User Manual

DSL-2750U

Wireless ADSL2+ Router with 3G/LTE/Ethernet WAN Support and USB Port

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CHAPTER 1. INTRODUCTION

Contents and Audience

This manual describes the router DSL-2750U 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-2750U 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.

Chapter 6 introduces abbreviations and acronyms used in this manual.

CHAPTER 2. OVERVIEW

General Information

DSL-2750U is a multifunction LTE/3G/ADSL/Ethernet router with Wi-Fi and built-in switch. The router allows accessing the Internet via LTE or 3G GSM network (with a USB modem[1] connected). In addition, the device allows accessing the Internet via ADSL technology and via Ethernet technology.

The router is equipped with an ADSL port to connect to an ADSL line and 4 Ethernet ports to connect workstations. Due to this feature, DSL-2750U represents a moderate-priced solution for creating wired networks without an additional switch. In addition, any Ethernet port of the device can be used to connect to a private Ethernet line. Also the router has a USB port designed to connect a USB modem, printer, or USB storage.

DSL-2750U 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, WPS, WMM.

In addition, the device is equipped with a button for switching the Wi-Fi network off/on. If needed, for example, when you leave home, you can easily switch the router's WLAN by pressing the button, and devices connected to the LAN ports of the router will stay online.

Support of guest Wi-Fi network allows you to create a separate wireless network with individual security settings and maximum rate limitation. Devices connected to the guest network will be able to access the Internet, but will be isolated from the devices and resources of the router's LAN.

The wireless router DSL-2750U 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 web sites for users of your LAN.

Built-in Yandex.DNS service protects against malicious and fraudulent web sites and helps to block access to adult content on children's devices.

You can configure and manage the settings of the multifunction wireless router DSL-2750U via the user-friendly web-based interface (the interface is available in several languages).

The fast and easy configuration wizard allows you to specify all needed parameters in several simple steps.

You can simply update the firmware: the router itself finds approved firmware on D-Link update server and notifies when ready to install it.

1 Not included in the delivery package. D-Link does not guarantee compatibility with all USB modems. For the list of supported USB modems, see the ***Specifications*** section, page 7.

*Specifications**

Hardware	
Processor	· RTL8676S
RAM	· 32MB, SDRAM
Flash	· 8MB, SPI
Interfaces	· RJ-11 ADSL port · 4 10/100BASE-TX LAN ports · USB 2.0 port
LEDs	· POWER · 4 LAN LEDs · WLAN · WPS · USB · DSL · INTERNET
Buttons	· ON/OFF button to power on/power off · RESET button to restore factory default settings · WPS button to set up wireless connection · WIRELESS ON/OFF button to enable/disable wireless network
Antenna	· Two external non-detachable omnidirectional antennas (5dBi gain)
MIMO	· 2 x 2
Power connector	· Power input connector (DC)

DSL Parameters	
ADSL Standards	· ADSL: Multi-mode, ANSI T1.413 Issue 2, ITU-T G.992.1 (G.dmt) Annex A, ITU-T G.992.2 (G.lite) Annex A, ITU-T G.994.1 (G.hs) · ADSL2: ITU-T G.992.3 (G.dmt.bis) Annex A/L/M, ITU-T G.992.4 (G.lite.bis) Annex A · ADSL2+: ITU-T G.992.5 Annex A/L/M
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

Software	
WAN connection types	· LTE · 3G · PPPoA · PPPoE · IPv6 PPPoE · PPPoE Dual Stack · IPoA · Static IPv4 / Dynamic IPv4 · Static IPv6 / Dynamic IPv6 · Bridge

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

Software	
Network functions	· DHCP server/relay · Stateful/Stateless mode for IPv6 address assignment, IPv6 prefix delegation · DNS relay · Dynamic DNS · Static IP routing · Static IPv6 routing · IGMP Proxy · IGMP snooping · RIP · Support of UPnP IGD · Support of VLAN · WAN ping respond · Support of SIP ALG · Support of RTSP · WAN reservation
Firewall functions	· Network Address Translation (NAT) · Stateful Packet Inspection (SPI) · IP filter · IPv6 filter · MAC filter · URL filter · DMZ · Prevention of ARP and DDoS attacks · Virtual servers · Built-in Yandex.DNS web content filtering service
VPN	· IPsec/PPTP/L2TP/PPPoE pass-through
QoS	· Interface grouping · VLAN priority (802.1p)
USB interface functions	· USB modem Auto connection to available type of supported network (4G/3G/2G) Auto configuration of connection upon plugging in USB modem Enabling/disabling PIN code check, changing PIN code[2] · USB storage File browser Print server Access to storage via accounts Built-in Samba/FTP/DLNA server Built-in Transmission torrent client; uploading/downloading files from/to USB storage
Management	· Local and remote access to settings through TELNET/WEB (HTTP/HTTPS) · Multilingual web-based interface for configuration and management · Firmware update via web-based interface · Automatic notification on new firmware version · Saving/restoring configuration to/from file · Support of logging to remote host/connected USB storage · Automatic synchronization of system time with NTP server and manual time/date setup · Ping utility · Traceroute utility · TR-069 client

2 For some models of USB modems.

Wireless Module Parameters	
Standards	· IEEE 802.11b/g/n
Frequency range	· 2400 ~ 2483.5MHz
Wireless connection security	· WEP · WPA/WPA2 (Personal/Enterprise) · MAC filter · WPS (PBC/PIN)
Advanced functions	· WMM (Wi-Fi QoS) · Information on connected Wi-Fi clients · Advanced settings · Guest Wi-Fi / support of MBSSID · Limitation of wireless network rate · Periodic scan of channels, automatic switch to least loaded channel · Autonegotiation of channel bandwidth in accordance with environment conditions (20/40 Coexistence)
Wireless connection rate	· IEEE 802.11b: 1, 2, 5.5, and 11Mbps · IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, and 54Mbps · IEEE 802.11n: from 6.5 to 300Mbps (from MCS0 to MCS15)
Transmitter output power *The maximum value of the transmitter output power depends upon the radio frequency regulations applied in your country*	· 802.11b (typical at room temperature 25 °C) 15dBm · 802.11g (typical at room temperature 25 °C) 13.5 ~ 15dBm · 802.11n (typical at room temperature 25 °C) 13.5 ~ 15dBm
Receiver sensitivity	· 802.11b (typical at room temperature 25 °C) -84dBm · 802.11g (typical at room temperature 25 °C) -72dBm · 802.11n (typical at room temperature 25 °C) HT20 -70dBm HT40 -67dBm
Modulation schemes	· 802.11b: CCK (11, 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps), DSSS · 802.11g: PSK/CCK, DBPSK, DQPSK, OFDM, BPSK, QPSK, 16QAM, 64QAM · 802.11n: PSK/CCK, DBPSK, DQPSK, OFDM, etc.

Physical Parameters	
Dimensions (L x W x H)	· 174 x 119 x 32 mm (6.6 x 4.7 x 1.3 in)
Weight	· 197 g (0.43 lb)

Operating Environment	
Power	· Output: 12V DC, 1A
Temperature	· Operating: from 0 to 40 °C · Storage: from -20 to 70 °C
Humidity	· From 5% to 95% (non-condensing)

Supported USB modems[3]	
GSM	· Alcatel X500 · D-Link DWM-152C1 · D-Link DWM-156A6 · D-Link DWM-156A7 · D-Link DWM 156A8 · D-Link DWM-156C1 · D-Link DWM-157B1 · D-Link DWM-157B1 (Velcom) · D-Link DWM-158D1 · D-Link DWR-710 · Huawei E150 · Huawei E1550 · Huawei E156G · Huawei E160G · Huawei E169G · Huawei E171 · Huawei E173 (Megafon) · Huawei E220 · Huawei E3131 (MTS 420S) · Huawei E352 (Megafon) · Prolink PHS600 · Prolink PHS901 · ZTE MF112 · ZTE MF192 · ZTE MF626 · ZTE MF627 · ZTE MF652 · ZTE MF667 · ZTE MF668 · ZTE MF752
LTE	· Huawei E3131 · Huawei E3272 · Huawei E3351 · Huawei E3372 · Huawei E367 · Huawei E392 · Megafon M100-1 · Megafon M100-2 · Megafon M100-3 · Megafon M100-4 · Megafon M150-1 · Megafon M150-2 · Quanta 1K6E (Beeline 1K6E) · MTS 824F · MTS 827F · Yota LU-150 · Yota WLTUBA-107 · ZTE MF823 · ZTE MF827
Smartphones in USB tethering mode	· Some models of Android smartphones

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

Product Appearance

Top Panel

Figure 1. Top panel view.

LED	Mode	Description
POWER	*Solid green*	The router is powered on.
	Blinking green	The firmware is being updated.
	Solid red	The router is being loaded.
	No light	The router is powered off.

LED	Mode	Description
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).
	No light	The cable is not connected to the relevant port.
WLAN	*Solid green*	A client has connected to the WLAN.
	Slow blinking green	The router's WLAN is on.
	Fast blinking green	The WLAN interface is active (upstream or downstream traffic).
	No light	The router's WLAN is off.
WPS	*Blinking green*	Attempting to add a wireless device via the WPS function.
	No light	The WPS function is not in use.
USB	*Solid green*	A USB device is connected to the router's USB port.
	No light	No USB device.
DSL	*Solid green*	DSL has been synchronized.
	Blinking green	Detecting a carrier signal and synchronizing DSL.
	No light	No carrier signal.
INTERNET	*Solid green*	A WAN connection is established.
	No light	The router is in the bridge mode or no WAN connection is created.

Back and Bottom Panels

Figure 2. Back panel view.

Port	Description
DSL	A DSL port to connect the router to the telephone line.
LAN 1-4	4 Ethernet ports to connect Ethernet devices. One port can be used to connect to a private Ethernet line.
USB	A port for connecting a USB device (modem, storage, printer).
WPS	A button to set up a wireless connection (the WPS function). To use the WPS function: with the device turned on, push the button and immediately release it. The **WPS** LED should start blinking.
WIRELESS ON/OFF	A button to enable/disable the router's wireless network.
ON/OFF	A button to turn the router on/off.
12VDC IN	Power connector.

The **RESET** button located on the bottom panel of the router is designed to restore the factory default settings. To restore the factory defaults, push the button (with the device turned on), hold it for 10 seconds, and then release the button.

The device is also equipped with external non-detachable Wi-Fi antennas.

Delivery Package

The following should be included:

- Router DSL-2750U
- Power adapter DC 12V/1A
- RJ-11 telephone cable
- Ethernet cable
- Splitter
- "***Quick Installation Guide***" (brochure).

The "***User Manual***" and "***Quick Installation Guide***" documents are available on D-Link website (see www.dlink.ru).

! 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 LTE/3G/ADSL/Ethernet router DSL-2750U with Wi-Fi and built-in switch (hereinafter referred to as "the router") is performed via the built-in web-based interface. The web-based interface is available from any operating system that supports a web browser.

Web Browser

The following web browsers are recommended:

- Apple Safari 8 and later
- Google Chrome 48 and later
- Microsoft Internet Explorer 10 and later
- Microsoft Edge 20.10240 and later
- Mozilla Firefox 44 and later
- Opera 35 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.

USB Modem

To connect to an LTE or 3G network, you should use a USB modem. Connect it to the USB port of the router, then access the web-based interface of the router, and you will be able to configure a connection to the Internet[4].

Your USB modem should be equipped with an active SIM card of your operator.

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

For some models of USB modems, it is required to disable the PIN code check on the SIM card prior to connecting the USB modem to the router.

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

Connecting to PC

PC with Ethernet Adapter

1. Make sure that your PC is powered off.
2. Connect an Ethernet cable between any of four Ethernet ports located on the back panel of the router and the Ethernet port of your PC.
3. ***To connect via USB modem:*** connect your USB modem to the USB port[5] located on the back panel of the router.

In some cases you will need to reboot the router after connection of the USB modem.

4. ***To connect the router to a DSL line:*** connect a phone cable between the DSL port of the router and the **ADSL OUT** port of the splitter. Connect your phone to the **PHONE** port of the splitter. Then connect another phone cable between a phone jack and the **ADSL IN** port of the splitter.
5. ***To connect the router to an Ethernet line:*** run the Initial Configuration Wizard and select the router's LAN port that will be used as the WAN port. Then connect the Ethernet cable between the selected Ethernet port located on the back panel of the router and the Ethernet line.
6. Connect the power cord to the power connector port on the back panel of the router, then plug the power adapter into an electrical outlet or power strip.
7. Turn on the router by pressing the **ON/OFF** button on its back panel.
8. Turn on your PC and wait until your operating system is completely loaded.

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

Obtaining IP Address Automatically in OS Windows XP

1. Click the **Start** button and proceed to the **Control Panel > Network and Internet Connections > Network Connections** window.
2. In the **Network Connections** window, right-click the relevant **Local Area Connection** icon and select the **Properties** line in the menu displayed.

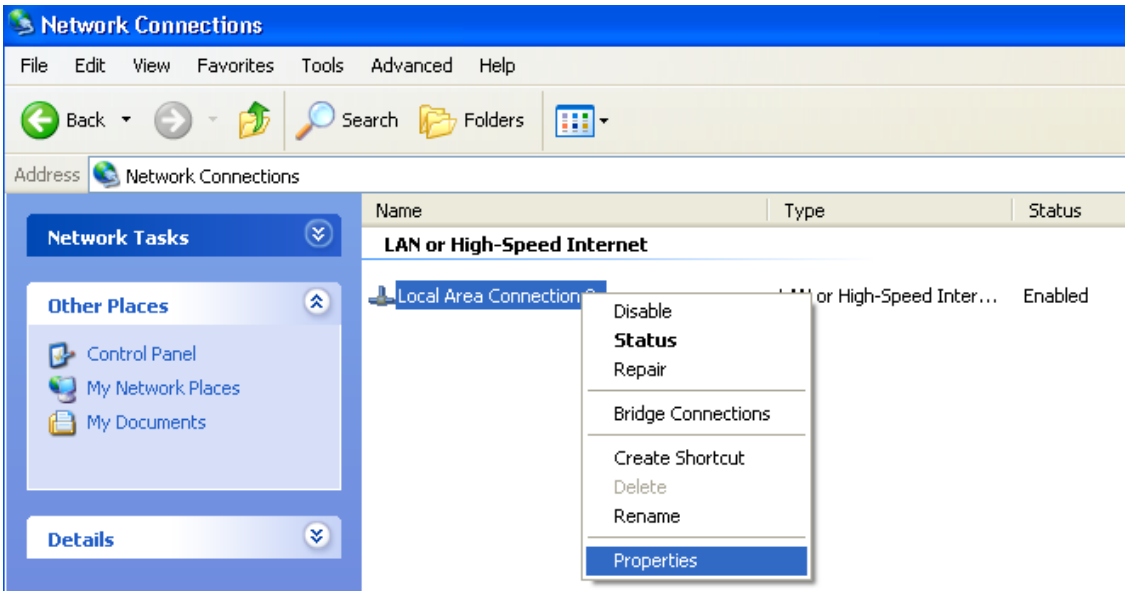


*Figure 3. The **Network Connections** window.*

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

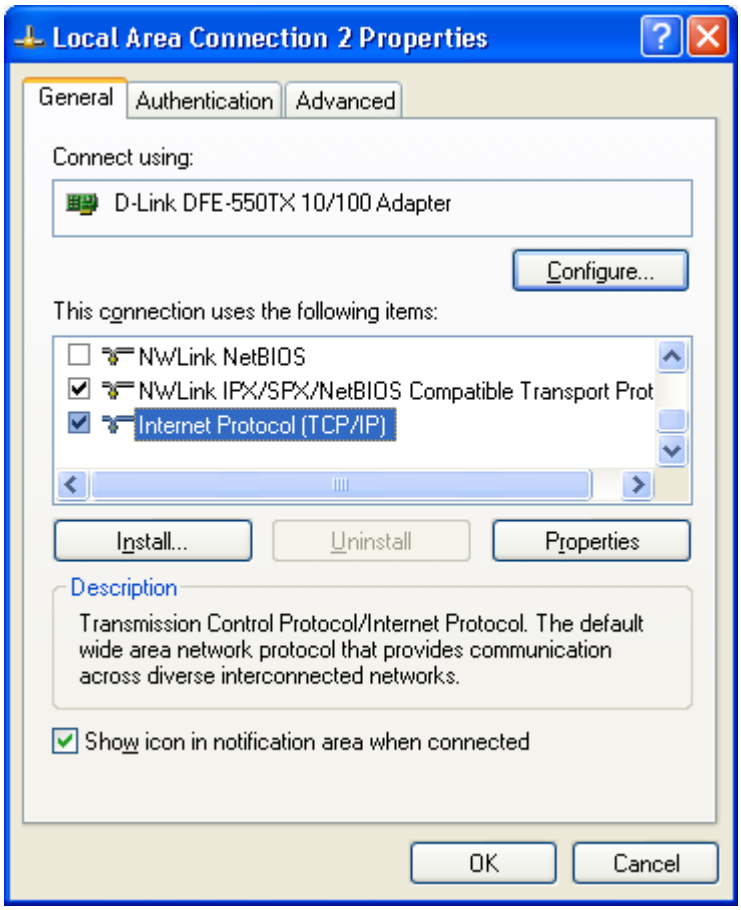


*Figure 4. The **Local Area Connection Properties** window.*

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

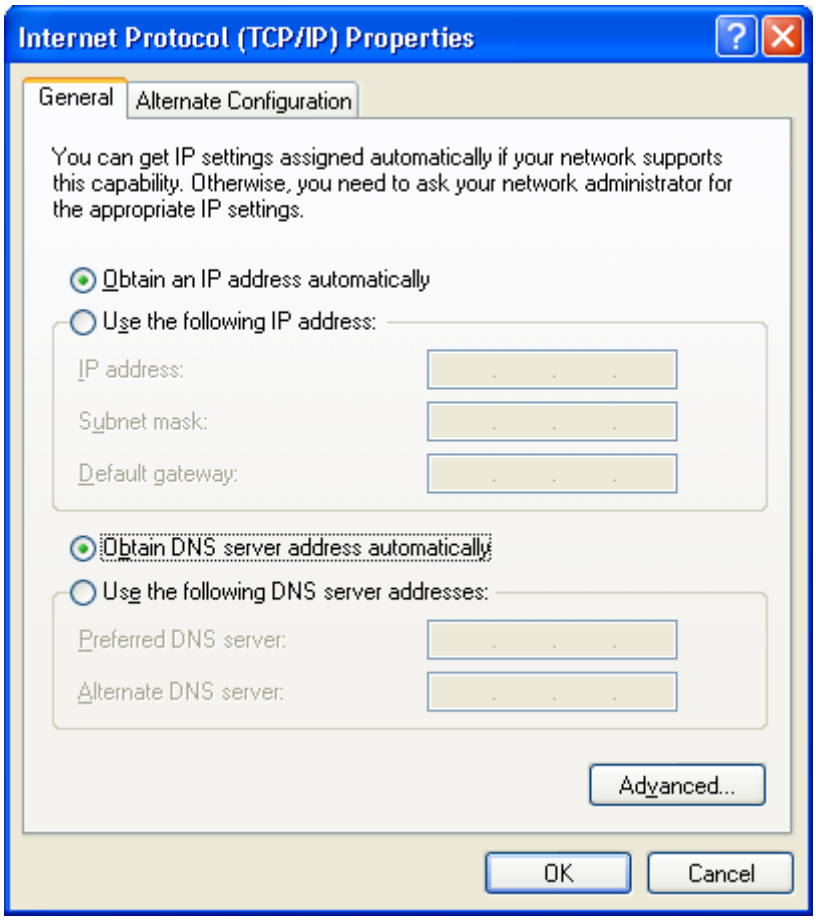


*Figure 5. The **Internet Protocol (TCP/IP) Properties** window.*

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

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

Obtaining IP Address Automatically in OS Windows 7

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

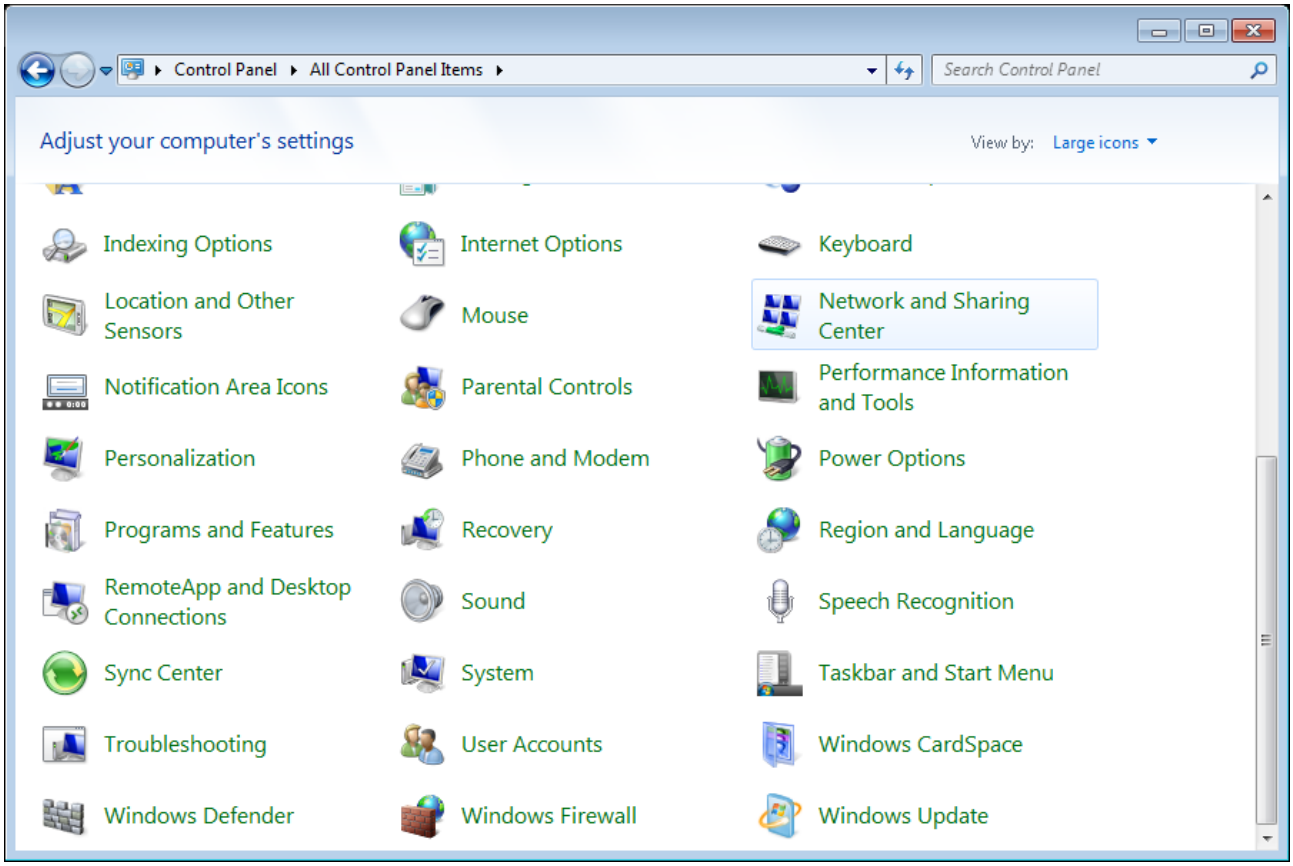


*Figure 6. The **Control Panel** window.*

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

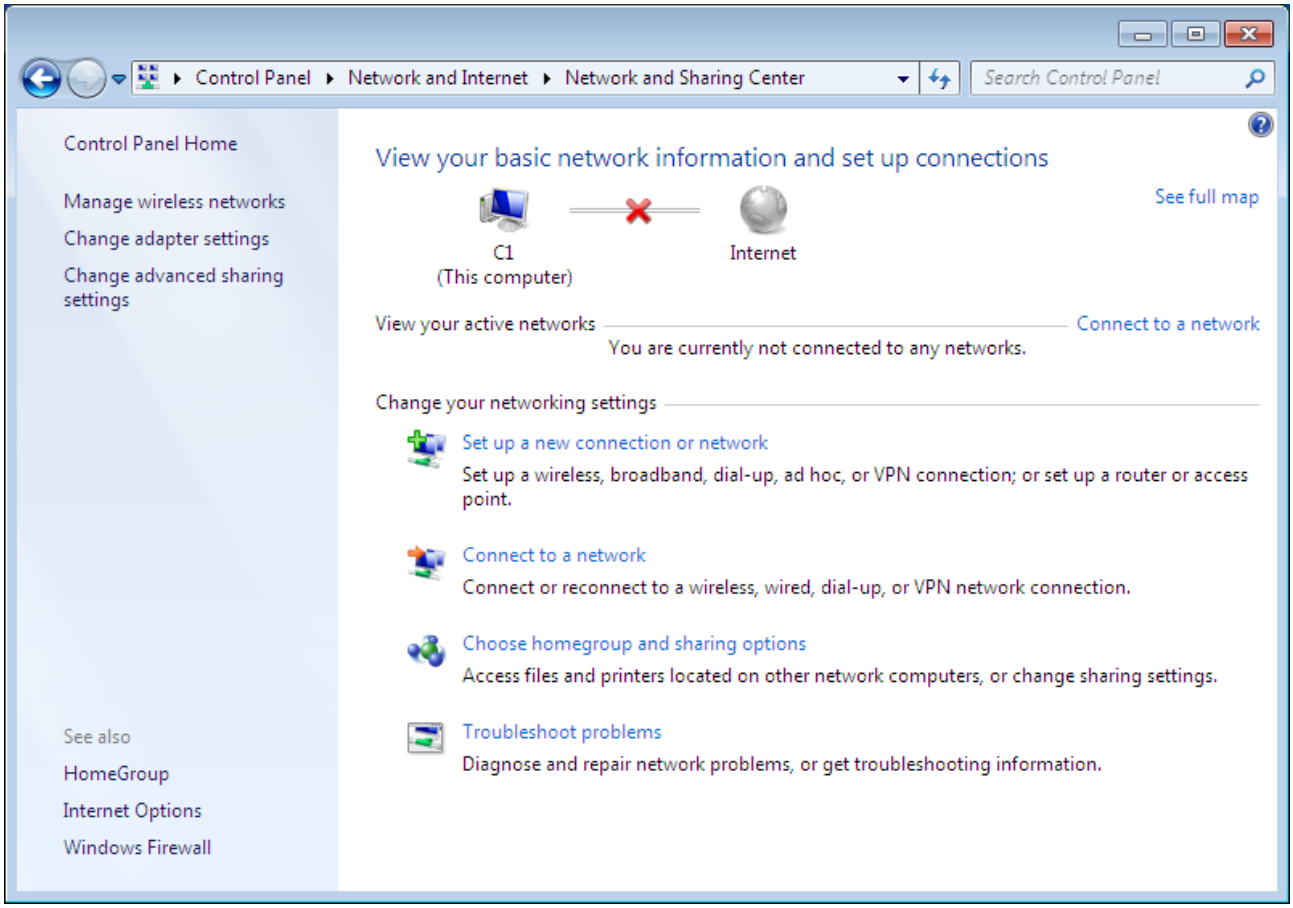


*Figure 7. The **Network and Sharing Center** window.*

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

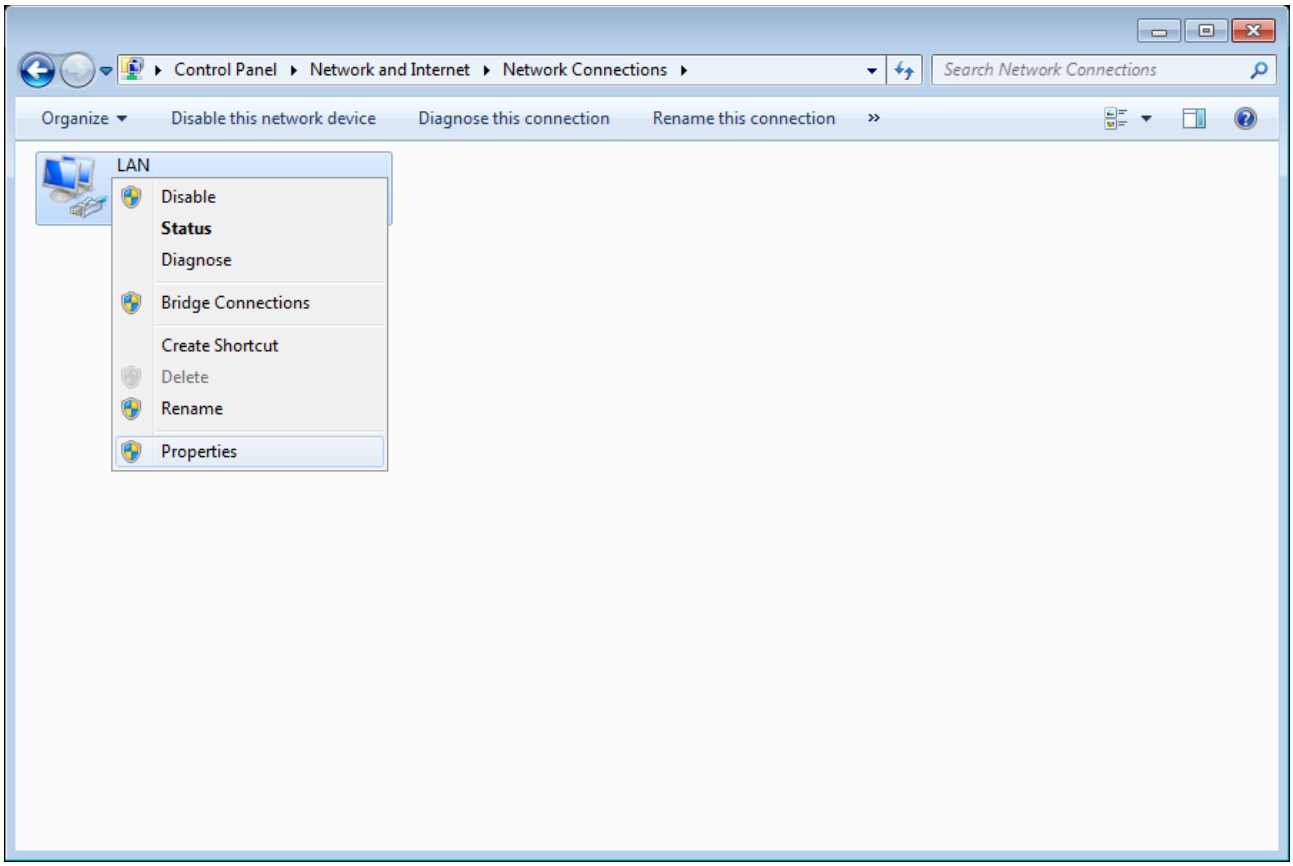


*Figure 8. The **Network Connections** window.*

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

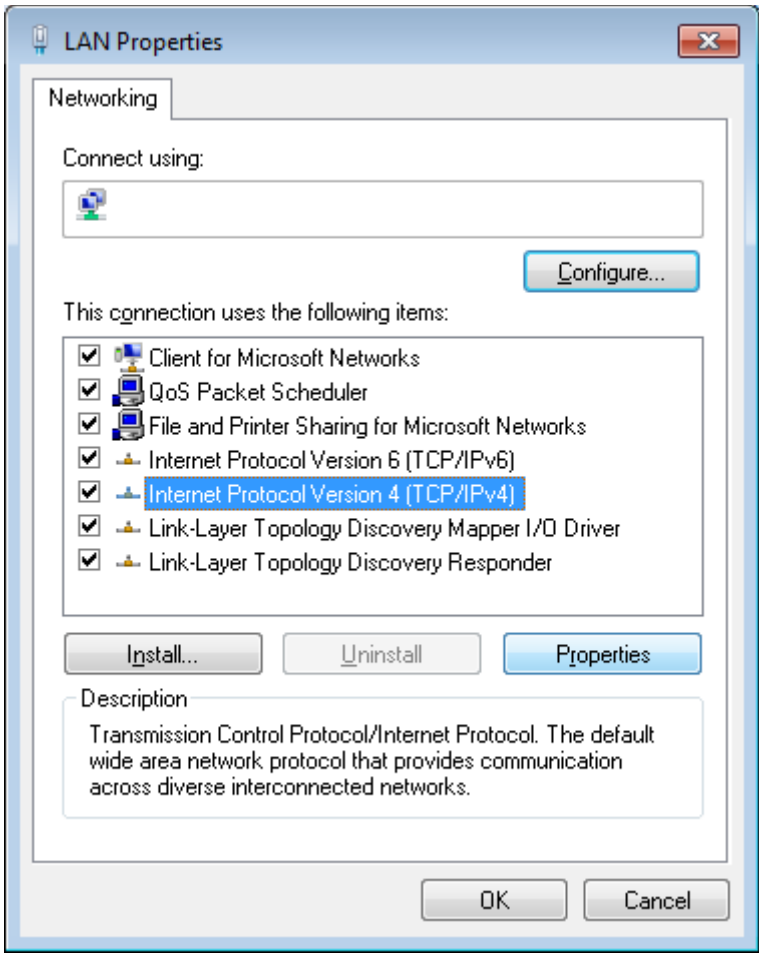


*Figure 9. The **Local Area Connection Properties** window.*

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

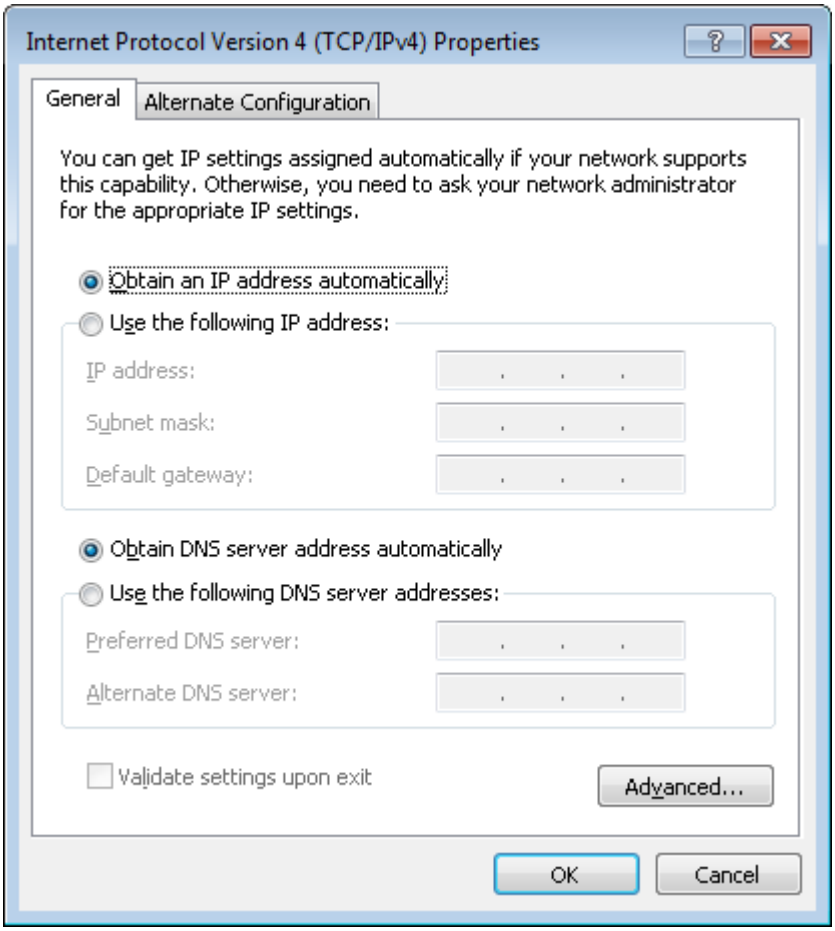


*Figure 10. The **Internet Protocol Version 4 (TCP/IPv4) Properties** window.*

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

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

PC with Wi-Fi Adapter

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

In some cases you will need to reboot the router after connection of the USB modem.

2. ***To connect the router to a DSL line:*** connect a phone cable between the DSL port of the router and the **ADSL OUT** port of the splitter. Connect your phone to the **PHONE** port of the splitter. Then connect another phone cable between a phone jack and the **ADSL IN** port of the splitter.
3. ***To connect the router to an Ethernet line:*** run the Initial Configuration Wizard and select the router's LAN port that will be used as the WAN port. Then connect the Ethernet cable between the selected Ethernet port located on the back panel of the router and the Ethernet line.
4. Connect the power cord to the power connector port on the back panel of the router, then plug the power adapter into an electrical outlet or power strip.
5. Turn on the router by pressing the **ON/OFF** button on its back panel.
6. Turn on 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.

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

Configuring Wi-Fi Adapter in OS Windows XP

1. Click the **Start** button and proceed to the **Control Panel > Network and Internet Connections > Network Connections** window.
2. Select the icon of the wireless network connection and make sure that your Wi-Fi adapter is on.

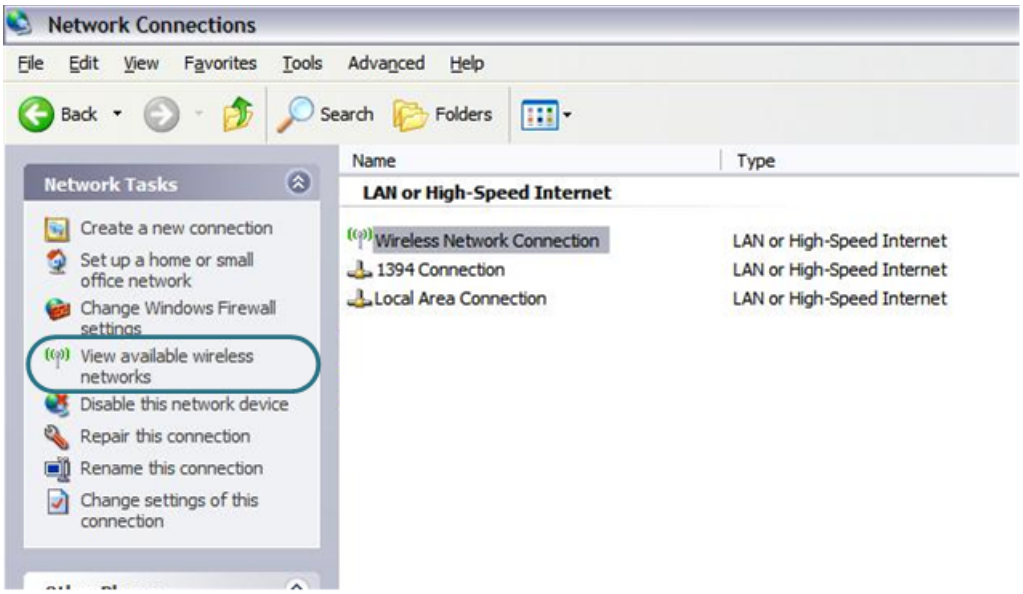


*Figure 11. The **Network Connections** window.*

3. Search for available wireless networks.
4. In the opened **Wireless Network Connection** window, select the wireless network **DSL-2750U** and click the **Connect** button.
5. In the opened window, enter the network key (see WPS PIN on the barcode label on the bottom panel of the device) in the **Network key** and **Confirm network key** fields 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.)

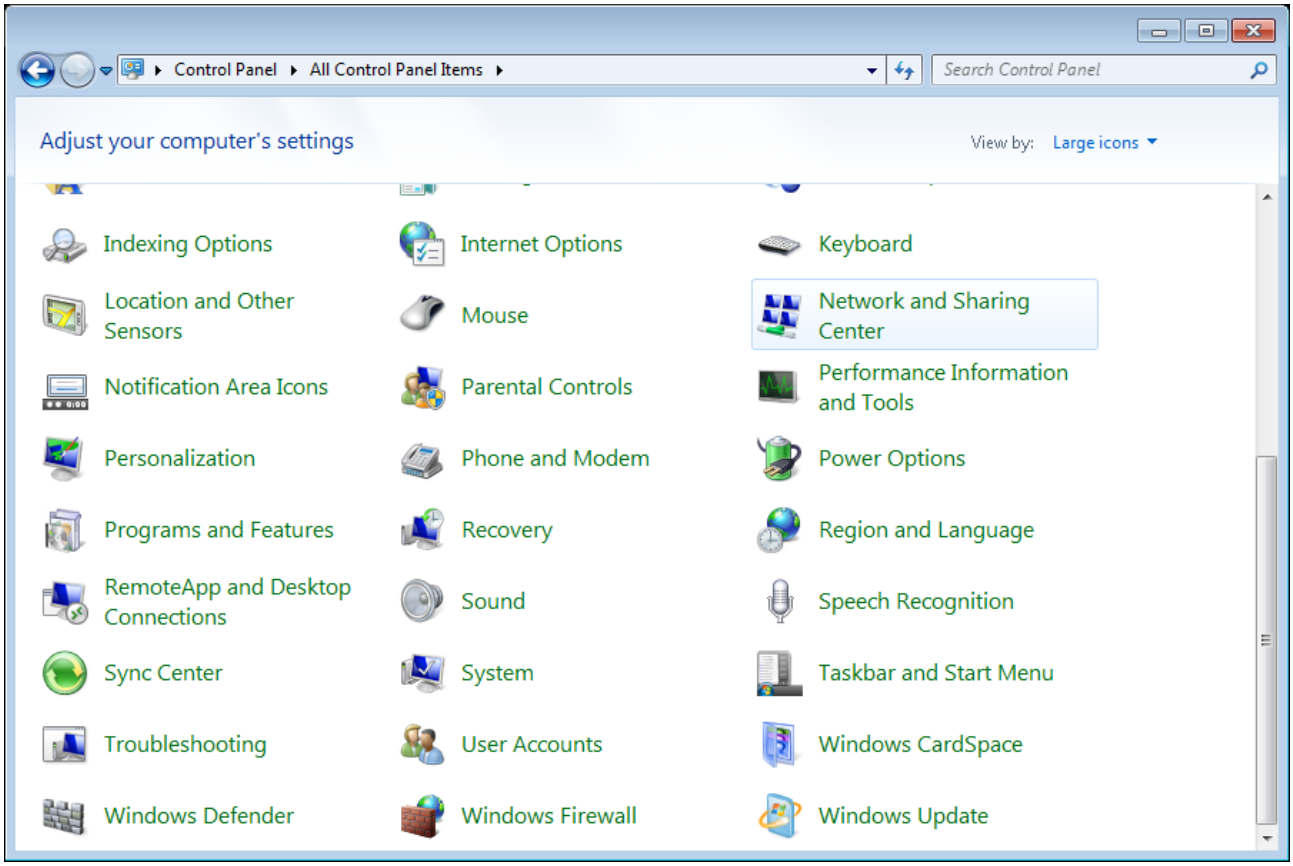


*Figure 12. The **Control Panel** window.*

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.

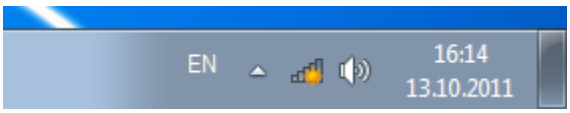


Figure 13. The notification area of the taskbar.

6. In the opened window, in the list of available wireless networks, select the wireless network **`DSL-2750U`** and click the **Connect** button.

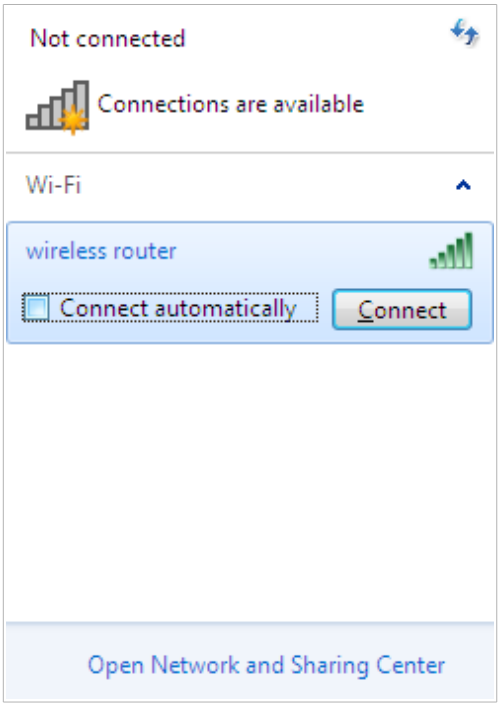


Figure 14. The list of available networks.

7. In the opened window, enter the network key (see WPS PIN on the barcode label on the bottom panel of the device) in the **Security key** field and click the **OK** button.
8. Wait for about 20-30 seconds. After the connection is established, the network icon will be displayed as the signal level scale.

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

Connecting to Web-based Interface

When you have configured your computer, you can access the web-based interface and configure needed parameters (create a WAN connection, change the parameters of the wireless network, specify the settings of the firewall, etc.)

Start a web browser (see the ***Before You Begin*** section, page 15). In the address bar of the web browser, enter the IP address of the router (by default, **`192.168.1.1`**) or its domain name (by default, **`dlinkrouter.local`**) with a dot at the end. Press the **Enter** key.

Figure 15. Connecting to the web-based interface of the DSL-2750U device.

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.

If the device has not been configured previously or the default settings have been restored, after access to the web-based interface the Initial Configuration Wizard opens (see the ***Initial Configuration Wizard*** section, page 37).

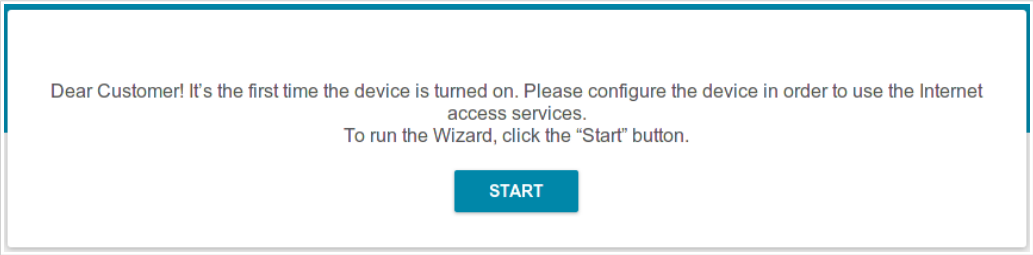


Figure 16. The page for running the Initial Configuration Wizard.

If you configured the device previously, after access to the web-based interface the login page opens. Enter the username (**admin**) in the **Username** field and the password you specified in the **Password** field, then click the **LOGIN** button.

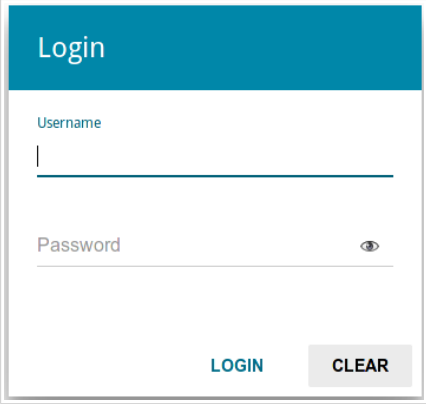


Figure 17. The login page.

Web-based Interface Structure

Summary Page

On the **Summary** page, detailed information on the device state is displayed.

