



DSL-2650U/NRU

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

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CHAPTER 1. INTRODUCTION

Contents and Audience

This manual describes the router DSL-2650U/NRU 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.
<i>Before You Begin</i>	A reference to a chapter or section of this manual.
<i>“Quick Installation Guide”</i>	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.
 <u>Information</u>	An important note.

Document Structure

Chapter 1 describes the purpose and structure of the document.

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

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

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

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

Chapter 6 introduces abbreviations and acronyms used in this manual.

CHAPTER 2. OVERVIEW

General Information

DSL-2650U/NRU is a multifunction 3G/ADSL/Ethernet router with Wi-Fi and built-in switch. The router allows accessing the Internet via 3G GSM network (with a 3G USB modem^{1,2} connected). In addition, the device allows accessing the Internet via ADSL technology and via Ethernet technology.

The router is equipped with an ADSL port to connect to an ADSL line and 4 Ethernet ports to connect workstations. Due to this feature, DSL-2650U/NRU 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-2650U/NRU is equipped with an integrated 802.11n draft* WLAN interface and is compatible with 802.11b/g wireless devices. The router supports multiple functions for the wireless interface: several security standards (WEP, WPA/WPA2), MAC address filtering, and the WPS function.

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

You can configure and manage the settings of DSL-2650U/NRU via the user-friendly web-based interface (the interface is available in two languages – in English and in Russian).

1 Not included in the delivery package. D-Link does not guarantee compatibility with all USB modems. Please, refer to the **Supported USB Modems** section, page 104.

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

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

Specifications

Interfaces:

- ADSL: 1 RJ-11 port
- LAN: 4 RJ-45 10/100BASE-TX Fast Ethernet LAN ports with auto-MDI/MDIX
- WLAN: built-in 802.11b, g, and n draft wireless interface
- USB: USB 2.0 type A port.

Wireless Network:

- IEEE 802.11n draft standard*, IEEE 802.11b/g compliant
- Support of guest wireless network
- WEP data encryption
- WPA/WPA2 security supporting TKIP, AES and TKIP+AES
- MAC-based access to wireless network
- PIN and PBC methods of WPS
- Advanced settings.

ADSL Standards:

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

WAN Connection Types:

- 3G
- ADSL:
 - PPPoA
 - PPPoE
 - IPoE
 - IPoA
 - Bridge.

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

- Ethernet:
 - Static IP
 - DHCP
 - PPPoE.

ATM/PPP Protocols:

- Bridged and routed Ethernet encapsulation
- VC-based or LLC-based multiplexing
- ATM Forum UNI3.1/4.0 PVC (up to 8 PVCs)
- ATM Adaptation Layer Type 5 (AAL5)
- ITU-T I.610 OAM F4/F5 loopback
- ATM QoS
- PPP over ATM (RFC 2364)
- PPP over Ethernet (PPPoE)
- Keep-alive for PPP connections.

Network Protocols and Functions:

- Static IP routing
- NAT (*Network Address Translation*)
- DHCP server/client/relay
- DNS relay
- DDNS
- UPnP
- Support of VLAN
- IGMP proxy.

Firewall and Access Management Functions:

- Network Address Translation (NAT)
- Stateful Packet Inspection (SPI)
- MAC-filtering based on time of day and day of week
- URL filter
- Packet filtering (IP/ICMP/TCP/UDP)
- Virtual servers
- Prevention of DoS attacks
- Intrusion detection system
- DMZ
- Port Triggering.

QoS:

- Interface grouping
- 3 priority queues.

USB Modem:

- Enabling/disabling PIN code check
- Changing PIN code.

Configuration and Management:

- Bilingual (Russian/English) web-based interface for configuration and management
- Firmware update via web-based interface
- Saving/restoring configuration to/from file
- Support of remote logging
- SNMP agent
- Automatic synchronization of system time with NTP server.

Power:

- External power adapter
- ON/OFF power switch
- ON/OFF Wi-Fi switch
- Reset to Factory Defaults button
- WPS button.

Product Appearance

Front Panel



Figure 1. Front panel view.

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

Back Panel

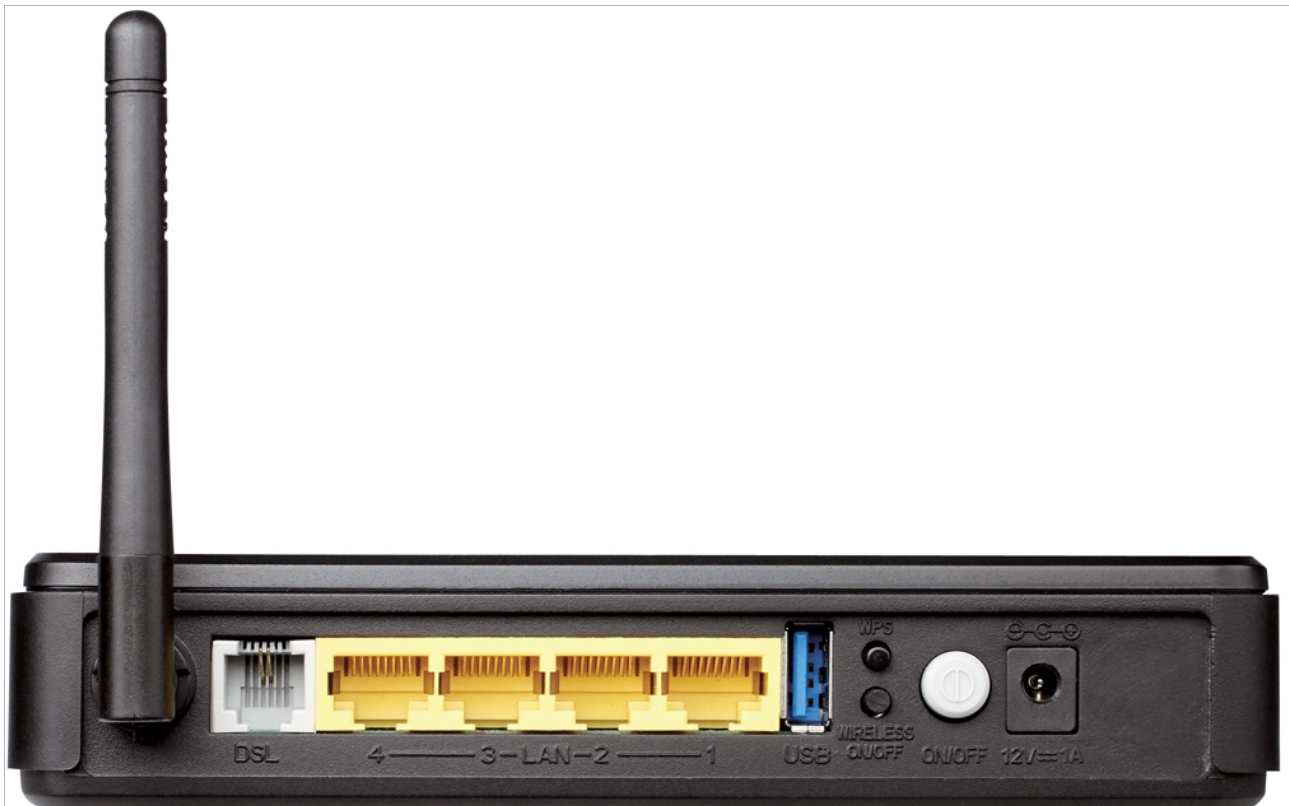



Figure 2. Back panel view.

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

Delivery Package

The following should be included:

- router DSL-2650U/NRU
- power adapter
- RJ-11 telephone cable
- straight-through Ethernet cable (CAT 5E)
- splitter
- CD-ROM with “*User Manual*” and “*Quick Installation Guide*”
- “*Quick Installation Guide*” (brochure).

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

CHAPTER 3. INSTALLATION AND CONNECTION

Before You Begin

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

Operating System

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

Web Browser

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

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

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

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

Wireless Connection

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

USB Modem

To connect to the 3G GSM network, you should use a 3G USB modem. Connect it to the USB port of the router (it is recommended to use a USB extension cable), then access the web-based interface of the router, and you will be able to configure connection to the Internet.



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

Connecting to PC (in OS Windows XP)

PC with Ethernet Adapter

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

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

4. **To connect the router to a DSL line:** connect a phone cable between the DSL port of the router and the **ADSL OUT** port of the splitter. Connect your phone to the **PHONE** port of the splitter. Then connect another phone cable between a phone jack and the **ADSL IN** port of the splitter.
5. **To connect the router to an Ethernet line:** connect the Ethernet cable between any of four Ethernet ports located on the back panel of the router and the Ethernet line.
6. Connect the power cord to the power connector port on the back panel of the router, then plug the power adapter into an electrical outlet or power strip.
7. Turn on your PC and wait until your operating system is completely loaded.

Obtaining IP Address Automatically

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.

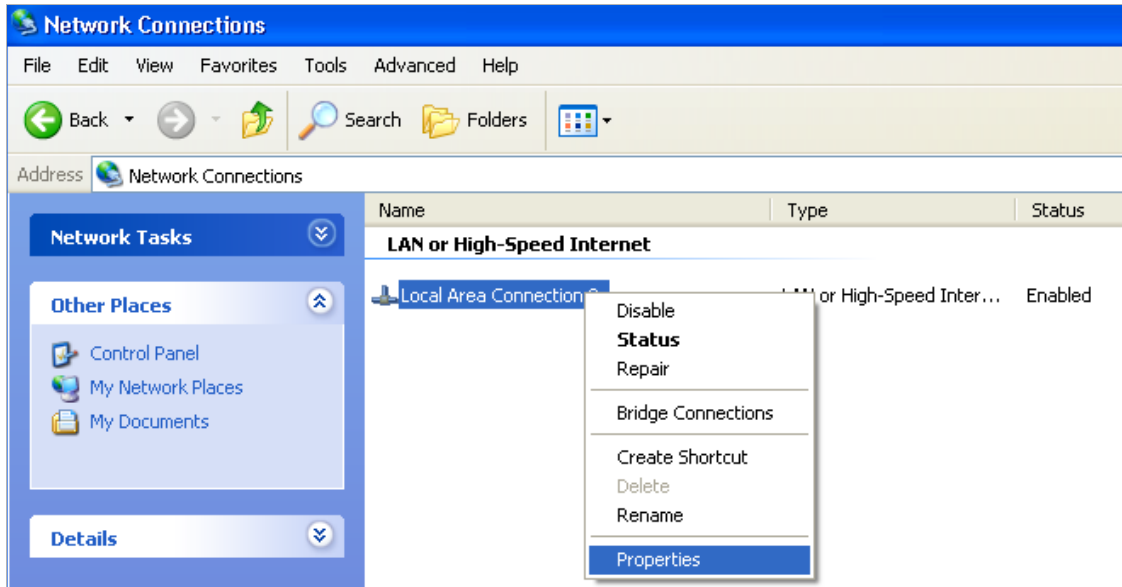


Figure 3. The **Network Connections** window.

3. In the **Local Area Connection Properties** window, on the **General** tab, in the **This connection uses the following items** section, select the **Internet Protocol (TCP/IP)** line. Click the **Properties** button.

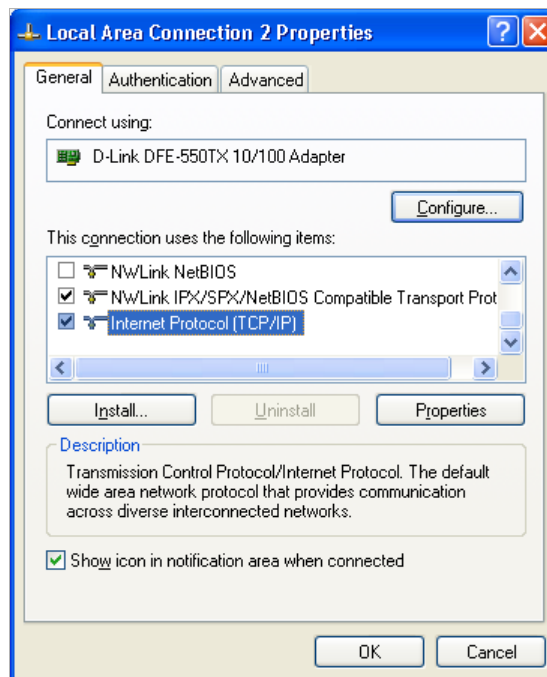


Figure 4. The **Local Area Connection Properties** window.

4. Select the **Obtain an IP address automatically** radio button. Click the **OK** button.

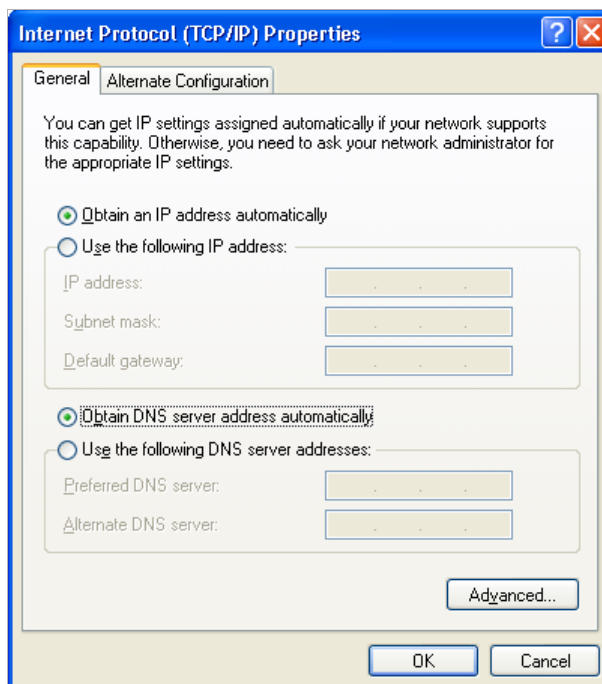


Figure 5. The **Internet Protocol (TCP/IP) Properties** window.

Click the **OK** button. Now your computer is configured to obtain an IP address automatically.

PC with Wi-Fi Adapter

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

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

2. **To connect the router to a DSL line:** connect a phone cable between the DSL port of the router and the **ADSL OUT** port of the splitter. Connect your phone to the **PHONE** port of the splitter. Then connect another phone cable between a phone jack and the **ADSL IN** port of the splitter.
3. **To connect the router to an Ethernet line:** connect the Ethernet cable between any of four Ethernet ports located on the back panel of the router and the Ethernet line.
4. Connect the power cord to the power connector port on the back panel of the router, then plug the power adapter into an electrical outlet or power strip.
5. Turn on Wi-Fi: push the relevant button on the back panel of the router.
6. Turn on your PC and wait until your operating system is completely loaded.
7. Turn on your Wi-Fi adapter. As a rule, modern notebooks with built-in wireless NICs are equipped with a button or switch that turns on/off the wireless adapter (refer to your PC documents). If your PC is equipped with a pluggable wireless NIC, install the software provided with your Wi-Fi adapter.

Configuring Wi-Fi Adapter

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 connection and make sure that your Wi-Fi adapter is on.

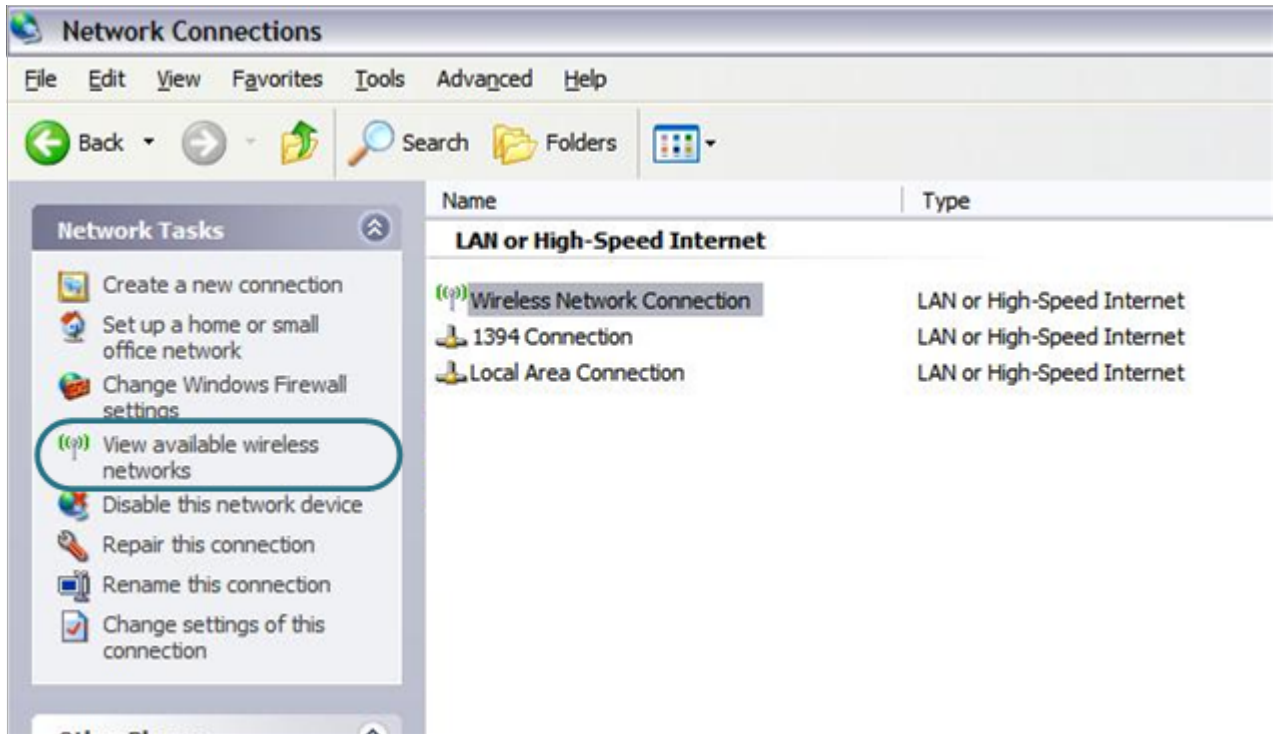


Figure 6. The **Network Connections** window.

3. Search for available wireless networks.
4. In the opened **Wireless Network Connection** window select the needed wireless network (**DSL_2650NRU**) 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 you will need to reconfigure the wireless connection using the newly specified settings.

Connecting to Web-based Interface

When you have configured your computer, you can access the web-based interface and configure needed parameters (for example, create an interface to connect to the Internet, configure the connection to 3G network, change the parameters of the wireless network, specify the settings of the firewall, edit the password for the administrator account, etc.)

1. Start a web browser (see the **Before You Begin** section, page 12).
2. In the address bar of the web browser, enter the IP address of the router (by default, the following IP address is specified: **192.168.1.1**). Press the **Enter** key.



Figure 7. Connecting to the web-based interface of the DSL-2650U/NRU device.

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

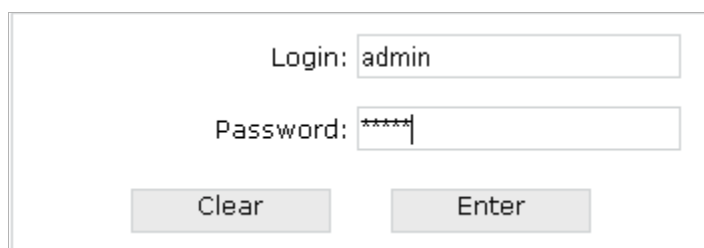
A screenshot of a login page. It features two input fields: "Login:" with the text "admin" and "Password:" with "*****". Below the fields are two buttons: "Clear" and "Enter".

Figure 8. The login page.

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

After successful registration the system statistics page opens. The page displays general information on the router and its software.

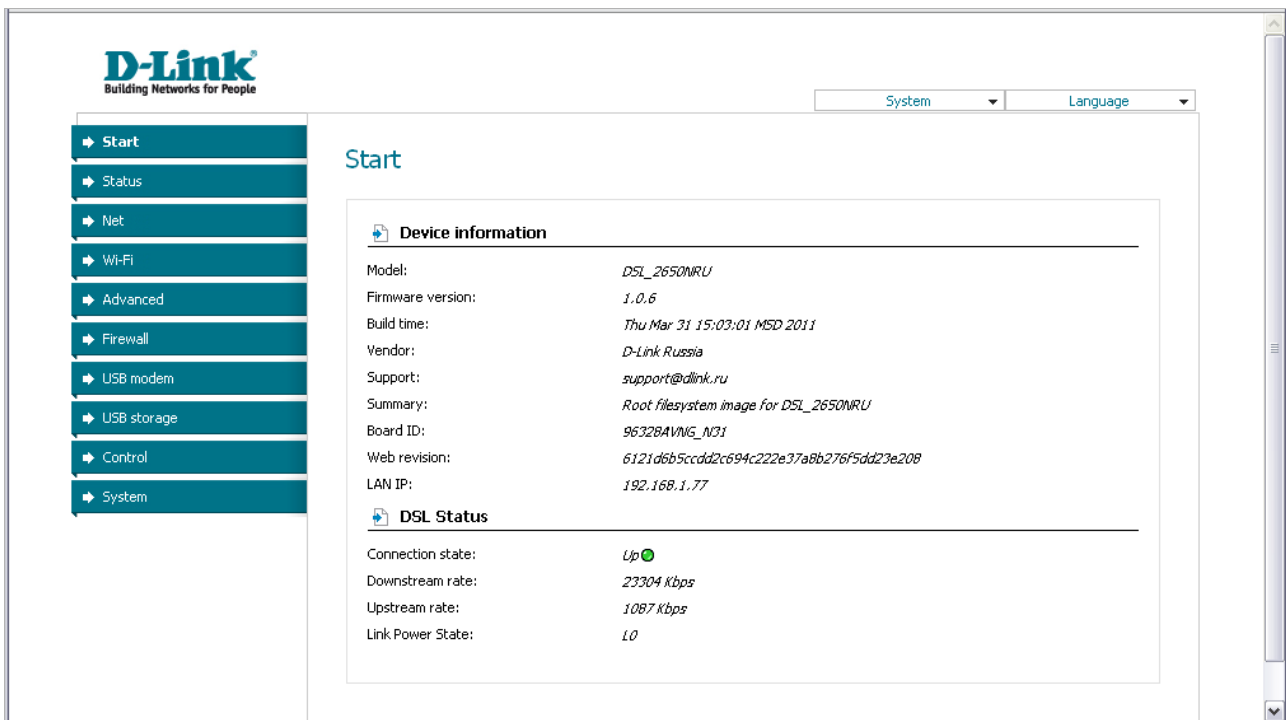


Figure 9. The system statistics page.