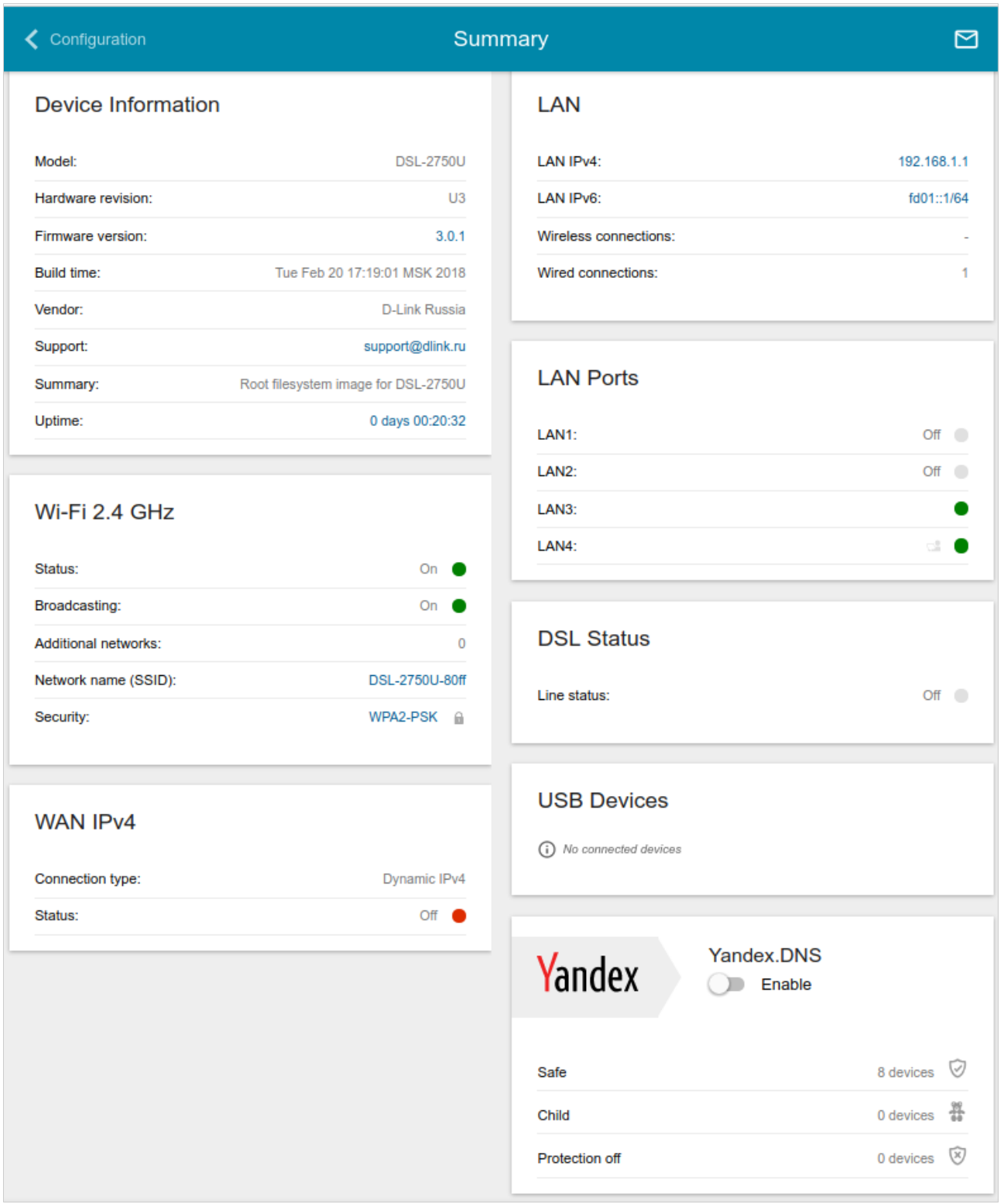


Figure 18. The summary page.

The **Device Information** section displays the model and hardware version of the router, the firmware version, and other data.

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

The **Wi-Fi 2.4 GHz** section displays data on the state of the device's wireless network, its name and the authentication type, and availability of an additional wireless network.

In the **WAN** section, data on the type and status of the existing WAN connection are displayed.

In the **LAN** section, the IPv4 and IPv6 address of the router and the number of wired and wireless clients of the device are displayed.

The **LAN Ports** section displays the state of the device's LAN ports.

In the **DSL Status** section, data on the DSL connection state is displayed.

The **USB Devices** section displays the device connected to the USB port of the router.

The **Yandex.DNS** section displays the Yandex.DNS service state and operation mode. To enable the Yandex.DNS service, move the **Enable** switch to the right. If needed, change the operation mode of the service.

Home Page

The **Home** page displays links to the most frequently used pages with device's settings.

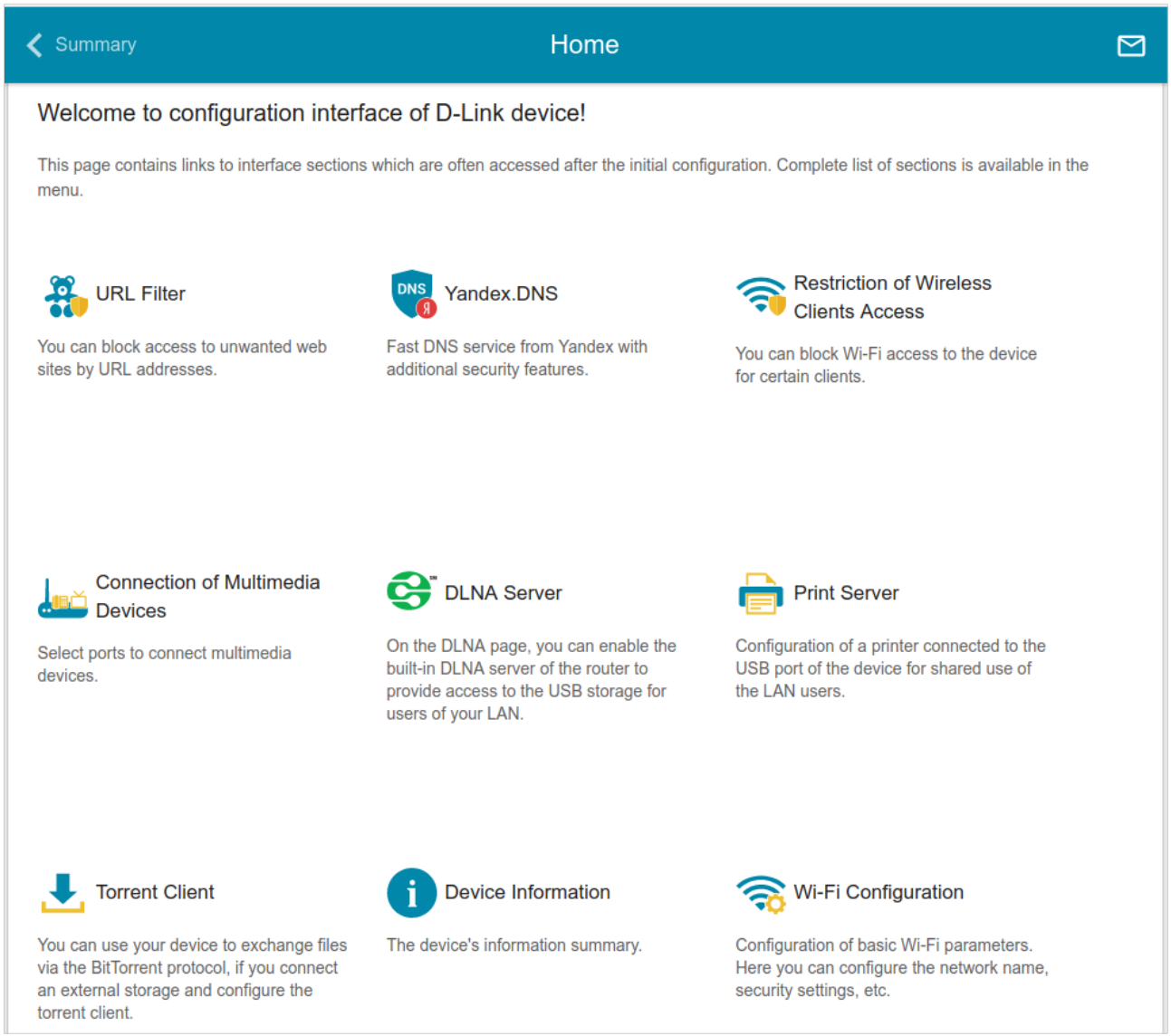


*Figure 19. The **Home** page.*

Other settings of the router are available in the menu in the left part of the page.

Menu Sections

To configure the router use the menu in the left part of the page.

In the **Initial Configuration** section you can run the Initial Configuration Wizard. The Wizard allows you to configure the router for operation in the needed mode and specify all parameters necessary for getting started (for the description of the Wizard, see the ***Initial Configuration Wizard*** section, page 37).

The pages of the **Statistics** section display data on the current state of the router (for the description of the pages, see the ***Statistics*** section, page 57).

The pages of the **Connections Setup** 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 ***Connections Setup*** section, page 64).

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 117).

The **Print Server** section is designed for configuring the router as a print server (see the ***Print Server*** section, page 138).

The pages of the **USB Storage** section are designed for operating the connected USB storage (for the description of the pages, see the ***USB Storage*** section, page 139).

The pages of the **USB Modem** section are designed for operating the connected 3G or LTE USB modem (for the description of the pages, see the ***USB Modem*** section, page 152).

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 156).

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 175).

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 186).

The pages of the **Yandex.DNS** section are designed for configuring the Yandex.DNS web content filtering service (for the description of the pages, see the ***Yandex.DNS*** section, page 202).

To exit the web-based interface, click the **Logout** line of the menu.

Notifications

The router's web-based interface displays notifications in the top right part of the page.

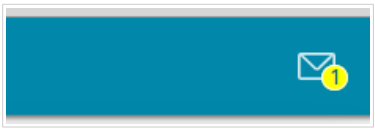


Figure 20. The web-based interface notifications.

Click the icon displaying the number of notifications to view the complete list and click the relevant button.

CHAPTER 4. CONFIGURING VIA WEB-BASED INTERFACE

Initial Configuration Wizard

To start the Initial Configuration Wizard, go to the **Initial Configuration** section. On the opened page, click the **OK** button and wait until the factory default settings are restored.

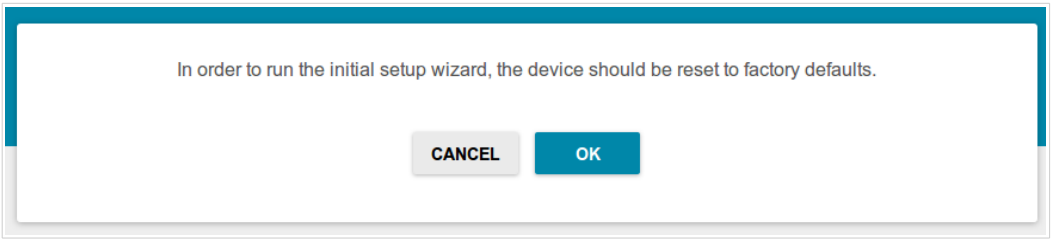


Figure 21. Restoring the default settings in the Wizard.

Click the **START** button.

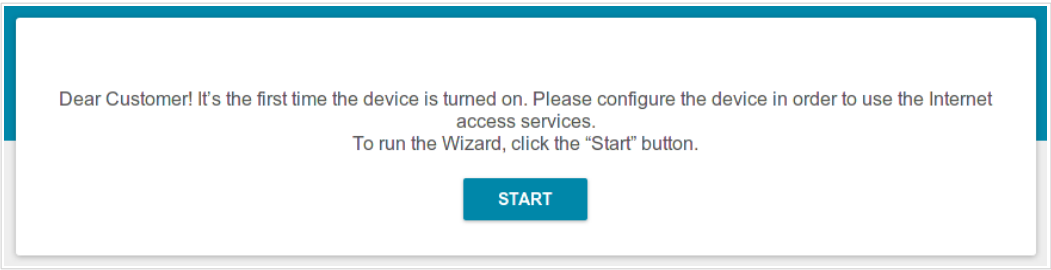


Figure 22. Starting the Wizard.

On the opened page, click **YES** in order to leave the current language of the web-based interface or click **NO** to select another language.

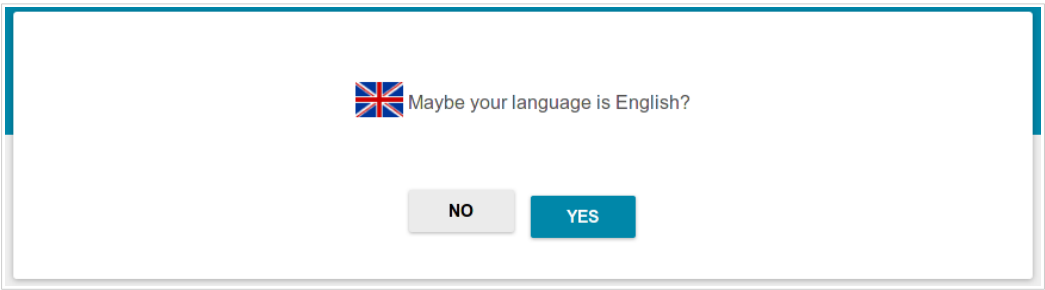


Figure 23. Selecting a language.

You can finish the wizard earlier and go to the menu of the web-based interface. To do this, click the **ADVANCED SETTINGS** button. On the opened page, change the default settings: specify the administrator password in the **Admin password** field and the name of the wireless network in the **Network name (SSID)** field. Then click the **APPLY** button.

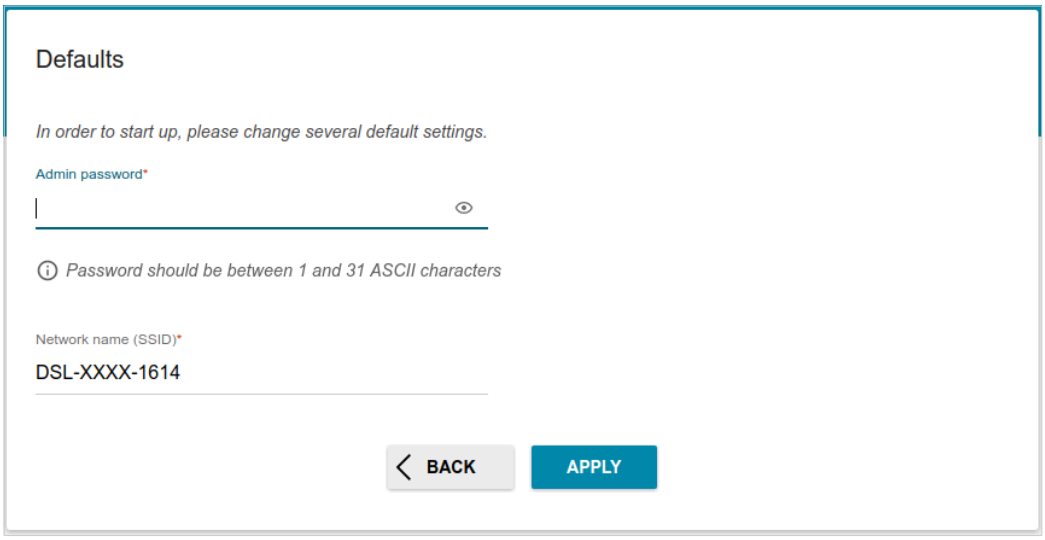


Figure 24. Changing the default settings.

To continue the configuration of the router via the Wizard, click the **CONTINUE** button.

Selecting Operation Mode

In order to connect your device to an ADSL line, on the **Device mode** page, from the **Connection method** list, select the **ADSL** value. In this mode you can configure a WAN connection, set your own settings for the wireless network, configure LAN ports to connect an STB or VoIP phone, and set your own password for access to the web-based interface of the device.

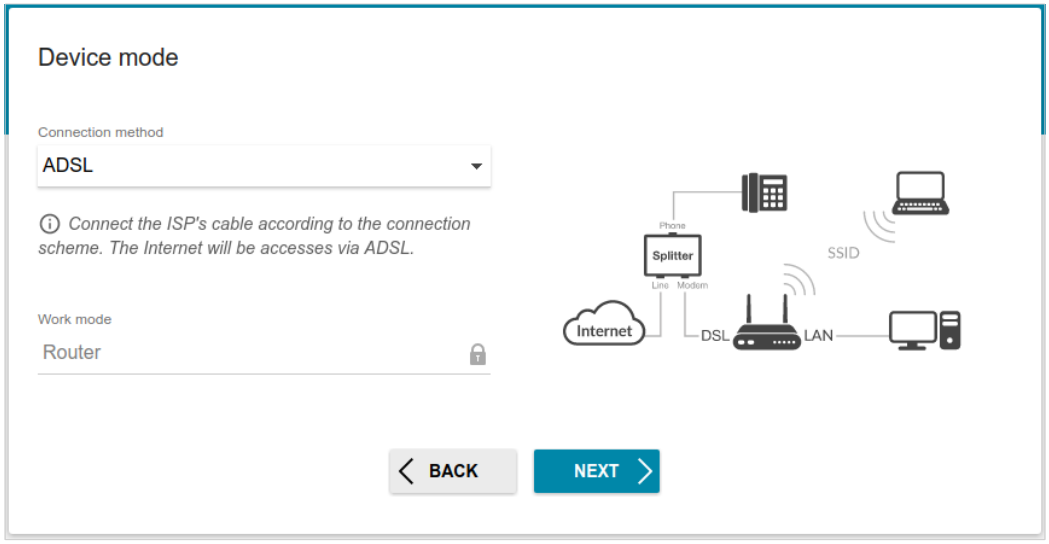


*Figure 25. Selecting an operation mode. The **ADSL** connection method.*

In order to connect your device to an Ethernet line, on the **Device mode** page, from the **Connection method** list, select the **Ethernet (LAN)** value. In this mode you can configure a LAN port as a WAN port, configure a WAN connection, set your own settings for the wireless network, configure LAN ports to connect an STB or VoIP phone, and set your own password for access to the web-based interface of the device.

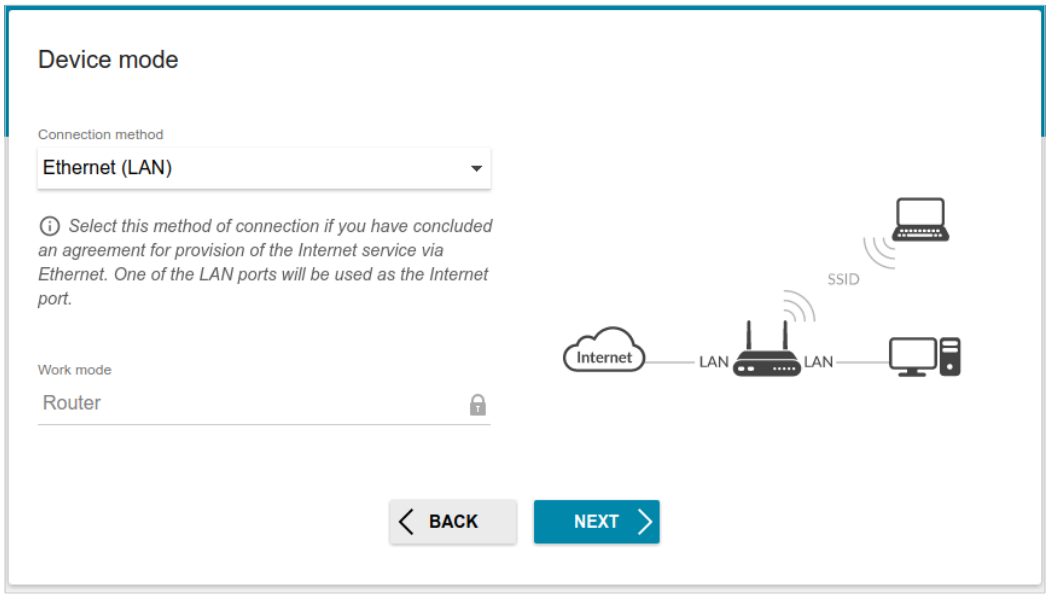


*Figure 26. Selecting an operation mode. The **Ethernet** connection method.*

In order to connect your device to the network of a 3G or LTE operator, on the **Device mode** page, from the **Connection method** list, select the **3G/LTE modem** value. In this mode you can configure a 3G/LTE WAN connection, set your own settings for the wireless network, and set your own password for access to the web-based interface of the device.

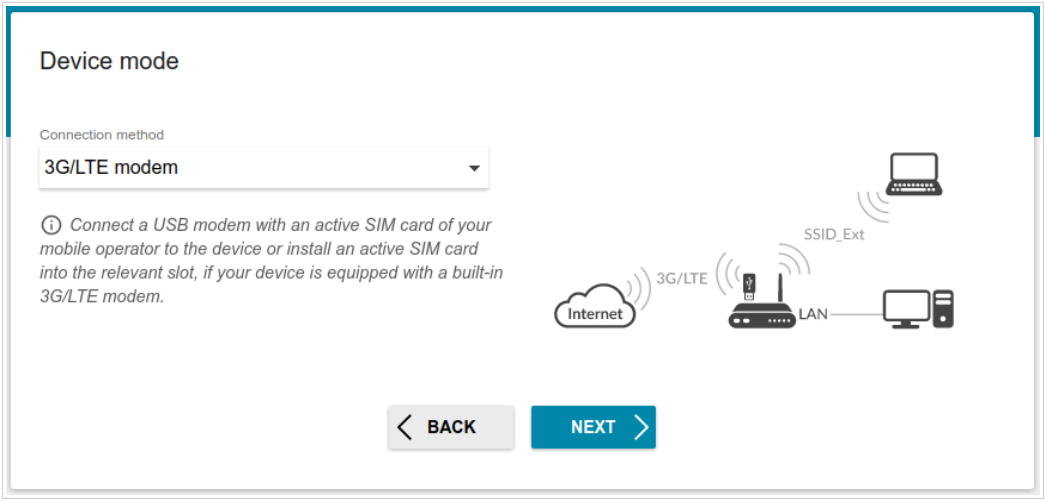


*Figure 27. Selecting an operation mode. The **3G/LTE modem** mode.*

When the operation mode is selected, click the **NEXT** button.

Creating 3G/LTE WAN Connection

This configuration step is available for the **3G/LTE modem** mode.

1. If the PIN code check is enabled for the SIM card inserted into your USB modem, enter the PIN code in the **PIN** field and click the **APPLY** button.

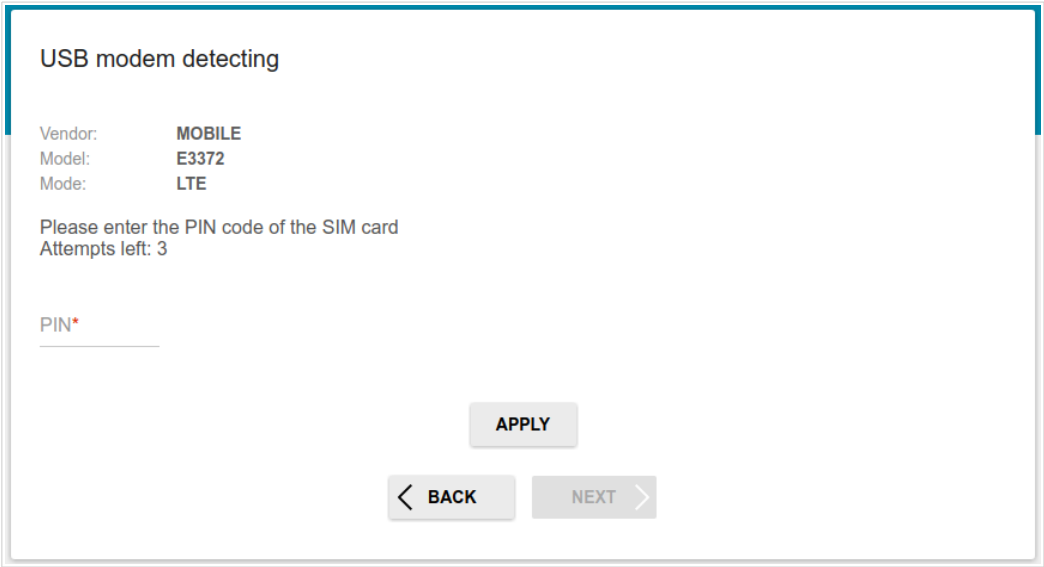


Figure 28. The page for entering the PIN code.

2. Please wait while the router automatically creates a WAN connection for your mobile operator.

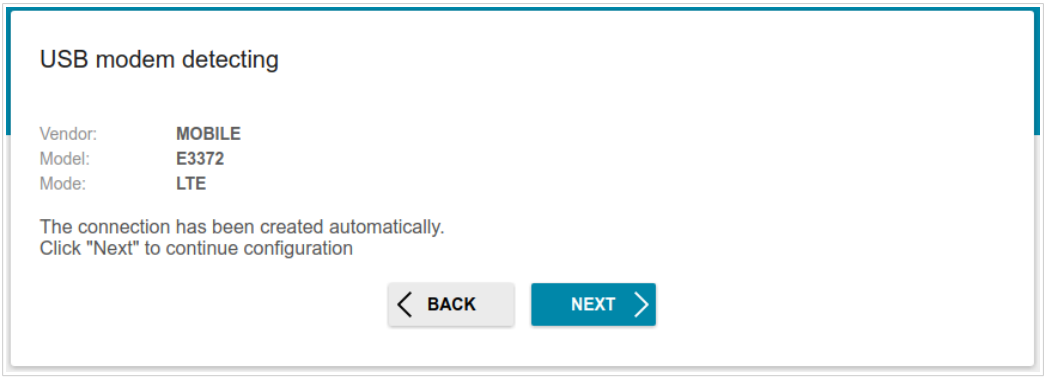


Figure 29. The page for creating 3G/LTE connection.

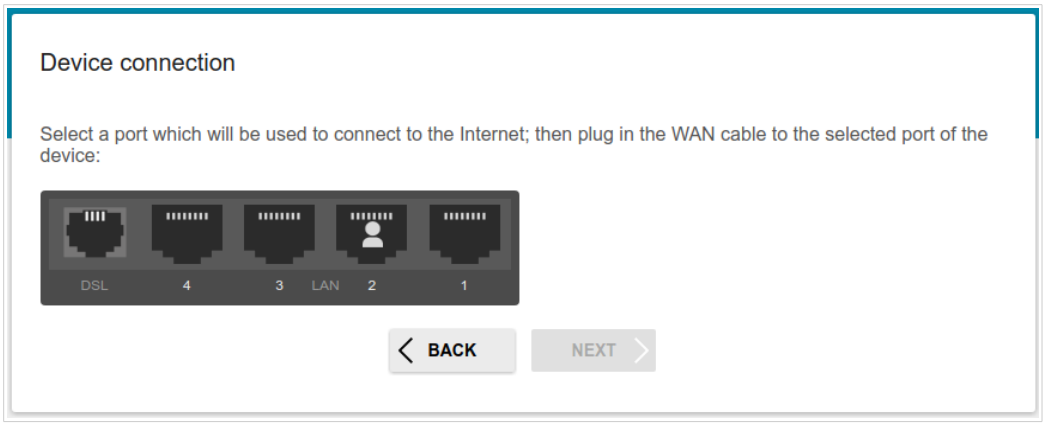
3. Click the **NEXT** button to continue or click the **BACK** button to return to the previous page.

If the router failed to create a WAN connection automatically, click the **CONFIGURE MANUALLY** button. On the **Internet connection type** page, configure all needed settings and click the **NEXT** button.

Selecting Ethernet WAN Port

This configuration step is available for the **Ethernet (LAN)** connection method.

1. On the **Device connection** page, select a LAN port that will be used as the WAN port.



2. Click the **NEXT** button.

Creating WAN Connection

You should configure your WAN connection in accordance with data provided by your Internet service provider (ISP). Make sure that you have obtained all necessary information prior to configuring your connection. Otherwise contact your ISP.

1. On the **Internet connection type** page, from the **Connection type** list, select the connection type used by your ISP and fill in the fields displayed on the page.
2. Specify the settings necessary for the connection of the selected type.
3. *For the **Ethernet (LAN)** connection method*: If your ISP uses MAC address binding, select the **Clone MAC address of your device** checkbox.
4. *For the **Ethernet (LAN)** connection method*: If the Internet access is provided via a VLAN channel, select the **Use VLAN** checkbox and fill in the **VLAN ID** field.
5. *For the **ADSL** connection method*: Specify the VPI and VCI values in the relevant fields.
6. Click the **NEXT** button to continue or click the **BACK** button to return to the previous page.

Static IPv4 or IPoA Connection

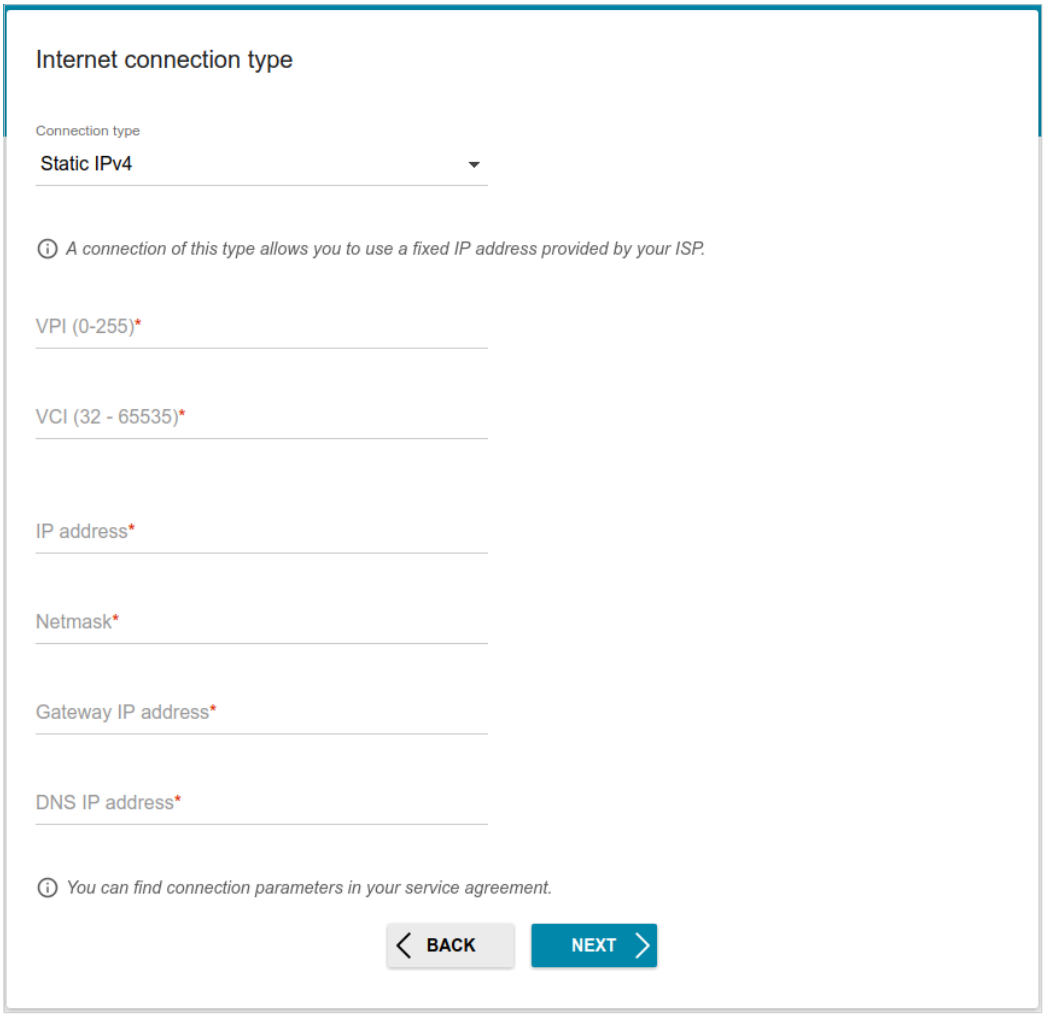


Figure 30. The page for configuring Static IPv4 WAN connection.

The **IPoA** connection type is available for the **ADSL** connection method only.

Fill in the following fields: **IP address**, **Netmask**, **Gateway IP address**, and **DNS IP address**.

Static IPv6 Connection

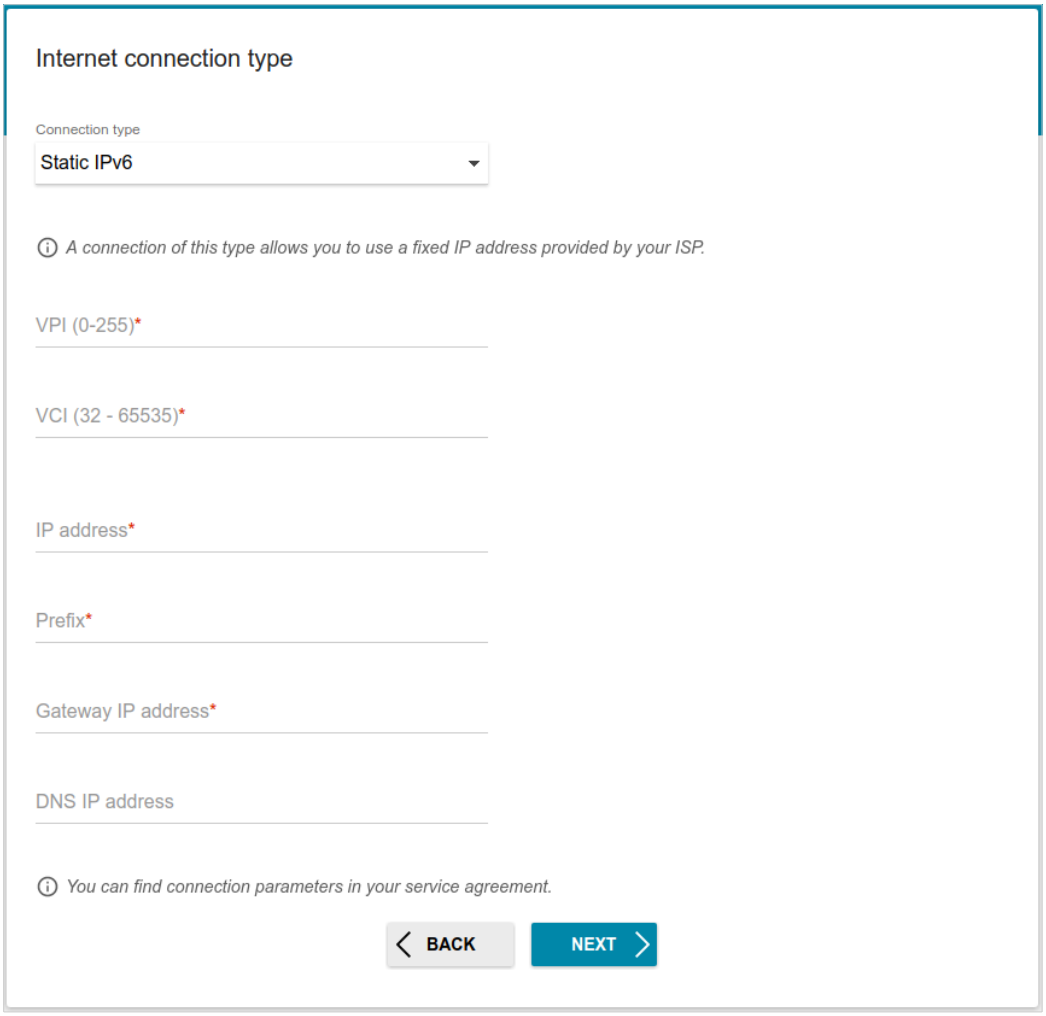


Figure 31. The page for configuring Static IPv6 WAN connection.

Fill in the following fields: **IP address**, **Prefix** and **Gateway IP address**.

PPPoE, PPPoA, IPv6 PPPoE, PPPoE Dual Stack Connections

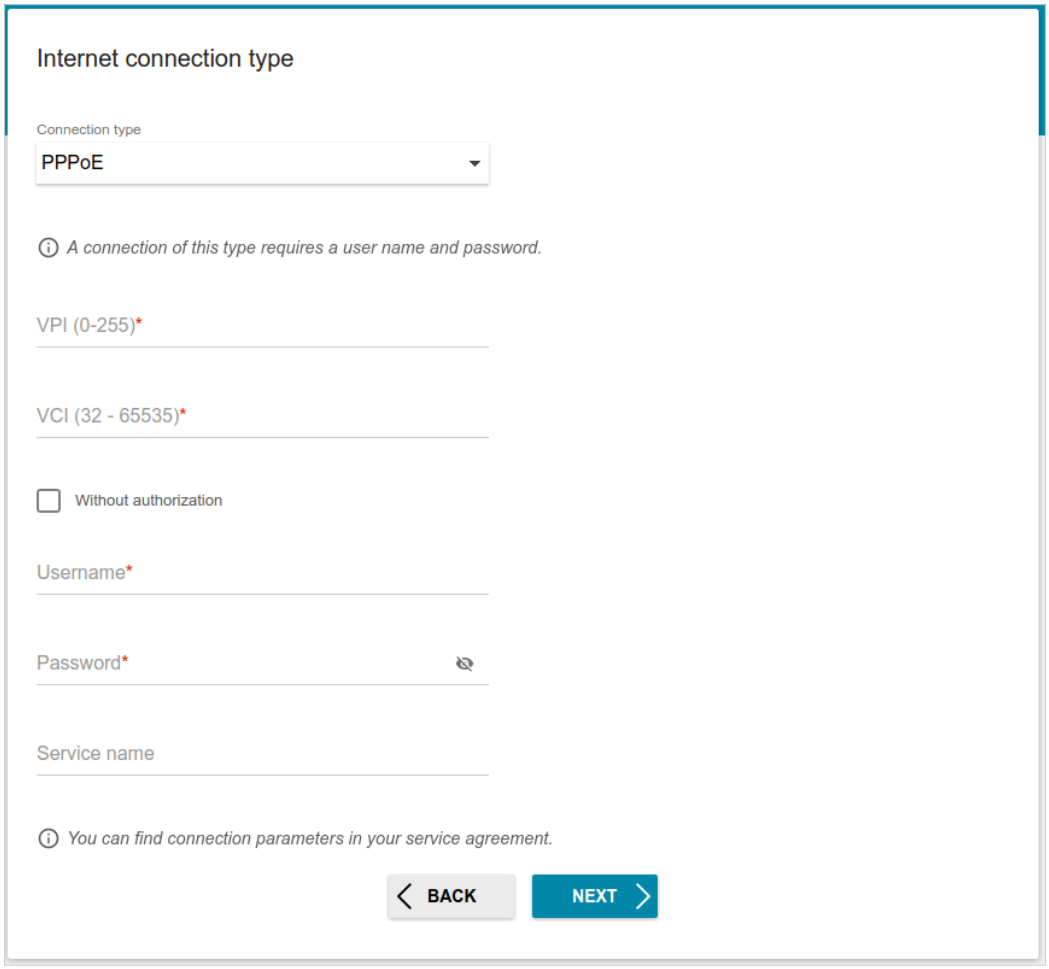


Figure 32. The page for configuring PPPoE WAN connection.

The **PPPoA** connection type is available for the **ADSL** connection method only.

In the **Username** field enter the login and in the **Password** field enter the password provided by your ISP. Click the **Show** icon ( ) to display the entered password. If authorization is not required, select the **Without authorization** checkbox.

Configuring Wireless Network

1. On the **Wireless Network 2.4 GHz** page, in the **Network name** field, specify your own name for the wireless network or leave the value suggested by the router.
2. In the **Password** field, specify your own password for access to the wireless network or leave the value suggested by the router (WPS PIN of the device, see the barcode label).
3. You can restore the parameters of the wireless network specified before resetting to factory defaults. To do this, click the **RESTORE** button.

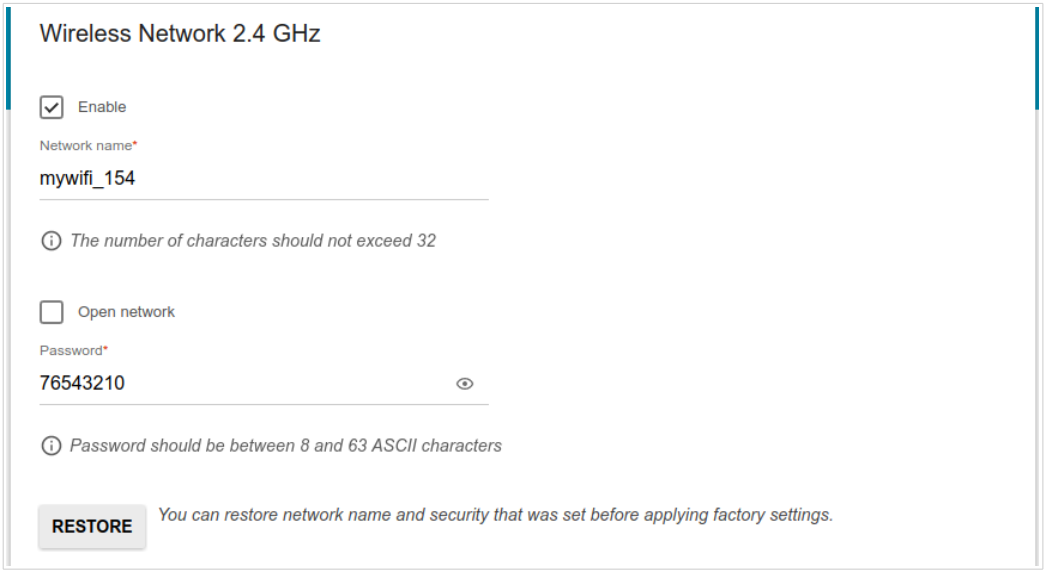


Figure 33. The page for configuring the wireless network.

4. If you want to create an additional wireless network isolated from your LAN, select the **Enable guest network** checkbox.

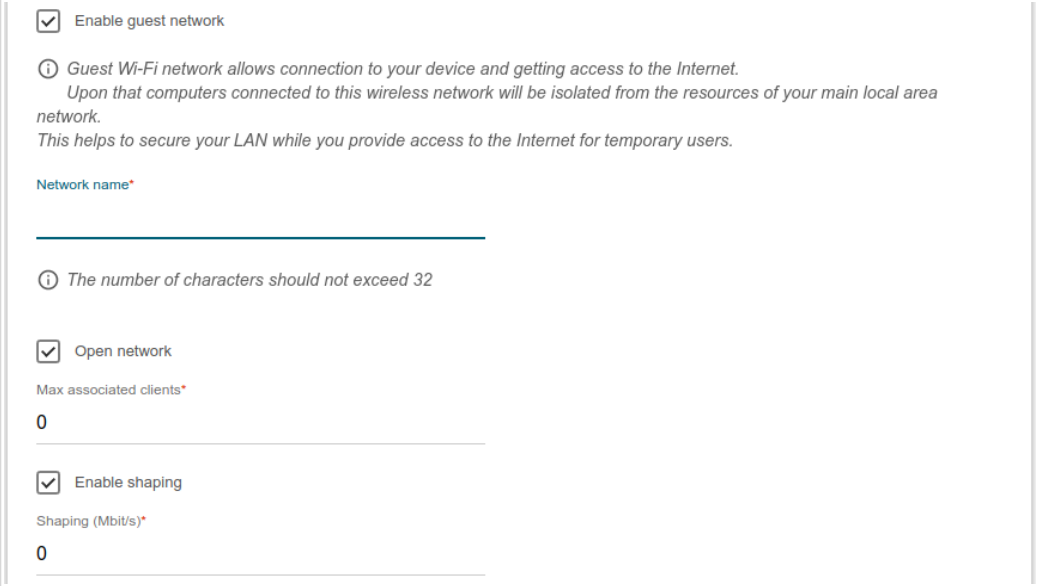


Figure 34. The page for configuring the wireless network.

5. In the **Network name** field, specify your own name for the guest wireless network or leave the value suggested by the router.
6. If you want to create a password for access to the guest wireless network, deselect the **Open network** checkbox and fill in the **Password** field.
7. If you want to limit the bandwidth of the guest wireless network, select the **Enable shaping** checkbox and fill in the **Shaping** field.
8. Click the **NEXT** button to continue or click the **BACK** button to specify other settings.

Configuring LAN Ports for IPTV/VoIP

1. On the **IPTV** page, select the **Is an STB connected to the device** checkbox.

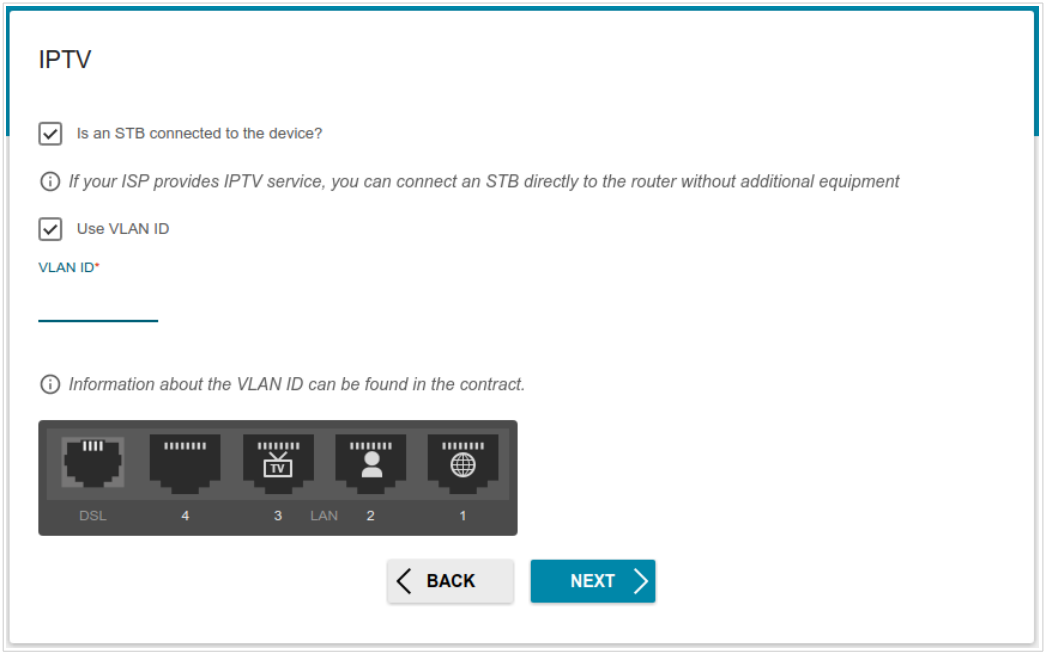


Figure 35. The page for selecting a LAN port to connect an IPTV set-top box.

2. Select a free LAN port for connecting your set-top box.
3. *For the **Ethernet (LAN)** connection method*: If the IPTV service is provided via a VLAN channel, select the **Use VLAN ID** checkbox and fill in the **VLAN ID** field.
4. *For the **ADSL** connection method*: Specify the VPI and VCI values in the relevant fields.
5. Click the **NEXT** button to continue or click the **BACK** button to specify other settings.