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

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

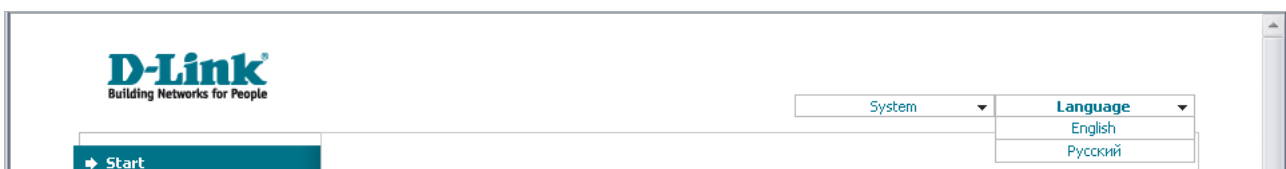


Figure 10. Changing the language of the web-based interface.

Saving and Restoring Settings

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

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

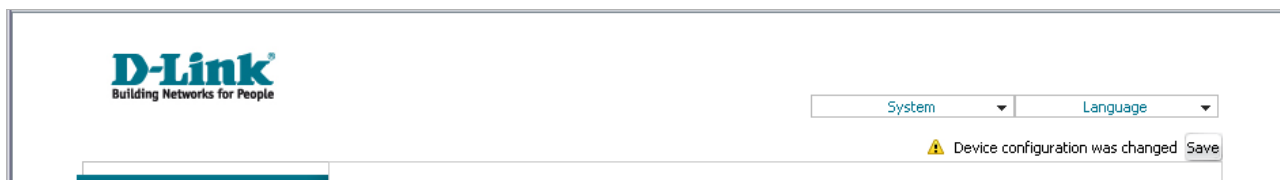


Figure 11. The notification on unsaved changes.

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

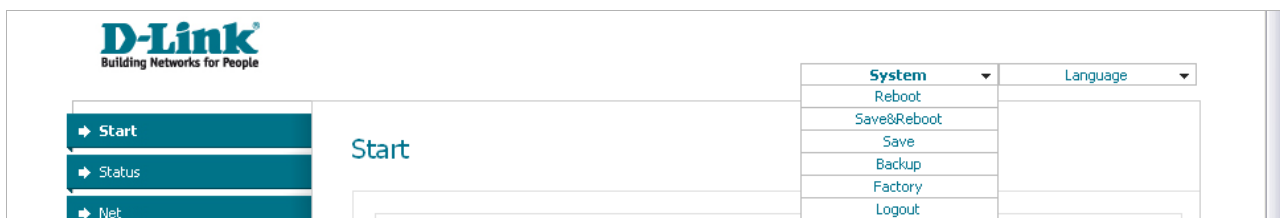


Figure 12. The top-page menu.

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

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

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

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

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

Also you can restore the factory default settings via the hardware **Reset** button located on the bottom panel of the router. Use a small paperclip to activate the button; insert it into the hole (with the device turned on), push, and hold for 5-10 seconds. Release the button and wait until the router is rebooted (about a minute). Now you can access the web-based interface of the router using the default IP address, username and password.

! When you keep the button pushed for more than 10 seconds, the Power LED lights red and the router switches to crash recovery mode. To restore normal operation of the router, please, contact the Technical Support Service.

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

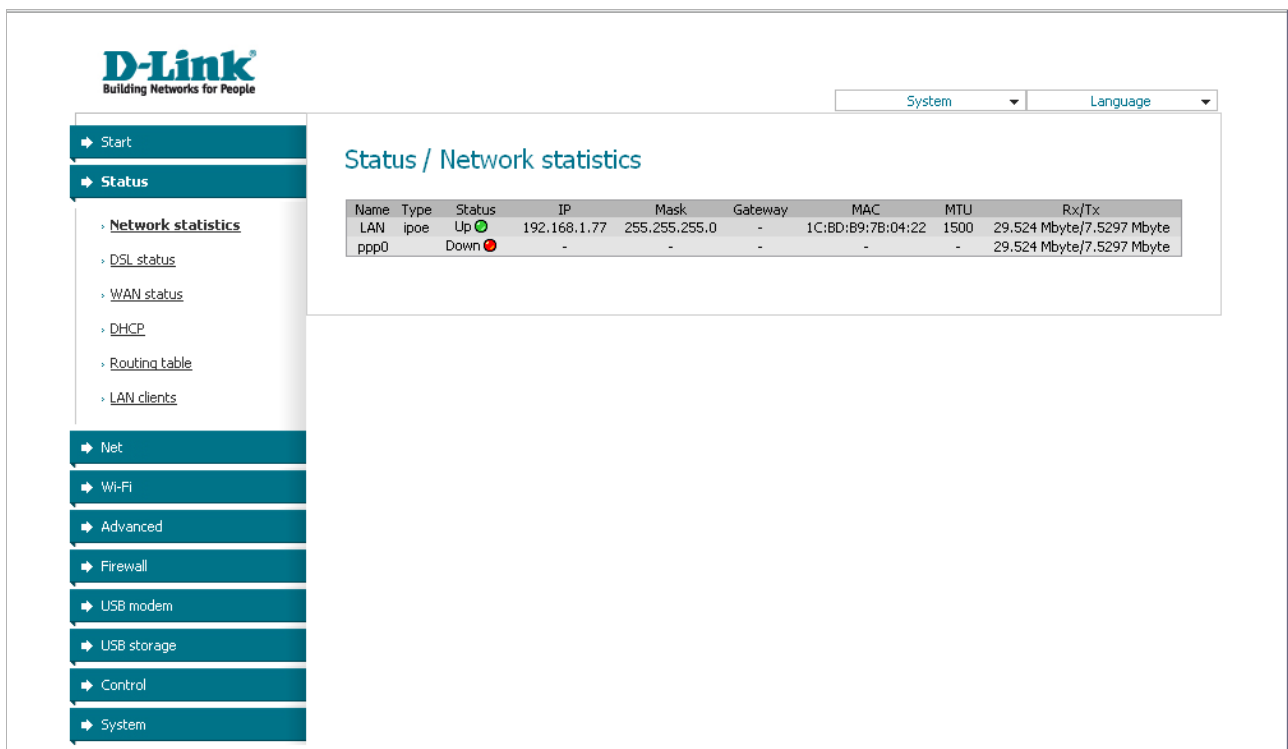
CHAPTER 4. CONFIGURING VIA WEB-BASED INTERFACE

Status

This menu displays data on the current state of the router. The following data are represented: DSL connection status, active WAN connections, IP addresses leased by DHCP server, the routing table, network statistics, and data on network devices connected to the router.

Network Statistics

On the **Status / Network statistics** page, you can view statistics for all interfaces active at the moment.



The screenshot shows the D-Link web interface. The top left features the D-Link logo and tagline "Building Networks for People". The top right has dropdown menus for "System" and "Language". A left sidebar contains navigation buttons for "Start", "Status", "Network statistics", "DSL status", "WAN status", "DHCP", "Routing table", "LAN clients", "Net", "Wi-Fi", "Advanced", "Firewall", "USB modem", "USB storage", "Control", and "System". The main content area is titled "Status / Network statistics" and contains a table with the following data:

Name	Type	Status	IP	Mask	Gateway	MAC	MTU	Rx/Tx
LAN	ipoe	Up ●	192.168.1.77	255.255.255.0	-	1C:BD:B9:7B:04:22	1500	29.524 Mbyte/7.5297 Mbyte
ppp0		Down ●	-	-	-	-	-	29.524 Mbyte/7.5297 Mbyte

Figure 13. The Status / Network statistics page.

DSL Status

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

The screenshot shows the D-Link web interface for the DSL-2650U/NRU router. The left sidebar contains navigation menus for Start, Status, Net, Wi-Fi, Advanced, Firewall, USB modem, USB storage, Control, and System. The main content area is titled "Status / DSL status" and features a "System" dropdown menu and a "Language" dropdown menu. Below the title are four tabs: "Main", "Line", "Framing", and "Counters". The "Main" tab is active, displaying the following status information:

Connection state:	Up ●
Downstream rate:	23304 Kbps
Upstream rate:	1087 Kbps
Link Power State:	LO
Mode:	ADSL2+
Trellis:	U:ON / D:ON
Line status:	No Defect

There are two "Refresh" buttons: one located at the bottom right of the status information box, and another located at the bottom right of the "Counters" tab area.

Figure 14. The **Status / DSL status** page.

WAN Status

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

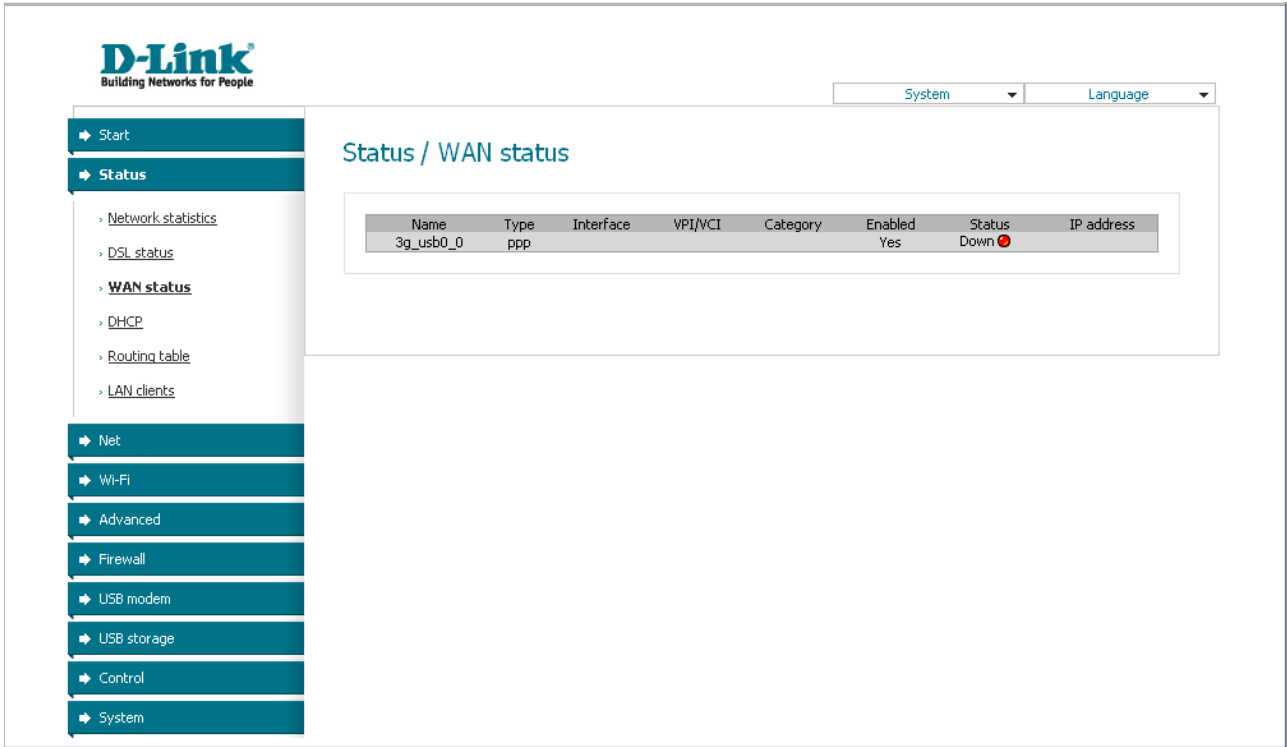


Figure 15. The **Status / WAN status** page.