6. On the **VoIP** page, select the **Is an IP phone connected to the device** checkbox.

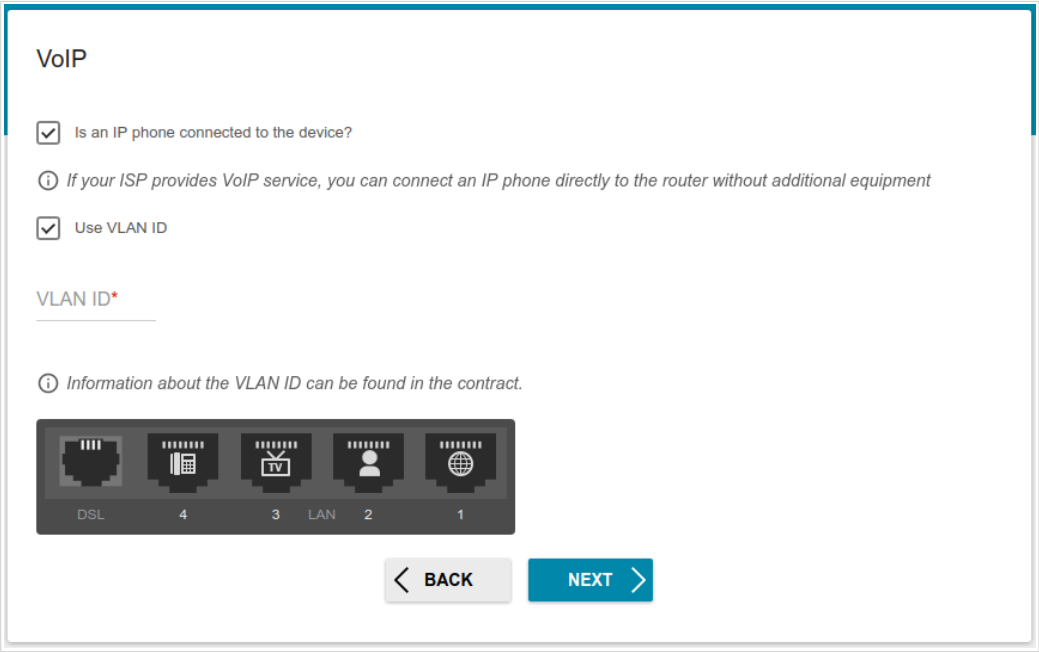


Figure 36. The page for selecting a LAN port to connect an VoIP phone.

7. Select a free LAN port for connecting your IP phone.
8. *For the **Ethernet (LAN)** connection method*: If the VoIP service is provided via a VLAN channel, select the **Use VLAN ID** checkbox and fill in the **VLAN ID** field.
9. *For the **ADSL** connection method*: Specify the VPI and VCI values in the relevant fields.
10. Click the **NEXT** button to continue or click the **BACK** button to specify other settings.

Changing Web-based Interface Password

On this page, you should change the default administrator password. You may set any password except **admin**. Use digits, Latin letters (uppercase and/or lowercase), and other characters available in the US keyboard layout.[7]

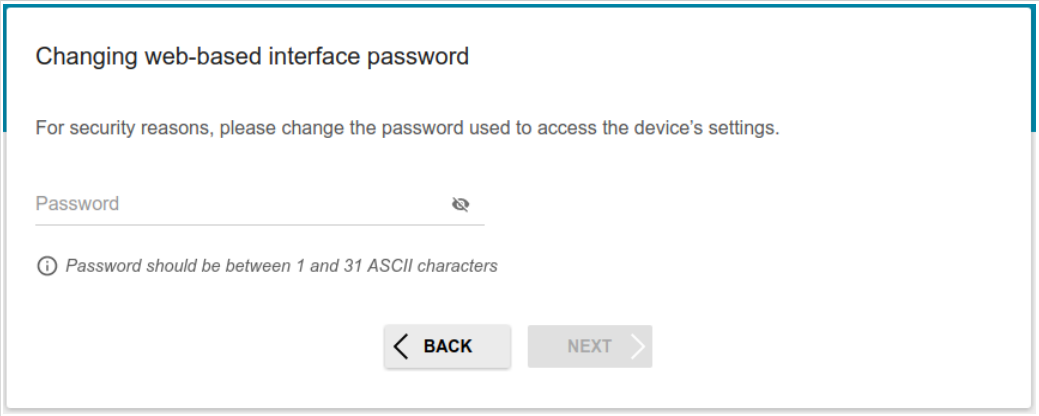


Figure 37. The page for changing the web-based interface password.

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

Click the **NEXT** button to continue or click the **BACK** button to return to the previous page.

On the next page, check all specified settings.

Also you can save a text file with parameters set by the Wizard to your PC. To do this, click the **SAVE CONFIGURATION FILE** button and follow the dialog box appeared.

To finish the Wizard, click the **APPLY** button. The router will apply settings and reboot. Click the **BACK** button to specify other settings.

7 0-9, A-Z, a-z, space, !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~.

If the Wizard has configured a WAN connection, after clicking the **APPLY** button, the page for checking the Internet availability opens.

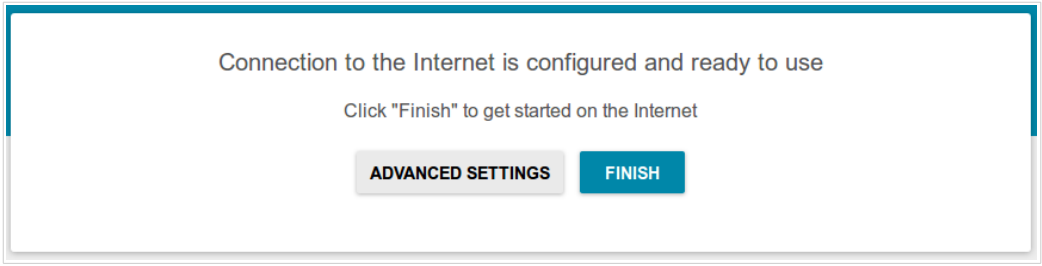


Figure 38. Checking the Internet availability.

If the router has been successfully connected to the Internet, click the **FINISH** button.

If problems appeared when connecting to the Internet, click the **CHECK AGAIN** button to recheck the state of the WAN connection.

If problems of connection have not been solved, contact the technical support of your ISP (as a rule, the technical support phone is provided with the agreement) or the D-Link technical support (the phone number will be displayed on the page after several attempts of checking the connection).

To specify other settings, click the **ADVANCED SETTINGS** button. After clicking the **ADVANCED SETTINGS** button, the **Summary** page opens (see the ***Summary Page*** section, page 32).

Connection of Multimedia Devices

The Multimedia Devices Connection Wizard helps to configure LAN ports or available wireless interfaces of the router for connecting additional devices, for example, an IPTV set-top box or IP phone. Contact your ISP to clarify if you need to configure DSL-2750U in order to use these devices.

To start the Wizard, on the **Home** page, select the **Connection of Multimedia Devices** section.

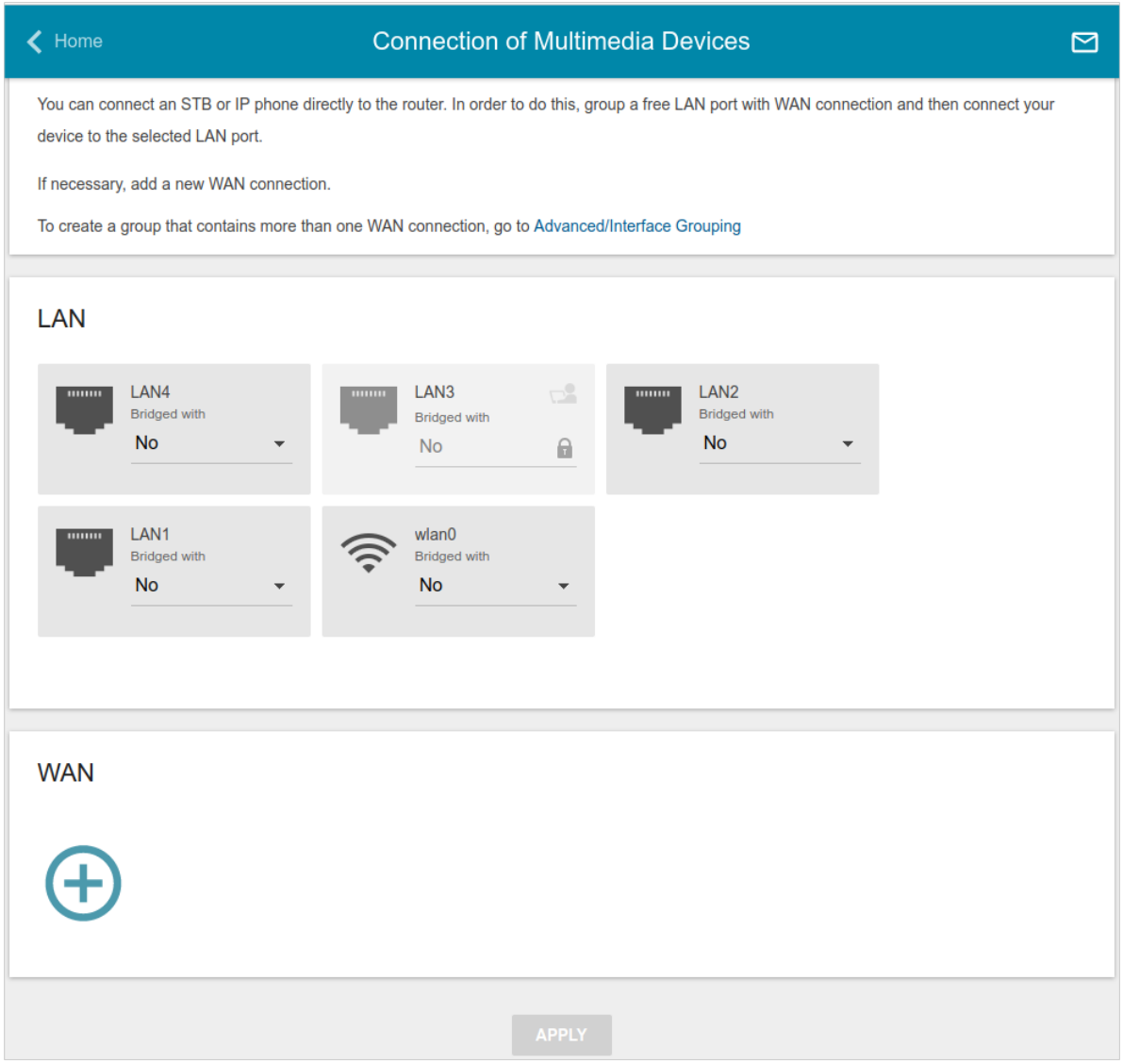


Figure 39. The Multimedia Devices Connection Wizard.

In the **WAN** section, click the **Add** icon ( ).

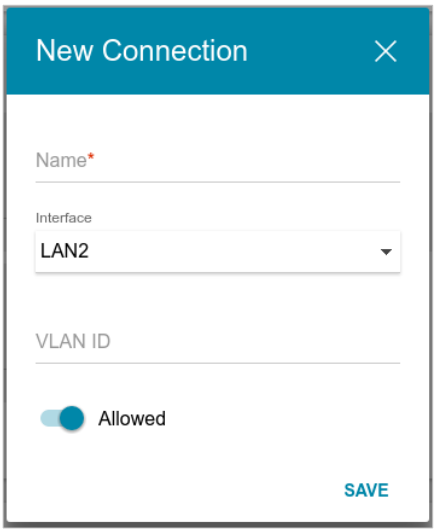


Figure 40. Adding a connection.

You can specify the following parameters:

Parameter	Description
Name	A name for the connection for easier identification (you can specify any name).
Interface	Select the value corresponding to the LAN port specified as the WAN port for connection to an Ethernet line or the **DSL** value for connection to an ADSL line.
VPI	*For the **DSL** value only.* Virtual Path Identifier. The valid range is from 0 to 255.
VCI	*For the **DSL** value only.* Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation	*For the **DSL** value only.* Select **LLC** or **VCMUX** from the drop-down list.
QoS class	*For the **DSL** value only.* 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**

Parameter	Description
	(*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. **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 ID	If the service used by your additional equipment is provided via a VLAN channel with a tag (VLAN ID), specify the needed value.
Allowed	Move the switch to the right to enable the connection. Move the switch to the left to disable the connection.

Click the **SAVE** button.

Then in the **LAN** section, from the **Bridged with** drop-down list of the element corresponding to the LAN port or wireless interface to which the additional device is connected, select the created connection. Click the **APPLY** button.

The selected port or wireless interface cannot use the default connection to access the Internet.

To deselect the port or wireless interface, select the **No** value from the **Bridged with** drop-down list of the element corresponding to the needed LAN port or interface. Then in the **WAN** section, select the connection which will not be used any longer and click the **REMOVE** button. Then click the **APPLY** button.

Statistics

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

- network statistics
- IP addresses leased by the DHCP server
- the routing table
- data on devices connected to the router's network and its web-based interface
- addresses of active multicast groups
- active sessions
- DSL connection status.

Network Statistics

On the **Statistics / Network Statistics** page, you can view statistics for all connections existing in the system (WAN connections, LAN, WLAN). For each connection the following data are displayed: name and state (when the connection is on, its name is highlighted in green, when the connection is off, its name is highlighted in red), IP address and subnet mask, gateway (if the connection is established), MAC address, and volume of data received and transmitted (with increase of the volume the units of measurement are changed automatically: byte, Kbyte, Mbyte, Gbyte).

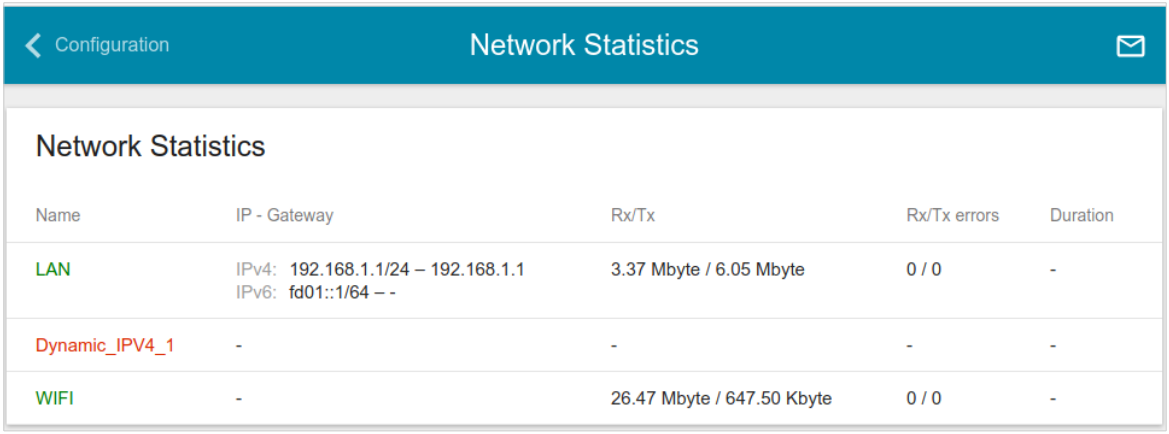


*Figure 41. The **Statistics / Network Statistics** page.*

To view data on a connection, click the line corresponding to this connection.

DHCP

The **Statistics / 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).

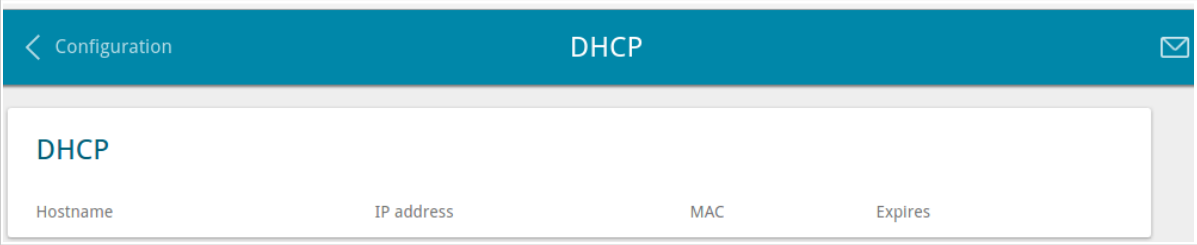


*Figure 42. The **Statistics / DHCP** page.*

Routing Table

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

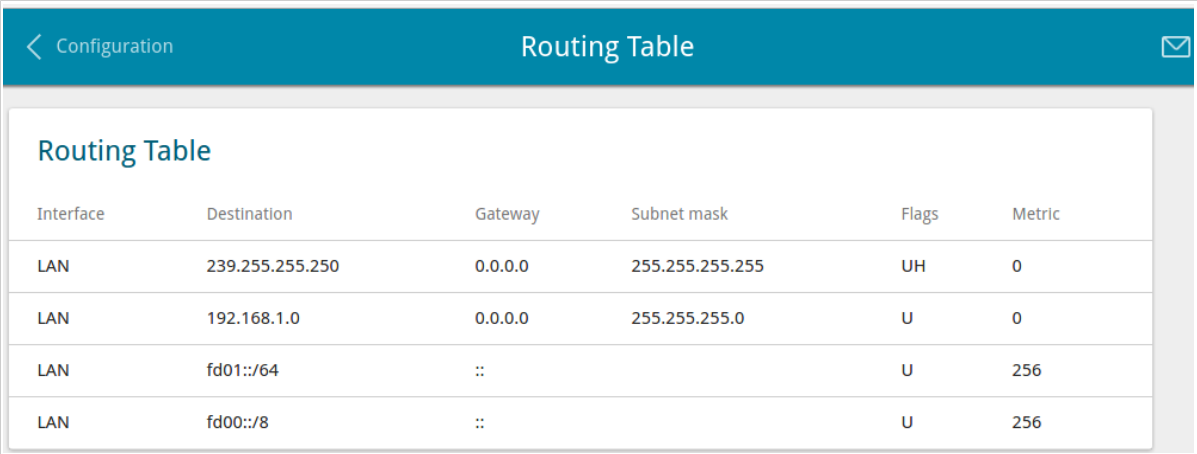


*Figure 43. The **Statistics / Routing Table** page.*

Clients

On the **Statistics / Clients** page, you can view the list of devices connected to the local network of the router.

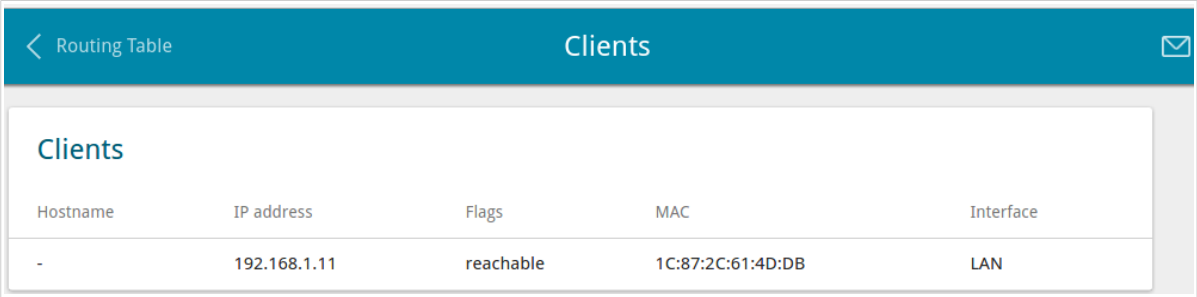


*Figure 44. The **Statistics / Clients** page.*

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

Multicast Groups

The **Statistics / Multicast Groups** page displays addresses of active multicast groups (including IPTV channels and groups for transferring service information) to which the device is subscribed, and the interface through which the device is subscribed.

*Figure 45. The **Statistics / Multicast Groups** page.*

Clients and Session

On the **Statistics / Clients and Session** page, you can view information on current sessions in the router's network. For each session the following data are displayed: the protocol for network packet transmission, the source IP address and port, and the destination IP address and port.

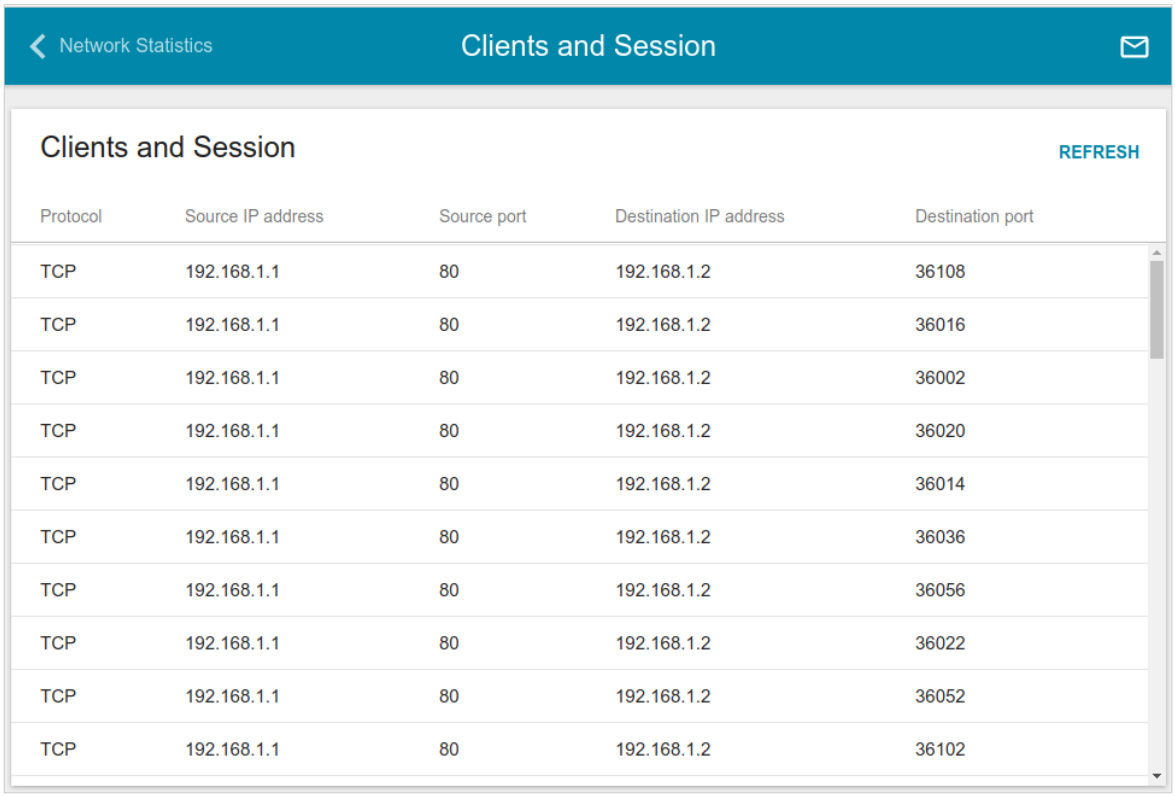


*Figure 46. The **Statistics / Clients and Session** page.*

To view the latest data on current sessions in the router's network, click the **REFRESH** button.

DSL Status

The information shown on the **Statistics / DSL Status** page can be used for troubleshooting and diagnosing connection problems.

In the **DSL status** and **Line** sections you can view data on your DSL line: the line state, data transfer rate (downstream/upstream traffic), physical parameters of the line (SNR, output power). The **Framing** section displays information on transmitted DSL frames.

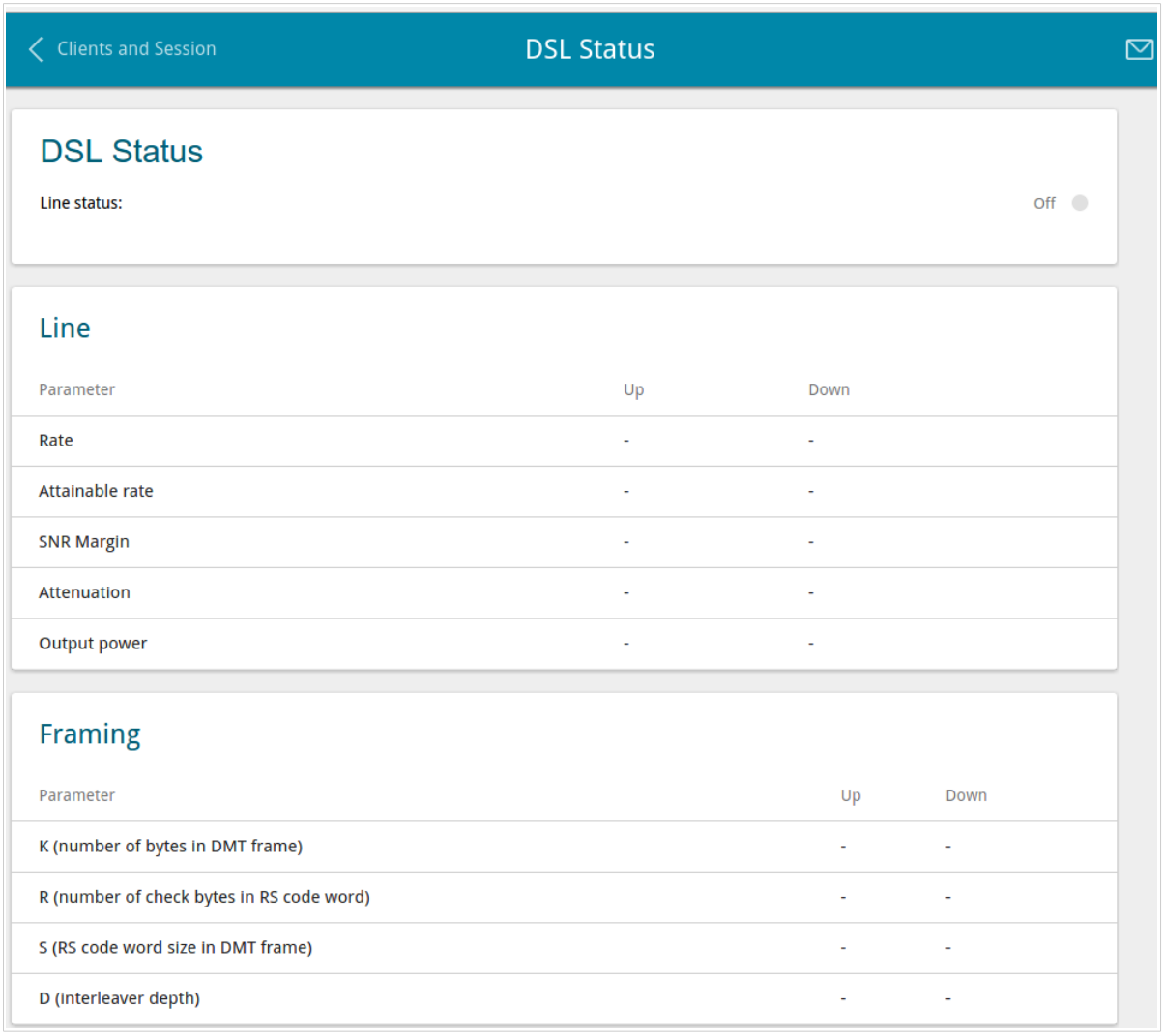


*Figure 47. The **Statistics / DSL Status** page.*

Connections Setup

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 **Connections Setup / WAN** page, you can create and edit connections used by the router.

By default, an ADSL connection of the **Dynamic IP** type is configured in the system. It is assigned to the DSL port of the router.

Please reboot the router after creating, editing, or removing an ADSL WAN connection.

Prior to creating an Ethernet WAN connection, specify a LAN port that will be used as the WAN port (see the ***WAN Remapping*** section, page 159).

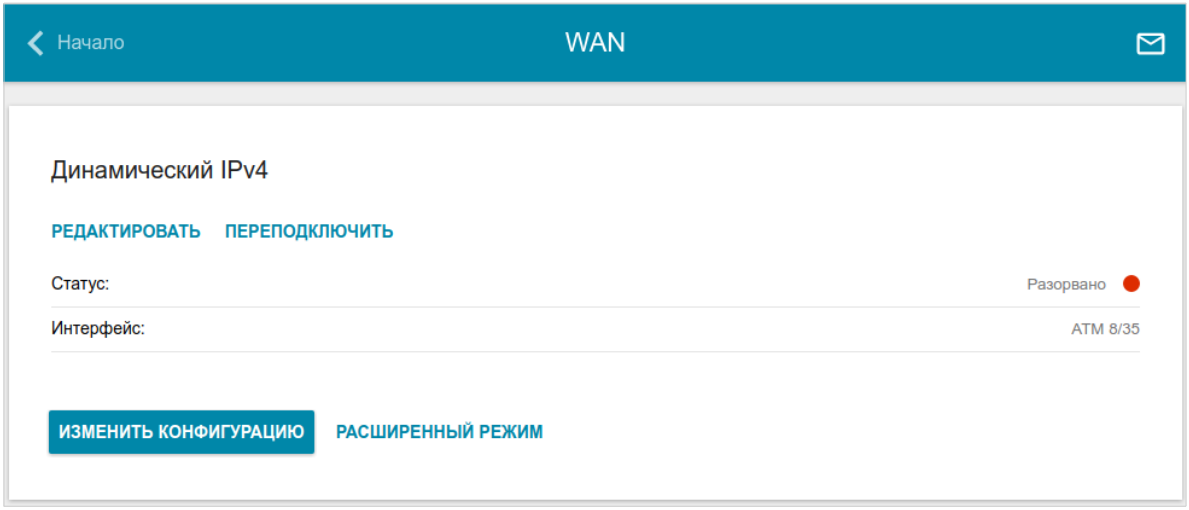


*Figure 48. The **Connections Setup / WAN** page. The simplified mode.*

To edit an existing connection, click the **EDIT** button. On the opened page, on the **Basic** tab, the mandatory settings of this WAN connection will be displayed. To view all available settings of the WAN connection, go to the **All Settings** tab. Change the needed parameters and click the **APPLY** button.

To disconnect a connection and establish it again, click the **RECONNECT** button.

To remove an existing connection and create a new one, click the **CHANGE CONFIGURATION** button. Upon that the connection creation page opens.

To create several WAN connections, go to the advanced mode. To do this, click the **ADVANCED MODE** button.

When connections of some types are created, the **Connections Setup / WAN** page is automatically displayed in the advanced mode.

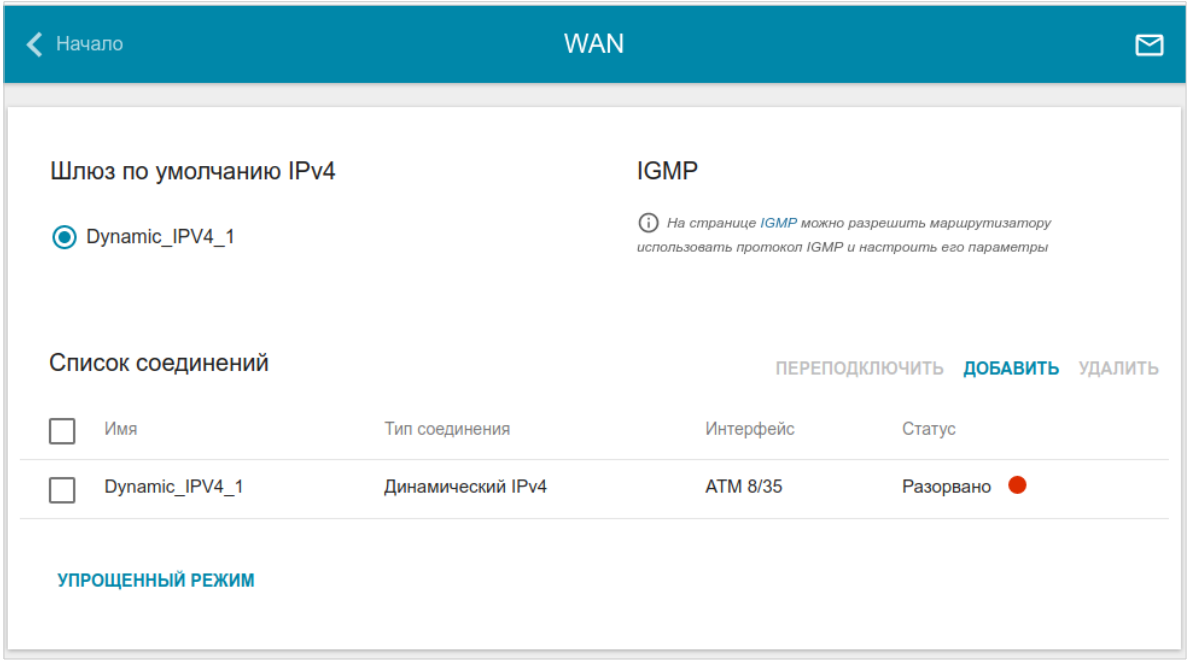


*Figure 49. The **Connections Setup / WAN** page. The advanced mode.*

To create a new connection, click the **ADD** button in the **Connections List** section. Upon that the connection creation page opens.

To edit an existing connection, in the **Connections List** section, left-click the relevant line in the table. On the opened page, on the **Basic** tab, mandatory settings of this WAN connection will be displayed. To view all available settings of the WAN connection, go to the **All Settings** tab. Change the needed parameters and click the **APPLY** button.

To disconnect a connection and establish it again, select the checkbox located to the left of the relevant line in the table and click the **RECONNECT** button.

To remove a connection, in the **Connections List** section, select the checkbox located to the left of the relevant line in the table and click the **DELETE** button. Also you can remove a connection on the editing page.

To allow multicast traffic (e.g. streaming video) for a connection, click the **IGMP** link (for the description of the page, see the ***IGMP*** section, page 172).

To use one of existing WAN connections as the default IPv4 or IPv6 connection, in the **Default gateway** section, select the choice of the radio button which corresponds to this connection.

To return to the simplified mode, click the **SIMPLIFIED MODE** button (the button is unavailable, if several WAN connections are created).

Creating Dynamic IPv4, Static IPv4, or IPoA WAN Connection

On the connection creation page, go to the **All Settings** tab. Then select the relevant value from the **Connection Type** drop-down list and specify the needed values.

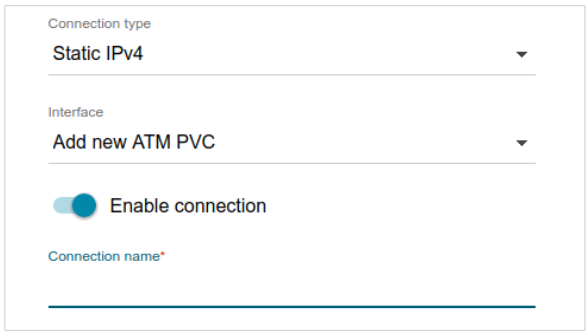


*Figure 50. The page for creating a new **Static IPv4** connection. Selecting a connection type.*

Parameter	Description
Interface	*For the **Dynamic IPv4** and **Static IPv4** types only.* A physical interface to which the new connection will be assigned. In order to create an Ethernet WAN connection, select the value corresponding to the LAN port specified as the WAN port. In order to create an ADSL WAN connection, select the value corresponding to the existing interface or the **Add new ATM PVC** value for creating a new interface at the physical layer.
Enable connection	Move the switch to the right to enable the connection. Move the switch to the left to disable the connection.
Connection name	*Available for the advanced mode only.* A name for the connection for easier identification.

The **Ethernet** section is displayed for Ethernet WAN connections.

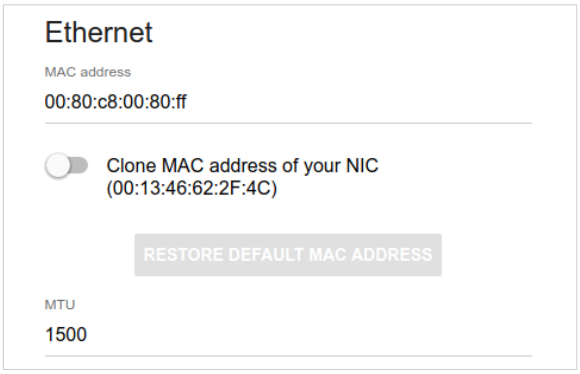


*Figure 51. The page for creating a new **Static IPv4** connection. The **Ethernet** section.*

Parameter	Description
Ethernet	
MAC address	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. To set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface, move the **Clone MAC address of your NIC** switch to the right. When the switch is moved to the right, the field is unavailable for editing. To set the router's MAC address, click the **RESTORE DEFAULT MAC ADDRESS** button (the button is available when the switch is moved to the right).

The **ATM** section is displayed for ADSL WAN connections.

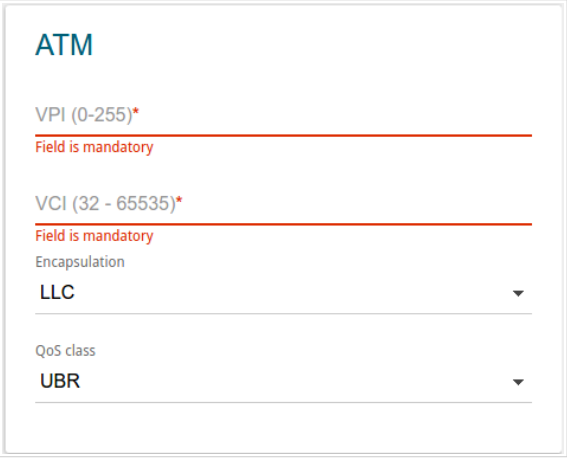


*Figure 52. The page for creating a new **Static IPv4** connection. The **ATM** section.*

Parameter	Description
ATM	
VPI	Virtual Path Identifier. The valid range is from 0 to 255.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select **LLC** or **VCMUX** 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

Parameter	Description
	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 53. The page for creating a new **Static IPv4** connection. The **IPv4** section.*

Parameter	Description
IPv4	
*For **Static IPv4** and **IPoA** types*	
IP Address	Enter an IP address for this WAN connection.
Netmask	Enter a subnet mask for this WAN connection.
Gateway IP address	Enter an IP address of the gateway used by this WAN connection.
Primary DNS server/ Secondary DNS server	Enter addresses of the primary and secondary DNS servers in the relevant fields.
*For **Dynamic IPv4** type*	
Obtain DNS server addresses automatically	Move the switch to the right to configure automatic assignment of DNS server addresses. Upon that the **Primary DNS server** and **Secondary DNS server** fields are not available for editing.
Primary DNS server/ Secondary DNS server	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Vendor ID	The identifier of your ISP. *Optional*.
Host name	A name of the router specified by your ISP. *Optional*.

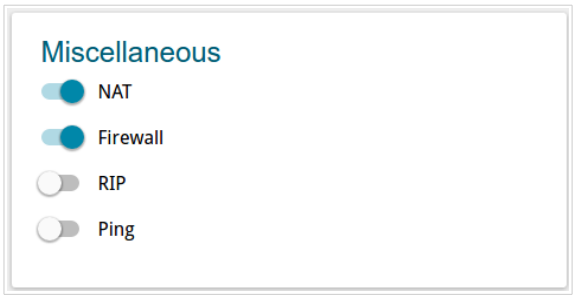


*Figure 54. The page for creating a new **Static IPv4** connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
NAT	If the switch is moved to the right, the network address translation function is enabled. Do not disable the function unless your ISP requires this.
Firewall	If the switch is moved to the right, protection against external connections for the LAN devices is enabled (for example, against attempts to get information about the LAN devices or to hack a device from the LAN). For security reasons, it is recommended not to disable this function.
RIP	Move the switch to the right to allow using RIP for this connection.
Ping	If the switch is moved to the right, the router responds to ping requests from the external network through this connection. For security reasons, it is recommended to disable this function.

The **VLAN** section is displayed for the **Dynamic IPv4** and **Static IPv4** types.

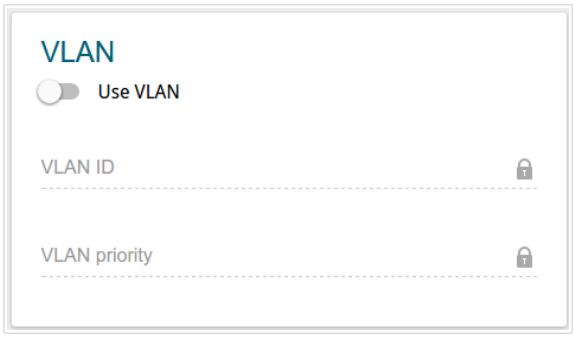


*Figure 55. The page for creating a new **Static IPv4** connection. The **VLAN** section.*

Parameter	Description
VLAN	
Use VLAN	Move the switch to the right to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** switch is moved to the right.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** switch is moved to the right.

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

Creating Dynamic IPv6 or Static IPv6 WAN Connection

On the connection creation page, go to the **All Settings** tab. Then select the relevant value from the **Connection Type** drop-down list and specify the needed values.

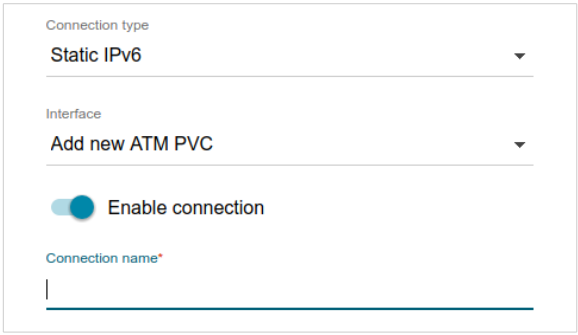


*Figure 56. The page for creating a new **Static IPv6** connection. Selecting a connection type.*

Parameter	Description
Interface	A physical interface to which the new connection will be assigned. In order to create an Ethernet WAN connection, select the value corresponding to the LAN port specified as the WAN port. In order to create an ADSL WAN connection, select the value corresponding to the existing interface or the **Add new ATM PVC** value for creating a new interface at the physical layer.
Enable connection	Move the switch to the right to enable the connection. Move the switch to the left to disable the connection.
Connection name	*Available for the advanced mode only.* A name for the connection for easier identification.

The **Ethernet** section is displayed for Ethernet WAN connections.

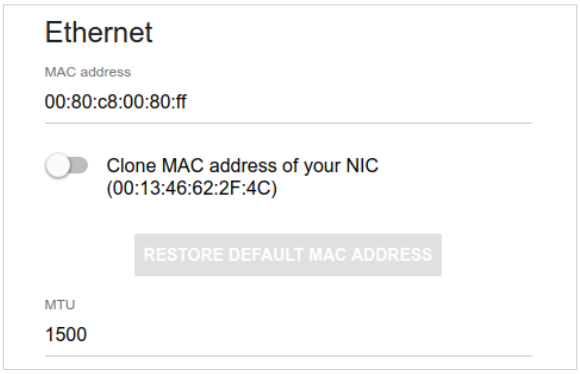


*Figure 57. The page for creating a new **Static IPv6** connection. The **Ethernet** section.*

Parameter	Description
Ethernet	
MAC address	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. To set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface, move the **Clone MAC address of your NIC** switch to the right. When the switch is moved to the right, the field is unavailable for editing. To set the router's MAC address, click the **RESTORE DEFAULT MAC ADDRESS** button (the button is available when the switch is moved to the right).

The **ATM** section is displayed for ADSL WAN connections.

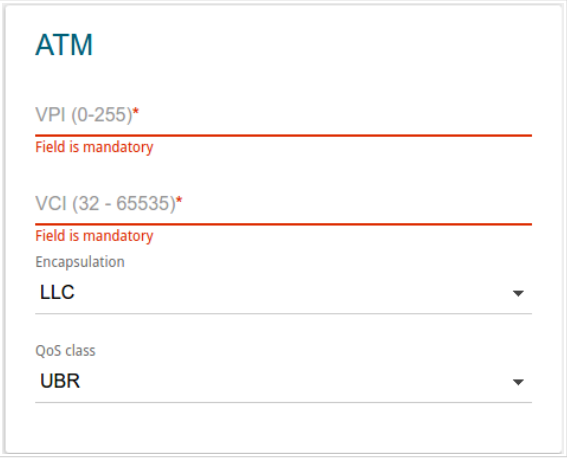


*Figure 58. The page for creating a new **Static IPv6** connection. The **ATM** section.*

Parameter	Description
ATM	
VPI	Virtual Path Identifier. The valid range is from 0 to 255.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select **LLC** or **VCMUX** 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

Parameter	Description
	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.

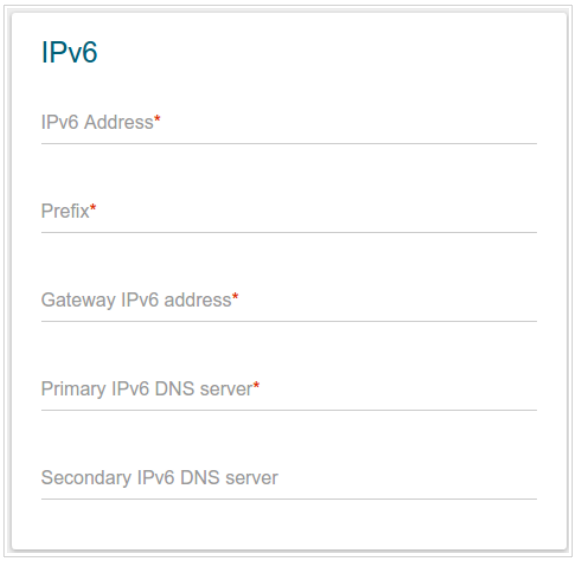


*Figure 59. The page for creating a new **Static IPv6** connection. The **IPv6** section.*

Parameter	Description
IPv6	
*For **Static IPv6** type*	
IPv6 address	Enter an IPv6 address for this WAN connection.
Prefix	The length of the subnet prefix. The value 64 is used usually.
Gateway IPv6 address	Enter an IPv6 address of the gateway used by this WAN connection.
Primary IPv6 DNS server/Secondary IPv6 DNS server	Enter addresses of the primary and secondary IPv6 DNS servers in the relevant fields.
*For **Dynamic IPv6** type*	
Get IPv6	Select a method for IPv6 address assignment from the drop-down list or leave the **Automatically** value.
Gateway by SLAAC	Move the switch to the right to automatically assign the IPv6 gateway address with help of SLAAC (*Stateless Address Autoconfiguration*).
Gateway IPv6 address	The address of the IPv6 gateway. The field is available for editing, if the **Gateway by SLAAC** switch is moved to the left.
Obtain DNS server addresses automatically	Move the switch to the right to configure automatic assignment of IPv6 DNS server addresses. Upon that the **Primary IPv6 DNS server** and **Secondary IPv6 DNS server** fields are not available for editing.

Parameter	Description
Primary IPv6 DNS server/Secondary IPv6 DNS server	Enter addresses of the primary and secondary IPv6 DNS servers in the relevant fields.

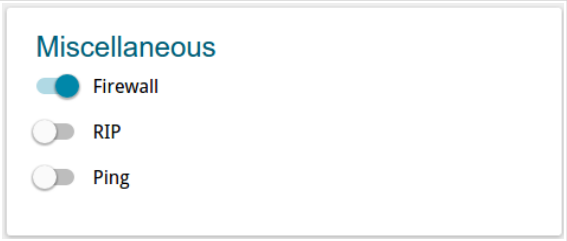


*Figure 60. The page for creating a new **Static IPv6** connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Firewall	If the switch is moved to the right, protection against external connections for the LAN devices is enabled (for example, against attempts to get information about the LAN devices or to hack a device from the LAN). For security reasons, it is recommended not to disable this function.
RIP	Move the switch to the right to allow using RIP for this connection.
Ping	If the switch is moved to the right, the router responds to ping requests from the external network through this connection. For security reasons, it is recommended to disable this function.

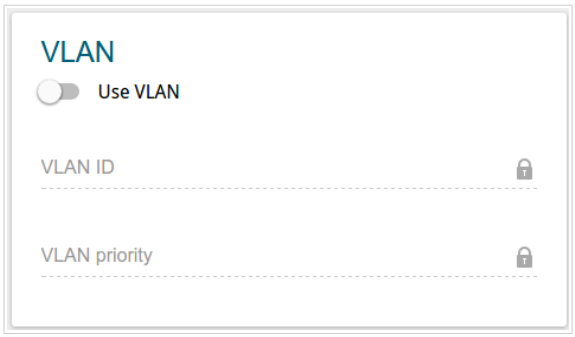


*Figure 61. The page for creating a new **Static IPv6** connection. The **VLAN** section.*

Parameter	Description
VLAN	
Use VLAN	Move the switch to the right to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** switch is moved to the right.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** switch is moved to the right.