DHCP

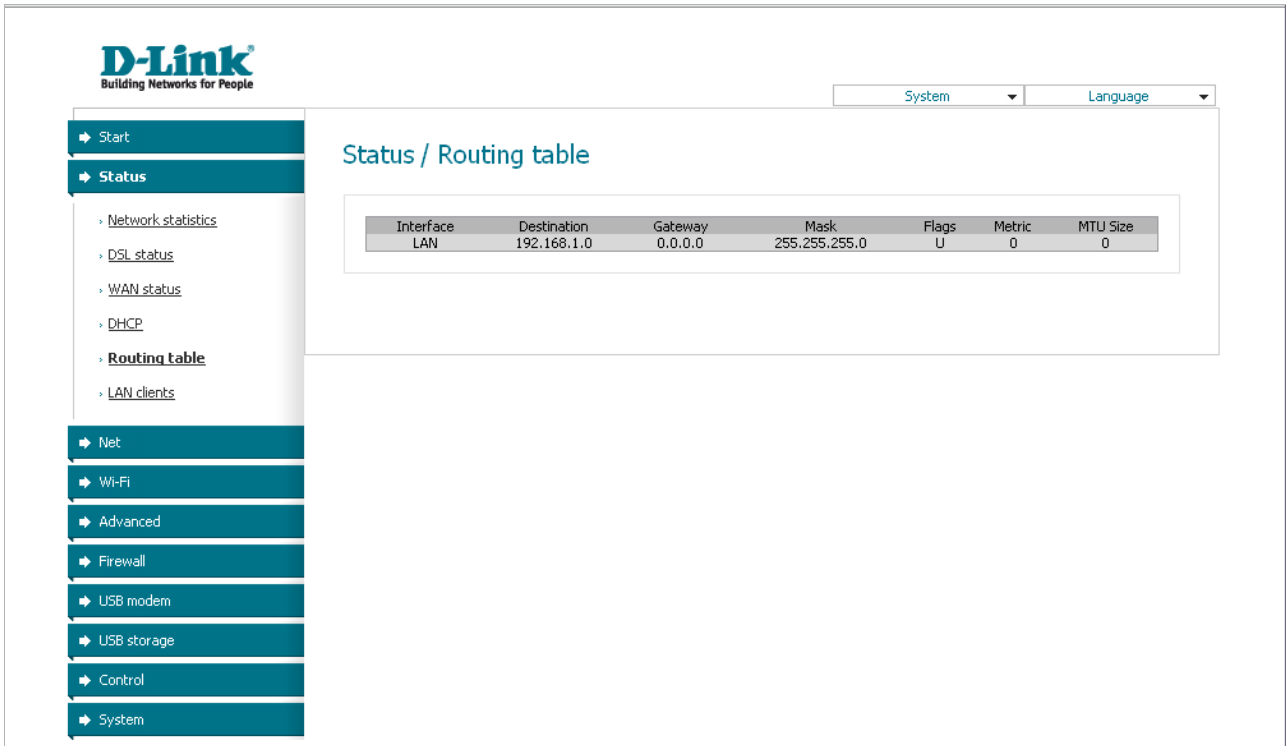
The **Status / DHCP** page displays the information on computers that have been identified by hostnames and MAC addresses and have got IP addresses from the DHCP server of the device, as well as the IP address expiration periods (the lease time).



Figure 16. The **Status / DHCP** page.

Routing Table

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



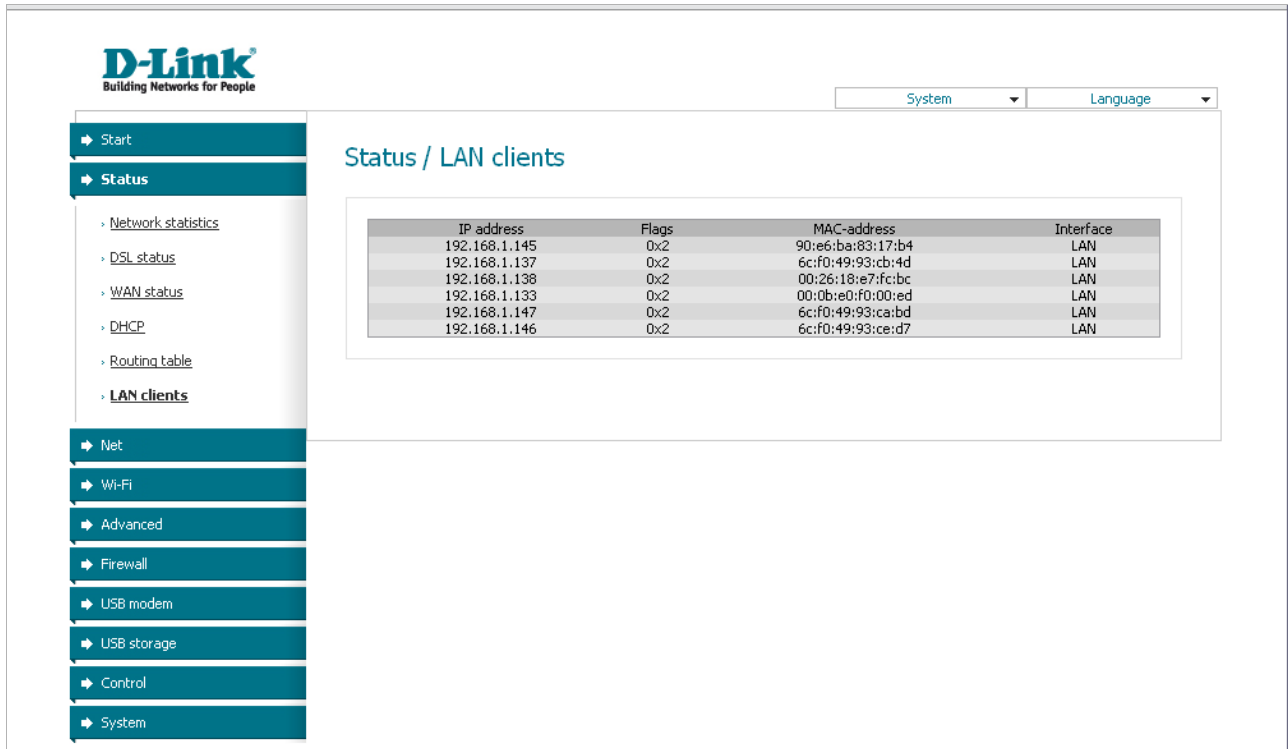
The screenshot shows the D-Link web interface. On the left is a navigation menu with items: Start, Status, Network statistics, DSL status, WAN status, DHCP, Routing table (highlighted), LAN clients, Net, Wi-Fi, Advanced, Firewall, USB modem, USB storage, Control, and System. The main content area is titled "Status / Routing table" and contains a table with the following data:

Interface	Destination	Gateway	Mask	Flags	Metric	MTU Size
LAN	192.168.1.0	0.0.0.0	255.255.255.0	U	0	0

Figure 17. The **Status / Routing table** page.

LAN Clients

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



The screenshot shows the D-Link web-based interface. The top left features the D-Link logo and tagline "Building Networks for People". The top right has "System" and "Language" dropdown menus. A left sidebar contains navigation options: Start, Status (selected), Network statistics, DSL status, WAN status, DHCP, Routing table, LAN clients, Net, Wi-Fi, Advanced, Firewall, USB modem, USB storage, Control, and System. The main content area is titled "Status / LAN clients" and contains a table with the following data:

IP address	Flags	MAC-address	Interface
192.168.1.145	0x2	90:e6:ba:83:17:b4	LAN
192.168.1.137	0x2	6c:f0:49:93:cb:4d	LAN
192.168.1.138	0x2	00:26:18:e7:fc:bc	LAN
192.168.1.133	0x2	00:0b:e0:f0:00:ed	LAN
192.168.1.147	0x2	6c:f0:49:93:ca:bd	LAN
192.168.1.146	0x2	6c:f0:49:93:ce:d7	LAN

Figure 18. The **Status / LAN clients** page.

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

Net

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

Connections

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

By default, the **LAN** connection is configured in the system. It corresponds to the local interface of the router (**br0**). The connection is represented by the ports of the built-in switch (ports 1-4) and the wireless interface of the router. You cannot delete this connection.

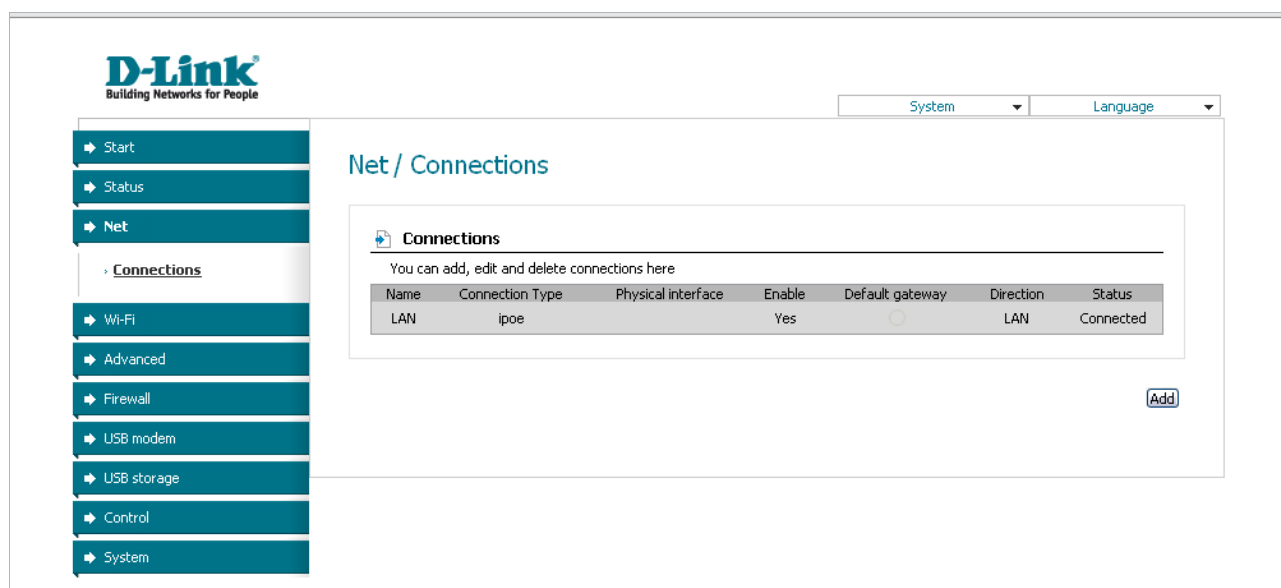


Figure 19. The **Net / Connections** page.