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

Creating PPPoE or PPPoA WAN Connection

On the connection creation page, go to the **All Settings** tab. Then select the relevant value from the **Connection Type** drop-down list and specify the needed values.

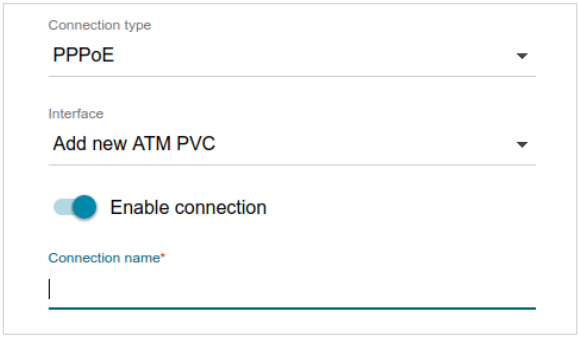


*Figure 62. The page for creating a new **PPPoE** connection. Selecting a connection type.*

Parameter	Description
Interface	*For the **PPPoE** type only.* A physical interface to which the new connection will be assigned. In order to create an Ethernet WAN connection, select the value corresponding to the LAN port specified as the WAN port. In order to create an ADSL WAN connection, select the value corresponding to the existing interface or the **Add new ATM PVC** value for creating a new interface at the physical layer.
Enable connection	Move the switch to the right to enable the connection. Move the switch to the left to disable the connection.
Connection name	*Available for the advanced mode only.* A name for the connection for easier identification.

The **Ethernet** section is displayed for Ethernet WAN connections.

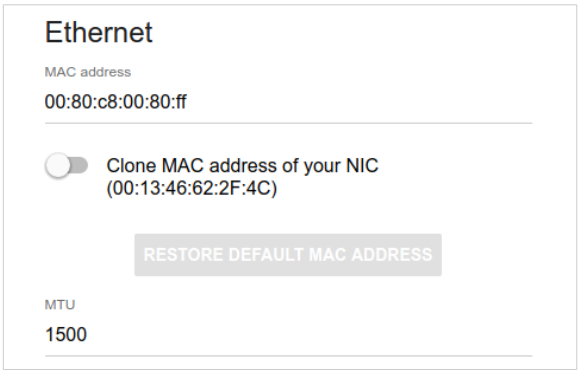


*Figure 63. The page for creating a new **PPPoE** connection. The **Ethernet** section.*

Parameter	Description
Ethernet	
MAC address	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. To set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface, move the **Clone MAC address of your NIC** switch to the right. When the switch is moved to the right, the field is unavailable for editing. To set the router's MAC address, click the **RESTORE DEFAULT MAC ADDRESS** button (the button is available when the switch is moved to the right).

The **ATM** section is displayed for ADSL WAN connections.

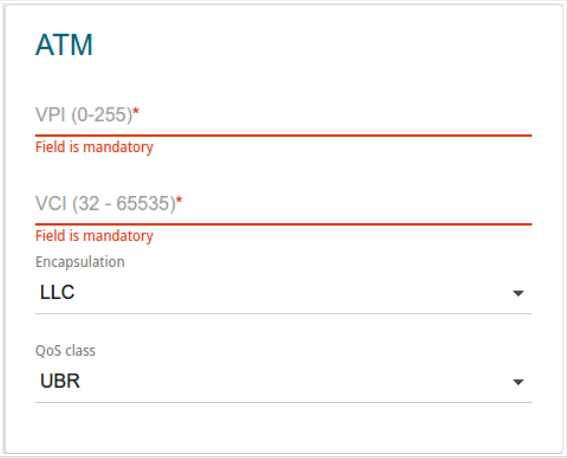


*Figure 64. The page for creating a new **PPPoE** connection. The **ATM** section.*

Parameter	Description
ATM	
VPI	Virtual Path Identifier. The valid range is from 0 to 255.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select **LLC** or **VCMUX** 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

Parameter	Description
	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.

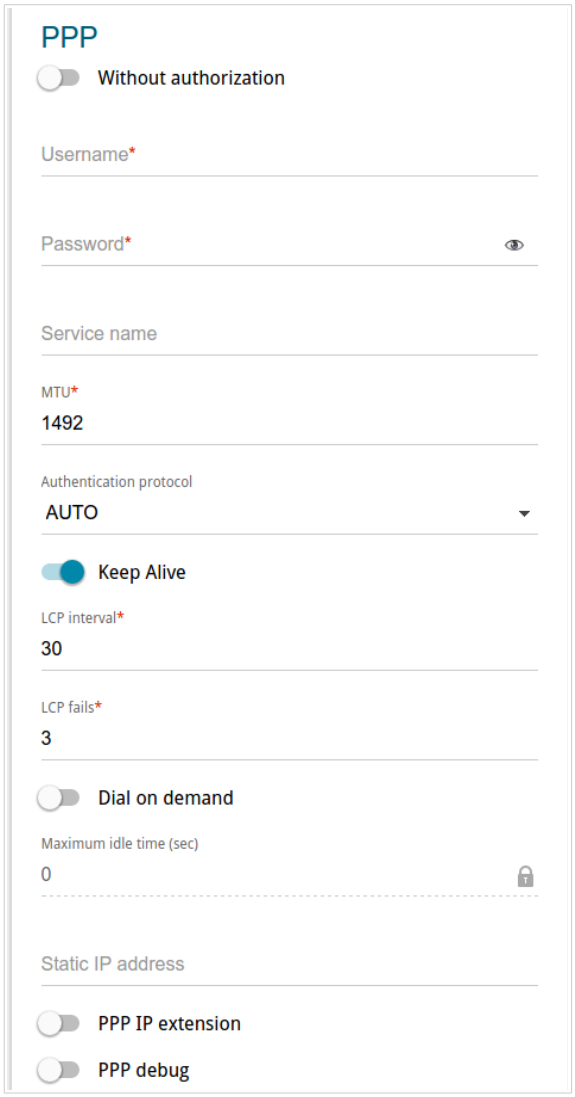


*Figure 65. The page for creating a new **PPPoE** connection. The **PPP** section.*

Parameter	Description
PPP	
Without authorization	Move the switch to the right if you don't need to enter a username and password to access the Internet.
Username	A username (login) to access the Internet.
Password	A password to access the Internet. Click the **Show** icon (👁) to display the entered password.
Service name	*For the **PPPoE** type only.* The name of the PPPoE authentication server.
MTU	The maximum size of units transmitted by the interface.

Parameter	Description
Authentication protocol	Select a required authentication method from the drop-down list or leave the **AUTO** value.
Keep Alive	Move the switch to the right 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. If the switch is moved to the right, the **LCP interval** and **LCP fails** fields are available. Specify the required values.
Dial on demand	Move the switch to the right if you want the router to establish connection to the Internet on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
Static IP Address	Fill in the field if you want to use a static IP address to access the Internet.
PPP IP extension	This option is used by some ISPs. Contact your ISP to clarify if this option needs to be enabled. If it is required, move the switch to the right.
PPP debug	Move the switch to the right if you want to log all data on PPP connection debugging.

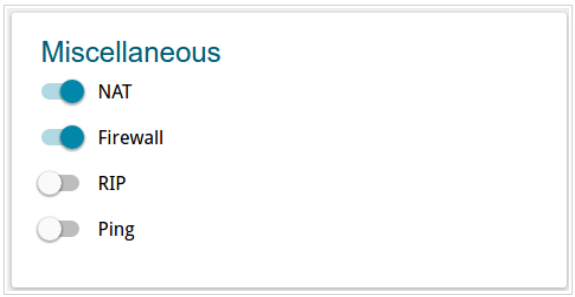


*Figure 66. The page for creating a new **PPPoE** connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
NAT	If the switch is moved to the right, the network address translation function is enabled. Do not disable the function unless your ISP requires this.
Firewall	If the switch is moved to the right, protection against external connections for the LAN devices is enabled (for example, against attempts to get information about the LAN devices or to hack a device from the LAN). For security reasons, it is recommended not to disable this function.
RIP	Move the switch to the right to allow using RIP for this connection.
Ping	If the switch is moved to the right, the router responds to ping requests from the external network through this connection. For security reasons, it is recommended to disable this function.

The **VLAN** section is displayed for the **PPPoE** type.

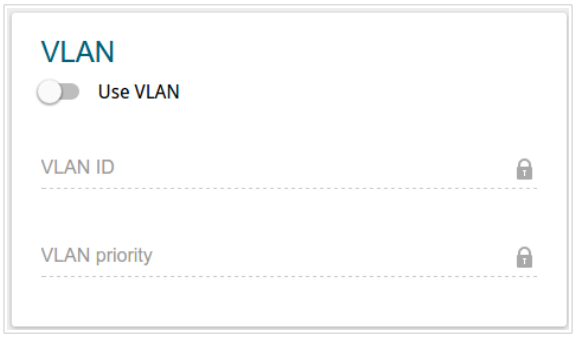


*Figure 67. The page for creating a new **PPPoE** connection. The **VLAN** section.*

Parameter	Description
VLAN	
Use VLAN	Move the switch to the right to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** switch is moved to the right.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** switch is moved to the right.

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

Creating PPPoE IPv6 or PPPoE Dual Stack WAN Connection

On the connection creation page, go to the **All Settings** tab. Then select the relevant value from the **Connection Type** drop-down list and specify the needed values.

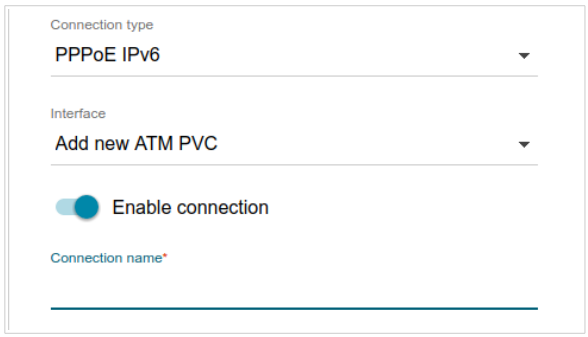


*Figure 68. The page for creating a new **PPPoE IPv6** connection. Selecting a connection type.*

Parameter	Description
Interface	A physical interface to which the new connection will be assigned. In order to create an Ethernet WAN connection, select the value corresponding to the LAN port specified as the WAN port. In order to create an ADSL WAN connection, select the value corresponding to the existing interface or the **Add new ATM PVC** value for creating a new interface at the physical layer.
Enable connection	Move the switch to the right to enable the connection. Move the switch to the left to disable the connection.
Connection name	*Available for the advanced mode only.* A name for the connection for easier identification.

The **Ethernet** section is displayed for Ethernet WAN connections.

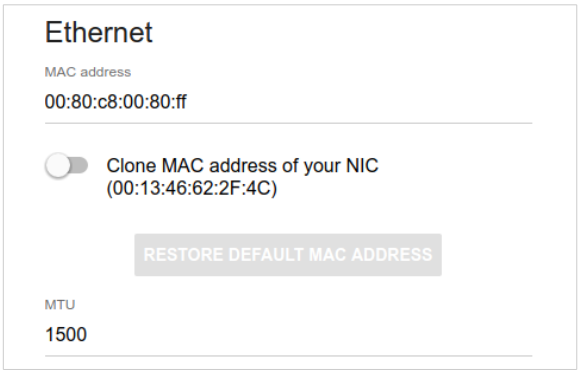


*Figure 69. The page for creating a new **PPPoE IPv6** connection. The **Ethernet** section.*

Parameter	Description
Ethernet	
MAC address	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. To set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface, move the **Clone MAC address of your NIC** switch to the right. When the switch is moved to the right, the field is unavailable for editing. To set the router's MAC address, click the **RESTORE DEFAULT MAC ADDRESS** button (the button is available when the switch is moved to the right).

The **ATM** section is displayed for ADSL WAN connections.

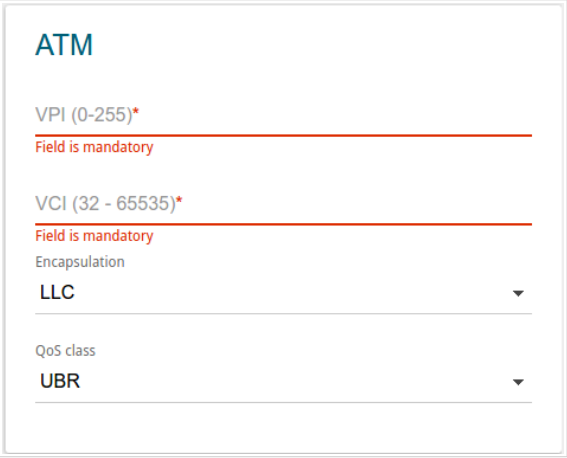


*Figure 70. The page for creating a new **PPPoE IPv6** connection. The **ATM** section.*

Parameter	Description
ATM	
VPI	Virtual Path Identifier. The valid range is from 0 to 255.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select **LLC** or **VCMUX** 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

Parameter	Description
	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.

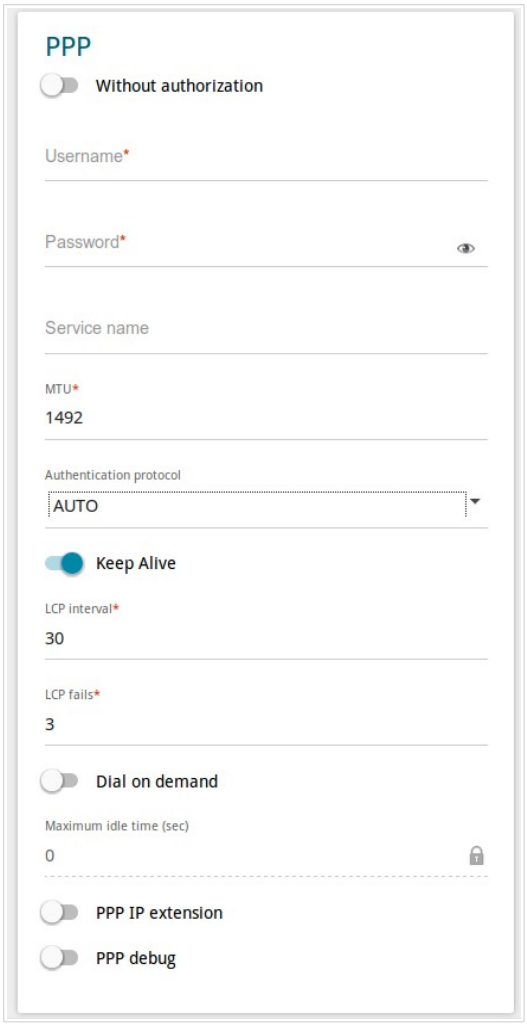


*Figure 71. The page for creating a new **PPPoE IPv6** connection. The **PPP** section.*

Parameter	Description
PPP	
Without authorization	Move the switch to the right if you don't need to enter a username and password to access the Internet.
Username	A username (login) to access the Internet.
Password	A password to access the Internet. Click the **Show** icon (👁) to display the entered password.
Service name	The name of the PPPoE authentication server.
MTU	The maximum size of units transmitted by the interface.
Authentication protocol	Select a required authentication method from the drop-down list or leave the **AUTO** value.

Parameter	Description
Keep Alive	Move the switch to the right 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. If the switch is moved to the right, the **LCP interval** and **LCP fails** fields are available. Specify the required values.
Dial on demand	Move the switch to the right if you want the router to establish connection to the Internet on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
Static IP Address	*For the **PPPoE Dual Stack** type only.* Fill in the field if you want to use a static IP address to access the Internet.
PPP IP extension	This option is used by some ISPs. Contact your ISP to clarify if this option needs to be enabled. If it is required, move the switch to the right.
PPP debug	Move the switch to the right if you want to log all data on PPP connection debugging.

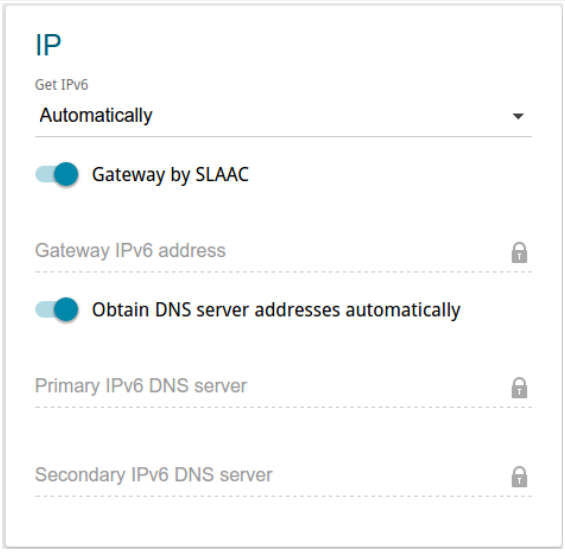


*Figure 72. The page for creating a new **PPPoE Pv6** connection. The **IP** section.*

Parameter	Description
IP	
Get IPv6	Select a method for IPv6 address assignment from the drop-down list or leave the **Automatically** value.
Gateway by SLAAC	Move the switch to the right to automatically assign the IPv6 gateway address with help of SLAAC (*Stateless Address Autoconfiguration*).
Gateway IPv6 address	The address of the IPv6 gateway. The field is available for editing, if the **Gateway by SLAAC** switch is moved to the left.
Obtain DNS server addresses automatically	Move the switch to the right to configure automatic assignment of IPv6 DNS server addresses. Upon that the **Primary IPv6 DNS server** and **Secondary IPv6 DNS server** fields are not available for editing.
Primary IPv6 DNS server/Secondary IPv6 DNS server	Enter addresses of the primary and secondary IPv6 DNS servers in the relevant fields.

*Figure 73. The page for creating a new **PPPoE IPv6** connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
NAT	*For the **PPPoE Dual Stack** type only.* If the switch is moved to the right, the network address translation function is enabled. Do not disable the function unless your ISP requires this.
Firewall	If the switch is moved to the right, protection against external connections for the LAN devices is enabled (for example, against attempts to get information about the LAN devices or to hack a device from the LAN). For security reasons, it is recommended not to disable this function.
RIP	Move the switch to the right to allow using RIP for this connection.
Ping	If the switch is moved to the right, the router responds to ping requests from the external network through this connection. For security reasons, it is recommended to disable this function.

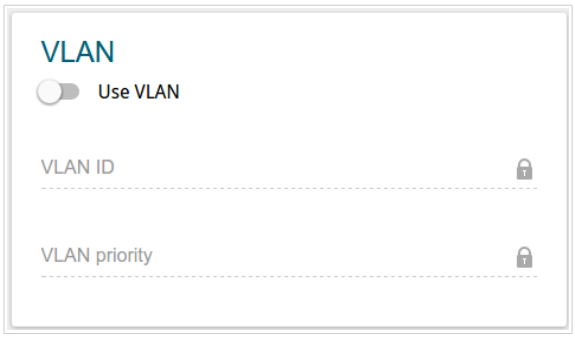


*Figure 74. The page for creating a new **PPPoE IPv6** connection. The **VLAN** section.*

Parameter	Description
VLAN	
Use VLAN	Move the switch to the right to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** switch is moved to the right.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** switch is moved to the right.

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

Creating Bridge WAN Connection

On the connection creation page, go to the **All Settings** tab. Then select the relevant value from the **Connection Type** drop-down list and specify the needed values.

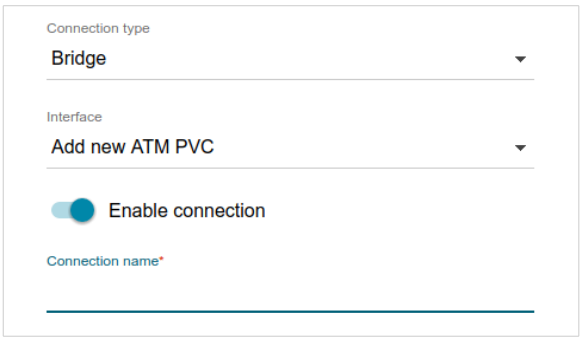


*Figure 75. The page for creating a new **Bridge** connection. Selecting a connection type.*

Parameter	Description
Interface	A physical interface to which the new connection will be assigned. In order to create an Ethernet WAN connection, select the value corresponding to the LAN port specified as the WAN port. In order to create an ADSL WAN connection, select the value corresponding to the existing interface or the **Add new ATM PVC** value for creating a new interface at the physical layer.
Enable connection	Move the switch to the right to enable the connection. Move the switch to the left to disable the connection.
Connection name	*Available for the advanced mode only.* A name for the connection for easier identification.

The **Ethernet** section is displayed for Ethernet WAN connections.

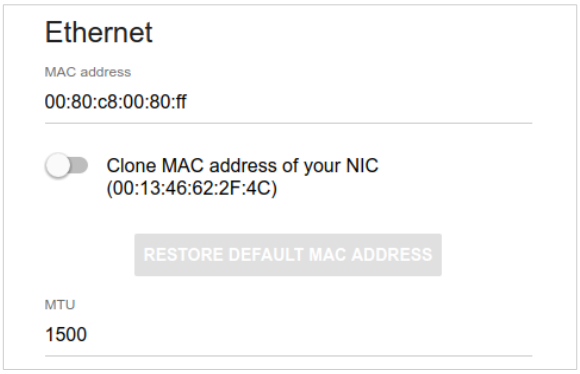


*Figure 76. The page for creating a new **Bridge** connection. The **Ethernet** section.*

Parameter	Description
Ethernet	
MAC address	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. To set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface, move the **Clone MAC address of your NIC** switch to the right. When the switch is moved to the right, the field is unavailable for editing. To set the router's MAC address, click the **RESTORE DEFAULT MAC ADDRESS** button (the button is available when the switch is moved to the right).

The **ATM** section is displayed for ADSL WAN connections.

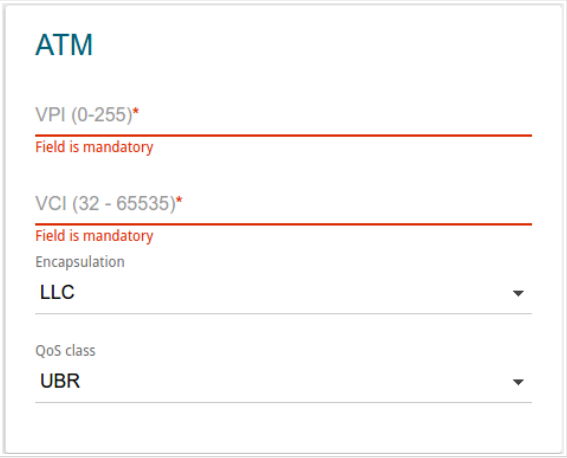


*Figure 77. The page for creating a new **Bridge** connection. The **ATM** section.*

Parameter	Description
ATM	
VPI	Virtual Path Identifier. The valid range is from 0 to 255.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select **LLC** or **VCMUX** 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

Parameter	Description
	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.

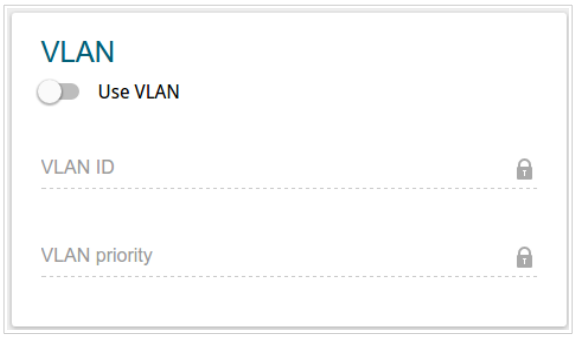


*Figure 78. The page for creating a new **Bridge** connection. The **VLAN** section.*

Parameter	Description
VLAN	
Use VLAN	Move the switch to the right to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** switch is moved to the right.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** switch is moved to the right.

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

Creating 3G WAN Connection

If the PIN code check is enabled for the SIM card inserted into your USB modem, then prior to creating a 3G WAN connection, go to the **USB Modem** menu and enter the PIN code[8] on the page displayed (see the ***USB Modem*** section, page 152). Then on the connection creation page, go to the **All Settings** tab, select the relevant value from the **Connection Type** drop-down list, and specify the needed values.

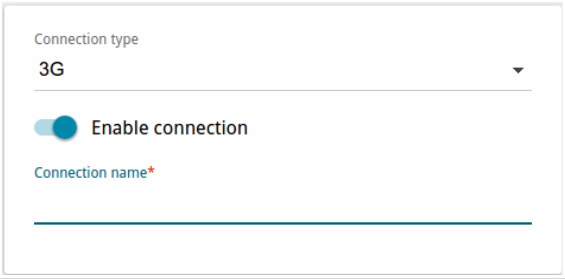


*Figure 79. The page for creating a new **3G** connection. Selecting a connection type.*

Parameter	Description
Enable connection	Move the switch to the right to enable the connection. Move the switch to the left to disable the connection.
Connection name	*Available for the advanced mode only.* A name for the connection for easier identification.

8 For some models of 3G USB modems it is required to disable the PIN code check on the SIM card prior to connecting the USB modem to the router.

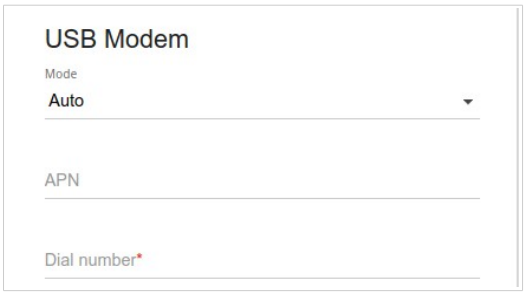


*Figure 80. The page for creating a new **3G** connection. The **USB Modem** section.*

Parameter	Description
USB Modem	
Mode	The value of the field specifies the type of the network to which the router connects. Leave the **Auto** value to let the router connect automatically to an available type of network, or select a needed value from the drop-down list.
APN	An access point name.
Dial number	A number dialed to connect to the authorization server of the operator.

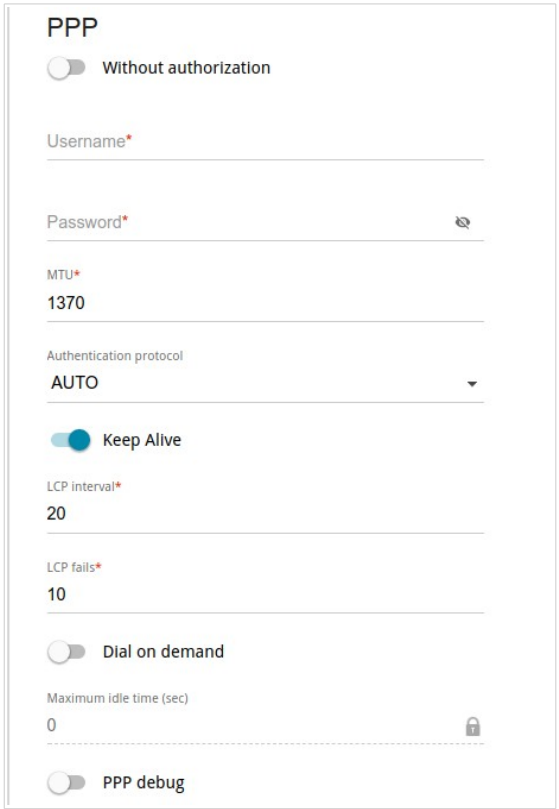


*Figure 81. The page for creating a new **3G** connection. The **PPP** section.*

Parameter	Description
PPP	
Without authorization	Move the switch to the right if your operator does not require authorization.
Username	A username (login) to connect to the network of the operator.
Password	A password to connect to the network of the operator. Click the **Show** icon ( ) to display the entered password.
MTU	The maximum size of units transmitted by the interface.
Authentication protocol	Select a required authentication method from the drop-down list or leave the **AUTO** value.
Keep Alive	Move the switch to the right if you want the router to keep you connected to the network of your operator even when the connection has been inactive for a specified period of time. When the checkbox is selected, the **LCP interval** and **LCP fails** fields are available. Specify the required values.
Dial on demand	Move the switch to the right if you want the router to establish connection to the Internet on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
PPP debug	Move the switch to the right if you want to log all data on PPP connection debugging.

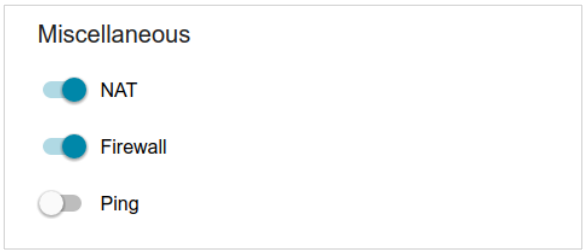


*Figure 82. The page for creating a new **3G** connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
NAT	If the switch is moved to the right, the network address translation function is enabled. Do not disable the function unless your ISP requires this.
Firewall	If the switch is moved to the right, protection against external connections for the LAN devices is enabled (for example, against attempts to get information about the LAN devices or to hack a device from the LAN). For security reasons, it is recommended not to disable this function.
Ping	If the switch is moved to the right, the router responds to ping requests from the external network through this connection. For security reasons, it is recommended to disable this function.

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

Creating LTE WAN Connection

! For the USB modem Megafon M100-1, please reboot the router after creating the WAN connection.

If the PIN code check is enabled for the SIM card inserted into your USB modem, then prior to creating an LTE WAN connection, go to the **USB Modem** menu and enter the PIN code[9] on the page displayed (see the ***USB Modem*** section, page 152). Then on the connection creation page, go to the **All Settings** tab, select the relevant value from the **Connection Type** drop-down list, and specify the needed values.

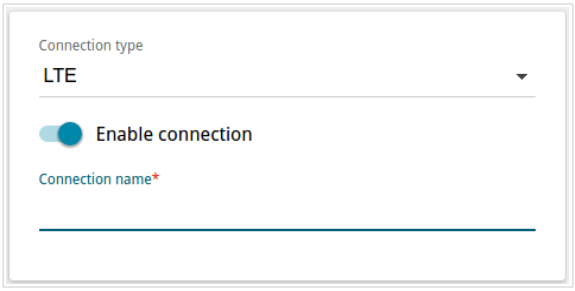


*Figure 83. The page for creating a new **LTE** connection. Selecting a connection type.*

Parameter	Description
Enable connection	Move the switch to the right to enable the connection. Move the switch to the left to disable the connection.
Connection name	*Available for the advanced mode only.* A name for the connection for easier identification.

9 For some models of LTE USB modems it is required to disable the PIN code check on the SIM card prior to connecting the USB modem to the router.

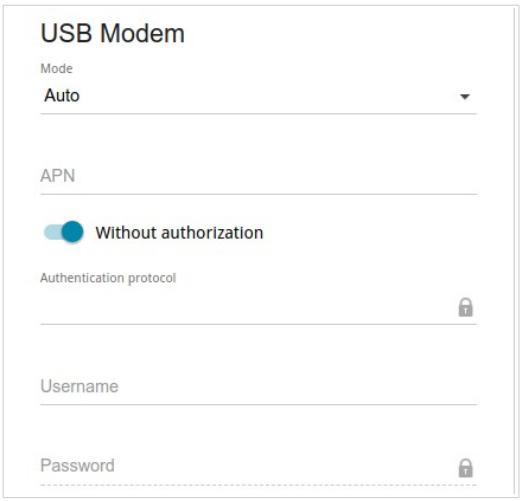


*Figure 84. The page for creating a new **LTE** connection. The **USB Modem** section.*

Parameter	Description
USB Modem	
Mode	The value of the field specifies the type of the network to which the router connects. Leave the **Auto** value to let the router connect automatically to an available type of network, or select a needed value from the drop-down list.[10]
APN	An access point name.
Without authorization	Move the switch to the right if your operator does not require authorization.
Authentication protocol	Select a required authentication method from the drop-down list.
Username	A username (login) to connect to the network of the operator.
Password	A password to connect to the network of the operator. Click the **Show** icon ( ) to display the entered password.

10 Some LTE USB modems do not support network type selection and work in the **Auto** mode regardless of the value selected from the drop-down list.

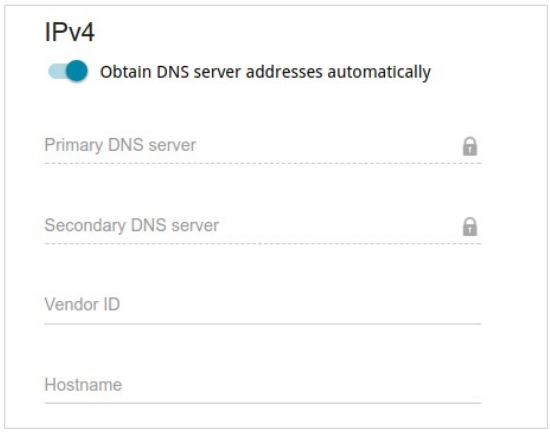


*Figure 85. The page for creating a new **LTE** connection. The **IPv4** section.*

Parameter	Description
IPv4	
Obtain DNS server addresses automatically	Move the switch to the right to configure automatic assignment of DNS server addresses. Upon that the **Primary DNS server** and **Secondary DNS server** fields are not available for editing.
Primary DNS server/ Secondary DNS server	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Vendor ID	The identifier of your ISP. *Optional*.
Hostname	A name of the router specified by your ISP. *Optional*.

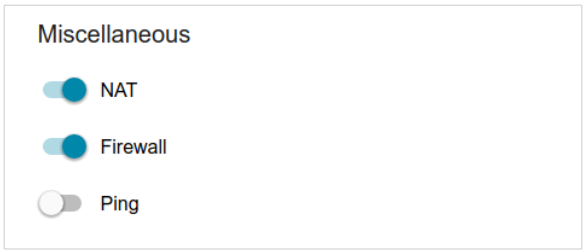


*Figure 86. The page for creating a new **LTE** connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
NAT	If the switch is moved to the right, the network address translation function is enabled. Do not disable the function unless your ISP requires this.
Firewall	If the switch is moved to the right, protection against external connections for the LAN devices is enabled (for example, against attempts to get information about the LAN devices or to hack a device from the LAN). For security reasons, it is recommended not to disable this function.
Ping	If the switch is moved to the right, the router responds to ping requests from the external network through this connection. For security reasons, it is recommended to disable this function.

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

LAN

To configure the router's local interface, go to the **Connections Setup / LAN** page.

IPv4

Go to the **IPv4** tab to change IPv4 address, configure the built-in DHCP server, or specify MAC address and IP address pairs.

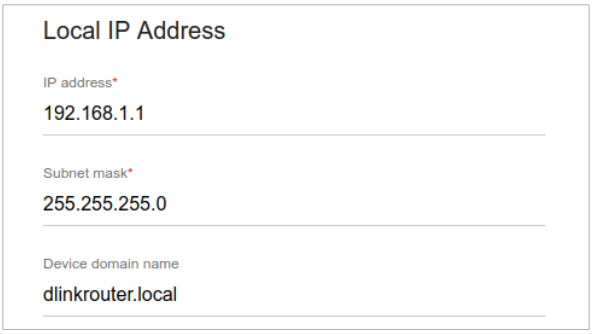


*Figure 87. Configuring the local interface. The **IPv4** tab. The **Local IP Address** section.*

Parameter	Description
Local IP Address	
IP address	The IP address of the router in the local subnet. By default, the following value is specified: `192.168.1.1`.
Subnet mask	The mask of the local subnet. By default, the following value is specified: `255.255.255.0`.
Device domain name	The name of the device attached to its IP address in the local subnet.

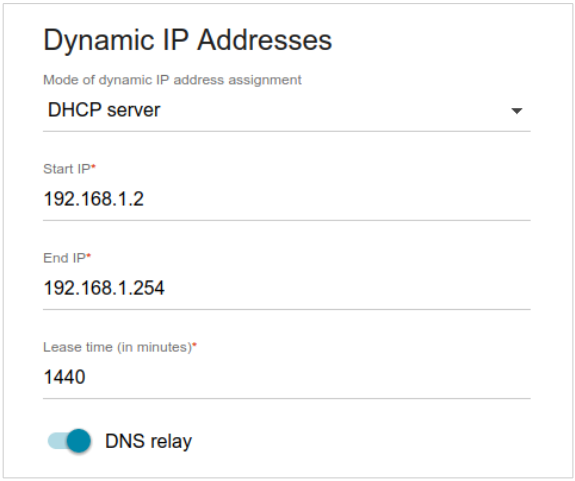


*Figure 88. Configuring the local interface. The **IPv4** tab. The **Dynamic IP Addresses** section.*

Parameter	Description
Dynamic IP Addresses	
Mode of dynamic IP address assignment	An operating mode of the router's DHCP server. **Disable**: the router's DHCP server is disabled, clients' IP addresses are assigned manually. **DHCP server**: the router assigns IP addresses to clients automatically in accordance with the specified parameters. When this value is selected, the **Start IP**, **End IP**, **Lease time** fields and the **DNS relay** switch are displayed on the tab. **DHCP 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 tab.
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.
DNS Relay	Move the switch to the right so that the devices connected to the router obtain the address of the router as the DNS server address. Move the switch to the left 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.
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 **APPLY** button.

In the **Static IP Addresses** section, you can specify MAC address and IP address pairs (set a fixed IPv4 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 **Dynamic IP Addresses** section, the **DHCP server** value is selected from the **Mode of dynamic IP address assignment** drop-down list).

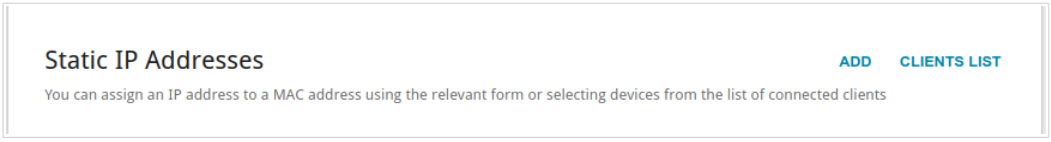


Figure 89. The section for creating MAC-IP pairs.

To create a MAC-IP pair, click the **ADD** button. In the opened window, in the **IP address** field, enter an IPv4 address which will be assigned to the device from the LAN, then in the **MAC address** field, enter the MAC address of this device. In the **Host** field, specify a network name of the device for easier identification (*optional*). Click the **APPLY** button.

Also you can create a MAC-IP pair for a device connected to the router's LAN at the moment. To do this, click the **CLIENTS LIST** button. In the opened window, select the relevant device and click the **OK** button. To view the latest list of the connected devices, click the **REFRESH** button.

To edit the settings for the existing MAC-IP pair, left-click the relevant line in the table. In the opened window, change the needed parameters and click the **APPLY** button.

To remove a MAC-IP pair, select the checkbox located to the left of the relevant line in the table and click the **DELETE** button. Then click the **APPLY** button. Also you can remove a MAC-IP pair in the editing window.

IPv6

Go to the **IPv6** tab to change IPv6 address of the router and configure IPv6 addresses assignment settings.

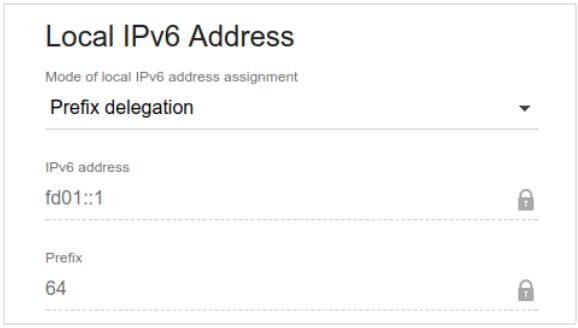


*Figure 90. Configuring the local interface. The **IPv6** tab. The **Local IPv6 Address** section.*

Parameter	Description
Local IPv6 Address	
Mode of local IPv6 address assignment	Select the needed value from the drop-down list. **Static**: an IPv6 address and a prefix are specified manually. **Prefix delegation**: the router requests a prefix to configure an IPv6 address from a delegating router.
IPv6 address	The IPv6 address of the router in the local subnet. By default, the following value is specified: `fd01::1`. The field is available for editing, if the **Static** value is selected from the **Mode of local IPv6 address assignment** drop-down list.
Prefix	The length of the prefix subnet. By default, the value `64` is specified. The field is available for editing, if the **Static** value is selected from the **Mode of local IPv6 address assignment** drop-down list.

*Figure 91. Configuring the local interface. The **IPv6** tab. The **Dynamic IPv6 Addresses** section.*

Parameter	Description
Dynamic IPv6 Addresses	
Mode of dynamic IPv6 address assignment	Select the needed value from the drop-down list. **Disable**: clients' IPv6 addresses are assigned manually. **Stateful**: the built-in DHCPv6 server of the router allocates addresses from the range specified in the **Start IPv6** and **End IPv6** fields. **Stateless**: clients themselves configure IPv6 addresses using the prefix.
Start IPv6	The start IPv6 address of the address pool used by the DHCPv6 server to distribute addresses to clients.
End IPv6	The end IPv6 address of the address pool used by the DHCPv6 server to distribute addresses to clients.
Lease Time	The lifetime of IPv6 addresses provided to clients. The field is available for editing, if the **Static** value is selected from the **Mode of local IPv6 address assignment** list in the **Local IPv6 Address** section.

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

WAN Reservation

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

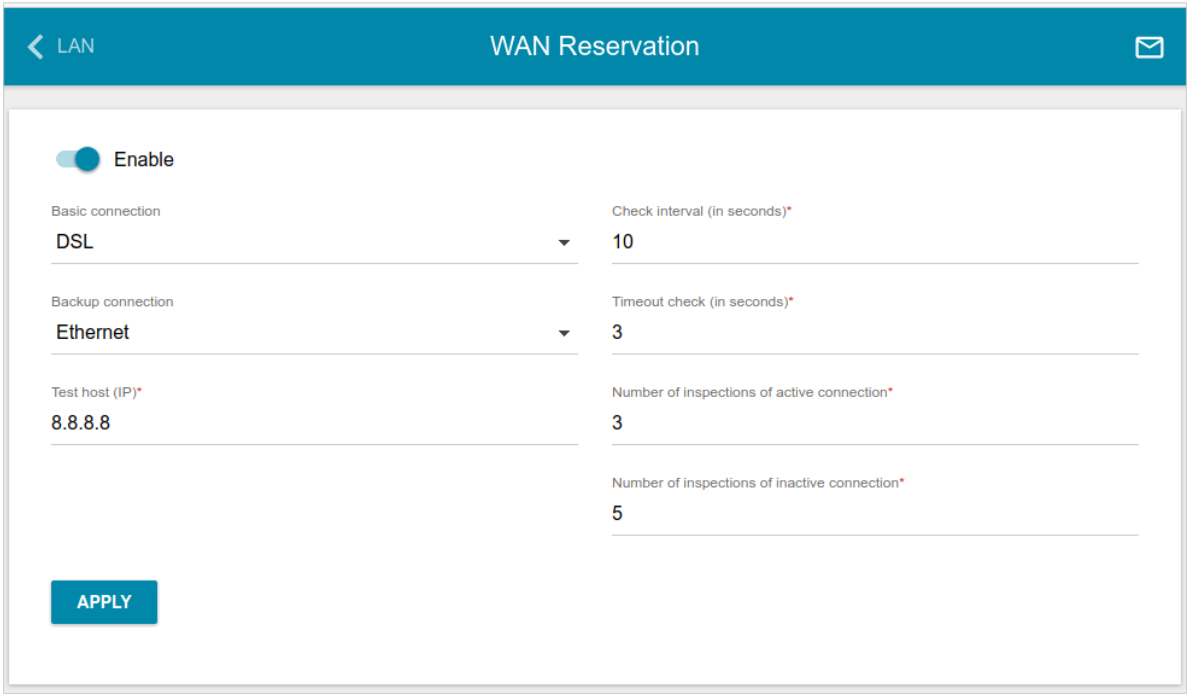


*Figure 92. The **Connections Setup / WAN Reservation** page.*

To activate the backup function, create the main and the reserve WAN connections. After that go to the **Connections Setup / WAN Reservation** page, move the **Enable** switch to the right, and specify the needed values in the fields displayed on the page.

Parameter	Description
Basic connection	From the drop-down list, select a WAN connection which will be used as the main one.
Backup connection	From the drop-down list, select a WAN connection which will be used as the reserve one.
Test host	An IP address that the router will check for availability via ICMP ping mechanism.
Check interval	A time period (in seconds) between attempts to check the status of the main connection. By default, the value `10` is specified.
Timeout check	A time period (in seconds) for an attempt to check the status of the main connection. At the end of this period the router's internal system makes a decision to enable/disable the reserve channel. By default, the value `3` is specified.

Parameter	Description
Number of inspections of active connection	A number of requests that will be sent in order to analyze the status of the main connection when the connection is active (the router uses the main connection as a default gateway).
Number of inspections of inactive connection	A number of requests that will be sent in order to analyze the status of the main connection when the connection is inactive (the router uses the reserve connection as a default gateway).

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

Wi-Fi

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

Basic Settings

In the **Wi-Fi / Basic Settings** section, you can change basic parameters for the wireless interface of the router and configure the basic and additional wireless networks.

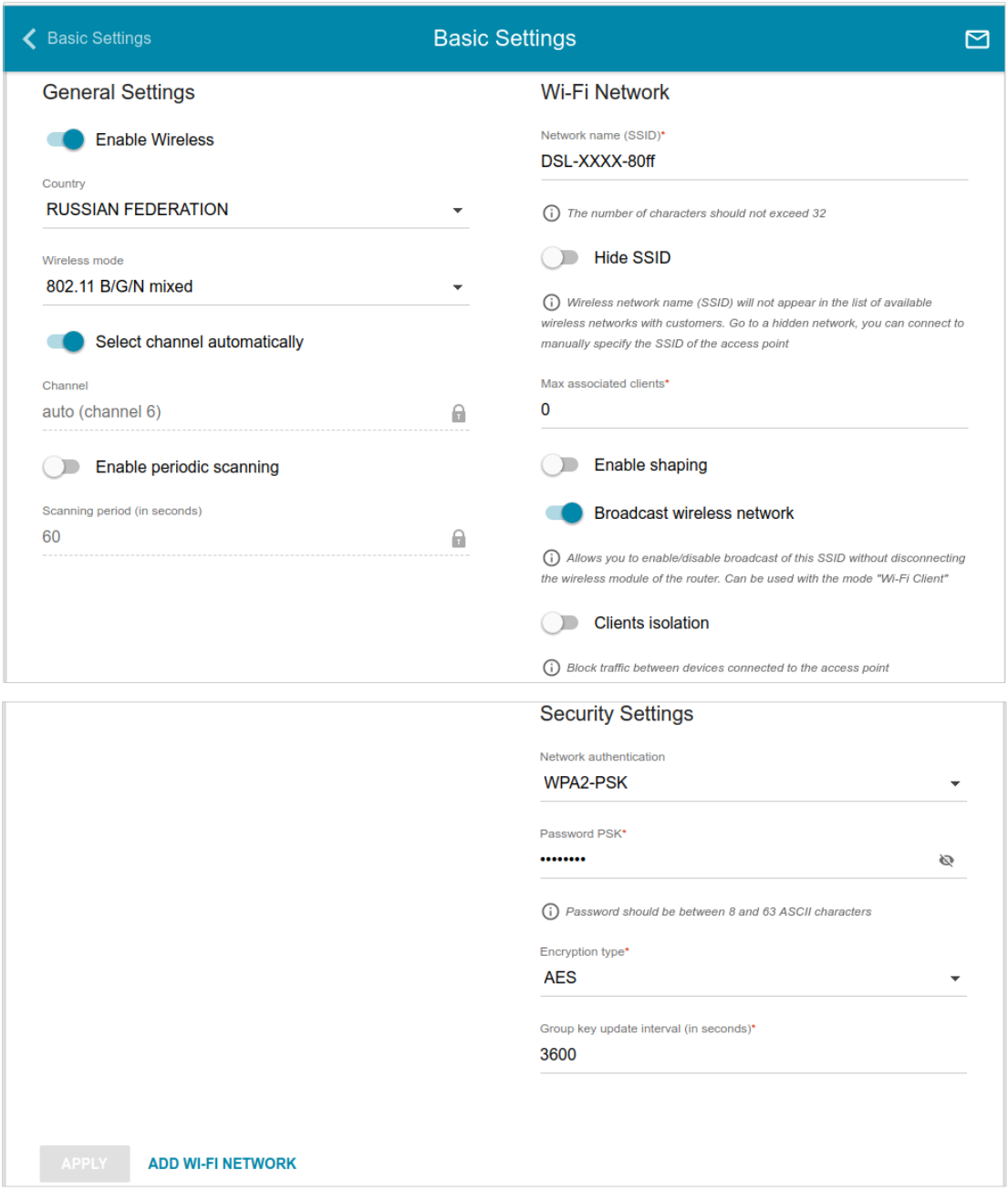


Figure 93. Basic settings of the wireless LAN.