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

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

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

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

Editing Local Interface Parameters

To edit the parameters of the router's local area network, left-click the **LAN** connection on the **Net / Connections** page.

On the **Main** tab, you can configure basic parameters of the router's LAN.

The screenshot displays the 'Net / Connections' web interface. At the top, there are three tabs: 'Main', 'DHCP server', and 'Static DHCP'. The 'Main' tab is selected. Below the tabs, there are three sections: 'General settings', 'Physical layer', and 'IP settings'. Each section has a sub-header and a description. The 'General settings' section includes fields for Name (LAN), Connection Type (IPoE), Enable (checked), and Direction (LAN). The 'Physical layer' section includes a field for Physical interface (br0). The 'IP settings' section includes fields for IP Address (192.168.1.1) and Netmask (255.255.255.0). There is also a field for Interface (br0). A 'Save' button is located at the bottom right of the form.

Net / Connections

Main DHCP server Static DHCP

General settings
Connection type and common settings

Name: LAN

Connection Type: IPoE

Enable:

Direction: LAN

Physical layer
Physical interface selection and tuning

Physical interface: br0

IP settings
Internet Protocol settings

IP Address: 192 . 168 . 1 . 1

Netmask: 255 . 255 . 255 . 0

Interface: br0

Save

Figure 20. Basic parameters of the router's LAN.

Parameter	Description
General settings	
Name	A name for this connection.
Connection Type	The type of network protocol used by this connection – IPoE .
Enable	The checkbox enabling this connection.
Direction	The direction of this connection.
Physical layer	
Physical interface	The physical interface to which this connection is assigned – br0 .
IP settings	
IP Address	The router's IP address. By default, the following value is specified: 192.168.1.1 .
Netmask	The subnet mask. By default, the following value is specified: 255.255.255.0 .
Interface	The name assigned to the connection by the system.

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

On the **DHCP server** tab, you can configure the built-in DHCP sever of the router.

The screenshot shows the 'Net / Connections' configuration page. At the top, there are three tabs: 'Main', 'DHCP server', and 'Static DHCP'. The 'DHCP server' tab is selected. Below the tabs, there are four configuration fields:

- Mode:** A dropdown menu set to 'Enable'.
- Start IP:** A field with four input boxes containing '192', '168', '1', and '2'.
- End IP:** A field with four input boxes containing '192', '168', '1', and '254'.
- Lease time (min):** A text input field containing '0'.

A 'Save' button is located at the bottom right of the configuration area.

Figure 21. The tab for configuring the DHCP server.

Parameter	Description
Mode	<p>An operating mode of the router's DHCP server.</p> <p>Enable: the router assigns IP addresses to clients automatically in accordance with specified parameters. When this value is selected, the Start IP, End IP, and the Lease time fields are displayed on the tab. If the DHCP server is enabled, you can also specify MAC-IP pairs on the Static DHCP tab.</p> <p>Disable: the router's DHCP server is disabled, clients' IP addresses are assigned manually.</p> <p>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.</p>
Start IP	The start IP address of the address pool used by the DHCP server to distribute IP addresses to clients.
End IP	The end IP address of the address pool used by the DHCP server to distribute IP addresses to clients.
Lease time	The lifetime of IP addresses leased by the DHCP server. At the end of this period the leased IP address is revoked and can be distributed to another device, unless the previous device has confirmed the need to keep the address.
External DHCP server IP	The IP address of the external DHCP server which assigns IP addresses to the router's clients.

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

On the **Static DHCP** tab, you can specify MAC address and IP address pairs. The tab is active when the router's DHCP server is enabled.

The screenshot shows the 'Net / Connections' section of the router's web interface. It features three tabs: 'Main', 'DHCP server', and 'Static DHCP', with 'Static DHCP' being the active tab. Below the tabs is a form for adding MAC-IP pairs. It includes two rows of input fields: 'IP address:' with four boxes and 'MAC address:' with six boxes. Below these is a table with two columns labeled 'IP address' and 'MAC address'. At the bottom right of the form are 'Remove' and 'Add' buttons, and a 'Save' button is located at the bottom right of the entire interface.

Figure 22. The tab for configuring MAC-IP pairs.

To create a MAC-IP pair (set a fixed IP address in the local area network for a device with a certain MAC address), click the **Add** button. Then enter the needed IP address and MAC address in the relevant fields and click the **Save** button.

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

Creating 3G WAN Connection

If the PIN code check is enabled for the SIM card inserted into your USB modem, then prior to creating a 3G WAN connection, proceed to the USB modem menu and enter the PIN code on the page displayed (see the *USB Modem* section, page 85).

The screenshot shows the 'Net / Connections' page. Under the 'General settings' section, there are four fields: 'Name' with the value '3g_usb0_0', 'Connection Type' set to '3G', 'Enable' checked, and 'Direction' set to 'WAN'. The 'Physical layer' section has one field: 'Physical interface' set to 'usb'.

Figure 23. The page for creating a new connection. The **General settings** and **Physical layer** sections.

Parameter	Description
General settings	
Name	A name for connection for easier identification.
Connection Type	Select the 3G value.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
Physical layer	
Physical interface	Select the usb value.

PPP settings

Enter the username, password, and other settings provided by the ISP. Leave the default values for the remaining fields.

PPP Username:

Without authorization:

Password:

Password confirmation:

Authentication algorithm: AUTO ▼

APN:

Dial number:

MTU:

Keep Alive:

LCP interval (sec):

LCP fails:

Extra options:

Interface:

Miscellaneous

NAT:

firewall:

Figure 24. The page for creating a new connection. The **PPP settings** and **Miscellaneous** sections.

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

Parameter	Description
MTU	The maximum size of units transmitted by the interface. <i>Optional.</i>
Keep Alive	Select the checkbox if you want the router to keep you connected to the network of your operator even when the connection has been inactive for a specified period of time. When the checkbox is selected, the LCP interval and LCP fails fields are available. Specify the required values.
Extra options	In the field, you can specify additional data for encryption or authentication. <i>Optional.</i>
Interface	The name assigned to the connection by the system.
Miscellaneous	
NAT	Select the checkbox if you want one WAN IP address to be used for all computers of your LAN.
Firewall	Select the checkbox to enable protection against ARP and DDoS attacks.

Click the **Save** button.

Creating ADSL WAN Connection

Net / Connections

General settings

Connection type and common settings

Name:

Connection Type:

Enable:

Direction: *WAN*

Physical layer

Physical interface selection and tuning

Physical interface:

VPI (0-255):

VCI (32-65535):

Encapsulation Mode:

QoS:

VLAN settings

Virtual local area network settings

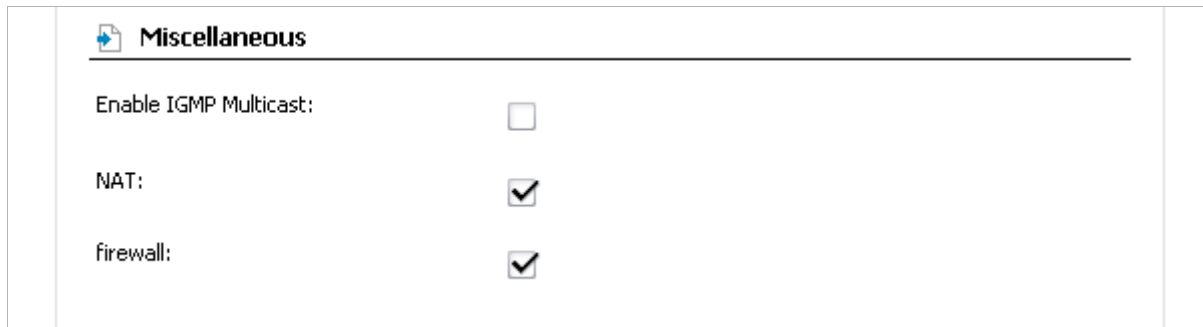
Use VLAN:

Figure 25. The page for creating a new connection. The **General settings**, **Physical layer** and **VLAN settings** sections.

Parameter	Description
General settings	
Name	A name for connection for easier identification.
Connection Type	A type of network protocol to be used by the connection. Available values: <ul style="list-style-type: none"> • PPPoA • PPPoE • IPoE • IPoA • Bridge.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
Physical layer	
Physical interface	A physical or virtual interface to which the new connection will be assigned. Leave the Create value to create a new interface at the physical layer.
VPI	Virtual Path Identifier. The valid range is from 0 to 250.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select LLC or VC from the drop-down list.
QoS	A class of traffic for this connection. <p>UBR Without PCR</p> <p><i>(Unspecified Bit Rate without Peak Cell Rate):</i> 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.</p> <p>UBR With PCR</p> <p><i>(Unspecified Bit Rate with Peak Cell Rate):</i> 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</p>

Parameter	Description
	<p>second).</p> <p>CBR</p> <p><i>(Constant Bit Rate)</i>: 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).</p> <p>Non Realtime VBR</p> <p><i>(Non-Real-time Variable Bit Rate)</i>: 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.</p> <p>Realtime VBR</p> <p><i>(Real-time Variable Bit Rate)</i>: 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.</p>
VLAN settings	
Use VLAN	Select the checkbox to allow the router to apply VLAN tagging.
VLAN priority	A priority tag for the type of traffic transmitted.
VLAN ID	An identifier for the VLAN.

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




The screenshot shows a web-based configuration interface for a router. At the top, there is a section header 'Miscellaneous' with a blue folder icon to its left. Below this header, there are three configuration items, each with a label on the left and a checkbox on the right. The first item is 'Enable IGMP Multicast:' with an unchecked checkbox. The second item is 'NAT:' with a checked checkbox. The third item is 'firewall:' with a checked checkbox.

Figure 26. The page for creating a new connection. The **Miscellaneous** section.

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

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

 **PPP settings**

Enter the username, password, and other settings provided by the ISP. Leave the default values for the remaining fields.

PPP Username:

Without authorization:

Password:

Password confirmation:

Authentication algorithm:

Service name:

Dial on demand:

MTU:

PPP IP extension:

Keep Alive:

LCP interval (sec):

LCP fails:

Use Static IP Address:

PPP debug:

PPPoE pass through:

Interface:

Figure 27. The page for creating a new connection. The **PPP settings** section.

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

Parameter	Description
Password confirmation	The confirmation of the entered password (to avoid mistypes).
Authentication algorithm	Select a required authentication method from the drop-down list or leave the AUTO value.
Service name	The name of the PPPoE authentication server.
Dial on demand	Select the checkbox if you want the router to establish connection to the Internet on demand. In the Maximum idle time field, specify a period of inactivity (in seconds) after which the connection should be terminated.
MTU	The maximum size of units transmitted by the interface.
PPP IP extension	This option is used by some ISPs. Contact your ISP to clarify if this checkbox needs to be enabled.
Keep Alive	Select the checkbox if you want the router to keep you connected to your ISP even when the connection has been inactive for a specified period of time. When the checkbox is selected, the LCP interval and LCP fails fields are available. Specify the required values.
Use Static IP Address	Select the checkbox if you want to use a static IP address to access the Internet. In the IP Address field displayed when the checkbox is selected, specify a static IP address.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
PPPoE pass through	<i>Displayed for the PPPoE type only.</i> Select the checkbox if you want to allow PPPoE clients of computers from your LAN to connect to the Internet through this PPPoE connection of the router.
Interface	The name assigned to the connection by the system.