In the **General Settings** section, the following parameters are available:

Parameter	Description
Enable Wireless	To enable Wi-Fi connection, move the switch to the right. To disable Wi-Fi connection, move the switch to the left.
Country	The country you are in. Select a value from the drop-down list.
Wireless mode	Operating mode of the wireless network of the router. This parameter defines standards of the devices that will be able to use your wireless network. Select a value from the drop-down list.
Select channel automatically	Move the switch to the right to let the router itself choose the channel with the least interference.
Channel	The wireless channel number. Left-click to open the window for selecting a channel (the action is available, when the **Select channel automatically** switch is moved to the left).
Enable periodic scanning	Move the switch to the right to let the router search for a free channel in certain periods of time. When the switch is moved to the right, the **Scanning period** field is available for editing.
Scanning period	Specify a period of time (in seconds) after which the router rescans channels.

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

To edit the settings of the basic wireless network, in the **Wi-Fi Network** section, change the needed parameters and click the **APPLY** button.

Also you can create an additional wireless network. To do this, click the **ADD WI-FI NETWORK** button. On the opened page, specify the relevant parameters.

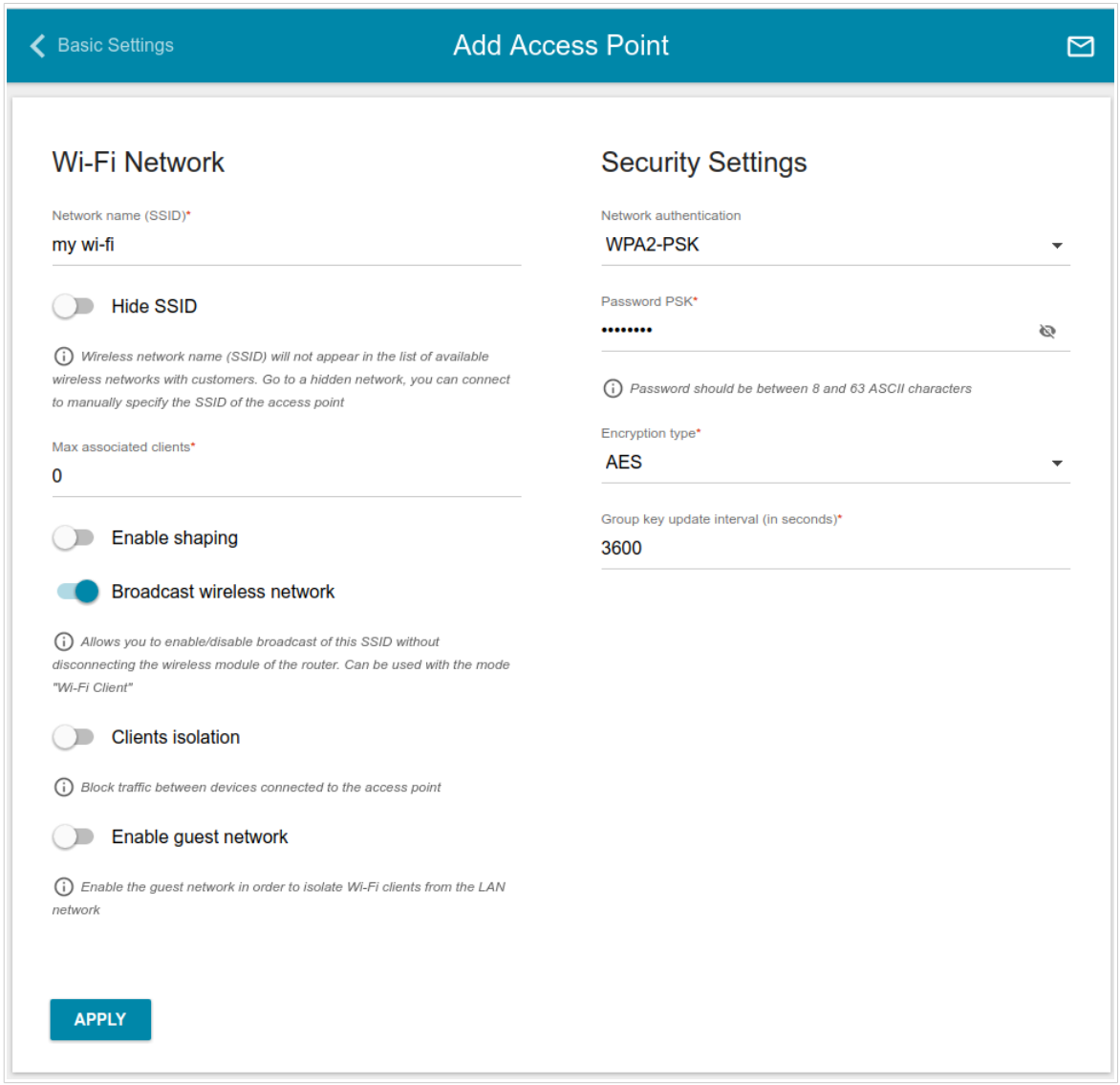


Figure 94. Creating a wireless network.

Parameter	Description
Wi-Fi Network	
Network name (SSID)	A name for the wireless network. The name can consist of digits and Latin characters.
Hide SSID	If the switch is moved to the right, other users cannot see your Wi-Fi network. It is recommended not to hide the network in order to simplify initial configuration of the wireless network.
BSSID	The unique identifier for this wireless network. You cannot change the value of this parameter, it is determined in the device's internal settings. The field is displayed in the settings of the existing wireless network.
Max associated clients	The maximum number of devices connected to the wireless network. When the value `0` is specified, the device does not limit the number of connected clients.
Enable shaping	Move the switch to the right to limit the maximum bandwidth of the wireless network. In the **Shaping** field displayed, specify the maximum value of speed (Kbit/s). Move the switch to the left not to limit the maximum bandwidth.
Broadcast wireless network	If the switch is moved to the left, devices cannot connect to the wireless network. Upon that the router can connect to another access point as a wireless client.
Clients isolation	Move the switch to the right to forbid wireless clients of this wireless network to communicate to each other.
Enable guest network	This function is available for the additional network. Move the switch to the right if you want the devices connected to the additional network to be isolated from the devices and resources of the router's LAN.

In the **Security Settings** section, you can change security settings of the wireless network.

By default, the **WPA2-PSK** network authentication type of the wireless network is specified. WPS PIN from the barcode label is used as the network key.

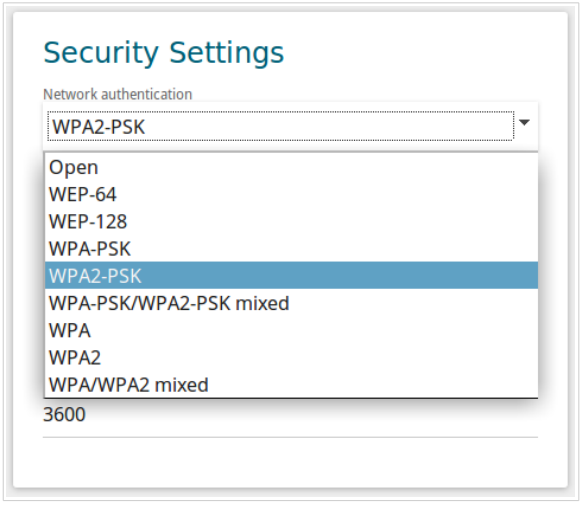


Figure 95. Network authentication types supported by the router.

The router supports the following authentication types:

Authentication type	Description
Open	Open authentication (with WEP encryption for wireless network modes not supporting 802.11n devices).
WEP-64	Authentication with a 64-bit shared key with WEP encryption. This authentication type is not available when a mode supporting 802.11n devices is selected from the **Wireless mode** drop-down list on the **Wi-Fi / Basic Settings** page.
WEP-128	Authentication with a 128-bit shared key with WEP encryption. This authentication type is not available when a mode supporting 802.11n devices is selected from the **Wireless mode** drop-down list on the **Wi-Fi / Basic Settings** page.
WPA	WPA-based authentication using a RADIUS server.
WPA-PSK	WPA-based authentication using a PSK.
WPA2	WPA2-based authentication using a RADIUS server.
WPA2-PSK	WPA2-based authentication using a PSK.
WPA/WPA2 mixed	A mixed type of authentication. When this value is selected, devices using the **WPA** authentication type and devices using the **WPA2** authentication type can connect to the wireless network.

Authentication type	Description
WPA-PSK/WPA2-PSK mixed	A mixed type of authentication. When this value is selected, devices using the **WPA-PSK** authentication type and devices using the **WPA2-PSK** authentication type can connect to the wireless network.

The **WPA**, **WPA2**, and **WPA/WPA2 mixed** authentication types require a RADIUS server.

When the **Open**, **WEP-64**, or **WEP-128** value is selected, the following settings are displayed on the page (unavailable for the wireless network operating modes which support the standard 802.11n):

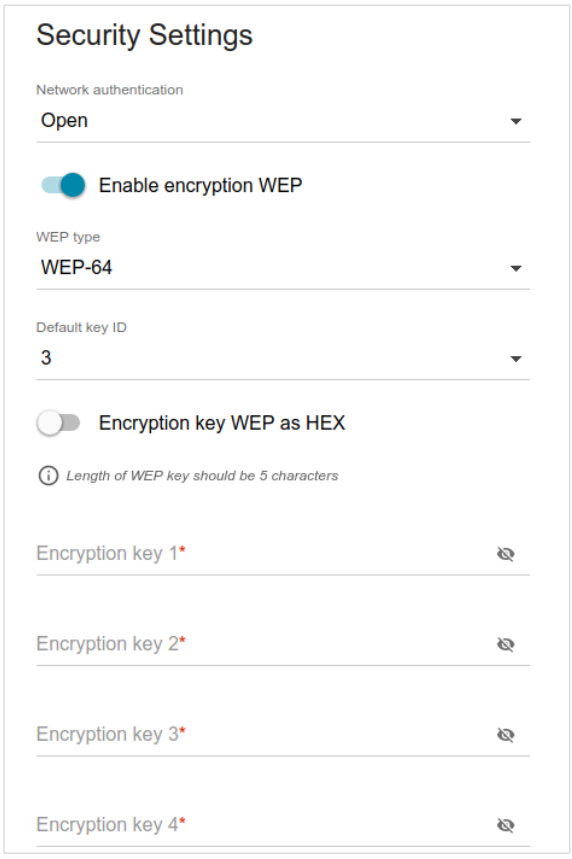


*Figure 96. The **Open** value is selected from the **Network authentication** drop-down list.*

Parameter	Description
Enable encryption WEP	*For **Open** authentication type only.* To activate WEP encryption, move the switch to the right. Upon that the **WEP type** and **Default key ID** drop-down lists, the **Encryption key WEP as HEX** switch, and four **Encryption key** fields are displayed on the page.
WEP type	*For **Open** authentication type only.* WEP encryption type with a 64-bit or 128-bit key. Select the **WEP-64** value to specify keys containing 5 ASCII symbols or 10 HEX symbols. Select the **WEP-128** value to specify keys containing 13 ASCII symbols or 26 HEX symbols.
Default key ID	The number of the key (from first to fourth) which will be used for WEP encryption.
Encryption key WEP as HEX	Move the switch to the right to set a hexadecimal number as a key for encryption.
Encryption key (1-4)	Keys for WEP encryption. The router uses the key selected from the **Default key ID** drop-down list. It is required to specify all the fields. Click the **Show** icon ( ) to display the entered key.

When the **WPA-PSK**, **WPA2-PSK**, or **WPA-PSK/WPA2-PSK mixed** value is selected, the following fields are displayed on the page:

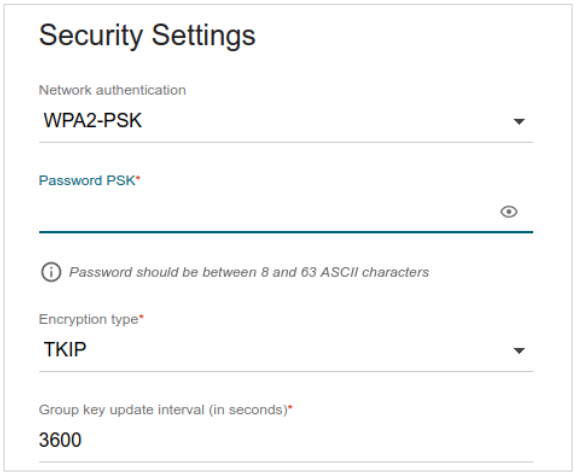


*Figure 97. The **WPA2-PSK** value is selected from the **Network authentication** drop-down list.*

Parameter	Description
Password PSK	A password for WPA encryption. The password can contain digits, Latin letters (uppercase and/or lowercase), and other characters available in the US keyboard layout.[11] Click the **Show** icon ( ) to display the entered password.
Encryption type	An encryption method: **TKIP**, **AES**, or **TKIP+AES**.
Group key update interval	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.

11 0-9, A-Z, a-z, space, !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~.

When the **WPA**, **WPA2**, or **WPA/WPA2 mixed** value is selected, the following settings are displayed on the page:

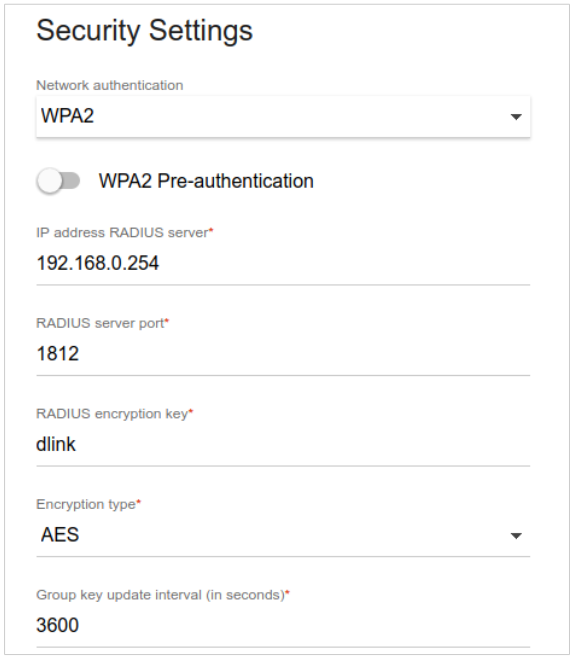


*Figure 98. The **WPA2** value is selected from the **Network authentication** drop-down list.*

Parameter	Description
WPA2 Pre-authentication	Move the switch to the right to activate preliminary authentication (displayed only for the **WPA2** and **WPA/WPA2 mixed** authentication types).
IP address RADIUS server	The IP address of the RADIUS server.
RADIUS server port	A port of the RADIUS server.
RADIUS encryption key	The password which the router uses for communication with the RADIUS server (the value of this parameter is specified in the RADIUS server settings).
Encryption type	An encryption method: **TKIP**, **AES**, or **TKIP+AES**.
Group key update interval	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 **APPLY** button.

To edit the basic or additional wireless network, left-click the relevant line in the table. On the opened page, change the needed parameters and click the **APPLY** button.

To remove the additional network, select the checkbox located to the left of the relevant line in the table and click the **DELETE** button. Then click the **APPLY** button.

Client Management

On the **Wi-Fi / Client Management** page, you can view the list of wireless clients connected to the router.

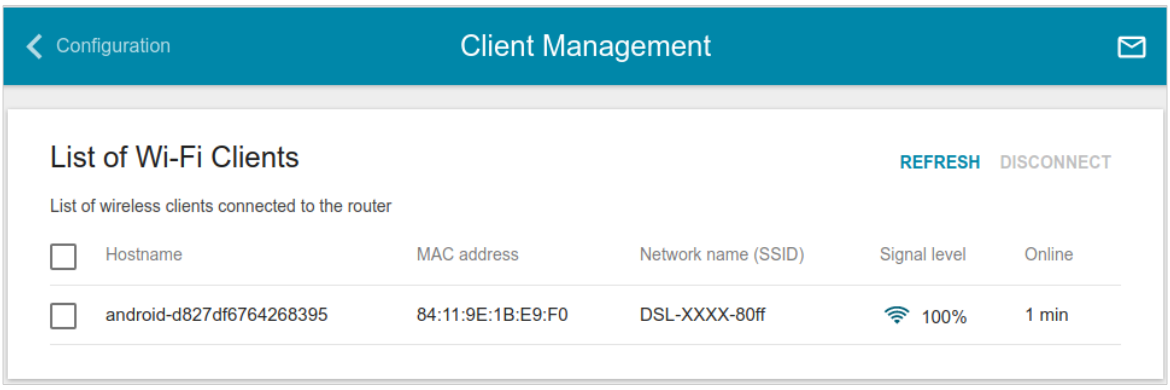


Figure 99. The page for managing the wireless clients.

If you want to disconnect a wireless device from your WLAN, select the checkbox in the line containing the MAC address of this device and click the **DISCONNECT** button.

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 configuration of the WLAN and select a method for connection 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.

! The WPS function allows adding devices only to the basic wireless network of the router.

! Before using the function you need to configure one of the following authentication types: **Open** with no encryption, **WPA2-PSK** or **WPA-PSK/WPA2-PSK mixed** with the **AES** encryption method. When other security settings are specified, controls of the **WPS** page are not available.

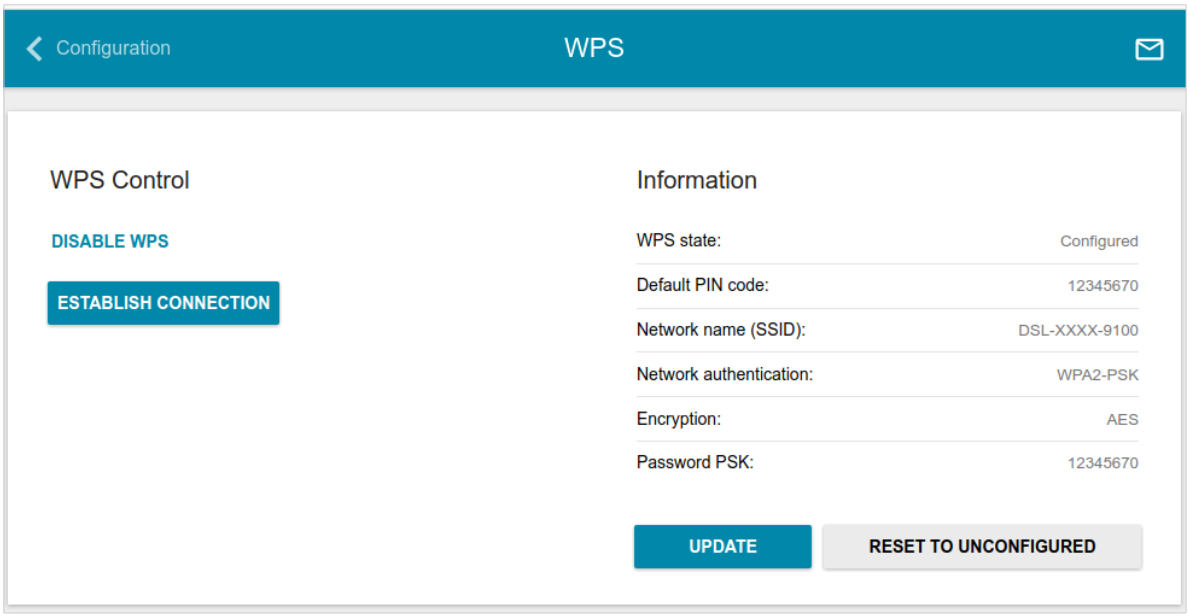


Figure 100. The page for configuring the WPS function.

To activate the WPS function, click the **ENABLE WPS** button.

When the WPS function is enabled, the **Information** section is available on the page.

Parameter	Description
WPS state	The state of the WPS function: • **Configured** (all needed settings are specified; these settings will be used upon establishing the wireless connection) • **Unconfigured** (after activating the WPS function, the SSID and the encryption key will be configured automatically, the network authentication type will be changed to WPA2-PSK).
Default PIN code	The PIN code of the router. This parameter is used when connecting the router to a registrar to set the parameters of the WPS function.
Network name (SSID)	The name of the router's wireless network.
Network Authentication	The network authentication type specified for the wireless network.
Encryption	The encryption type specified for the wireless network.
Password PSK	The encryption password specified for the wireless network.
UPDATE	Click the button to update the data on the page.
RESET TO UNCONFIGURED	Click the button to reset the parameters of the WPS function.

Using WPS Function via Web-based Interface

To connect to the basic wireless network via the PIN method of the WPS function, follow the next steps:

1. Click the **ENABLE WPS** button.
2. In the **WPS Control** section, click the **ESTABLISH CONNECTION** button.
3. In the opened window, 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 connect to the basic wireless network via the PBC method of the WPS function, follow the next steps:

1. Click the **ENABLE WPS** button.
2. In the **WPS Control** section, click the **ESTABLISH CONNECTION** button.
3. In the opened window, 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. Right after that, click the **CONNECT** button in the web-based interface of the router.

Using WPS Function without Web-based Interface

You can use the WPS function without accessing the web-based interface of the router. To do this, you need to configure the following router's settings:

1. Specify relevant security settings for the wireless network of the router.
2. Click the **ENABLE WPS** button.
3. Save the settings and close the web-based interface (click the **SAVE** button in the notification and then click the **Logout** line of the menu).

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 and release. The **WPS** LED will start blinking.

WMM

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

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

Select the needed action from the drop-down list in the **Work mode** section to configure the WMM function:

- **Auto**: the settings of the WMM function are configured automatically (the value is specified by default).
- **Manual**: the settings of the WMM function are configured manually. When this value is selected, the **Access Point** and **Station** sections are displayed on the page.
- **Disabled**: the WMM function is disabled.

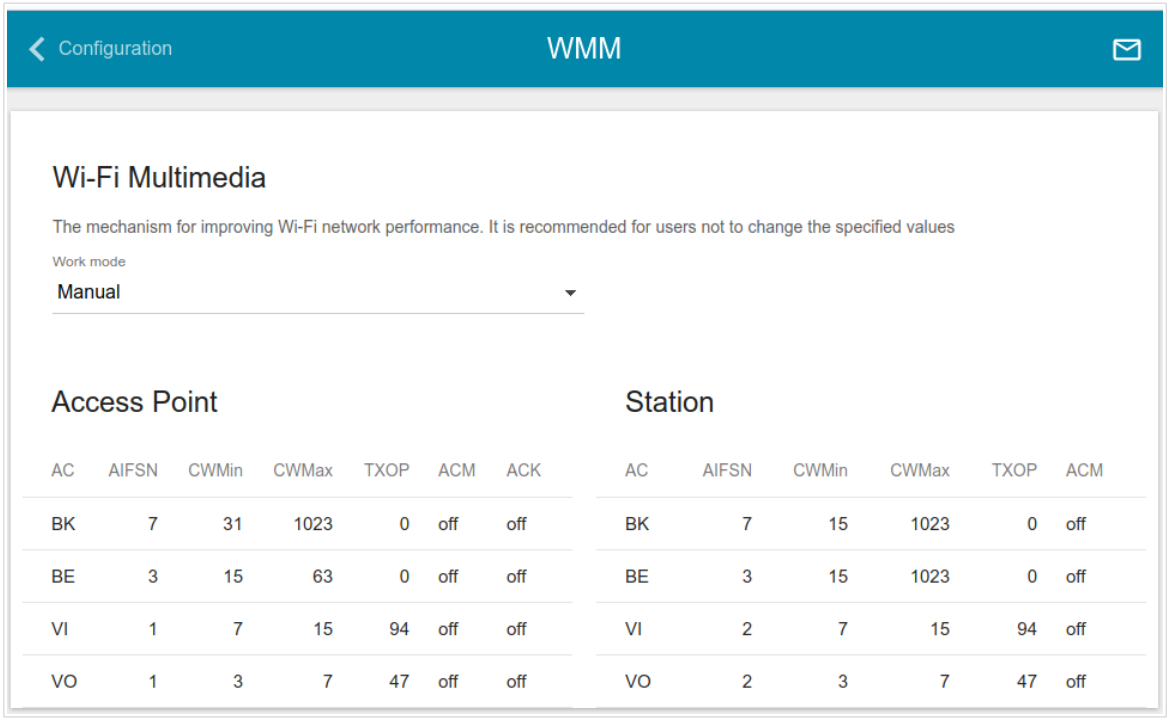


Figure 101. The page for configuring the WMM function.

All needed settings for the WMM function are specified in the device's system. Changing parameters manually may negatively affect your WLAN!

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

- **BK** (*Background*), low priority traffic (print jobs, file downloads, etc.).
- **BE** (*Best Effort*), traffic from legacy devices or devices/applications that do not support QoS.
- **VI** (*Video*).
- **VO** (*Voice*).

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

To edit the parameters of an Access Category, left-click the relevant line. In the opened window, change the needed parameters.

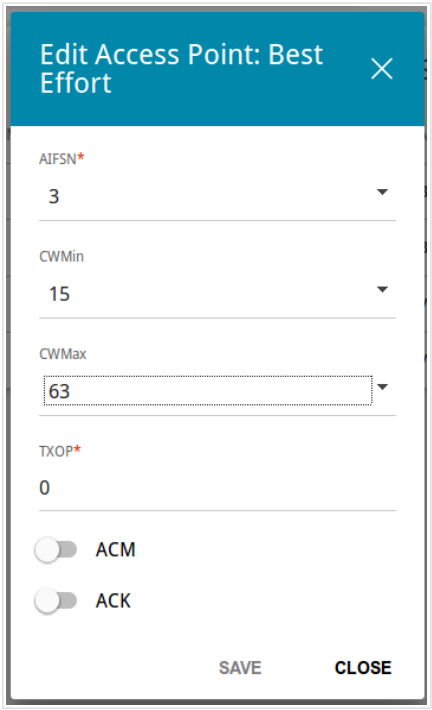


Figure 102. The window for changing parameters of the WMM function.

Parameter	Description
AIFSN	*Arbitrary Inter-Frame Space Number*. This parameter influences time delays for the relevant Access Category. The lower the value, the higher is the Access Category priority.
CWMin/CWMax	*Contention Window Minimum/Contention Window Maximum*. Both fields influence time delays for the relevant Access Category. The **CWMax** field value should not be lower, than the **CWMin** field value. The lower the difference between the **CWMax** field value and the **CWMin** field value, the higher is the Access Category priority.

Parameter	Description
TXOP	*Transmission Opportunity*. The higher the value, the higher is the Access Category priority.
ACM	*Admission Control Mandatory*. If the switch is moved to the right, the device cannot use the relevant Access Category.
ACK	*Acknowledgment*. Answering response requests while transmitting. Displayed only in the **Access Point** section. If the switch is moved to the left, the router answers requests. If the switch is moved to the right, the router does not answer requests.

Click the **SAVE** button.

Additional

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

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

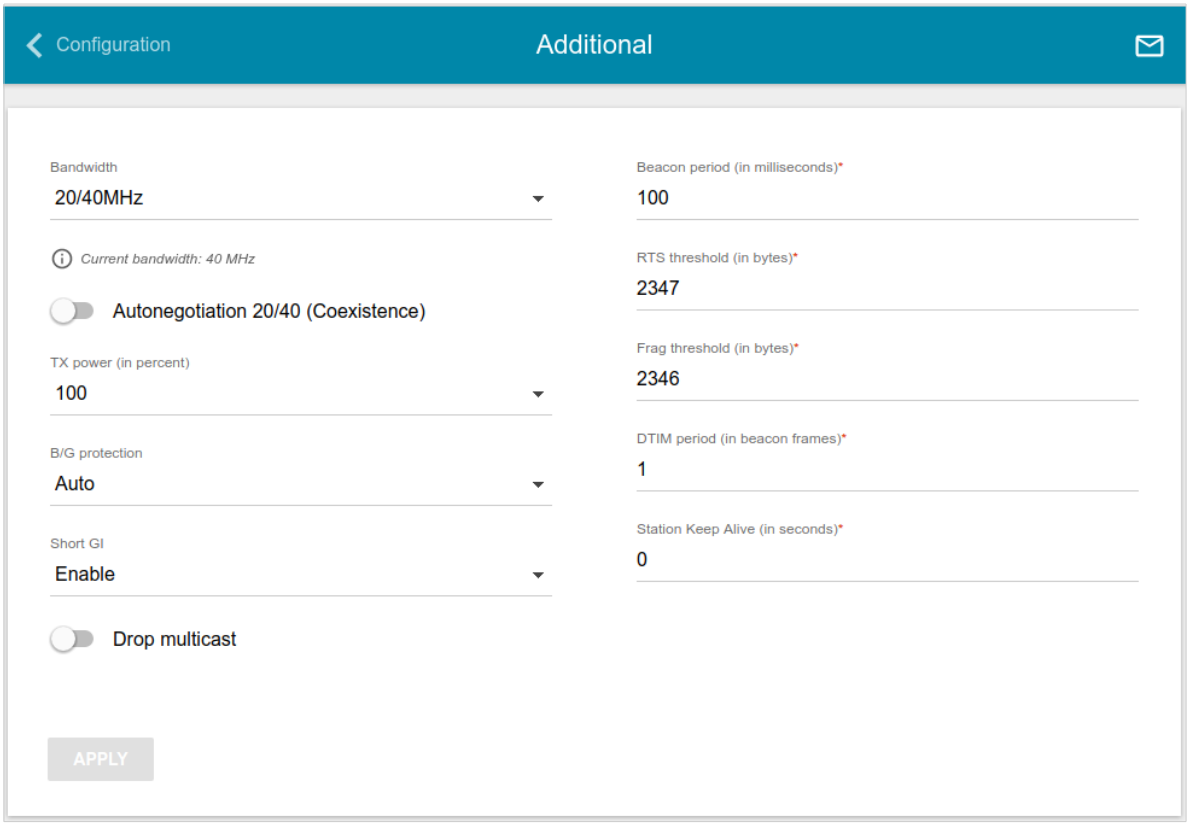


Figure 103. Additional settings of the WLAN.

The following fields are available on the page:

Parameter	Description
Bandwidth	The channel bandwidth for 802.11n standard. **20MHz**: 802.11n clients operate at 20MHz channels. **20/40MHz**: 802.11n clients operate at 20MHz or 40MHz channels.
Autonegotiation 20/40 (Coexistence)	Move the switch to the right to let the router to automatically choose the most suitable channel bandwidth (20MHz or 40MHz) for the connected devices (this setting can substantially lower the data transfer rate of your wireless network).
TX power	The transmit power (in percentage terms) of the router.

Parameter	Description
B/G protection	The 802.11b and 802.11g protection function is used to minimize collisions between devices of your wireless network. Select a value from the drop-down list. **Auto**: The protection function is enabled and disabled automatically depending on the state of the network (this value is recommended if your wireless local area network consists of both 802.11b and 802.11g devices). **Always On**: The protection function is always enabled (this setting can substantially lower the efficiency of your wireless network). **Always Off**: The protection function is always disabled.
Short GI	Guard interval (in nanoseconds). This parameter defines the interval between symbols transmitted when the router is communicating to wireless devices. **Enable**: the router uses the 400 ns short guard interval. Only for the wireless network operating modes which support 802.11n standard (see the value of the **Wireless mode** drop-down list on the **Wi-Fi / Basic Settings** page). **Disable**: the router uses the 800 ns standard guard interval.
Drop multicast	Move the switch to the right to disable multicasting for the router's WLAN. Move the switch to the left to enable multicasting from the WAN connection selected on the **Advanced / IGMP** page.
Beacon period	The time interval (in milliseconds) between packets sent to synchronize the wireless network.
RTS threshold	The minimum size (in bytes) of a packet for which an RTS frame is transmitted.
Frag threshold	The maximum size (in bytes) of a non-fragmented packet. Larger packets are fragmented (divided).
DTIM period	The time period (in beacon frames) between sending a DTIM (a message notifying on broadcast or multicast transmission) and data transmission.
Station Keep Alive	The time interval (in seconds) between keep alive checks of wireless devices from your WLAN. When the value **0** is specified, the checking is disabled.

When you have configured the parameters, click the **APPLY** 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.

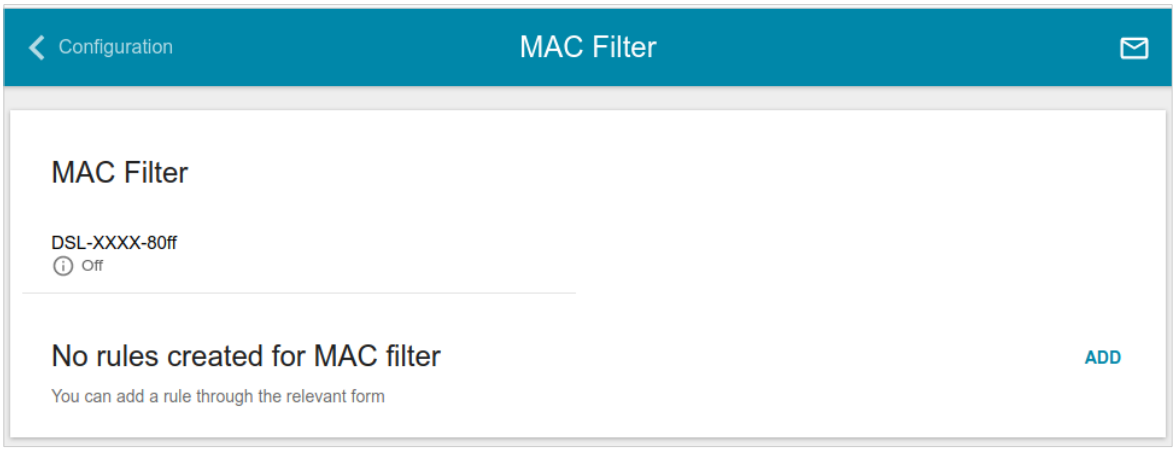


Figure 104. The page for configuring the MAC filter for the wireless network.

By default, MAC filtering is disabled.

To open the basic or additional wireless network for the devices which MAC addresses are specified on this page and to close the wireless network for all other devices, in the **MAC Filter** section, left-click the line of the wireless network. In the opened window, move the **Enable MAC filter** switch to the right. Upon that the **MAC filter restrict mode** drop-down list will be displayed. Select the **Allow** value from the drop-down list and click the **SAVE** button.

To close the wireless network for the devices which MAC addresses are specified on this page, select the **Deny** value from the **MAC filter restrict mode** drop-down list and click the **SAVE** button.

Click the **ADD** button to add a rule for MAC filtering.

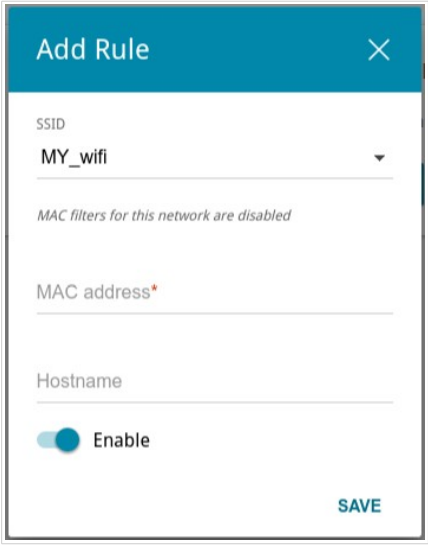


Figure 105. The window for adding a rule for the MAC filter.

You can specify the following parameters:

Parameter	Description
SSID	A wireless network to which the rule will be applied. Select the needed value from the drop-down list.
MAC address	In the field, enter the MAC address to which the selected filtering mode will be applied.
Hostname	The name of the device for easier identification. You can specify any name.
Enable	If the switch is moved to the right, the rule is active. Move the switch to the left to disable the rule.

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

To edit the parameters of the existing rule, in the **Filters** section, left-click the needed rule. In the opened window, change the settings and click the **SAVE** button.

To remove the rule from the page, in the **Filters** section, select the checkbox located to the left of the relevant rule and click the **DELETE** button.

Print Server

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

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

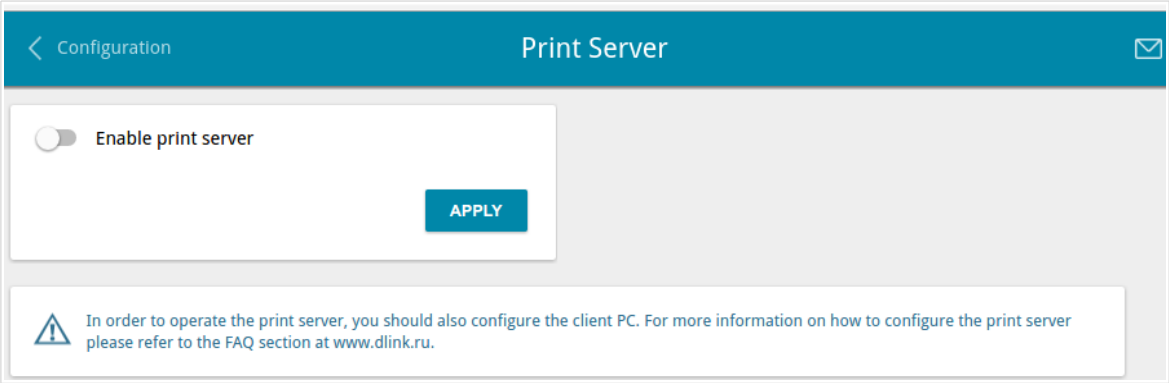


*Figure 106. The **Print Server** page.*

To configure the router as a print server, move the **Enable print server** switch to the right and click the **APPLY** button.

If you don't want to use the router as a print server, move the **Enable print server** switch to the left and click the **APPLY** button.

USB Storage

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

- view data on the connected USB storage
- create accounts for users to allow access to the content of the USB storage
- enable the built-in Samba server of the router
- enable the built-in FTP server of the router
- view content of the connected USB storage
- enable the built-in DLNA server of the router
- configure the built-in Transmission torrent client and manage distributing and downloading processes.

Information

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

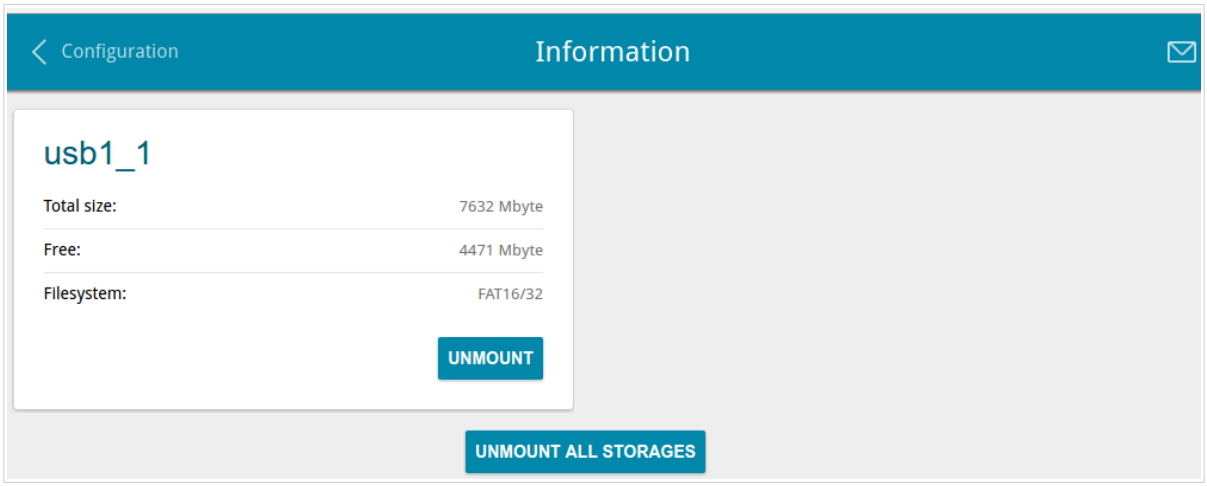


*Figure 107. The **USB Storage / Information** page.*

The following data are presented on the page: the name, total and free space of the storage, and the type of its file system (supported file systems: FAT16/32, NTFS, and ext2/3).

If the USB storage is divided into volumes, a section for every volume (partition) of the USB storage is displayed on the page.

To safely disconnect the USB storage or a volume of the USB storage, click the **UNMOUNT** button in the relevant section and wait for several seconds.

To disconnect all volumes of the USB storage, click the **UNMOUNT ALL STORAGES** button.

USB Users

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

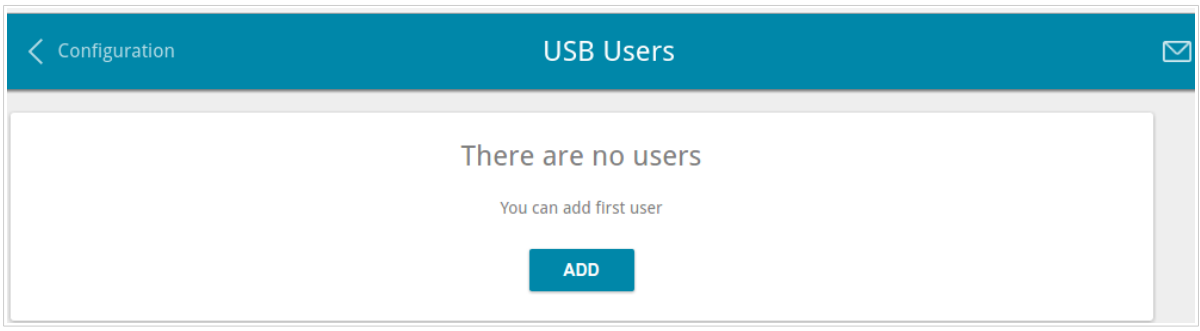


*Figure 108. The **USB Storage / USB Users** page.*

To create a new user account, click the **ADD** button.

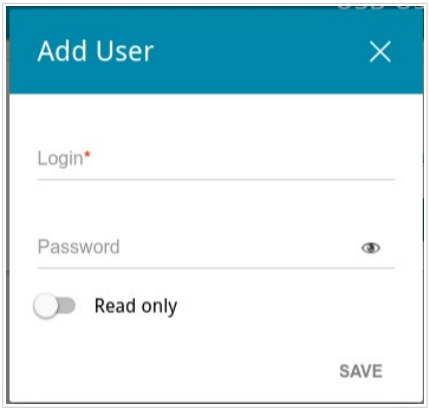


Figure 109. The window for adding a user.

In the opened window, in the **Login** field, specify a username, and in the **Password** field – the password for the account. Use digits, Latin letters (uppercase and/or lowercase), and other characters available in the US keyboard layout.[12]

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

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

Click the **SAVE** button.

To change the password of an account, select the relevant line in the table. In the opened window, enter a new value in the **Password** field, and then click the **SAVE** button.

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

12 0-9, A-Z, a-z, space, !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~.

Samba

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

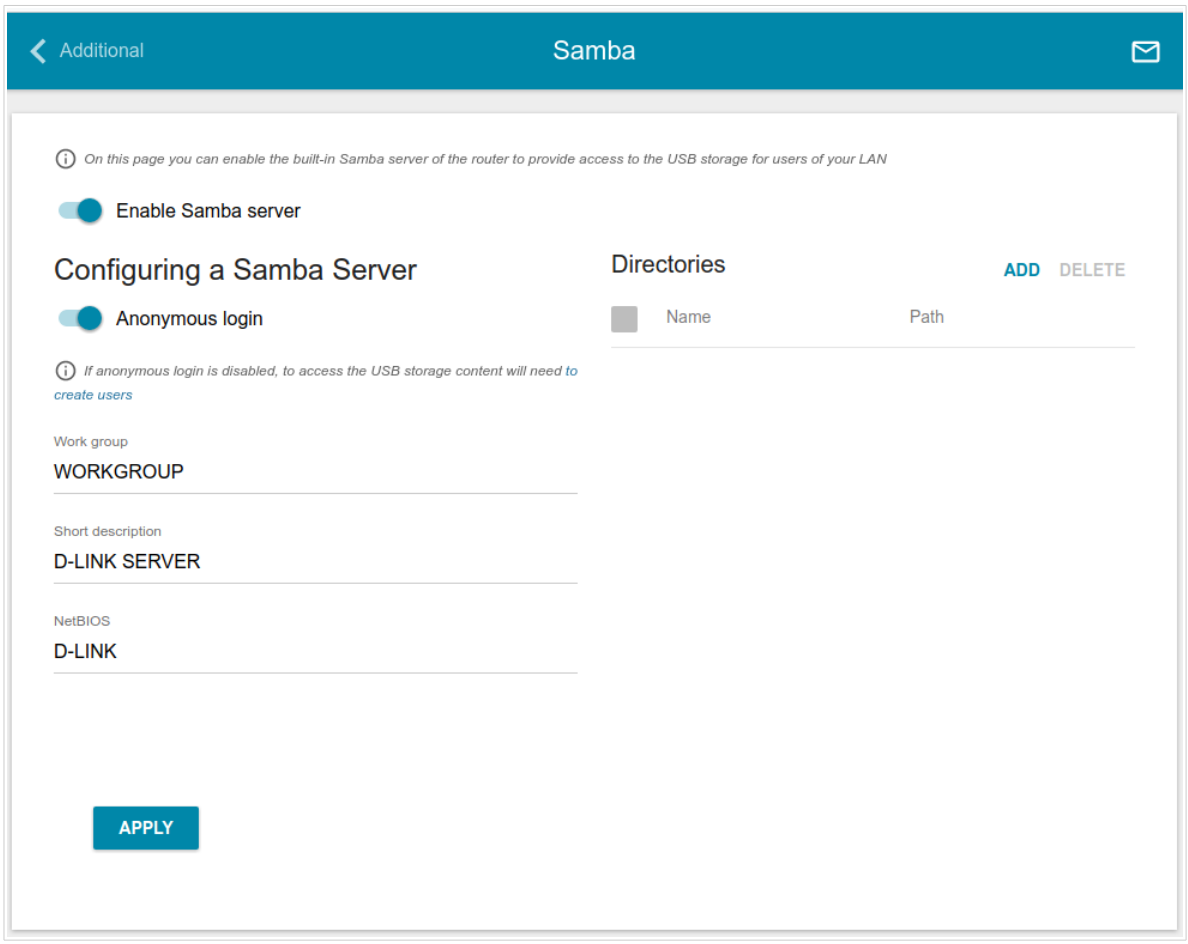


*Figure 110. The **USB Storage / Samba** page.*

To enable the Samba server, move the **Enable Samba server** switch to the right.