The **IP settings** section is displayed for the **IPoE** and **IPoA** connection types.

Figure 28. The page for creating a new connection. The **IP settings** section.

Parameter	Description
IP settings	
Obtain an IP address automatically	<i>Displayed for the IPoE type only.</i> Select the checkbox to configure automatic IP address assignment for this connection. When the checkbox is selected, the IP Address , Netmask , and Gateway IP Address fields are not displayed.
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.
Vendor ID	<i>Displayed for the IPoE type only.</i> The identifier of your ISP. This field is specified when the ISP assigns an IP address automatically (the Obtain an IP address automatically checkbox is selected). <i>Optional.</i>
Interface	The name assigned to the connection by the system.

Click the **Save** button.

Creating Ethernet WAN Connection

Prior to creating an Ethernet WAN connection, specify a LAN port that will be used as the WAN port (see the *Interface Grouping* section, page 63).

The screenshot shows the 'Net / Connections' configuration page. It is divided into two main sections: 'General settings' and 'Physical layer'.
General settings: This section is titled 'Connection type and common settings'. It includes:
 - Name: A text input field containing 'ipoe_eth1_0'.
 - Connection Type: A dropdown menu set to 'IPoE'.
 - Enable: A checked checkbox.
 - Direction: A dropdown menu set to 'WAN'.
Physical layer: This section is titled 'Physical interface selection and tuning'. It includes:
 - Physical interface: A dropdown menu set to 'LAN2'.
 - MAC: A series of six input fields containing the hexadecimal values '1C', 'BD', 'B9', '7B', '04', and '24'.

Figure 29. The page for creating a new connection. The **General settings** and **Physical layer** sections.

Parameter	Description
General settings	
Name	A name for connection for easier identification.
Connection Type	A type of network protocol to be used by the connection. Available values: <ul style="list-style-type: none"> • PPPoE • IPoE (for the Static IP and DHCP connection types).
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
Physical layer	
Physical interface	Select the value corresponding to the LAN port specified as the WAN port.
MAC	A MAC address assigned to the interface.

Parameter	Description
VLAN settings	
(The section is displayed, if the VLAN MUX Mode choice of the Ethernet WAN type radio button is selected on the Advanced / Interface grouping page.)	
Use VLAN	The checkbox indicates that the router is allowed to apply VLAN tagging.
VLAN priority	A priority tag for the type of traffic transmitted.
VLAN ID	An identifier for the VLAN.
Miscellaneous	
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all computers of your LAN.
Firewall	Select the checkbox to enable protection against ARP and DDoS attacks.

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

PPP settings

Enter the username, password, and other settings provided by the ISP. Leave the default values for the remaining fields.

PPP Username:	<input type="text"/>
Without authorization:	<input type="checkbox"/>
Password:	<input type="text"/>
Password confirmation:	<input type="text"/>
Authentication algorithm:	<input type="text" value="AUTO"/>
Service name:	<input type="text"/>
Dial on demand:	<input type="checkbox"/>
MTU:	<input type="text" value="1492"/>
PPP IP extension:	<input type="checkbox"/>
Keep Alive:	<input checked="" type="checkbox"/>
LCP interval (sec):	<input type="text" value="30"/>
LCP fails:	<input type="text" value="3"/>
Use Static IP Address:	<input type="checkbox"/>
PPP debug:	<input type="checkbox"/>
PPPoE pass through:	<input type="checkbox"/>
Interface:	<input type="text"/>

Figure 30. The page for creating a new connection. The **PPP settings** section.

Parameter	Description
PPP settings	
PPP Username	A username (login) to access the Internet.
Without authorization	Select the checkbox if you don't need to enter a username and password to access the Internet.
Password	A password to access the Internet.
Password confirmation	The confirmation of the entered password (to avoid mistypes).
Authentication algorithm	Select a required authentication method from the drop-down list or leave the AUTO value.
Service name	The name of the PPPoE authentication server.
Dial on demand	Select the checkbox if you want the router to establish connection to the Internet on demand. In the Maximum idle time field, specify a period of inactivity (in seconds) after which the connection should be terminated.
MTU	The maximum size of units transmitted by the interface.
PPP IP extension	This option is used by some ISPs. Contact your ISP to clarify if this checkbox needs to be enabled.
Keep Alive	Select the checkbox if you want the router to keep you connected to your ISP even when the connection has been inactive for a specified period of time. When the checkbox is selected, the LCP interval and LCP fails fields are available. Specify the required values.
Use Static IP Address	Select the checkbox if you want to use a static IP address to access the Internet. In the IP Address field displayed when the checkbox is selected, specify a static IP address.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
PPPoE pass through	Select the checkbox if you want to allow PPPoE clients of computers from your LAN to connect to the Internet through this PPPoE connection of the router.
Interface	The name assigned to the connection by the system.

The **IP settings** section is displayed for the **IPoE** connection type.

Figure 31. The page for creating a new connection. The **IP settings** section.

Parameter	Description
IP settings	
Obtain an IP address automatically	Select the checkbox to configure automatic IP address assignment for this connection. When the checkbox is selected, the IP Address , Netmask , and Gateway IP Address fields are not displayed.
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.
Vendor ID	The identifier of your ISP. This field is specified when the ISP assigns an IP address automatically (the Obtain an IP address automatically checkbox is selected). <i>Optional.</i>
Interface	The name assigned to the connection by the system.

Click the **Save** button.

Wi-Fi

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

Common settings

On the **Wi-Fi / Common settings** page, you can enable your wireless local area network (WLAN).

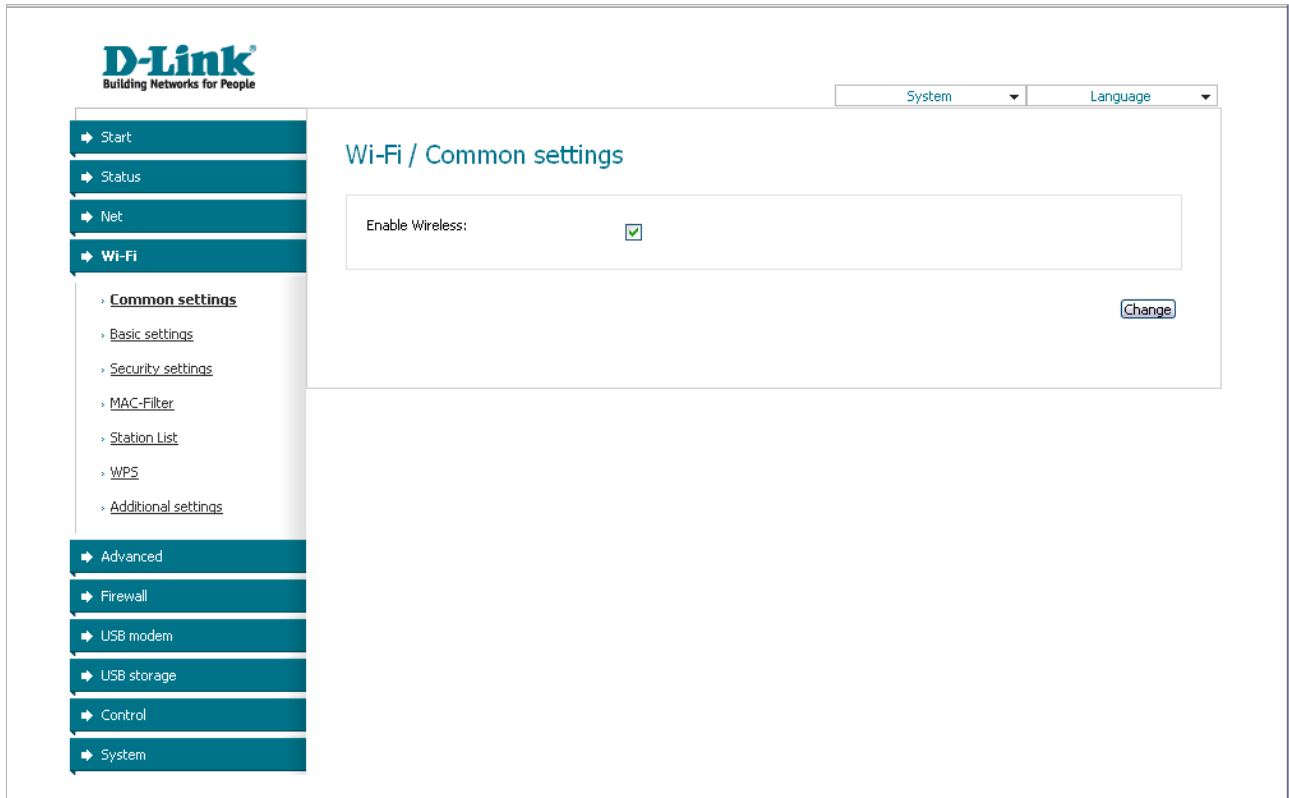


Figure 32. The page for enabling/disabling the wireless LAN.