The **Anonymous login** switch (by default, the switch is moved to the right) allows anonymous access to the content of the USB storage for users of your LAN.

If you want to provide authorized access to the content of the USB storage for users of your LAN, move the switch to the left. After applying the parameters on this page, go to the **USB Storage / USB Users** page and create needed accounts.

In the **Work group** field, leave the value specified by default (**WORKGROUP**) or specify a new name of a workgroup which participants will have access to the content of the USB storage.

In the **Short description** field, you can specify an additional description for the USB storage. This value will be displayed in some operating systems. Use digits and/or Latin characters.

In the **NetBIOS** field, specify a name of the USB storage which will be displayed for users of your LAN. Use digits and/or Latin characters.

To allow access only to a certain folder of the USB storage, click the **ADD** button in the **Directories** section.

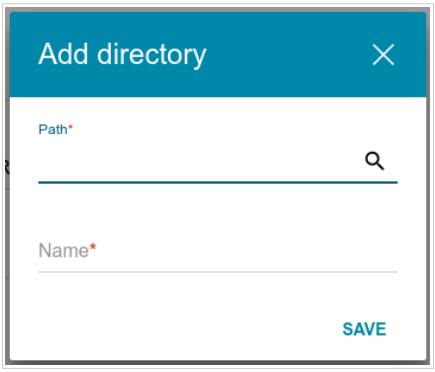


Figure 111. Specifying a folder.

In the opened window, locate a folder containing files. To do this, click the **Search** icon ( ) in the **Path** field. Then go to the needed folder and click the **SELECT** button.

In the **Name** field, specify a name of the selected folder which will be displayed for users of your LAN. Use digits and/or Latin characters.

Click the **SAVE** button.

To remove a folder from the list in the **Directories** section, select the checkbox located to the left of the relevant line in the table and click the **DELETE** button.

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

To disable the built-in Samba server of the router, move the **Enable Samba server** switch to the left and click the **APPLY** button.

FTP

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

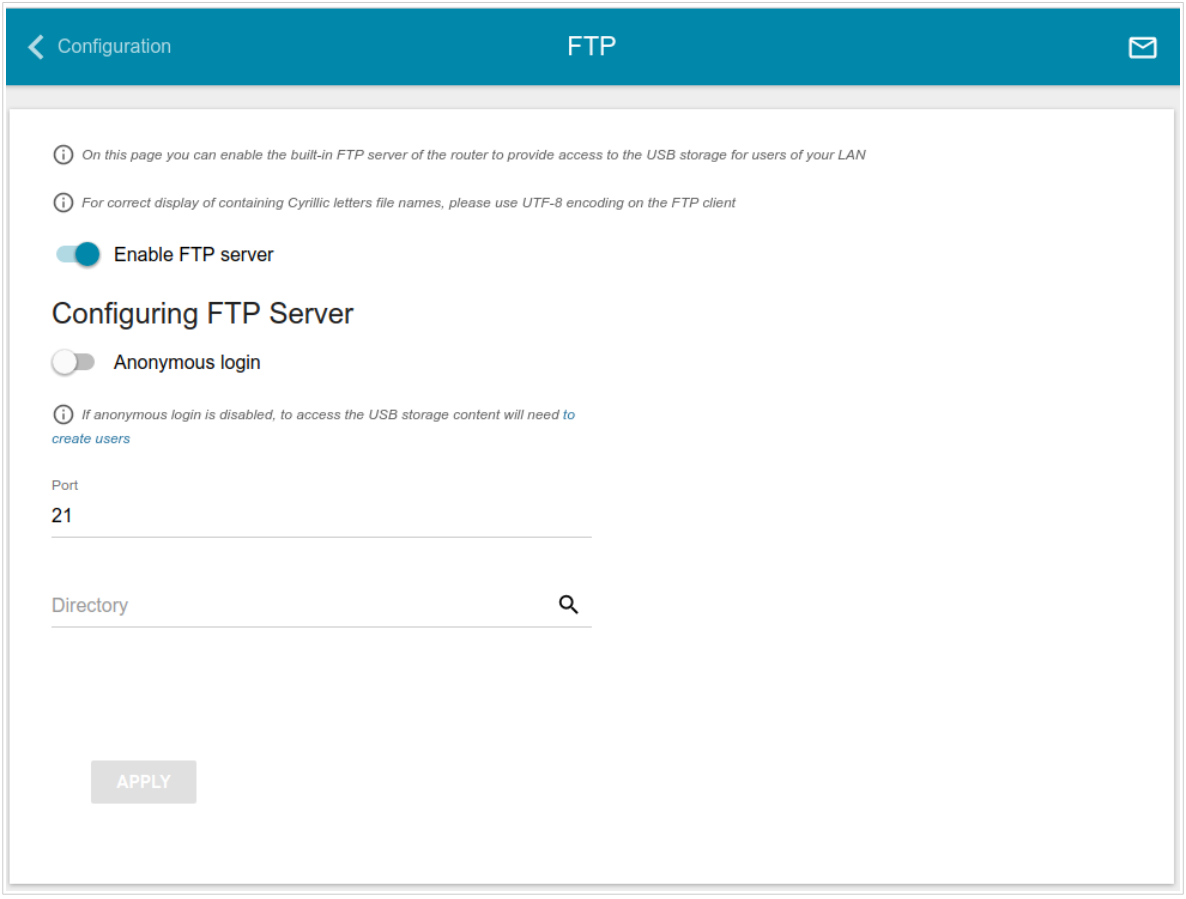


*Figure 112. The **USB Storage / FTP** page.*

To enable the FTP server, move the **Enable FTP server** switch to the right.

Move the **Anonymous login** switch to the right to allow anonymous access to the content of the USB storage for users of your LAN. If you want to provide authorized access to the content of the USB storage for users of your LAN, move the switch to the left. After applying the parameters on this page, go to the **USB Storage / USB Users** page and create needed accounts.

If needed, change the router's port used by the FTP server in the **Port** field (by default, the standard port **21** is specified).

To allow access only to a certain folder of the USB storage for users of your LAN, locate a folder containing files. To do this, click the **Search** icon ( ) in the **Directory** field. Then go to the needed folder and click the **SELECT** button.

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

To allow access to all the content of the USB storage for users of your LAN again, remove the value specified in the **Directory** field and click the **APPLY** button.

To disable the built-in FTP server of the router, move the **Enable FTP server** switch to the left and click the **APPLY** button.

Filebrowser

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

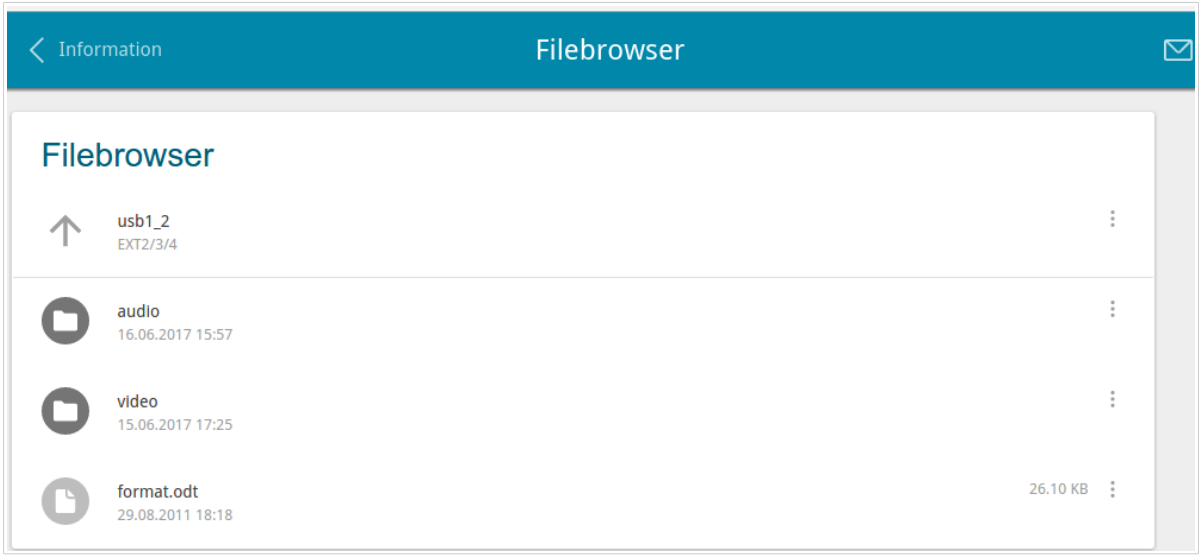


*Figure 113. The **USB Storage / Filebrowser** page.*

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

To go to a folder, click the line corresponding to this folder.

To refresh the folder contents, click the **Actions** icon (⋮) in the line corresponding to this folder and select the **Refresh** value.

To remove a folder or file, click the **Actions** icon (⋮) in the line corresponding to this folder or file and select the **Remove** value.

DLNA

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

The built-in media server allows DLNA certified devices of your LAN to play multimedia content of the USB storage. Multimedia content can be played only when a USB storage is connected to the router.

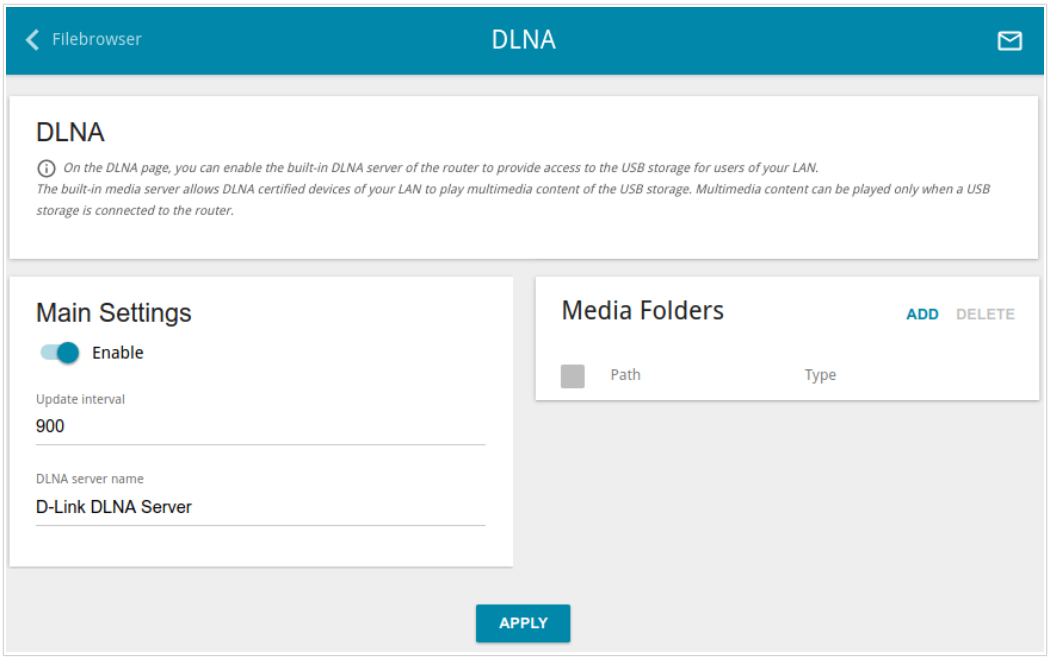


*Figure 114. The **USB Storage / DLNA** page.*

To enable the DLNA server, move the **Enable** switch to the right.

In the **Update interval** field, specify the time period (in seconds), at the end of which the media server updates the file list of the USB storage, or leave the value specified by default (**900**).

In the **DLNA server name** field, specify a name of the DLNA server which will be displayed for users of your LAN or leave the value specified by default (**D-Link DLNA Server**). Use digits and/or Latin characters.

To allow access to the content of the USB storage for users of your LAN, click the **ADD** button in the **Media Folders** section.

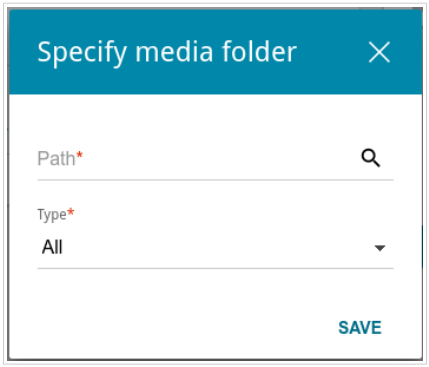


Figure 115. Specifying a media folder.

In the opened window, locate a folder containing files. To do this, click the **Search** icon ( ) in the **Path** field. Then go to the needed folder and click the **SELECT** button.

For each folder you can define the type of files which will be available for users of your LAN. To do this, select the needed type of files from the **Type** drop-down list. To share all files of a folder, select the **All** value from the **Type** drop-down list.

Click the **SAVE** button.

To remove a folder from the list in the **Media Folders** section, select the checkbox located to the left of the relevant line in the table and click the **DELETE** button.

After specifying all needed settings on the **USB Storage / DLNA** page, click the **APPLY** button.

To disable the built-in DLNA server of the router, move the **Enable** switch to the left and click the **APPLY** button.

Torrent Client

On the **USB Storage / Torrent Client** page, you can configure all needed settings for the built-in Transmission client.

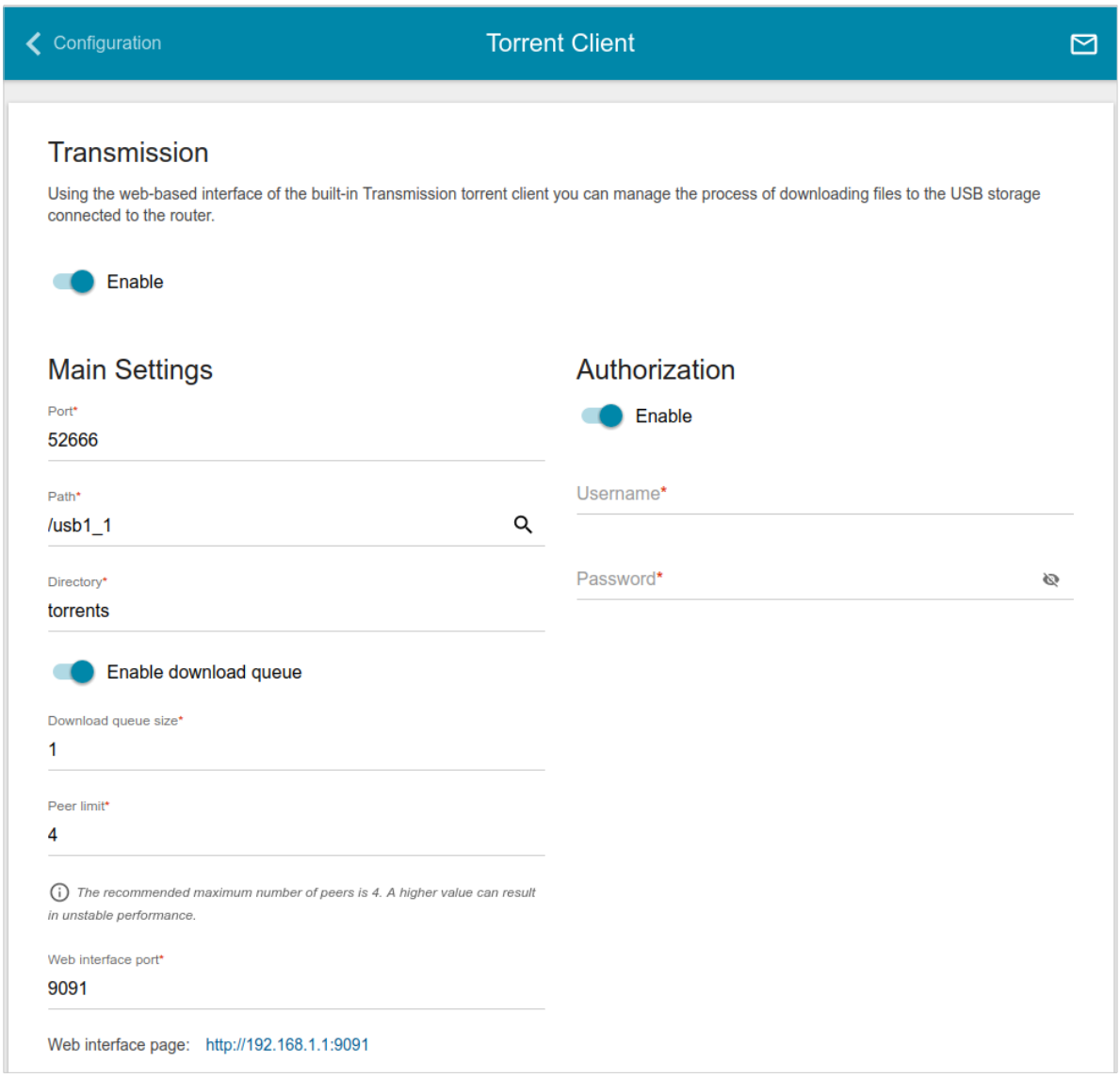


*Figure 116. The **USB Storage / Torrent Client** page.*

You can specify the following parameters:

Parameter	Description
Transmission	
Enable	Move the switch to the right to activate the Transmission client.
Main Settings	
Port	The router's port which will be used by the Transmission client.

Parameter	Description
Path	Locate data of the Transmission client. To do this, click the **Search** icon ( ), select the needed value, and click the **SELECT** button.
Directory	The folder on the USB storage where data of the Transmission client will be stored.
Enable download queue	Move the switch to the right if you want to limit the number of simultaneous downloads. Upon that the **Download queue size** field will be displayed. Move the switch to the left not to limit the number of simultaneous downloads.
Download queue size	The maximum number of simultaneous downloads. By default, the value `1` is specified.
Peer limit	The maximum number of the service users from which you can download files.
Web interface port	The port on which the web-based interface of the Transmission client is available.
Authorization	
Enable	Move the switch to the right if you want the Transmission client to request for username and password when accessing its web-based interface. Then fill in the **Username** and **Password** fields.
Username	The username to access the web-based interface of the Transmission client.
Password	The password to access the web-based interface of the Transmission client. Click the **Show** icon ( ) to display the entered password.

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

In the **Web-interface page** field, the address of the web-based interface of the Transmission client is displayed. To access the web-based interface of the Transmission client, click the link.

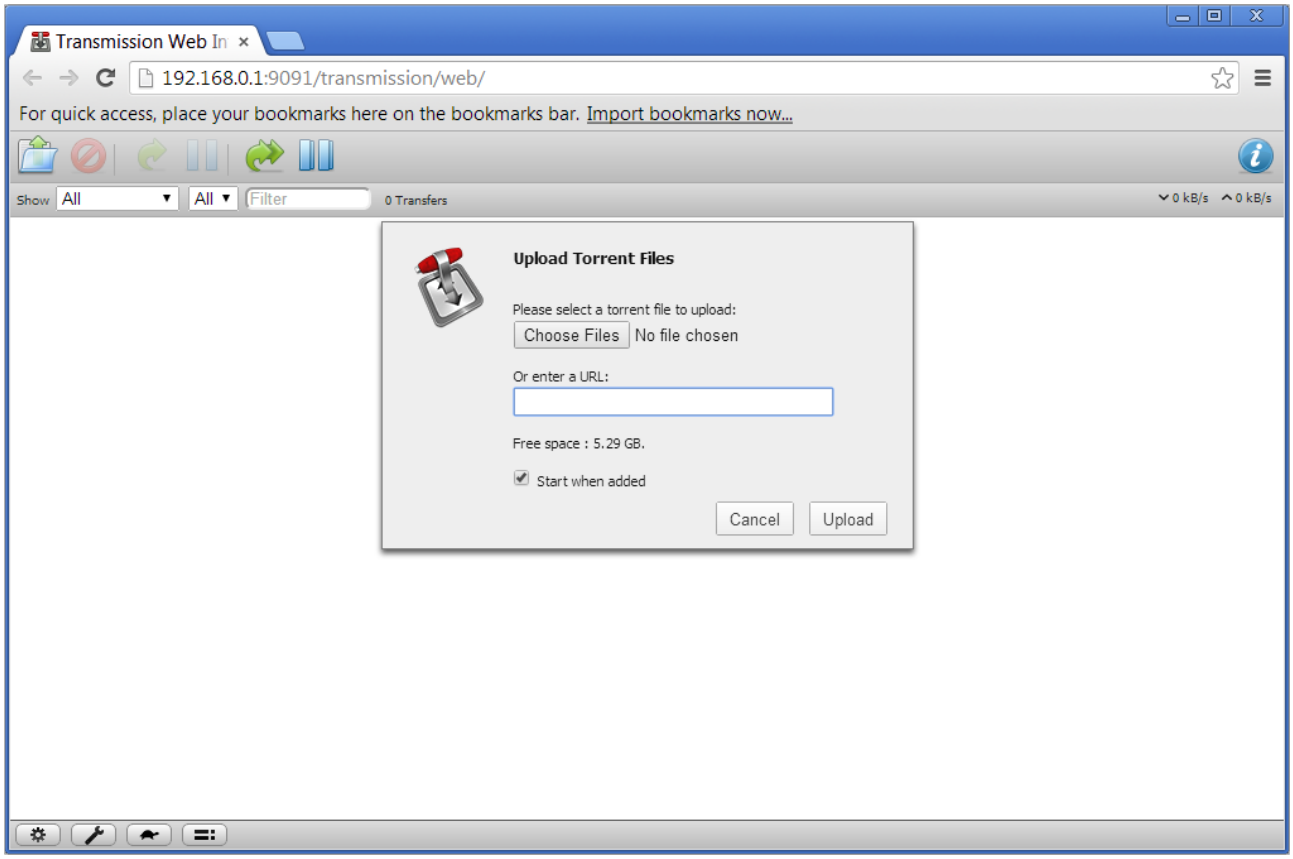


Figure 117. The web-based interface of the Transmission torrent client.

Using the web-based interface of the built-in Transmission torrent client you can manage the process of downloading files to the USB storage connected to the router.

The following buttons are available on the page:

Parameter	Description
 **Open Torrent**	Click the button to add a new torrent file (a metadata file according to which the Transmission client downloads files) to the download queue. In the dialog box appeared, select a file stored on your PC and click the **Upload** button.
 **Remove Selected Torrents**	Select the torrent file which you want to remove from the download queue and click the button.
 **Start Selected Torrents**	Select the torrent file corresponding to the download which should be restarted and click the button.

Parameter	Description
 **Start All Torrents**	Click the button to restart all downloads. If you limited the maximum number of simultaneous downloads, the Transmission client starts processing of the specified number of torrent files; after completing download of the first one, the client proceeds to the next file in the queue.
 **Pause Selected Torrents**	Select the torrent file corresponding to the download which should be stopped and click the button.
 **Pause All Torrents**	Click the button to stop all downloads.
 **Toggle Inspector**	Select a torrent file and click the button to view its data.

USB Modem

This menu is designed to operate USB modems.

If the PIN code check for the SIM card inserted into your USB modem is not disabled, the relevant notification will be displayed in the top right corner of the page.

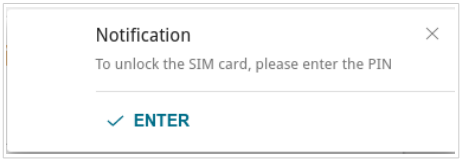


Figure 118. The notification on the PIN code check.

Click the **ENTER** button. When the **USB Modem / PIN** page opens, enter the PIN code in the **Authorization** section[13]. Click the **Show** icon ( ) to display the entered code. Then click the **APPLY** button.

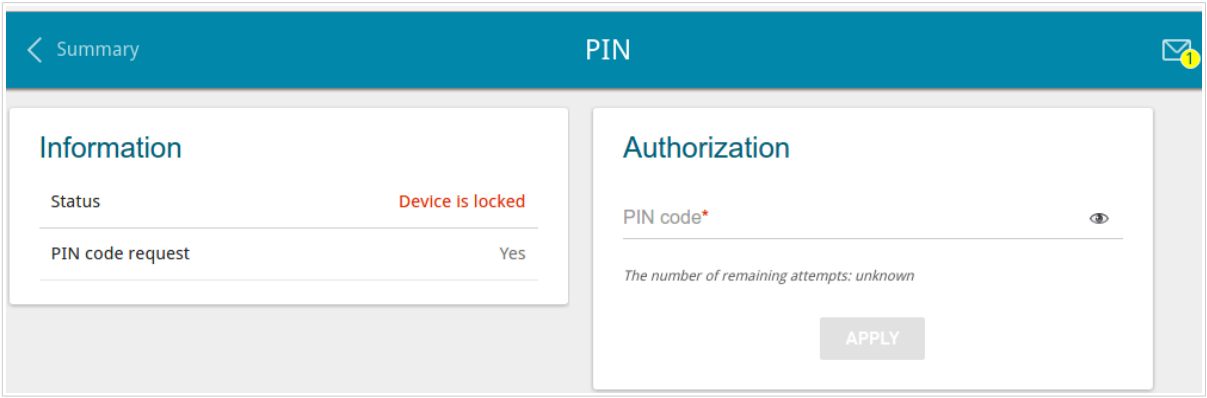


Figure 119. Entering the PIN code.

Some USB modems in the router mode and Android smartphones in the modem mode have an IP address from the subnet which coincides with the router's local subnet. In this case, the router's web-based interface can be unavailable. For correct operation, disconnect the device from the USB port and reboot the router. Then access the web-based interface, go to the **Connections Setup / LAN** page, and change the value of the **IP address** field on the **IPv4** tab (for example, specify the value `192.168.2.1`). Wait until the router is rebooted.

13 For some models of USB modems it is required to disable the PIN code check on the SIM card prior to connecting the USB modem to the router.

Basic Settings

On the **USB Modem / Basic Settings** page, you can view data on the USB modem connected to the router and enable/disable the function for automatic creation of 3G/LTE WAN connection upon plugging a USB modem into the router.

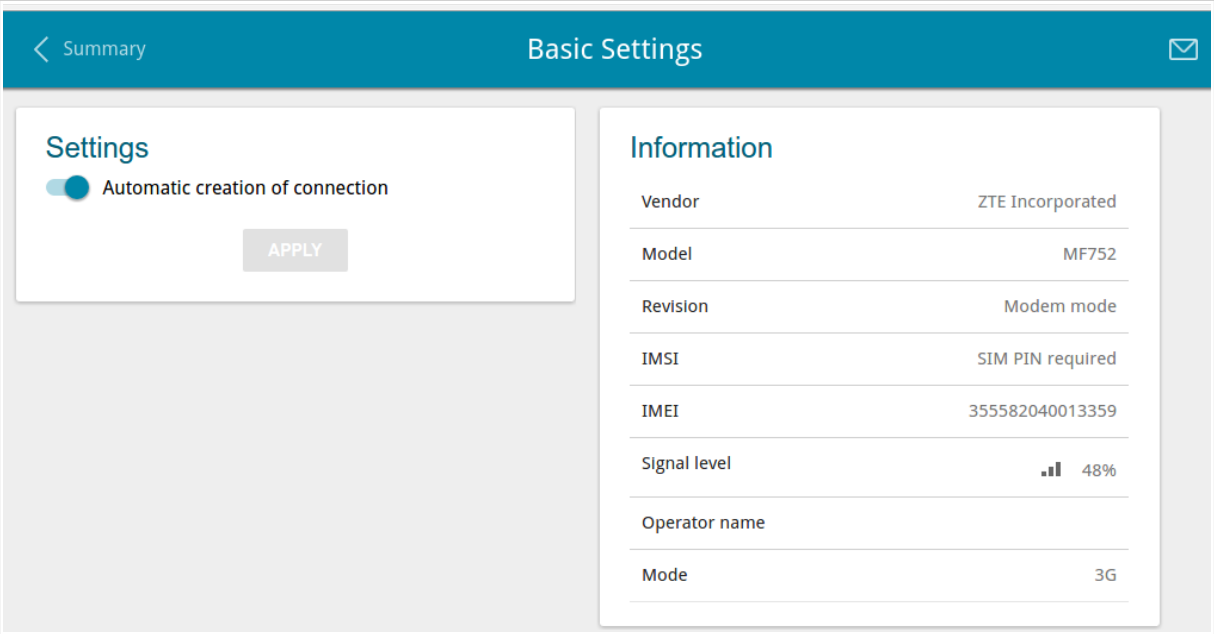


*Figure 120. The **USB Modem / Basic Settings** page.*

If the **Automatic creation of connection** switch is moved to the right and the PIN code check for the SIM card inserted into your USB modem is disabled, then an active WAN connection with default settings (for LTE modems) or the operator's settings (for GSM modems) will be automatically created when plugging the USB modem into the router. The connection will be displayed on the **Connections Setup / WAN** page.

If you don't want to use this function, move the **Automatic creation of connection** switch to the right and click the **APPLY** button.

When a USB modem is connected to the router, the following data are displayed in the **Information** section:

Parameter	Description
Vendor	The manufacturer of your USB modem.
Model	The alphanumeric code of the model of your USB modem.
Revision	The revision of the firmware of your USB modem.
IMSI	The code stored in the SIM card inserted to your USB modem.
IMEI	The code stored in the memory of the USB modem.

Parameter	Description
Signal level	The signal level at the input of the modem's receiver. The zero signal level shows that you are out of the coverage area of the selected operator's network.
Operator name	When the needed network is available, the name of the operator is displayed in this field.
Mode	A type of the network to which the USB modem is connected.

PIN

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

The operations presented on this page are unavailable for some models of USB modems.

The current state of the SIM card inserted into your USB modem is displayed in the **Status** field. If the PIN code is entered incorrectly or the PIN code is not entered when the PIN code check is enabled, the **Device is locked** value is displayed in the **Status** field. If the PIN code is entered correctly or the PIN check is disabled, the **Device is unlocked** value is displayed in the **Status** field.

If the PIN code check for the SIM card inserted into your USB modem is not disabled, the **Yes** value is displayed in the **PIN code request** field. If the PIN check is disabled, the **No** value is displayed in the **PIN code request** field.

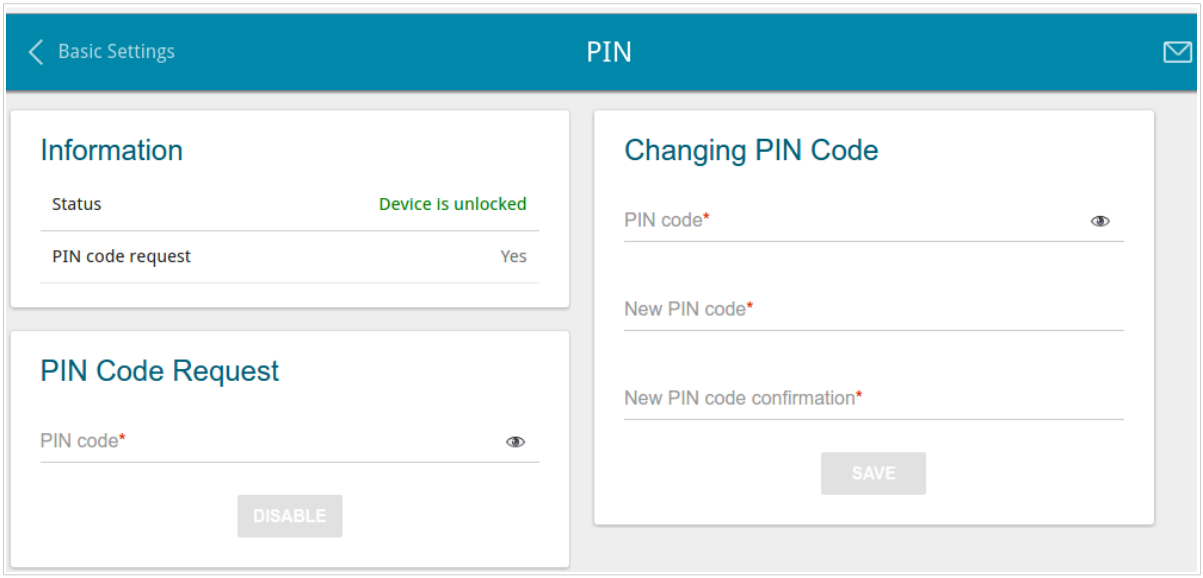


*Figure 121. The **USB Modem / PIN** page.*

To disable the PIN code check, in the **PIN Code Request** section, enter the current PIN code in the **PIN code** field and click the **DISABLE** button (the button is displayed if the PIN code check is enabled).

To enable the PIN code check, in the **PIN Code Request** section, enter the PIN code used before disabling the check in the **PIN code** field and click the **ENABLE** button (the button is displayed if the PIN code check is disabled).

To change the PIN code, in the **Changing PIN Code** section, enter the current code in the **PIN code** field, then enter a new code in the **New PIN code** and **New PIN code confirmation** fields and click the **SAVE** button.

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

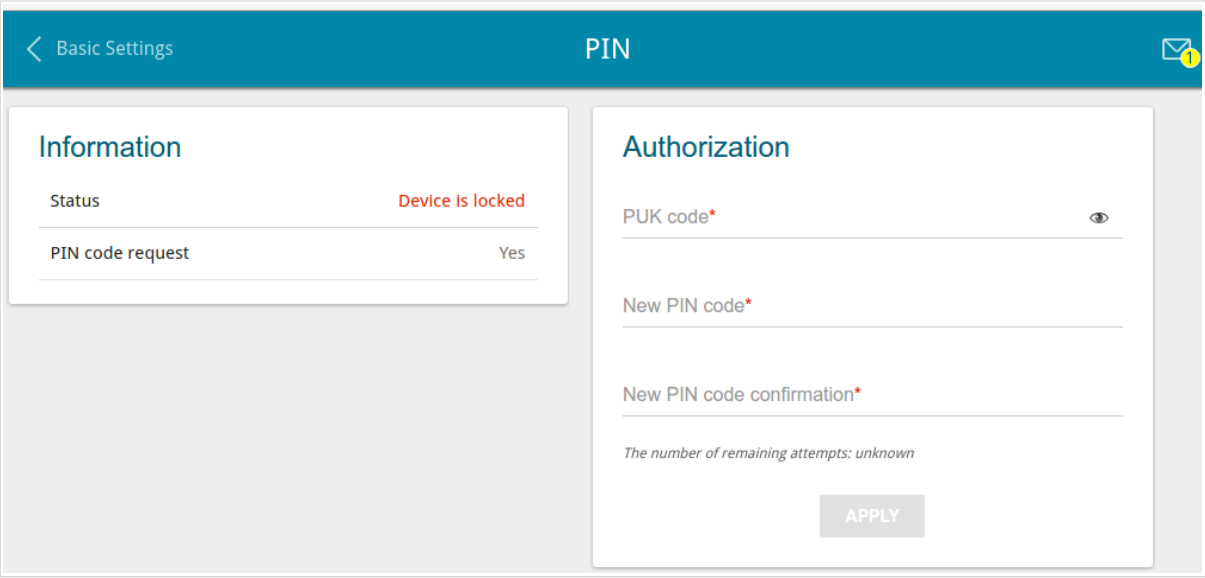


*Figure 122. The **USB Modem / PIN** page. The PUK code request.*

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

Advanced

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

- define interface groups
- allow the router to connect to a private Ethernet line
- add name servers
- configure a DDNS service
- define static routes
- configure TR-069 client
- create rules for remote access to the web-based interface
- enable the UPnP IGD protocol
- edit the ADSL connection parameters
- allow the router to use IGMP
- allow the router to use RTSP, enable the SIP ALG, the PPPoE/PPTP/L2TP/IPsec pass through functions for the router.

Interface Grouping

On the **Advanced / Interface Grouping** page, you can create groups consisting of interfaces and ports of the router, for example, for distinguishing different types of traffic. Such a function is mostly used in Triple-play networks.

The **DEFAULT** group is created in the router's system. You cannot edit or delete this group.

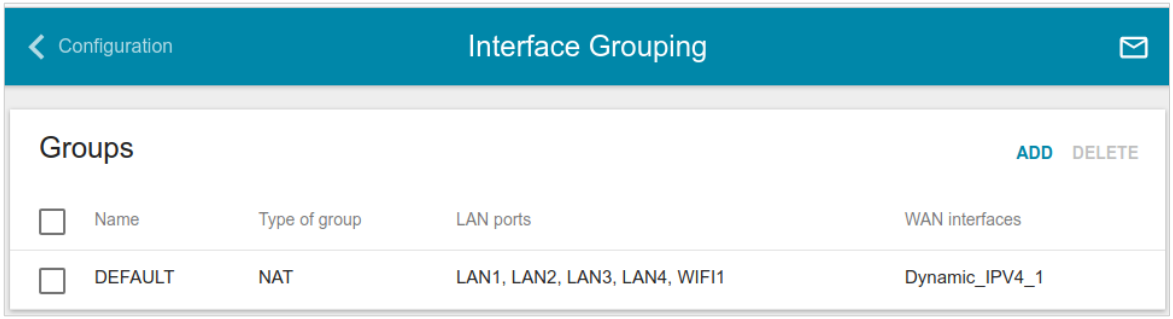


*Figure 123. The **Advanced / Interface Grouping** page.*

To create a new rule for interface grouping (a group of ports), click the **ADD** button.

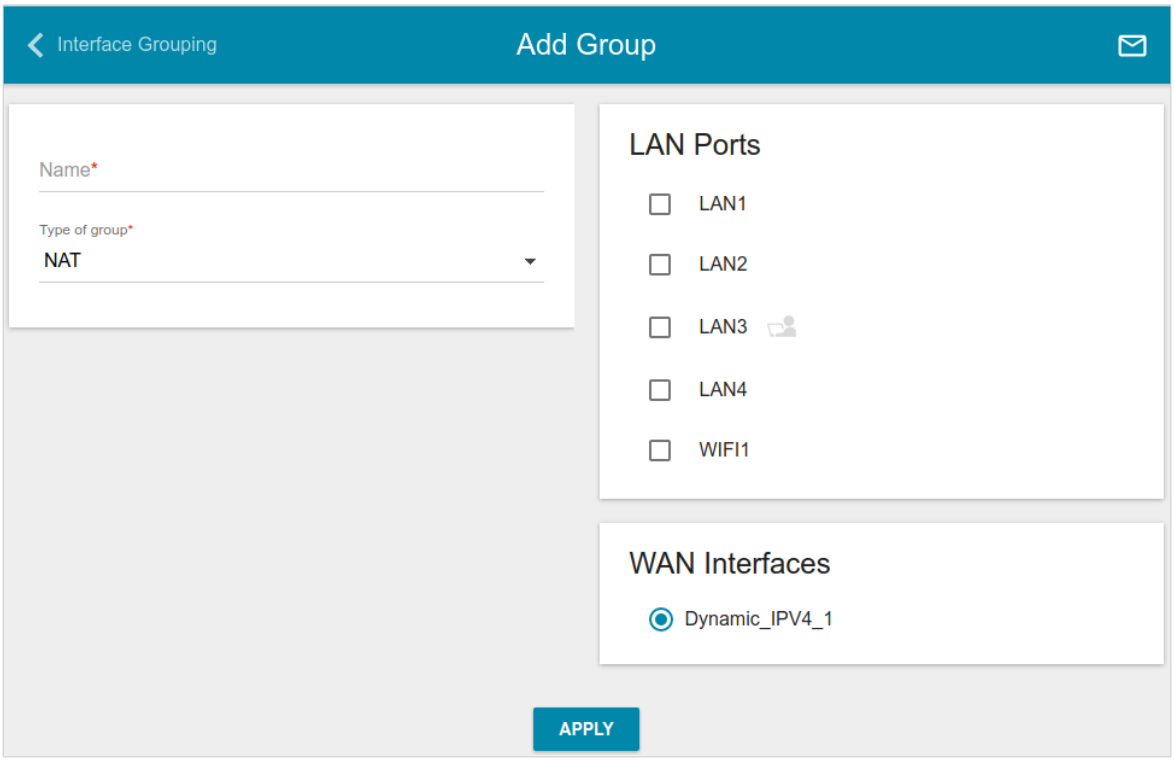


Figure 124. The page for adding a new group of ports.

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

Parameter	Description
Name	A name for the group for easier identification. You can specify any name.
Type of group	The type of the group. **NAT**. The group of this type is an external connection with address translation. It is mostly used to connect to the Internet. **Transparent bridge**. The group of this type is a transparent connection between the router's port and an external connection. It is mostly used to connect IPTV set-top boxes. **Local**. The group of this type is an internal connection of the router's ports. It is mostly used to join devices from the LAN to an isolated network with no access to the Internet.
LAN Ports	In this section the LAN ports and the WLAN interface of the router are displayed. To add an element to the group, select the relevant checkbox. To remove an element from the group, deselect the relevant checkbox.
WAN Interfaces	*Displayed for the **NAT** and **Transparent bridge** types only.* In this section WAN connections of the router are displayed. To add a connection to the group, select the choice of the radio button which corresponds to this connection.

Click the **APPLY** button.

To edit the parameters of a group you created, select the relevant line in the table. On the opened page, change the needed parameters and click the **APPLY** button.

To remove a group you created, select the checkbox located to the left of the relevant line of the table and click the **DELETE** button. Also you can remove a group on the editing page. When you delete a group, ports and interfaces assigned to it are reassigned to the **DEFAULT** group.

WAN Remapping

On the **Advanced / WAN Remapping** page, you can configure the router to connect to a private Ethernet line.

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

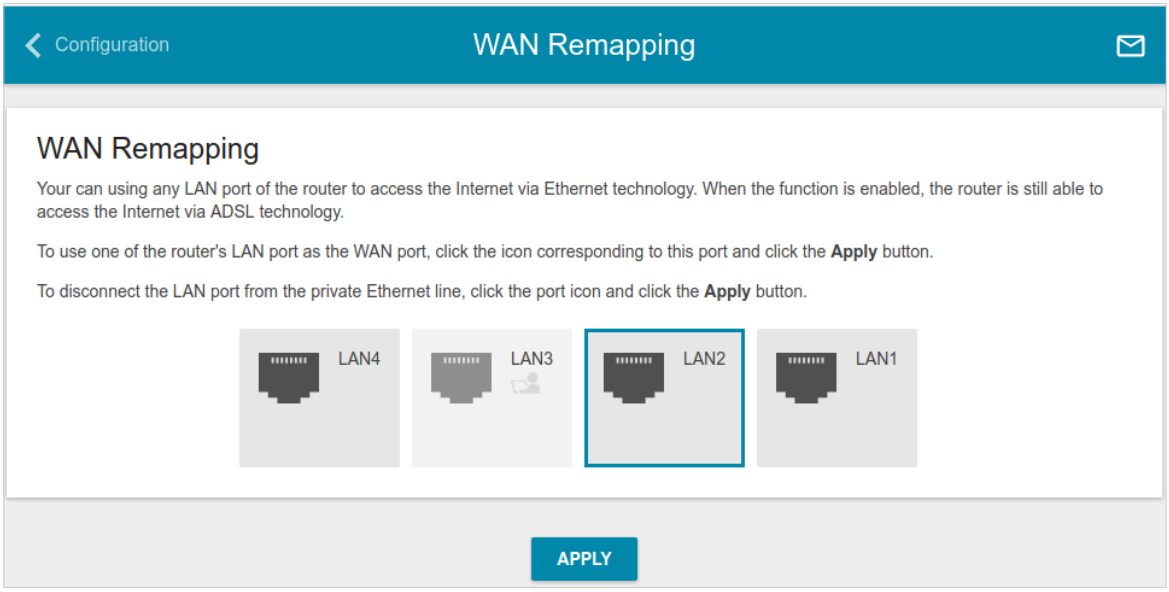


*Figure 125. The **Advanced / WAN Remapping** page.*

To use one of the router's LAN port as the WAN port, click the icon corresponding to this port and click the **APPLY** button. Port configured as the WAN port is highlighted in teal.

If in the future you need to disconnect the LAN port from the private Ethernet line, click the icon highlighted in teal and click the **APPLY** button.

DNS

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

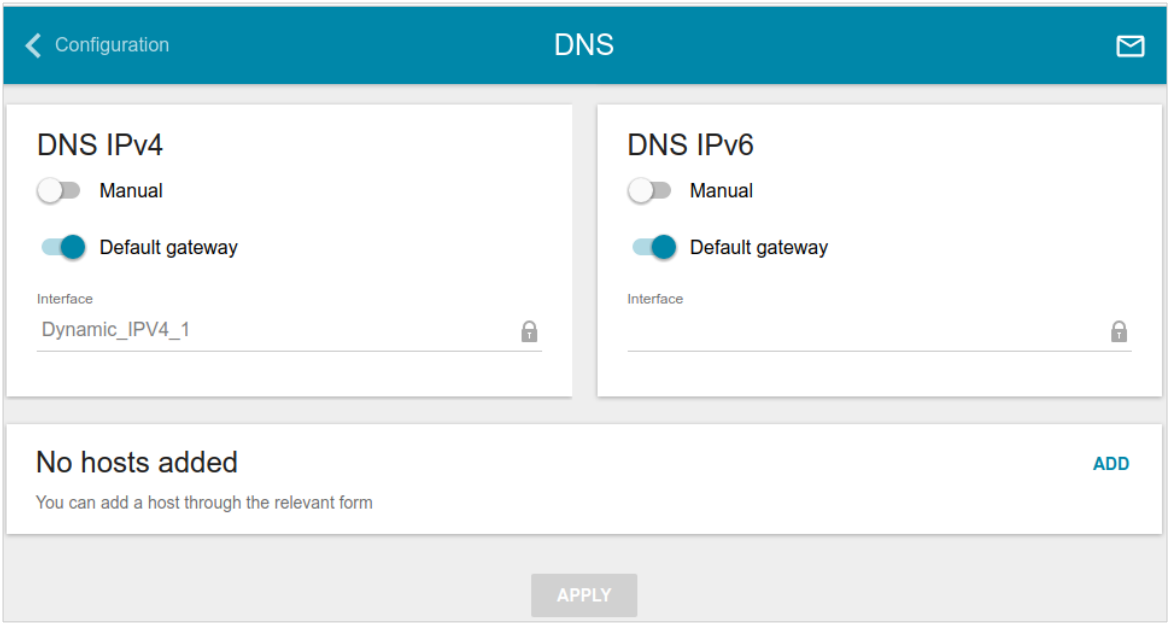


*Figure 126. The **Advanced / DNS** page.*

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).

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, move the **Manual** switch to the left (use the **DNS IPv4** section for IPv4 and the **DNS IPv6** section for IPv6). Then move the **Default gateway** switch to the left and from the **Interface** drop-down list select a WAN connection which will be used to obtain addresses of DNS servers automatically. If you want the router to use the default WAN connection to obtain addresses of DNS servers, move the **Default gateway** switch to the right. Then click the **APPLY** button.

To specify a DNS server manually, move the **Manual** switch to the right (use the **DNS IPv4** section for IPv4 and the **DNS IPv6** section for IPv6). In the **Name Servers IPv4** or **Name Servers IPv6** section, click the **ADD SERVER** button, and in the line displayed, enter an IP address of the DNS server. Then click the **APPLY** button.

To remove a DNS server from the page, click the **Delete** icon (×) in the line of the address and then click the **APPLY** button.

If needed, you can add your own address resource record. To do this, click the **ADD** button.