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

Basic Settings

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

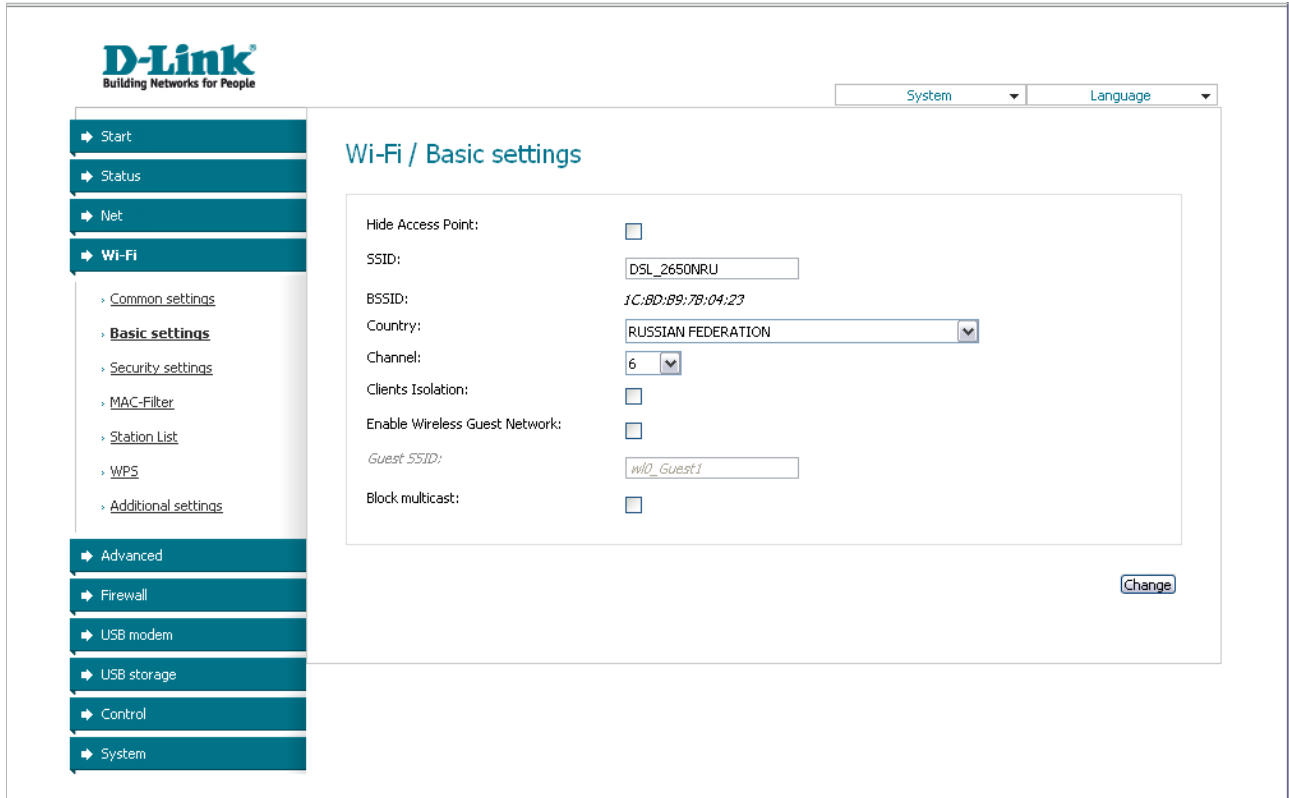


Figure 33. Basic settings of the wireless LAN.

Parameter	Description
Hide Access Point	If the checkbox is selected, other users cannot see your Wi-Fi network. (It is recommended not to select this checkbox in order to simplify initial configuration of your WLAN.)
SSID	A name for the WLAN. By default, the value DSL_2650NRU is specified. It is recommended to specify another name for the network upon initial configuration (use digits and Latin characters).
BSSID	The parameter that uniquely identifies your wireless network. You cannot change the value of this parameter.
Country	The country you are in. Select a value from the drop-down list.
Channel	The wireless channel number. By default, channel 6 is specified. If you want to use another channel, select a value from the drop-down list. When the auto value is selected, the router itself chooses the channel with the least interference.
Clients Isolation	Select the checkbox to isolate the users of your WLAN (to forbid wireless clients to communicate to each other).
Enable Wireless Guest Network	Select the checkbox to create a separate part of your WLAN with open authentication type and with no password.
Guest SSID	A name for the guest part of your WLAN.
Block multicast	Select the checkbox to disable multicasting for the router's WLAN. Deselect the checkbox to enable multicasting from WAN connections for which the Enable IGMP Multicast checkbox is selected.

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

Security Settings

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

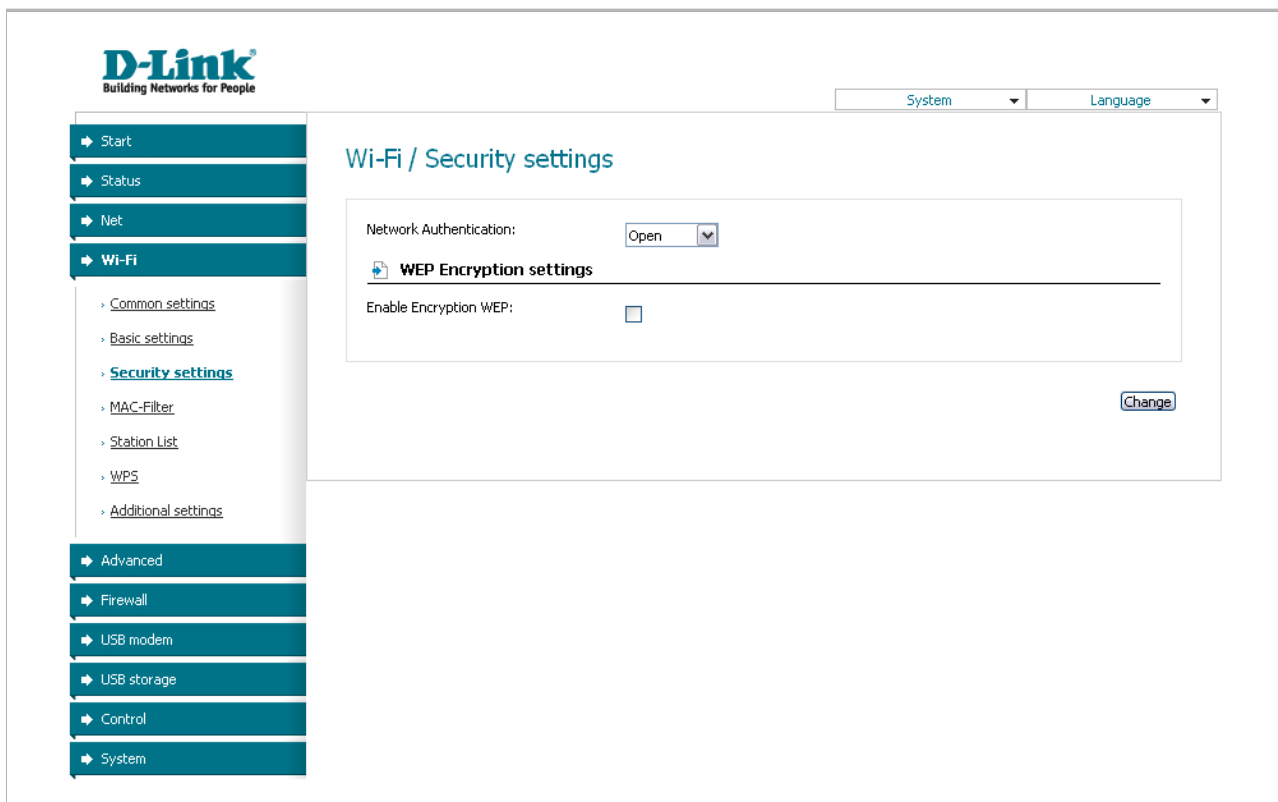


Figure 34. The default security settings.

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

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

The router supports the following authentication types:

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

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

The screenshot shows the 'Wi-Fi / Security settings' page. At the top, 'Network Authentication' is set to 'Open'. Below this, the 'WEP Encryption settings' section is expanded, showing three options: 'Enable Encryption WEP' (checked), 'Encryption Key WEP as HEX' (checked), and 'Encryption Key WEP (1)' (text input field containing '1234567890'). A 'Change' button is located at the bottom right of the settings area.

Figure 35. The **Open** value is selected from the **Network Authentication** drop-down list.

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

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

The screenshot shows the 'Wi-Fi / Security settings' page. Under 'Network Authentication', 'WPA2-PSK' is selected in a dropdown menu. The 'Encryption Key PSK' field contains '1234567890'. The 'WPA2 Pre-authentication' checkbox is unchecked. A section titled 'WPA Encryption settings' is expanded, showing 'WPA Encryption' set to 'TKIP+AES' and 'WPA renewal' set to '3600'. A 'Change' button is located at the bottom right of the settings area.

Figure 36. The **WPA2-PSK** value is selected from the **Network Authentication** drop-down list.

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

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

MAC Filter

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

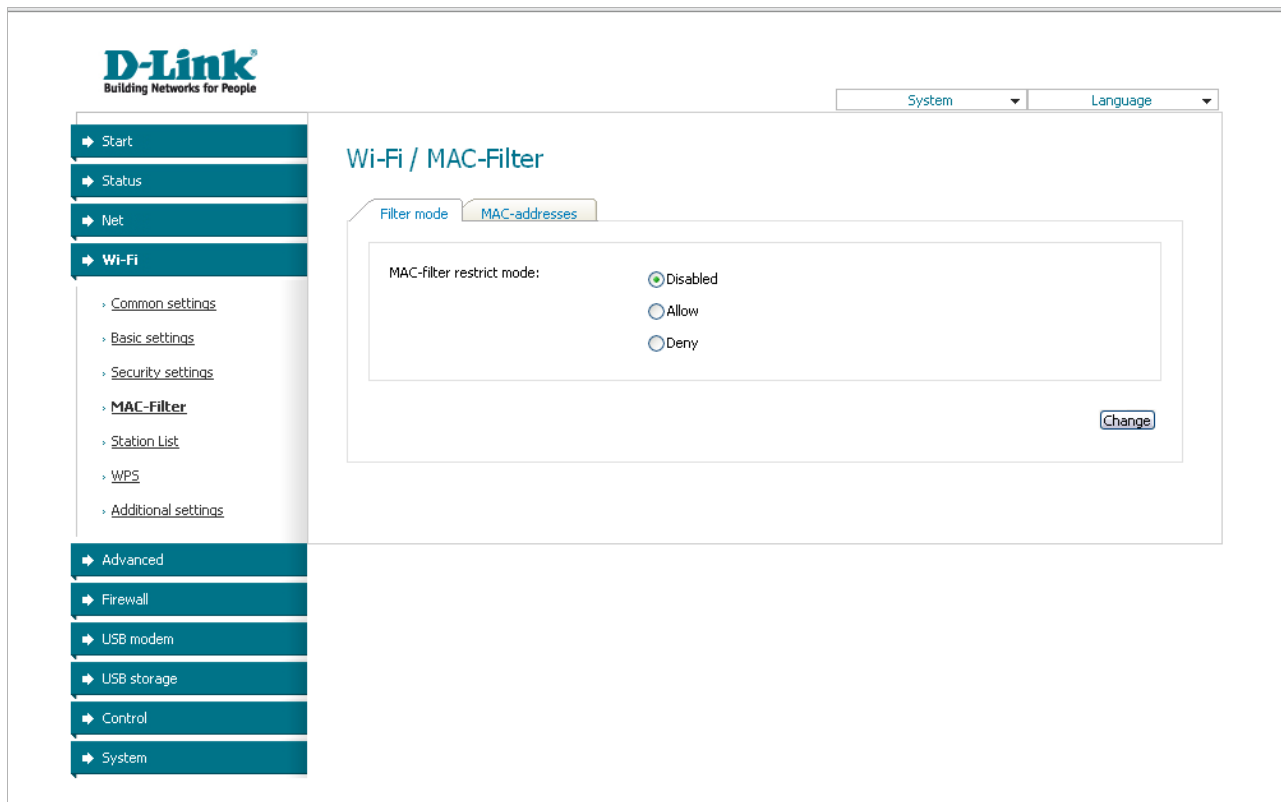


Figure 37. The MAC filter for the wireless network.

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

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

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

To add a MAC address to which the selected filtering mode will be applied, proceed to the **MAC-addresses** tab, enter this address in the **MAC-address** field of the **MAC-address adding** section, and click the **Add** button. After that, the entered address will be displayed in the **MAC-address list** section.