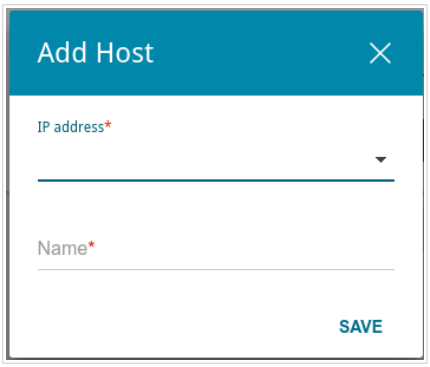


Figure 127. The window for adding a DNS record.

In the **IP address** field, specify a host from the internal or external network. You can choose a device connected to the router's LAN at the moment. To do this, select the relevant IP address from the drop-down list (the field will be filled in automatically). In the **Name** field, specify the domain name to which the specified IP address will correspond. Click the **SAVE** button.

To edit an existing record, select the relevant line in the table. In the opened window, change the needed parameters and click the **SAVE** button.

To remove a record, select the checkbox located to the left of the relevant line in the table and click the **DELETE** button.

After completing the work with records, click the **APPLY** button.

DDNS

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

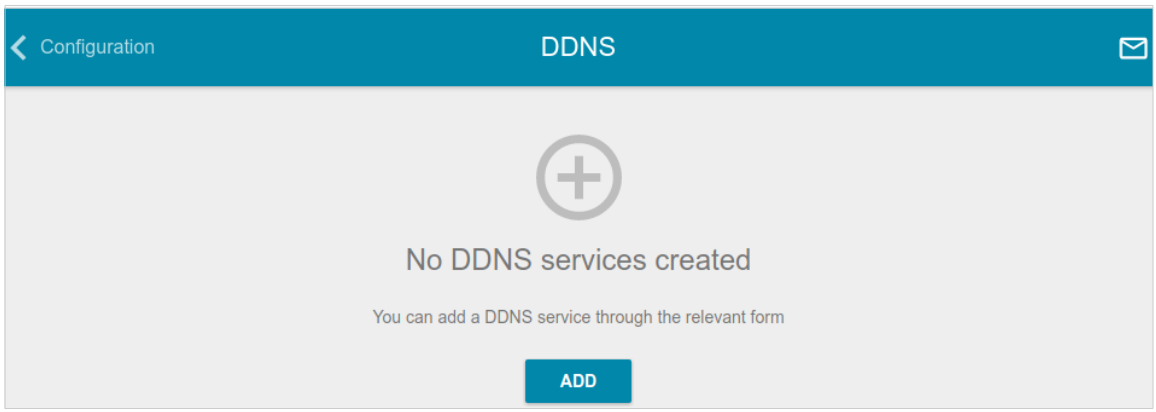


*Figure 128. The **Advanced / DDNS** page.*

To add a new DDNS service, click the **ADD** button.

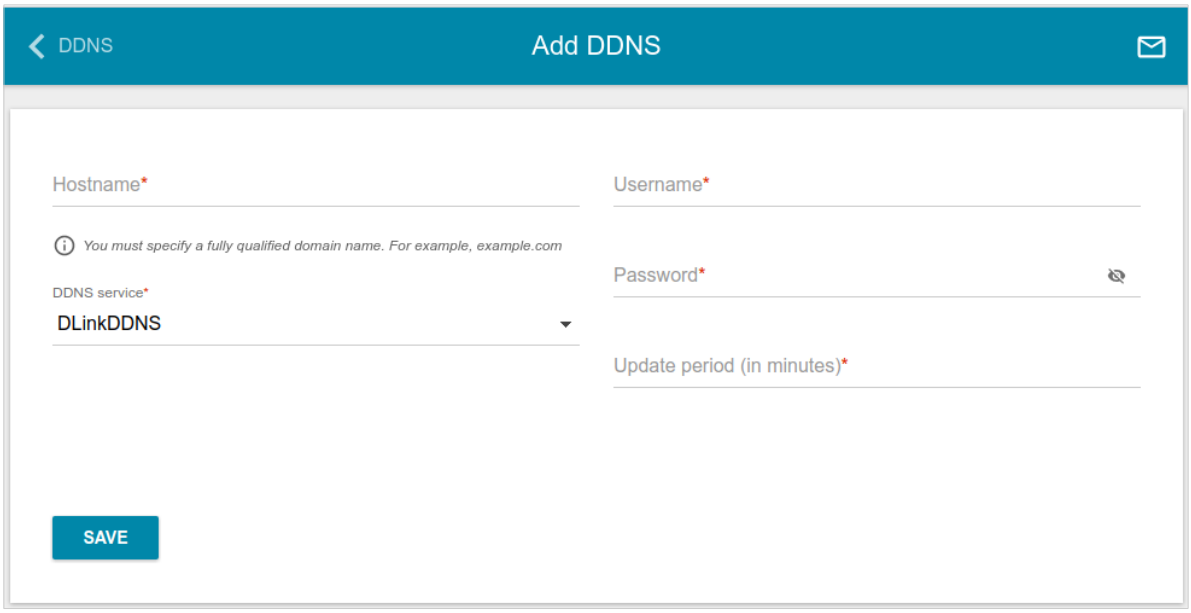


Figure 129. The window for adding a DDNS service.

In the opened window, you can specify the following parameters:

Parameter	Description
Host name	The full domain name registered at your DDNS provider.
DDNS service	Select a DDNS provider from the drop-down list.
Username	The username to authorize for your DDNS provider.
Password	The password to authorize for your DDNS provider. Click the **Show** icon () to display the entered password.
Update period	An interval (in minutes) between sending data on the router's external IP address to the relevant DDNS service.

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

To edit parameters of the existing DDNS service, select the relevant line in the table. In the opened window, change the needed parameters 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 **DELETE** 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.

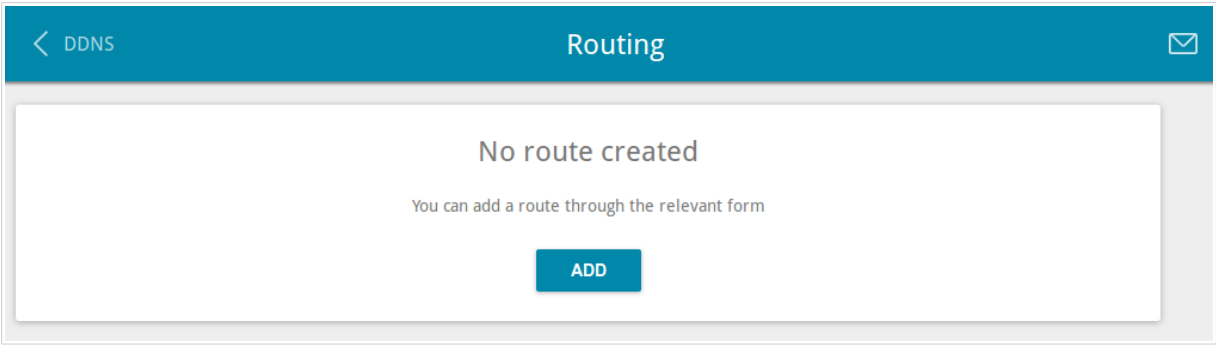


*Figure 130. The **Advanced / Routing** page.*

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

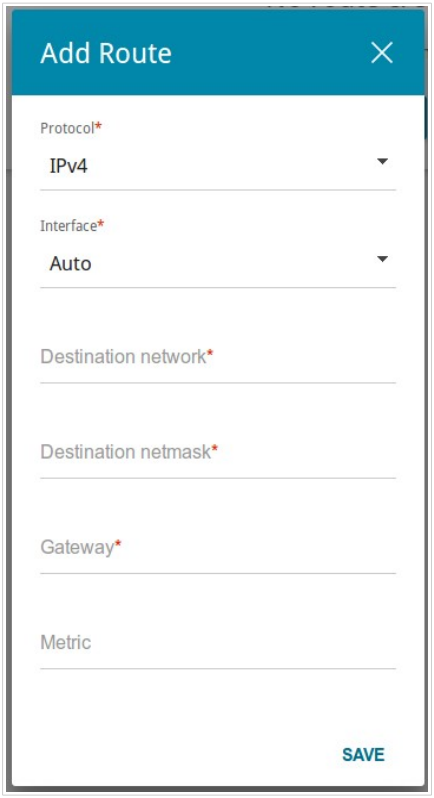


Figure 131. The window for adding a new route.

In the opened window, you can specify the following parameters:

Parameter	Description
Protocol	A protocol that the route will use.
Interface	From the drop-down list, select an interface through which the destination network can be accessed. If you have selected the **Auto** value, the router itself sets the interface on the basis of data on connected networks.
Destination network	A destination network to which this route is assigned. You can specify an IPv4 or IPv6 address. You can specify an IPv6 address (`2001:db8:1234::1`) or an IPv6 address with a prefix (`2001:db8:1234::/64`).
Destination netmask	*For IPv4 protocol only.* The destination network mask.
Gateway	An IP address through which the destination network can be accessed.
Metric	A metric for the route. The lower the value, the higher is the route priority. *Optional*.

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

To edit an existing route, select a relevant line of the table. On the opened page, change the needed parameters 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 **DELETE** 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.

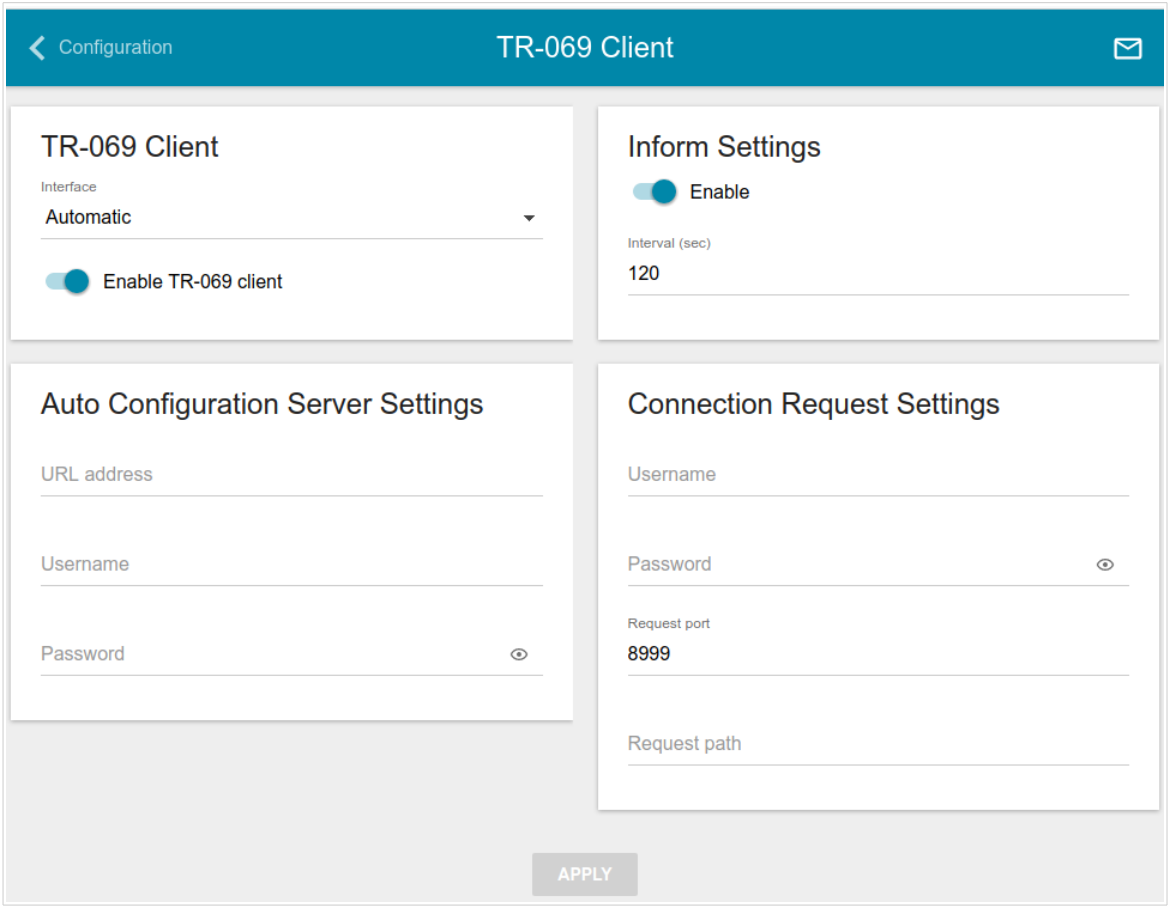


Figure 132. The page for configuring the TR-069 client.

You can specify the following parameters:

Parameter	Description
TR-069 Client	
Interface	The interface which the router uses for communication with the ACS. Leave the **Automatic** value to let the device select the interface basing on the routing table or select another value if required by your ISP.
Enable TR-069 client	Move the switch to the right to enable the TR-069 client.

Parameter	Description
Inform settings	
Enable	Move the switch to the right so the router may send reports (data on the device and network statistics) to the ACS.
Interval	Specify the time period (in seconds) between sending reports.
Auto Configuration Server Settings	
URL address	The URL address of the ACS provided by the ISP.
Username	The username to connect to the ACS.
Password	The password to connect to the ACS. Click the **Show** icon ( ) to display the entered password.
Connection Request Settings	
Username	The username used by the ACS to transfer a connection request to the router.
Password	The password used by the ACS. Click the **Show** icon ( ) to display the entered password.
Request port	The port used by the ACS. By default, the port `8999` is specified.
Request path	The path used by the ACS.

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

Remote Access

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

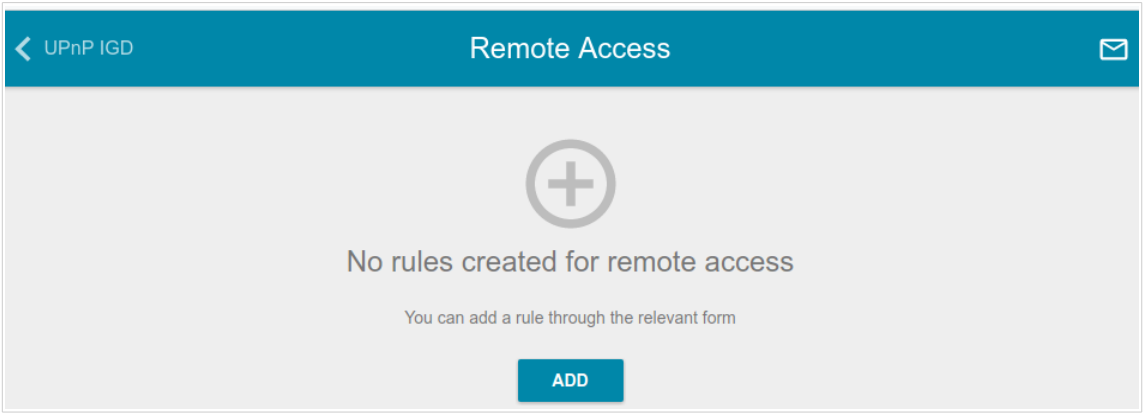


*Figure 133. The **Advanced / Remote Access** page.*

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

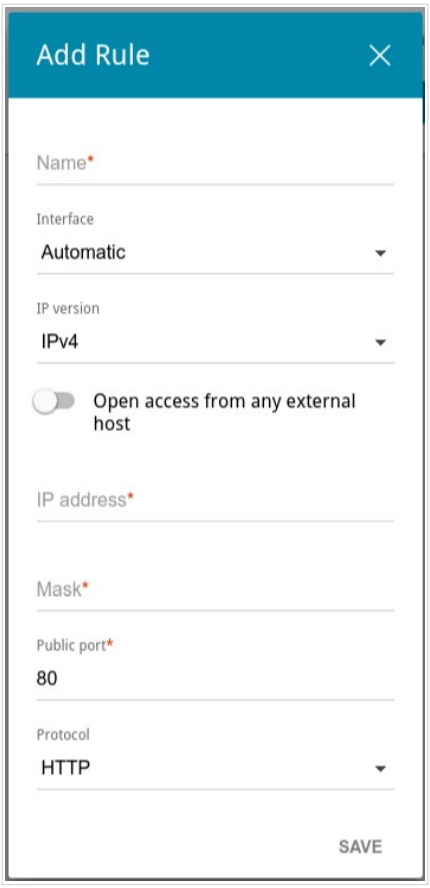


Figure 134. The window for adding a rule for remote management.

In the opened window, you can specify the following parameters:

Parameter	Description
Name	A name for the rule for easier identification. You can specify any name.
Interface	Select a WAN connection to which this rule will be assigned. When the **Automatic** value is selected, the router uses the default connection.
IP version[14]	An IP version to which the rule will be applied. Select the relevant value from the drop-down list.
Open access from any external host	Move the switch to the right to allow access to the router for any host. Upon that the **IP address** and **Mask** fields are not displayed.
IP address	A host or a subnet to which the rule is applied. You can specify an IPv4 or IPv6 address.
Mask	*For the IPv4-based network only.* The mask of the subnet.
Public port	*For the IPv4-based network only.* An external port of the router. You can specify only one port.
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, left-click the relevant rule. In the opened window, change the needed parameters 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 **DELETE** button.

14 Remote access via IPv6 will be implemented in further versions of the firmware.

UPnP IGD

On the **Advanced / UPnP IGD** page, you can enable the UPnP IGD protocol. The router uses the UPnP IGD protocol for automatic configuration of its parameters for network applications requiring an incoming connection to the router.

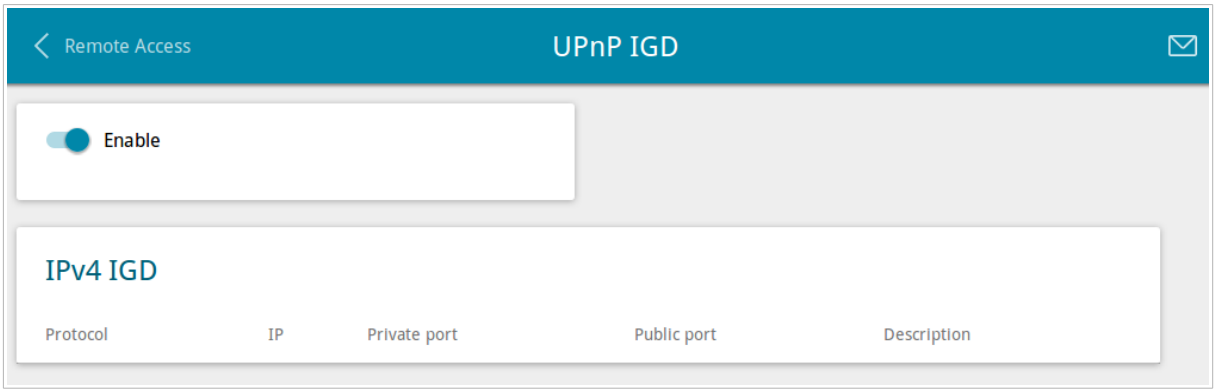


*Figure 135. The **Advanced / UPnP IGD** page.*

If you want to manually specify all parameters needed for network applications, move the **Enable** switch to the left. Then go to the **Firewall / Virtual Servers** page and specify needed settings.

If you want to enable the UPnP IGD protocol in the router, move the **Enable** switch to the right.

When the protocol is enabled, the router's parameters configured automatically are displayed on the page:

Parameter	Description
Protocol	A protocol for network packet transmission.
IP	The IP address of a client from the local area network.
Private port	A port of a client's IP address to which traffic is directed from a public port of the router.
Public port	A public port of the router from which traffic is directed to a client's IP address.
Description	Information transmitted by a client's network application.

xDSL

The **Advanced / xDSL** 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 **APPLY** button.

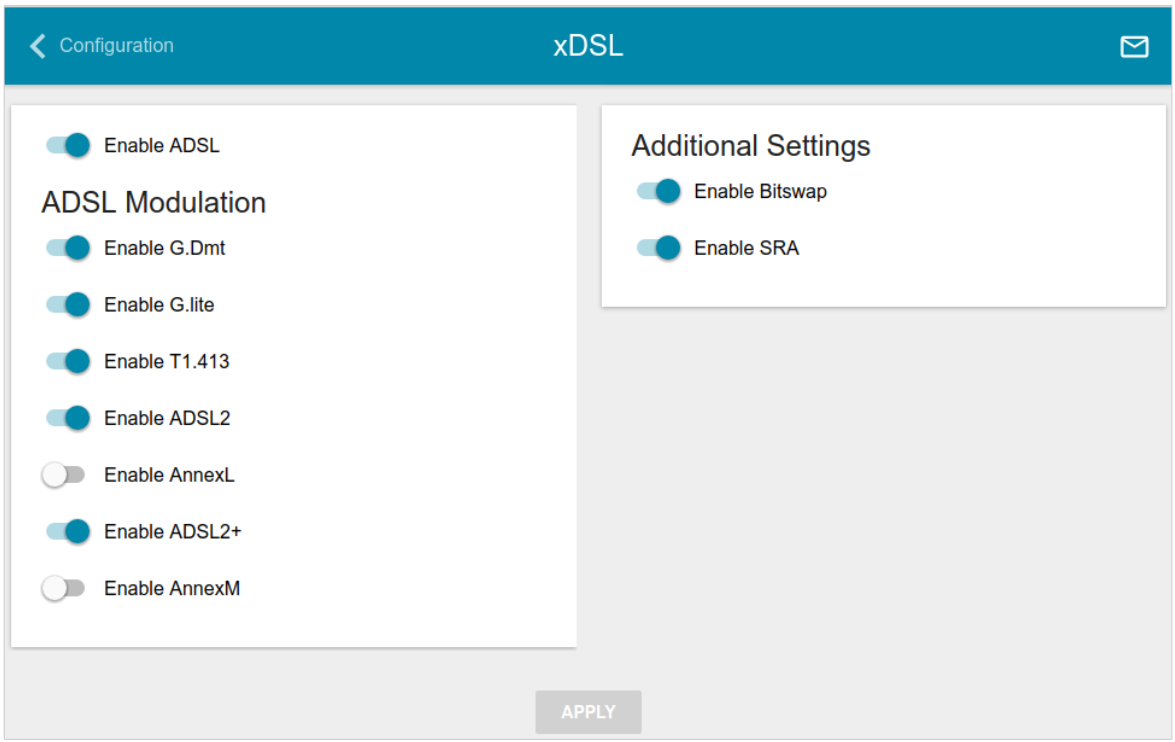


*Figure 136. The **Advanced / xDSL** page.*

IGMP

On the **Advanced / IGMP** page, you can allow the router to use IGMP.

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

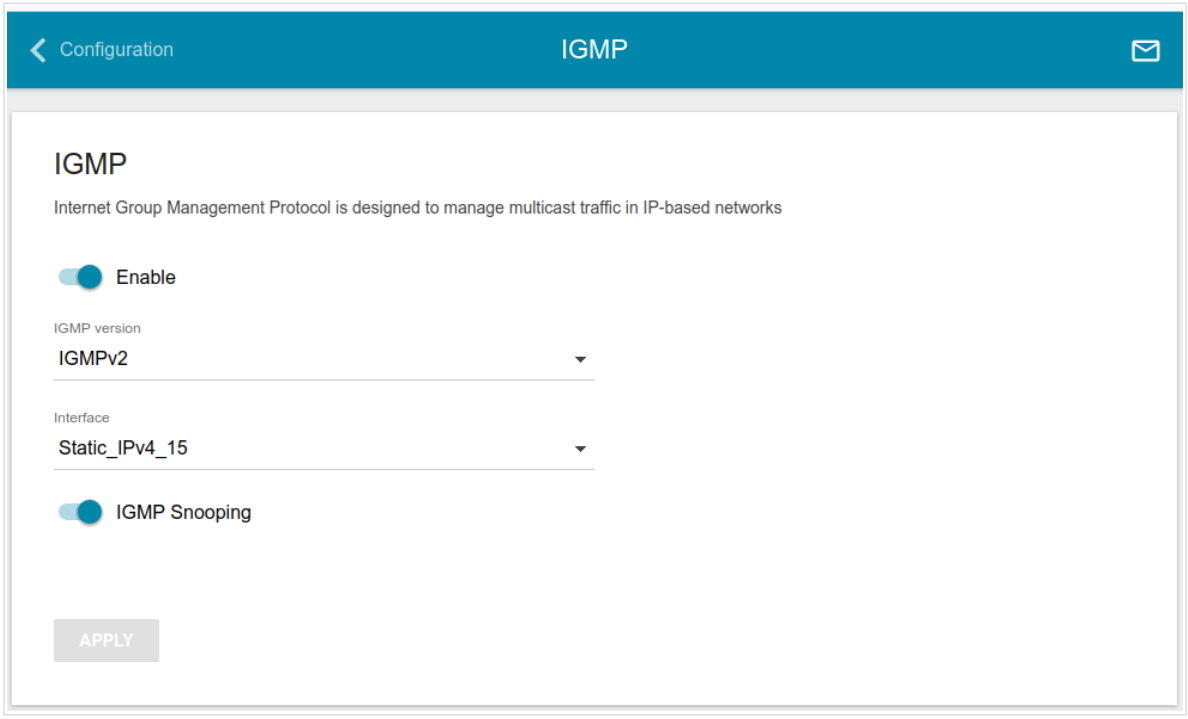


*Figure 137. The **Advanced / IGMP** page.*

The following elements are available on the page:

Parameter	Description
Enable	Move the switch to the right to enable IGMP.
IGMP version	Select a version of IGMP from the drop-down list.
Interface	From the drop-down list, select a connection of the Dynamic IPv4 or Static IPv4 type for which you need to allow multicast traffic (e.g. streaming video).
IGMP Snooping	The IGMP snooping function allows limiting multicast traffic for devices connected to the Ethernet ports of the router. If the switch is moved to the right, multicast traffic is forwarded only to the devices which require it. If the switch is moved to the left, multicast traffic is forwarded to all devices connected to the Ethernet ports of the router.

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

ALG/Passthrough

On the **Advanced / ALG/Passthrough** page, you can allow the router to use RTSP, enable the SIP ALG and PPPoE/PPTP/L2TP/IPsec pass through functions.

SIP is used for creating, modifying, and terminating communication sessions. This protocol allows telephone calls via the Internet.

RTSP is used for real-time streaming multimedia data delivery. This protocol allows some applications to receive streaming audio/video from the Internet.

The PPPoE pass through function allows PPPoE clients of computers from your LAN to connect to the Internet through connections of the router.

The PPTP pass through, L2TP pass through and IPsec pass through functions allow VPN PPTP, L2TP and IPsec traffic to pass through the router so that clients from your LAN can establish relevant connections with remote networks.

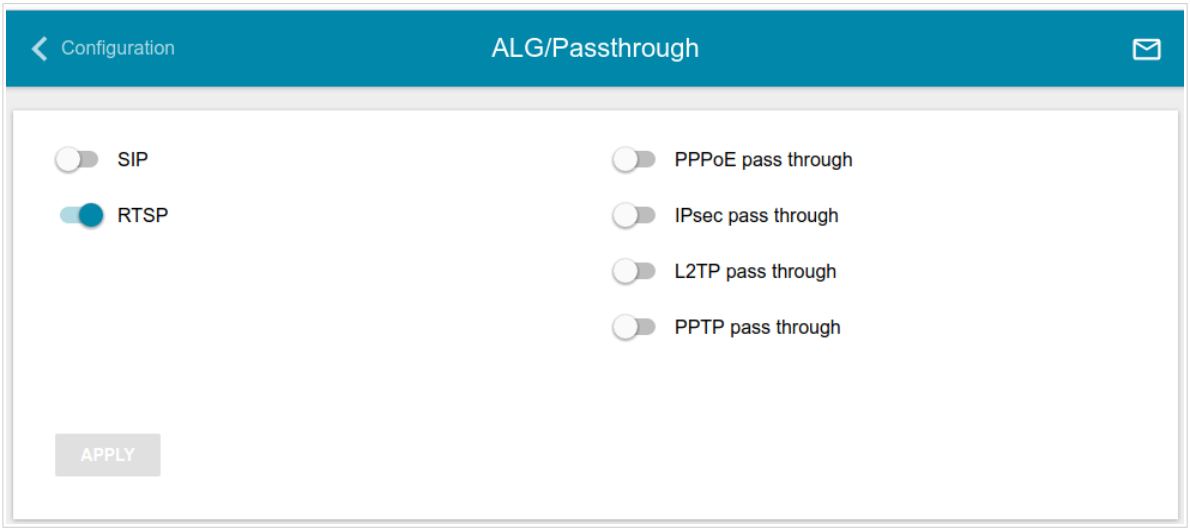


*Figure 138. The **Advanced / ALG/Passthrough** page.*

The following elements are available on the page:

Parameter	Description
SIP	Move the switch to the right to enable SIP. Such a setting allows using the SIP ALG function. This function allows VoIP traffic to pass through the NAT-enabled router.[15]
RTSP	Move the switch to the right to enable RTSP. Such a setting allows managing media stream: fast forward streaming audio/video, pause and start it.
PPPoE pass through	Move the switch to the right to enable the PPPoE pass through function.
IPsec pass through	Move the switch to the right to enable the IPsec pass through function.
L2TP pass through	Move the switch to the right to enable the L2TP pass through function.
PPTP pass through	Move the switch to the right to enable the PPTP pass through function.

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

15 On the **Connections Setup / WAN** page, create a WAN connection, move the **SIP** switch to the right on the **Advanced / ALG/Passthrough** page, connect an Ethernet cable between a LAN port of the router and the IP phone. Specify SIP parameters on the IP phone and configure it to obtain an IP address automatically (as DHCP client).

Firewall

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

- add rules for IP filtering
- create virtual servers
- define a DMZ
- configure the MAC filter
- specify restrictions on access to certain web sites.

IP Filter

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

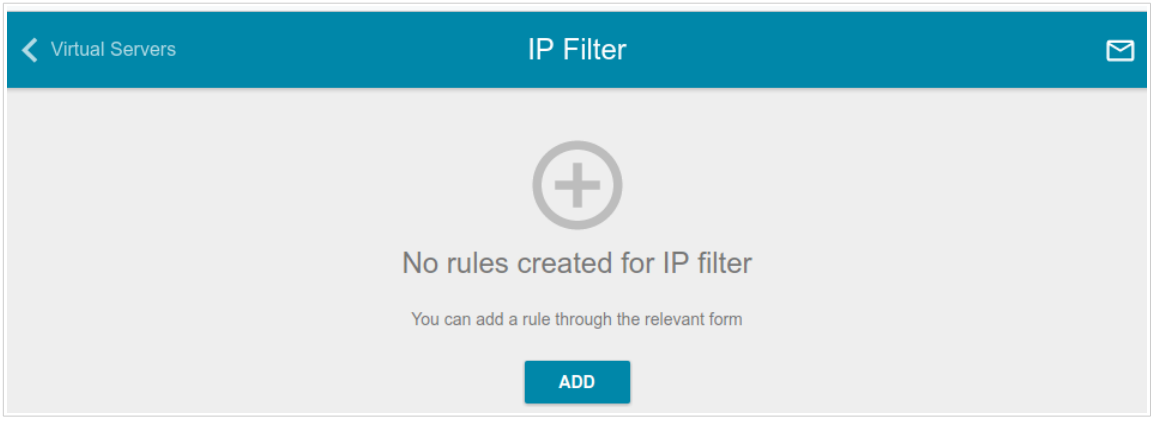


*Figure 139. The **Firewall / IP Filter** page.*

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

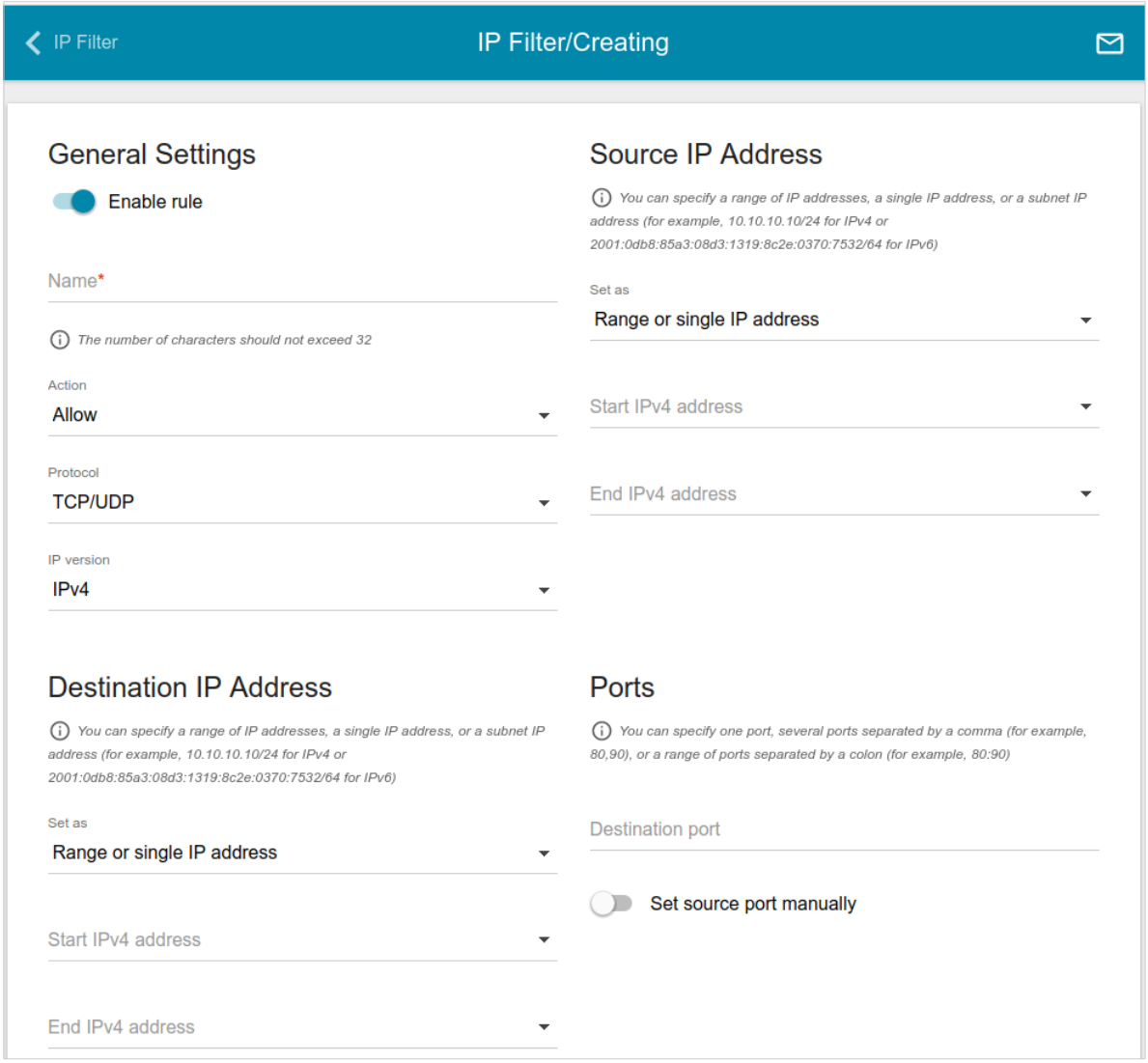


Figure 140. The page for adding a rule for IP filtering.

You can specify the following parameters:

Parameter	Description
General Settings	
Enable rule	Move the switch to the right to enable the rule. Move the switch to the left to disable the rule.
Name	A name for the rule for easier identification. You can specify any name.
Action	Select an action for the rule. **Allow**: Allows packet transmission in accordance with the criteria specified by the rule. **Deny**: Denies packet transmission in accordance with the criteria specified by the rule.

Parameter	Description
Protocol	A protocol for network packet transmission. Select a value from the drop-down list.
IP version	An IP version to which the rule will be applied. Select the relevant value from the drop-down list.
Source IP Address	
Set as	Select the needed value from the drop-down list.
Start IPv4 address / Start IPv6 address	The source host start IPv4 or IPv6 address. If it is necessary to specify a single address, leave the **End IPv4 address / End IPv6 address** field blank. You can choose a device connected to the router's LAN at the moment. To do this, select the relevant IPv4 or IPv6 address from the drop-down list (the field will be filled in automatically).
End IPv4 address / End IPv6 address	The source host end IPv4 or IPv6 address.
Subnet IPv4 address / Subnet IPv6 address	The source subnet IPv4 or IPv6 address. The field is displayed when the **Subnet** value is selected from the **Set as** drop-down list.
Destination IP Address	
Set as	Select the needed value from the drop-down list.
Start IPv4 address / Start IPv6 address	The destination host start IPv4 or IPv6 address. If it is necessary to specify a single address, leave the **End IPv4 address / End IPv6 address** field blank. You can choose a device connected to the router's LAN at the moment. To do this, select the relevant IPv4 or IPv6 address from the drop-down list (the field will be filled in automatically).
End IPv4 address / End IPv6 address	The destination host end IPv4 or IPv6 address.
Subnet IPv4 address / Subnet IPv6 address	The destination subnet IPv4 or IPv6 address. The field is displayed when the **Subnet** value is selected from the **Set as** drop-down list.
Ports	
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.

Parameter	Description
Set source port manually	Move the switch to the right to specify a port of the source IP address manually. Upon that the **Source port** field is displayed.
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.

Click the **APPLY** button.

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

To remove a rule, select the checkbox located to the left of the relevant line of the table and click the **DELETE** button. Also you can remove a rule on the editing page.

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.

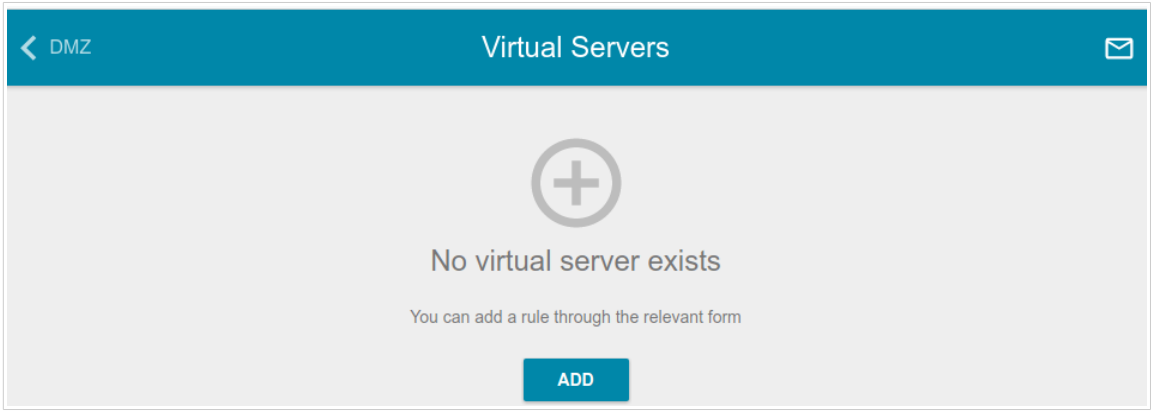


*Figure 141. The **Firewall / Virtual Servers** page.*

To create a new virtual server, click the **ADD** button.

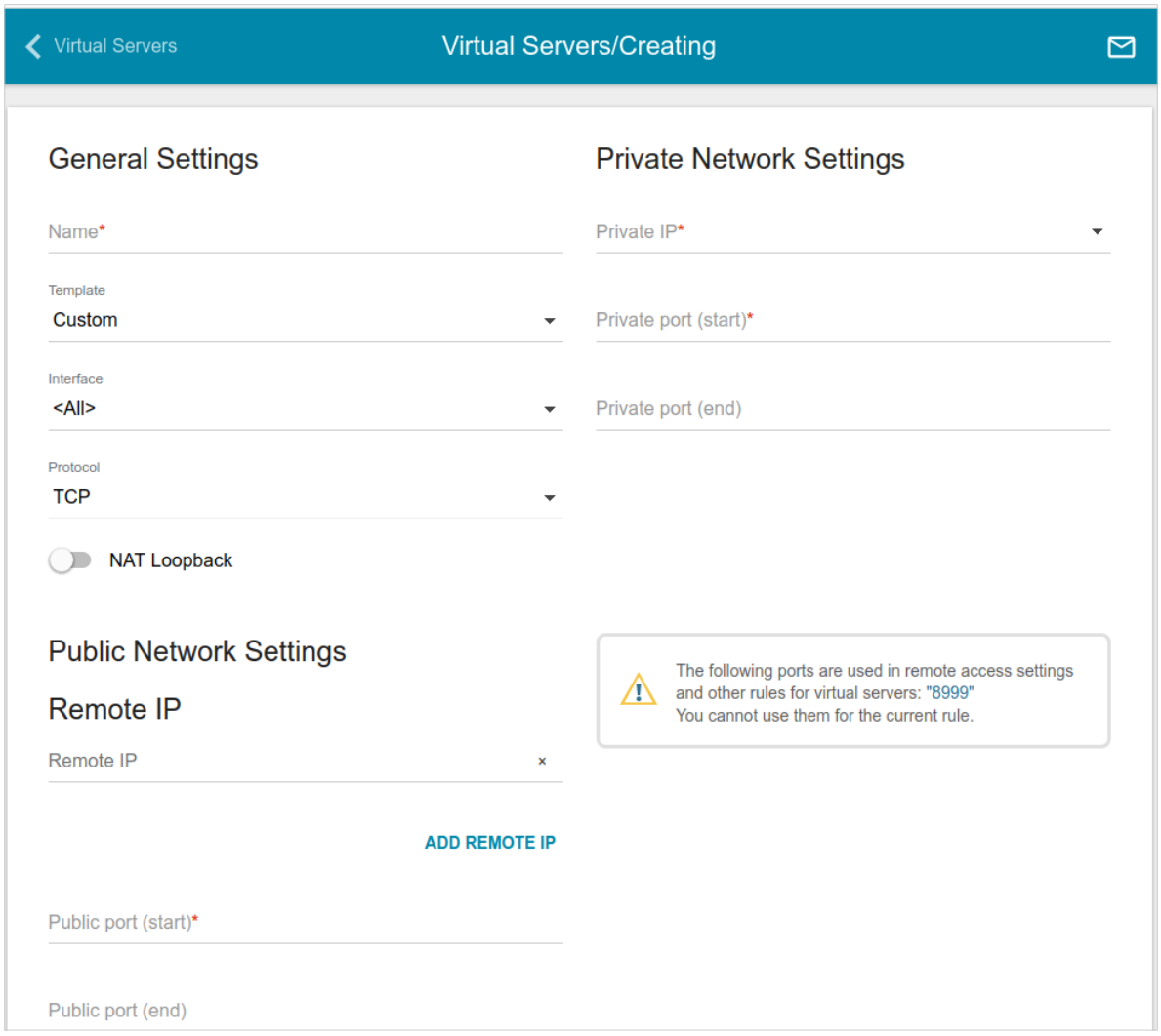


Figure 142. The page for adding a virtual server.

You can specify the following parameters:

Parameter	Description
General Settings	
Name	A name for the virtual server for easier identification. You can specify any name.
Template	Select a virtual server template from the drop-down list, or select **Custom** to specify all parameters of the new virtual server manually.
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.
NAT Loopback	Move the switch to the right in order to let the users of the router's LAN access the local server using the external IP address of the router or its DDNS name (if a DDNS service is configured). Users from the external network access the router using the same address (or DDNS name).
Public Network Settings	
Remote IP	Enter the IP address of the server from the external network. To add one more IP address, click the **ADD REMOTE IP** button and enter the address in the displayed line. To remove the IP address, click the **Delete** icon (×) in the line of the address.
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 in the **Private Network Settings** section. 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 Network Settings	
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).

Parameter	Description
Private port (start)/ 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 (start)** field and leave the **Private port (end)** field blank.

Click the **APPLY** button.

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

To remove a server, select the checkbox located to the left of the relevant line of the table and click the **DELETE** button. Also you can remove a server on the editing page.

DMZ

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

On the **Firewall / DMZ** page, you can specify the IP address of the DMZ host.

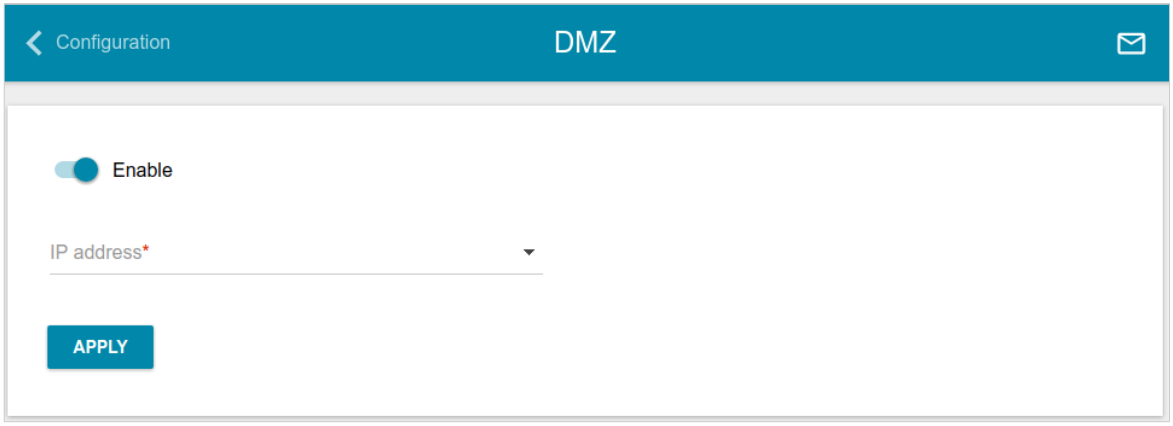


*Figure 143. The **Firewall / DMZ** page.*

To enable the DMZ, move the **Enable** switch to the right.

Enter the IP address of a host from your network in the **IP address** field. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list (the field will be filled in automatically).

Click the **APPLY** 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, move the **Enable** switch to the left and click the **APPLY** button.

MAC Filter

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

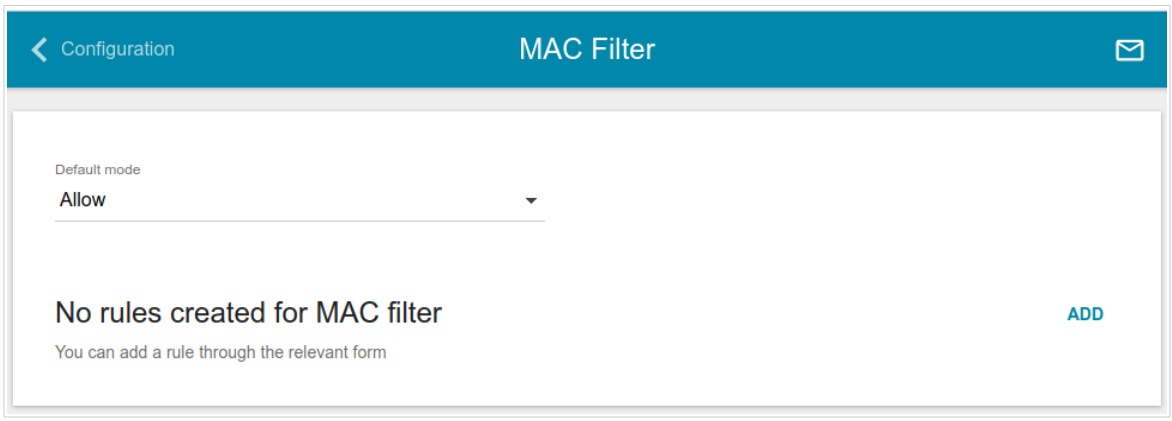


*Figure 144. The **Firewall / MAC Filter** page.*

Select the needed action from the drop-down list in the **Default mode** section to configure filtering for all devices of the router's network:

- **Allow**: Allows access to the router's network and to the Internet for devices (the value is specified by default);
- **Deny**: Blocks access to the router's network for devices.

If you need to specify a filtering mode for each device separately, create a relevant rule. To do this, click the **ADD** button.

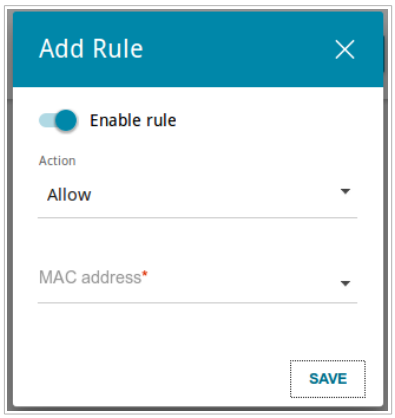


Figure 145. The window for adding a rule for the MAC filter.

In the opened window, you can specify the following parameters:

Parameter	Description
Enable rule	Move the switch to the right to enable the rule. Move the switch to the left to disable the rule.
Action	Select an action for the rule. **Deny**: Blocks access to the router's network for the device with the specified MAC address. **Allow**: Allows access to the router's network and to the Internet for the device with the specified MAC address when the rules on the **Firewall / IP Filter** page block access for this device.
MAC address	The MAC address of a device from the router's LAN. 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 drop-down list (the field will be filled in automatically).

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

To edit a rule, select the relevant line in the table. In the opened window, change the needed parameters and click the **SAVE** button.

To remove a rule, select the checkbox located to the left of the relevant line of the table and click the **DELETE** button. Also you can remove a rule in the editing window.

URL Filter

On the **Firewall / URL Filter** page, you can specify restrictions on access to certain web sites.

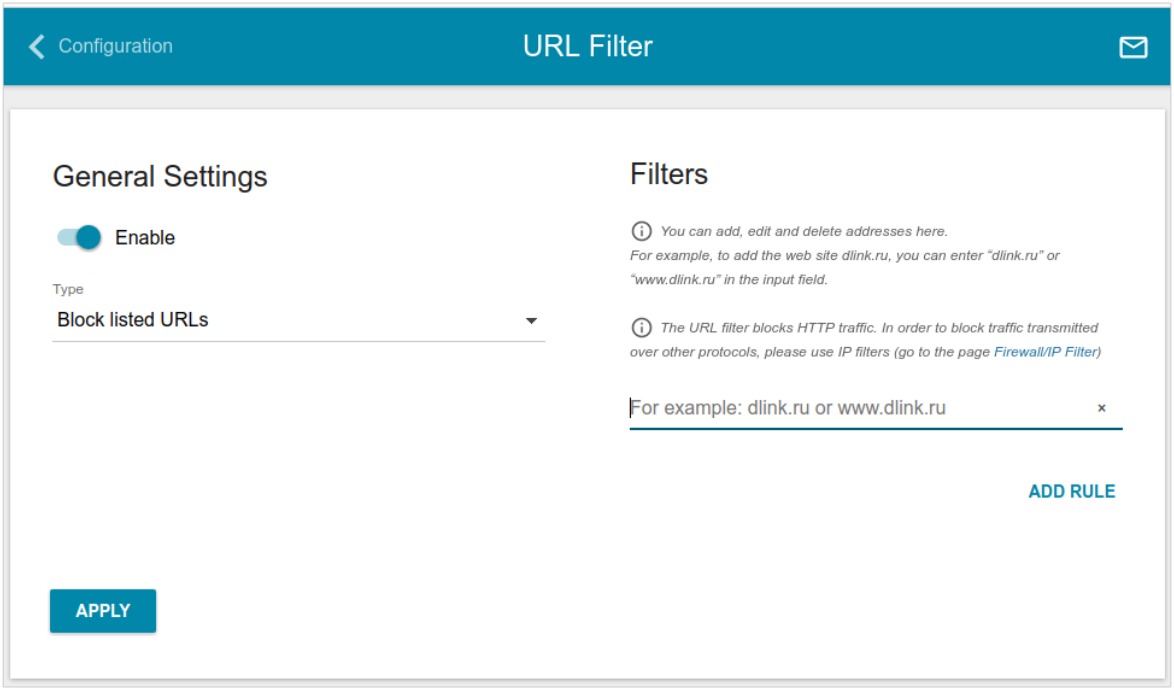


*Figure 146. The **Firewall / URL Filter** page.*

To enable the URL filter, in the **General Settings** section, move the **Enable** switch to the right, then select the needed mode from the **Type** drop-down list:

- **Block listed URLs**: when this value is selected, the router blocks access to all addresses specified in the **Filters** section;
- **Block all URLs except listed**: when this value is selected, the router allows access to addresses specified in the **Filters** section and blocks access to all other web sites.

Click the **APPLY** button.

To specify URL addresses to which the selected filtering mode will be applied, in the **Filters** section, click the **ADD RULE** button and enter a relevant address in the displayed line. Then click the **APPLY** button.

To remove an address from the list of URL addresses, click the **Delete** icon (×) in the line of the relevant URL address. Then click the **APPLY** button.

System

In this menu you can do the following:

- change the password used to access the router's settings
- restore the factory default settings
- create a backup of the router's configuration
- restore the router's configuration from a previously saved file
- save the current settings to the non-volatile memory
- reboot the router
- change the web-based interface language
- update the firmware of the router
- configure automatic notification on new firmware version
- view the system log; configure sending the system log to a remote host and/or a USB storage connected to the router
- check availability of a host on the Internet through the web-based interface of the router
- trace the route to a host
- allow or forbid access to the router via TELNET
- configure automatic synchronization of the system time or manually configure the date and time for the router.

Configuration

On the **System / Configuration** 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, restore the factory defaults, backup the current configuration, restore the router's configuration from a previously created file, save the changed settings to the non-volatile memory, reboot the device, or change the web-based interface language.

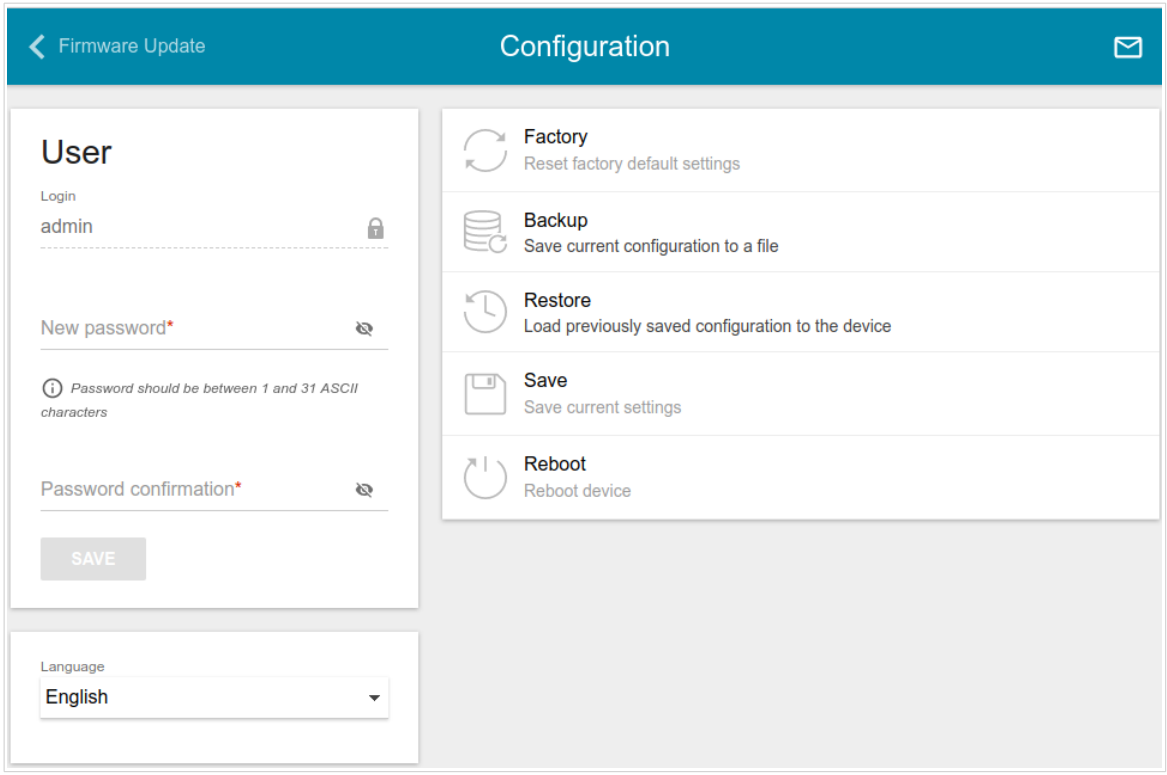


*Figure 147. The **System / Configuration** page.*

In order to change the password for the administrator account, in the **User** section, enter a new password in the **Password** and **Password confirmation** fields. Click the **Show** icon ( ) to display the entered password. Use digits, Latin letters (uppercase and/or lowercase), and other characters available in the US keyboard layout.[16] Then click the **SAVE** button.

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

To change the web-based interface language, select the needed value from the **Language** drop-down list.

16 0-9, A-Z, a-z, space, !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~.

The following buttons are also available on the page:

Control	Description
Factory	Click the button to restore the factory default settings. Also you can restore the factory defaults via the hardware **RESET** button (see the ***Back and Bottom Panels*** section, page 13).
Backup	Click the button to save the configuration (all settings of the router) to your PC. The configuration backup will be stored in the download location of your web browser.
Restore	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.
Save	Click button to save settings to the non-volatile memory. The router saves changed settings automatically. If changed settings have not been saved automatically, a notification is displayed in the top right part of the page.
Reboot	Click the button to reboot the device. All unsaved changes will be lost after the device's reboot.

Firmware Update

On the **System / Firmware Update** page, you can update the firmware of the router and configure the automatic check for updates of the router's firmware.

Update the firmware only when the router is connected to your PC via a wired connection.

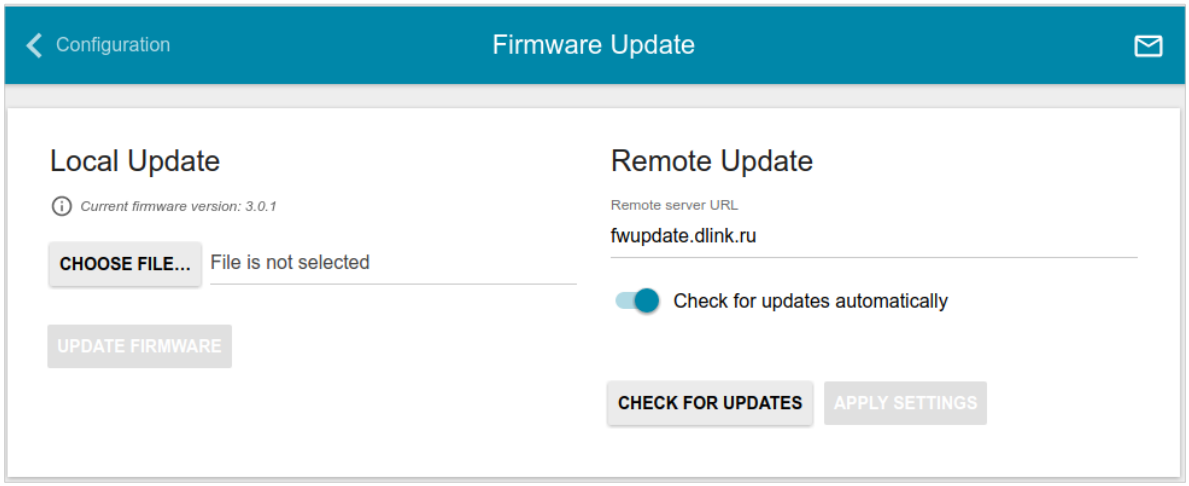


*Figure 148. The **System / Firmware Update** page.*

The current version of the router's firmware is displayed in the **Current firmware version** field.

By default, the automatic check for the router's firmware updates is enabled. If a firmware update is available, a notification will be displayed in the top right corner of the page.

To disable the automatic check for firmware updates, in the **Remote update** section, move the **Check for updates automatically** switch to the left and click the **APPLY SETTINGS** button.

To enable the automatic check for firmware updates, in the **Remote update** section, move the **Check for updates automatically** switch to the right and click the **APPLY SETTINGS** button. By default, in the **Remote server URL** field, the D-Link update server address (`fwupdate.dlink.ru`) is specified.

You can update the firmware of the router locally (from the hard drive of your PC) or remotely (from the update server).

Local Update

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

To update the firmware of the router locally, follow the next steps:

1. Download a new version of the firmware from www.dlink.ru.
2. Click the **CHOOSE FILE** button in the **Local Update** section on the **System / Firmware Update** page to locate the new firmware file.
3. Click the **UPDATE FIRMWARE** button.
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.

If after updating the firmware the router doesn't work correctly, please restore the factory default settings. To do this, click the **Factory** button on the **System / Configuration** page. Wait until the router is rebooted.

Remote Update

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

To update the firmware of the router remotely, follow the next steps:

1. On the **System / Firmware Update** page, in the **Remote Update** section, click the **CHECK FOR UPDATES** button to check if a newer firmware version exists.
2. Click the **UPDATE FIRMWARE** button (the button is displayed if a newer version of the firmware is available).
3. Wait until the router is rebooted (about one and a half or two minutes).
4. Log into the web-based interface using the login (**admin**) and the current password.

If after updating the firmware the router doesn't work correctly, please restore the factory default settings. To do this, click the **Factory** button on the **System / Configuration** page. Wait until the router is rebooted.

Log

On the **System / Log** page, you can set the system log options and configure sending the system log to a remote host and/or a USB storage[17] connected to the router.

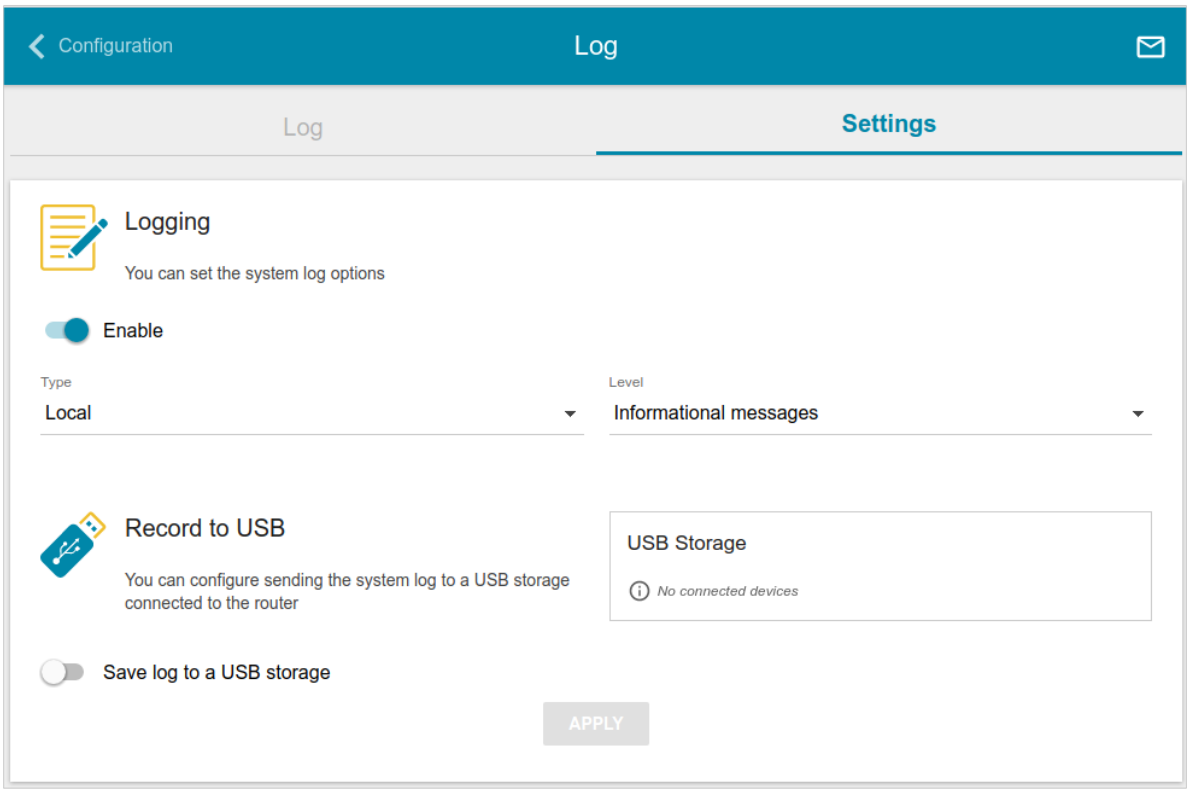


*Figure 149. The **System / Log** page. The **Settings** tab.*

To enable logging of the system events, go to the **Settings** tab and move the **Enable** switch to the right. Then specify the needed parameters.

17 This function will be implemented in further versions of the firmware.

Parameter	Description
Logging	
Type	Select a type of logging from the drop-down list. • **Local**: the system log is stored in the router's memory. 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 sent to the remote host specified in the **Server** field.
Level	Select a type of messages and alerts/notifications to be logged.
Server	The IP or URL address of the host from the local or global network, to which the system log will be sent.
Port	A port of the host specified in the **Server** field. By default, the value `514` is specified.
Record to USB	
USB Storage	If a USB storage is connected to the router, its name is displayed in the field. To safely disconnect the USB storage, click the **UNMOUNT** button.
Save log to a USB storage	Move the switch to the right so that the device could send the system log to the USB storage connected to it. Upon that the **Path**, **The maximum size of one file**, **File name**, and **Number of files to keep** fields are displayed.
Path	Click the **Search** icon () located to the right of the field in order to locate the folder where system log files will be stored.
The maximum size of one file	The maximum size (in kilobytes) of one system log file.
File name	A name for system log files.
Number of files to keep	The maximum number of files allowed to be recorded on the USB storage. When this number is exceeded, the file containing the oldest data will be deleted. The field is available for editing if the value specified in the **The maximum size of one file** field is greater than zero.

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

To disable logging of the system events, move the **Enable** switch to the left and click the **APPLY** button.

To view the system log, go to the **Log** tab.

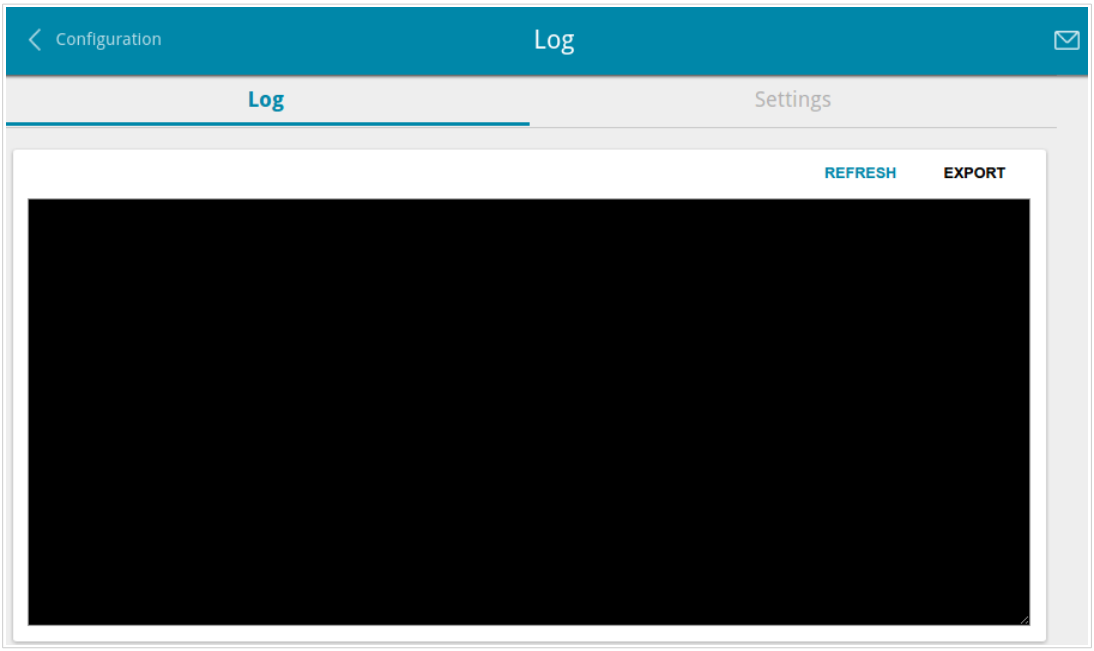


*Figure 150. The **System / Log** page. The **Log** tab.*

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

To save the system log to your PC, click the **EXPORT** button. The file will be stored in the download location of your web browser.

Ping

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

The Ping utility sends echo requests to a specified host and receives echo replies.

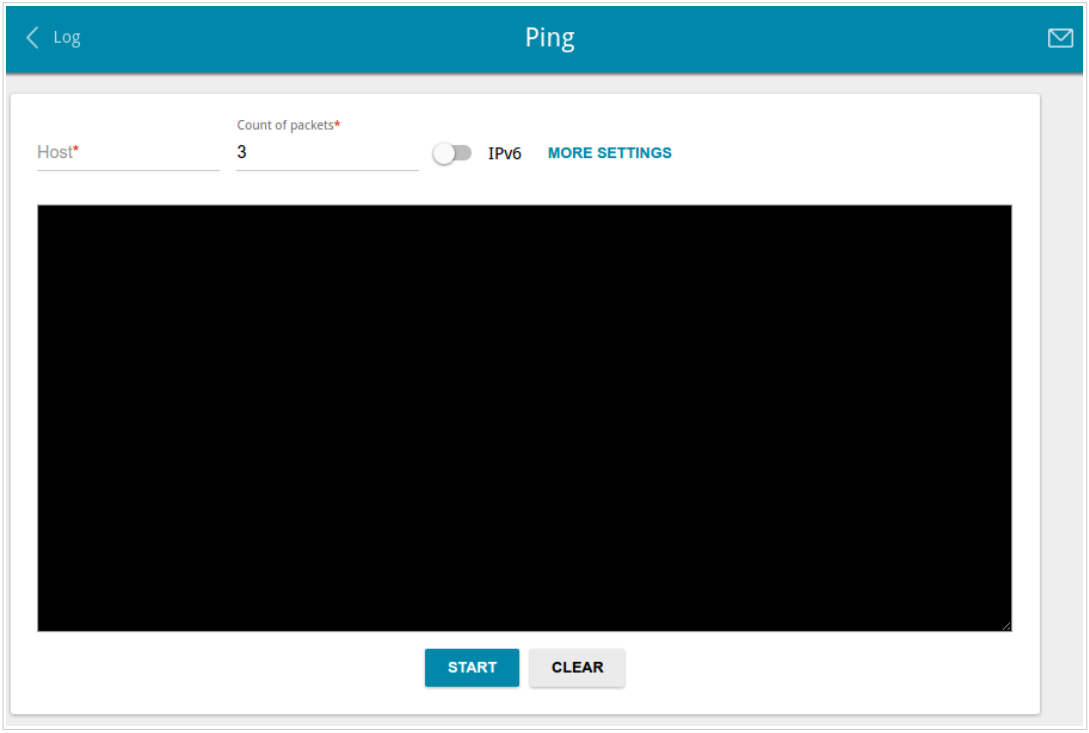


*Figure 151. The **System / Ping** page.*

To check availability of a host, enter the IP address or name of this host in the **Host** field and specify a number of requests that will be sent in order to check its availability in the **Count of packets** field. If availability check should be performed with IPv6, move the **IPv6** switch to the right.

To specify additional settings, click the **MORE SETTINGS** button.

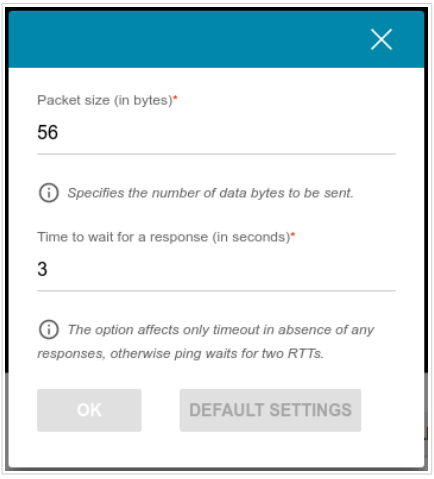


*Figure 152. The **System / Ping** page. The additional settings window.*

In the opened window, in the **Packet size** field, specify the volume of data sent in a request. In the **Time to wait for a response** field, specify the response waiting period in seconds. To restore the default field values, click the **DEFAULT SETTINGS** button.

After specifying the additional parameters, click the **OK** button.

To run the check, click the **START** button. After a while, the results will be displayed on the page.

To remove the check result from the page, click the **CLEAR** button.

Traceroute

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

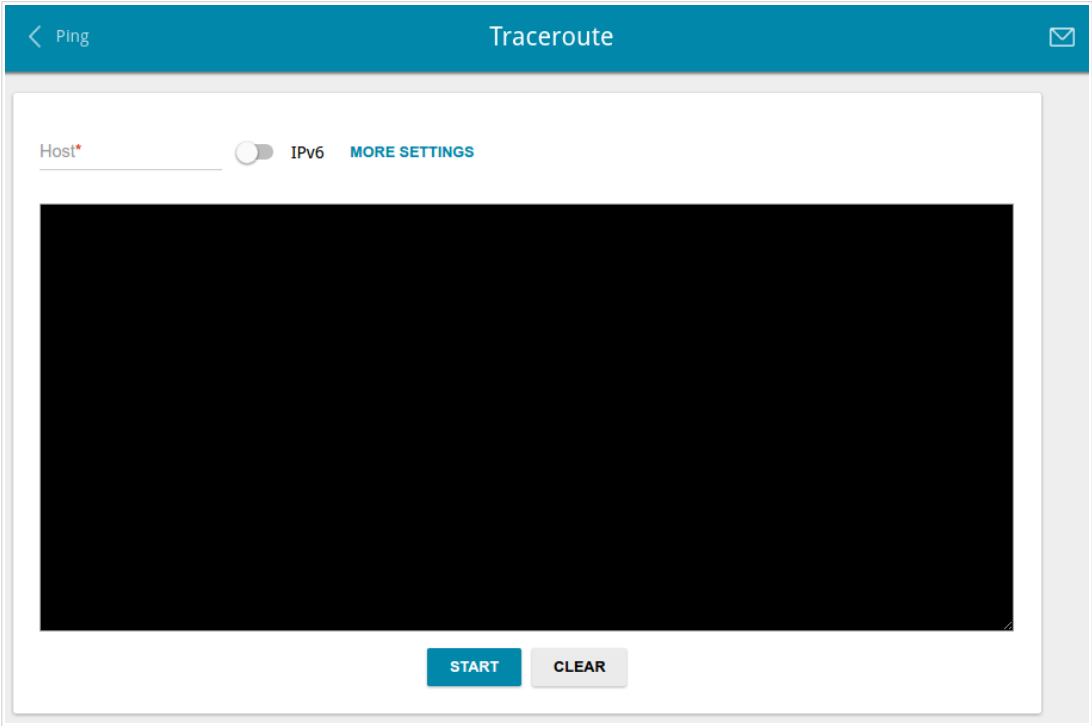


*Figure 153. The **System / Traceroute** page.*

To determine the route, enter the name or IP address of a host in the **Host** field. If the route should be determined using IPv6, move the **IPv6** switch to the right.

To specify additional settings, click the **MORE SETTINGS** button.

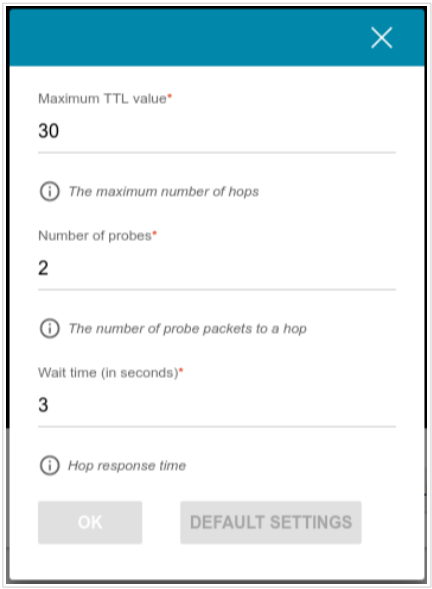


*Figure 154. The **System / Traceroute** page. The additional settings window.*

In the opened window, you can specify the following parameters:

Parameter	Description
Maximum TTL value	Specify the TTL (*Time to live*) parameter value. The default value is `30`.
Number of probes	The number of attempts to hit an intermediate host.
Wait time	A period of waiting for an intermediate host response.

To restore the default field values, click the **DEFAULT SETTINGS** button.

After specifying the additional parameters, click the **OK** button.

To run the check, click the **START** button. After a while, the results will be displayed on the page.

To remove the check result from the page, click the **CLEAR** button.

Telnet

On the **System / Telnet** page, you can enable or disable access to the device settings via TELNET from your LAN. Access via TELNET is disabled by default. It is automatically enabled after changing the default administrator password.

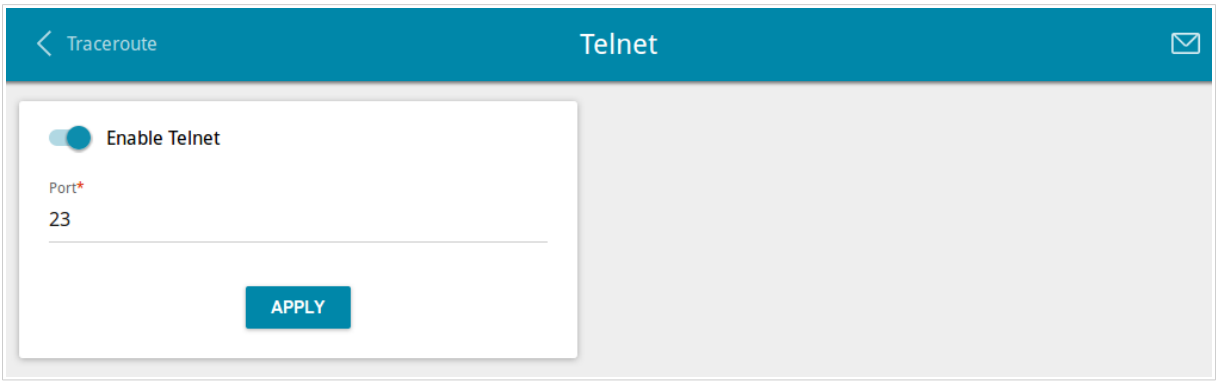


*Figure 155. The **System / Telnet** page.*

To disable access via TELNET, move the **Enable Telnet** switch to the left and click the **APPLY** button.

To enable access via TELNET again, move the **Enable Telnet** switch to the right. In the **Port** field, enter the number of the router's port through which access will be allowed (by default, the port **23** is specified). Then click the **APPLY** button.

System Time

On the **System / System Time** 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.

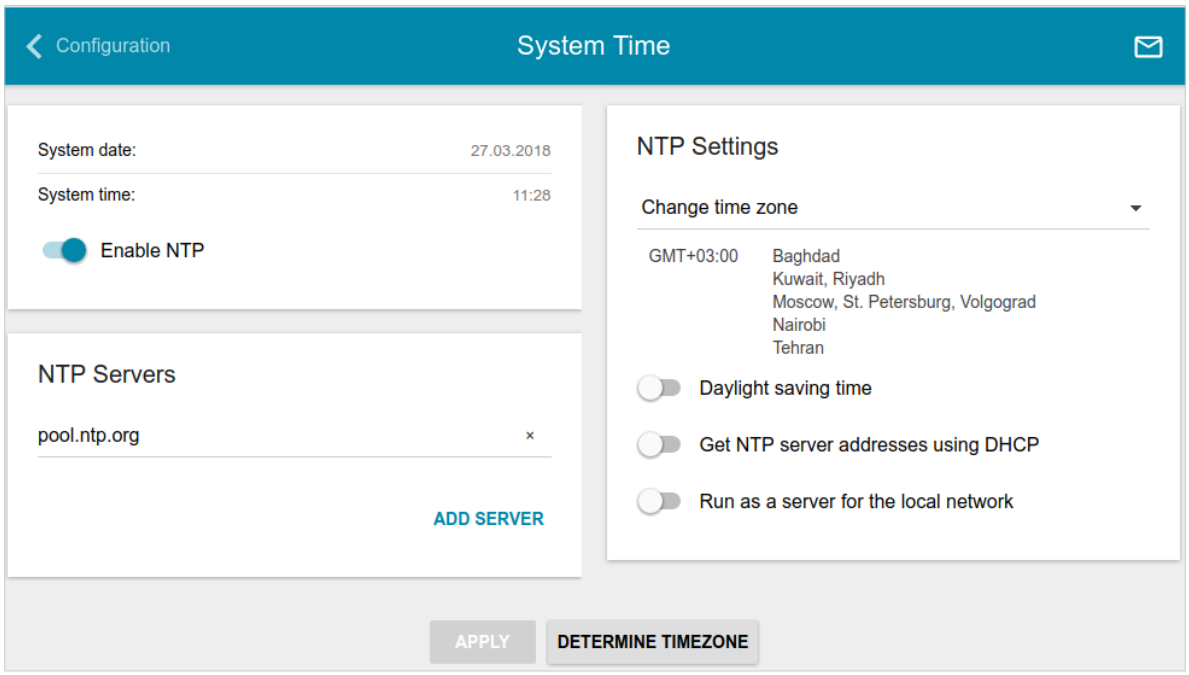


*Figure 156. The **System / System Time** page.*

To set the system time manually, follow the next steps:

1. Move the **Enable NTP** switch to the left.
2. In the **Time Settings** section, specify needed values. To specify the time set up your PC or portable device, click the **SET LOCAL TIME** button.
3. Click the **APPLY** button. The **System date** and **System time** fields will be filled in automatically.

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

1. Move the **Enable NTP** switch to the right.
2. Specify the needed NTP server or leave the value specified by default in the **NTP Servers** section. If you need to specify several servers, click the **ADD SERVER** button.
3. Select your time zone from the **Timezone** drop-down list in the **NTP Settings** section. To set the time zone in accordance with the settings of your operating system or portable device, click the **DETERMINE TIMEZONE** button.
4. Click the **APPLY** button. The **System date** and **System time** fields will be filled in automatically.

To enable automatic adjustment for daylight saving time of the router, move the **Daylight saving time** switch to the right in the **NTP Servers** section and click the **APPLY** button.

In some cases NTP servers addresses are provided by your ISP. In this case, you need to move the **Get NTP server addresses using DHCP** switch in the **NTP Servers** section to the right and click the **APPLY** button. Contact your ISP to clarify if this setting needs to be enabled. If the **Get NTP server addresses using DHCP** switch is moved to the right, the **NTP Servers** section is not displayed.

To allow connected devices to use the IP address of the router in the local subnet as a time server, move the **Run as a server for the local network** switch to the right and click the **APPLY** 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).

Yandex.DNS

This menu is designed to configure the Yandex.DNS service.

Yandex.DNS is a web content filtering service which provides the DNS server, protects a computer against malicious web sites, and blocks access to adult web sites.

Settings

On the **Yandex.DNS / Settings** page, you can enable the Yandex.DNS service and configure its operating mode.

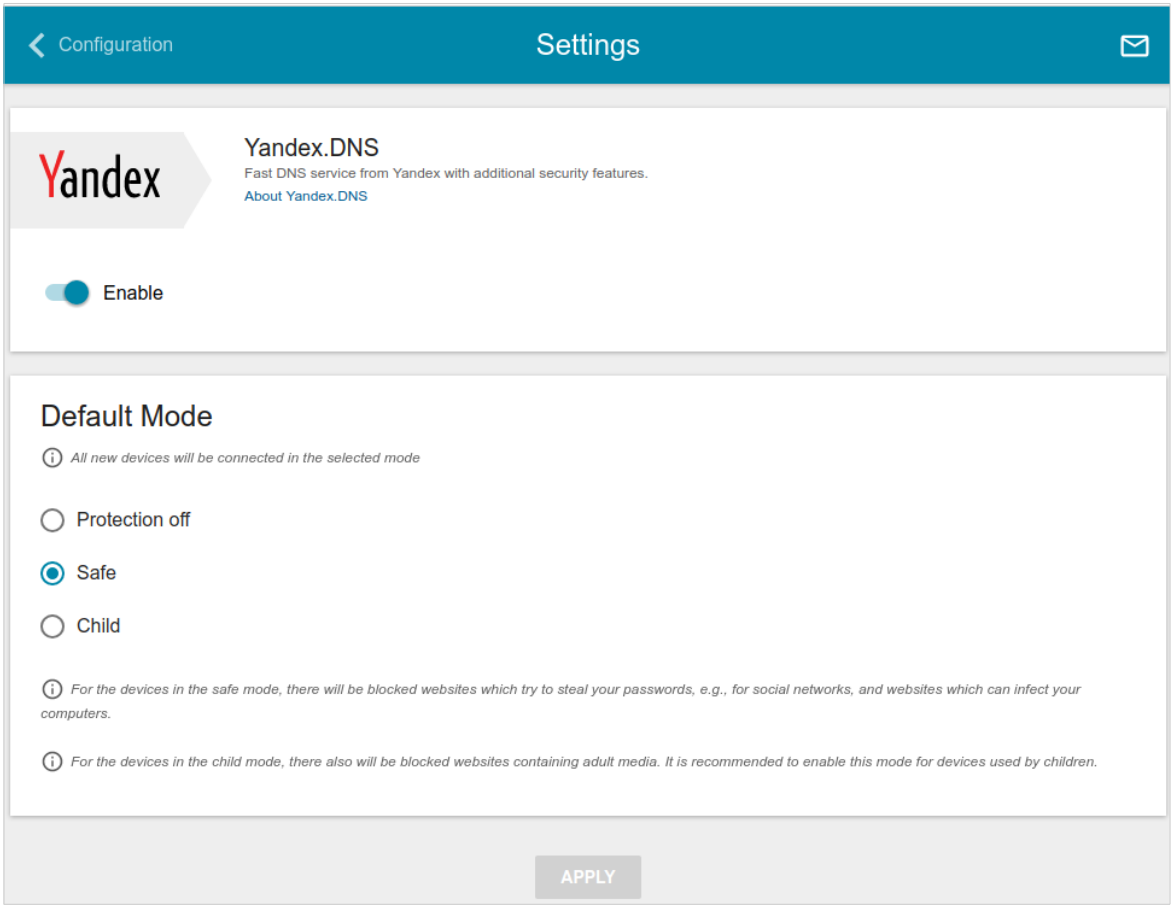


*Figure 157. The **Yandex.DNS / Settings** page.*

To get detailed information on the service, click the **About Yandex.DNS** link.

To enable the Yandex.DNS service, move the **Enable** switch to the right.

When the service is enabled, the **Default mode** section is displayed on the page. Select the needed choice of the radio button to configure filtering for all devices of the router's network:

- **Protection off**: when this value is selected, the service provides the DNS server with no restrictions on access to unsafe web sites;
- **Safe**: when this value is selected, the service blocks access to malicious and fraudulent web sites;
- **Child**: when this value is selected, the service blocks access to malicious and fraudulent web sites and blocks access to adult content.

Also the selected filtering mode will be applied to all devices newly connected to the router's network.

After specifying all needed parameters, click the **APPLY** button.

To disable the Yandex.DNS service, move the **Enable** switch to the left and click the **APPLY** button.

Devices and Rules

On the **Yandex.DNS / Devices and Rules** page, you can specify a filtering mode for each device separately.

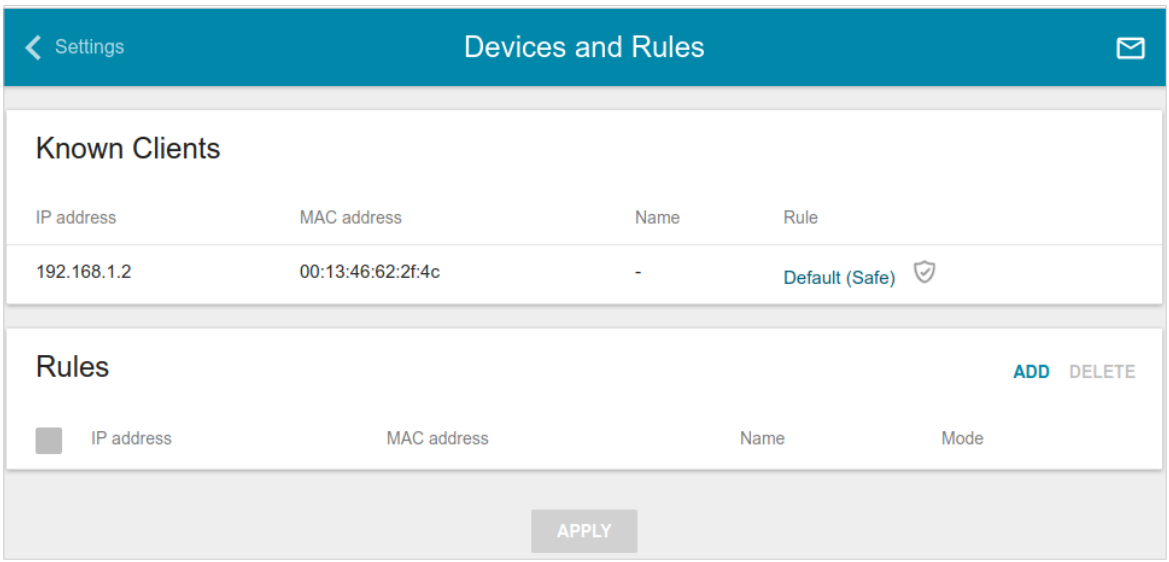


*Figure 158. The **Yandex.DNS / Devices and Rules** page.*

In the **Known Clients** section, the devices connected to the local network of the router at the moment and their relevant filtering mode are displayed.

To create[18] a new filtering rule for a device, click the **ADD** button in the **Rules** section, or left-click the name of the filtering mode in the line of the device for which a rule should be created in the **Known Clients** section.

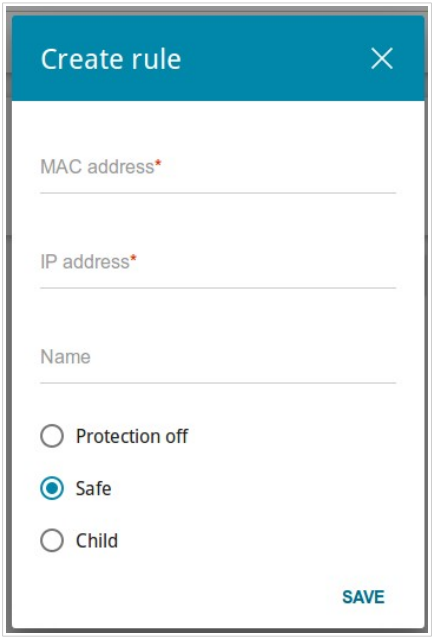


Figure 159. Adding a new rule for the Yandex.DNS service.

18 When a new rule for filtering is created, a MAC address and IP address pair is displayed on the **Connections Setup / LAN** page. The created pair will be deleted with the relevant rule.

In the opened window, you can specify the following parameters:

Parameter	Description
MAC address	The MAC address of a device from the router's LAN.
IP address	The IP address of a device from the router's LAN.
Name	Enter a name for the rule for easier identification. *Optional*.
Mode	Select an operating mode of the Yandex.DNS service for this rule. **Protection off**: when this value is selected, the service provides the DNS server with no restrictions on access to unsafe web sites. **Safe**: when this value is selected, the service blocks access to malicious and fraudulent web sites. **Child**: when this value is selected, the service blocks access to malicious and fraudulent web sites and blocks access to adult content.

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

To edit a rule for filtering, select a relevant line of the table, in the opened window, change the needed values and click the **SAVE** button.

To remove a rule for filtering, select the checkbox located to the left of the relevant rule and click the **DELETE** button. Also you can remove a rule in the editing window.

After completing the work with rules, click the **APPLY** button.

CHAPTER 5. OPERATION GUIDELINES

Safety Rules and Conditions

Please carefully read this section before installation and connection of the device. Make sure that the power adapter and cables are not damaged. The device should be used only as intended in accordance with the documents.

The device is intended for use in dry, clean, dust-free, and well ventilated areas with normal humidity away from strong heat sources. Do not use the device outdoors or in the areas with high humidity. Do not place foreign objects on the device. Do not obstruct the ventilation openings of the device. The environmental temperature near the device and the temperature inside the device's cover should be within the range from 0 °C to +40 °C.

Only use the power adapter supplied with the device. Do not plug in the adapter, if its case or cable are damaged. Plug the adapter only into working electrical outlets with parameters indicated on the adapter.

Do not open the cover of the device! Unplug the device before dusting and cleaning. Use a damp cloth to clean the device. Do not use liquid/aerosol cleaners or magnetic/static cleaning devices. Prevent moisture getting into the device or the power adapter.

The service life of the device is 2 years.

Wireless Installation Considerations

The DSL-2750U 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-2750U 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.

CHAPTER 6. ABBREVIATIONS AND ACRONYMS

3G	Third Generation
AC	Access Category
AES	Advanced Encryption Standard
ARP	Address Resolution Protocol
BSSID	Basic Service Set Identifier
CCK	Complementary Code Keying
CRC	Cyclic Redundancy Check
DDNS	Dynamic Domain Name System
DDoS	Distributed Denial of Service
DHCP	Dynamic Host Configuration Protocol
DLNA	Digital Living Network Alliance
DMZ	DeMilitarized Zone
DNS	Domain Name System
DTIM	Delivery Traffic Indication Message
FTP	File Transfer Protocol
GMT	Greenwich Mean Time
GSM	Global System for Mobile Communications
IGD	Internet Gateway Device
IGMP	Internet Group Management Protocol
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IPsec	Internet Protocol Security
L2TP	Layer 2 Tunneling Protocol
IPoA	Internet Protocol over ATM
ISP	Internet Service Provider

LAN	Local Area Network
LLC	Logical Link Control
LCP	Link Control Protocol
LTE	Long Term Evolution
MAC	Media Access Control
MTU	Maximum Transmission Unit
NAT	Network Address Translation
NTP	Network Time Protocol
OFDM	Orthogonal Frequency Division Multiplexing
PBC	Push Button Configuration
PIN	Personal Identification Number
PPPoA	Point-to-Point Protocol over ATM
PPPoE	Point-to-point protocol over Ethernet
PSK	Pre-shared key
PUK	PIN Unlock Key
QoS	Quality of Service
RADIUS	Remote Authentication in Dial-In User Service
RIP	Routing Information Protocol
RTS	Request To Send
RTSP	Real Time Streaming Protocol
SIM	Subscriber Identification Module
SIP	Session Initiation Protocol
SMB	Server Message Block
SSID	Service Set Identifier
TKIP	Temporal Key Integrity Protocol
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
USB	Universal Serial Bus

VC	Virtual Circuit
VCI	Virtual Circuit Identifier
VLAN	Virtual Local Area Network
VPI	Virtual Path Identifier
WAN	Wide Area Network
WEP	Wired Equivalent Privacy
Wi-Fi	Wireless Fidelity
WLAN	Wireless Local Area Network
WPA	Wi-Fi Protected Access
WPS	Wi-Fi Protected Setup