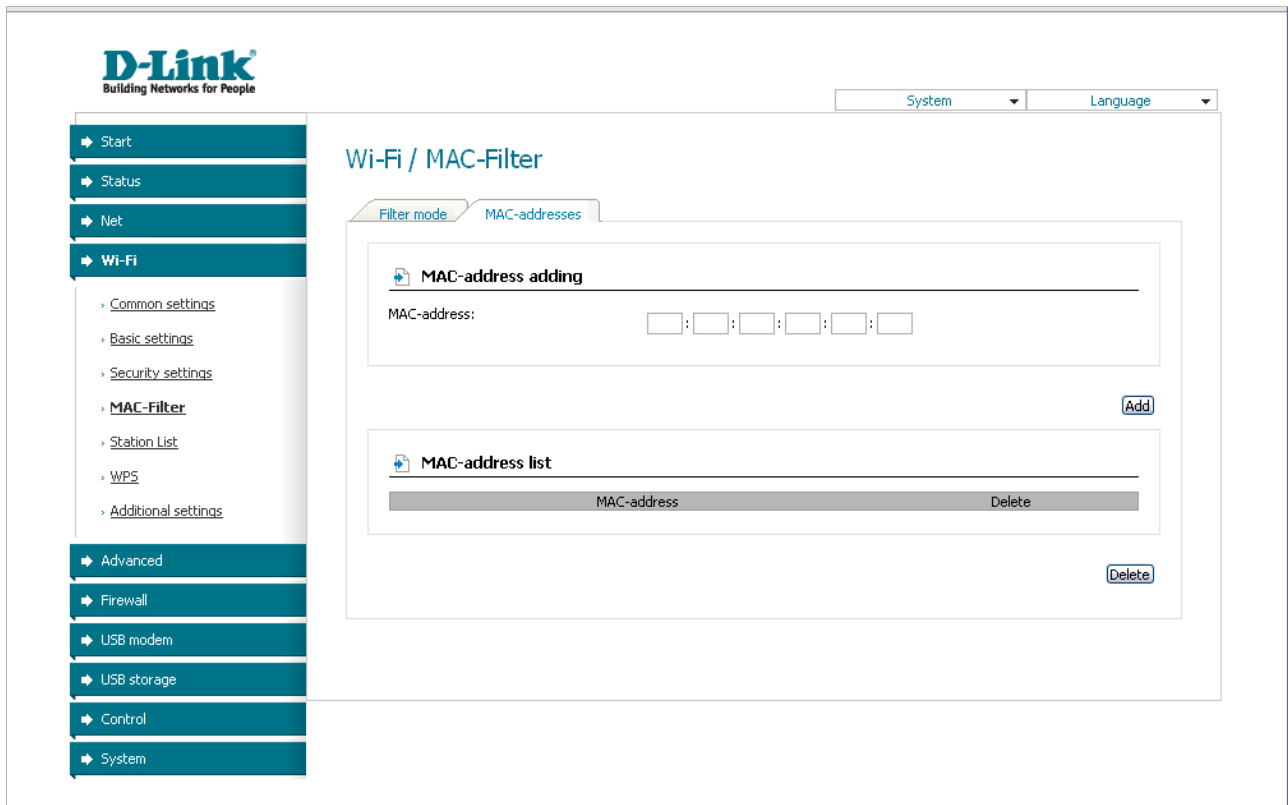


Figure 38. The tab for adding a MAC address.

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

Station List

On the **Wi-Fi / Station List** page, you can view the list of wireless devices connected to the router.

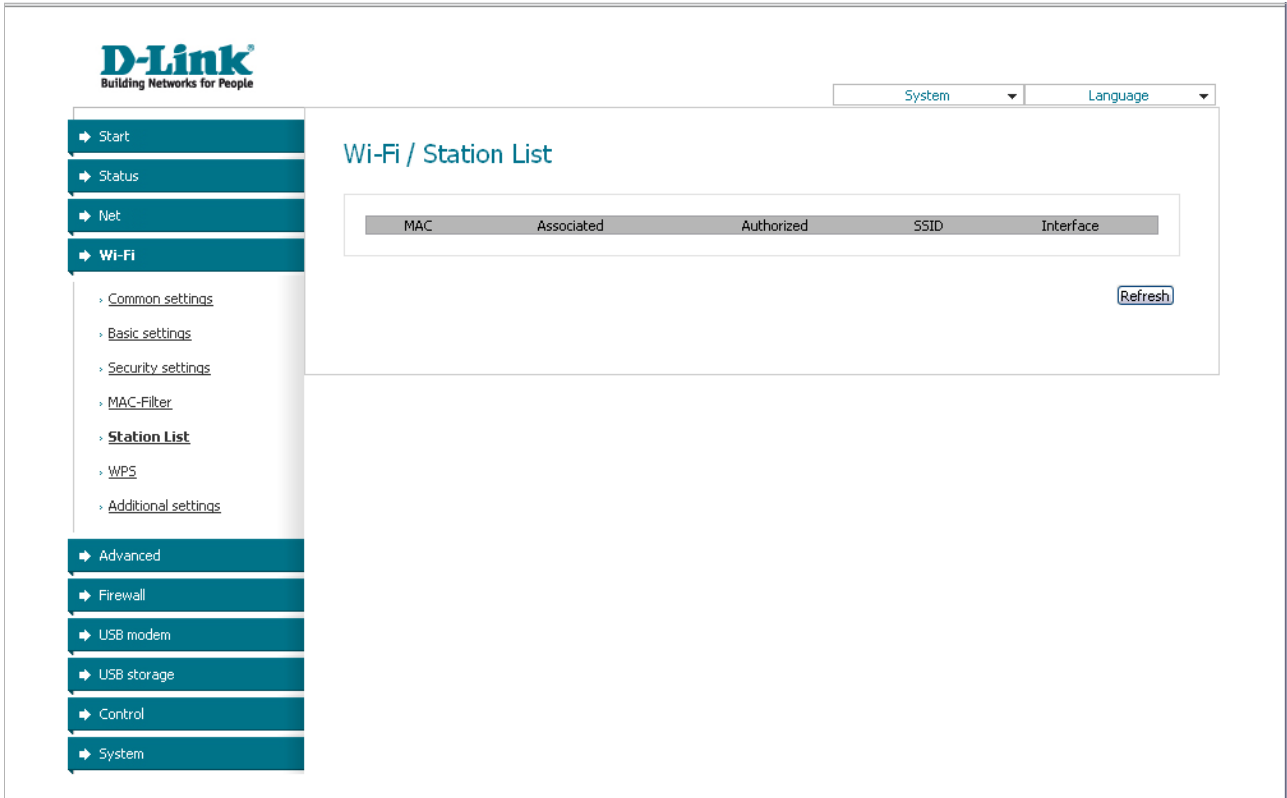


Figure 39. The list of the router's wireless clients.

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

WPS

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

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

! Before using the WPS function it is required to configure a type of WPA encryption.

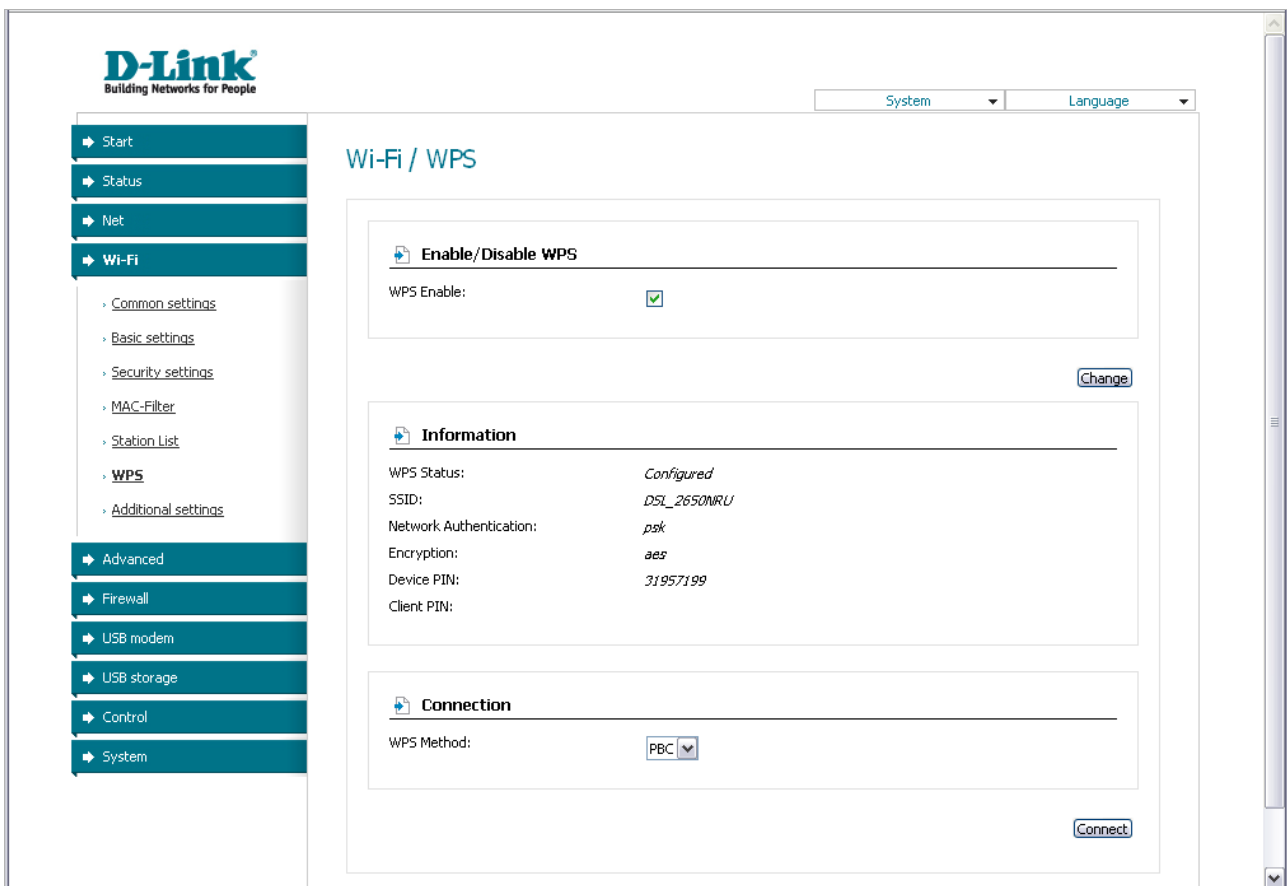


Figure 40. The page for configuring the WPS function.

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

Parameter	Description
WPS Status	The state of connecting the wireless device via the WPS function.
SSID	The name of the router's WLAN.
Network Authentication	The network authentication type specified for the WLAN.
Encryption	The encryption type specified for the WLAN.
Device PIN	The PIN code of the router.
Client PIN	The PIN code of the device newly connected to the router via the WPS function.
WPS Method	A method of the WPS function. Select a value from the drop-down list. PIN : Connecting the device via the PIN code. PBC : Connecting the device via the push button (actual or virtual).
PIN Code	The PIN code of the WPS-enabled device that needs to be connected to the wireless network of the router. The field is displayed only when the PIN value is selected from the WPS Method drop-down list.
Connect	Click the button to connect the wireless device to the router's WLAN via the WPS function.

Using WPS Function via Web-based Interface

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

1. Select the **WPS Enable** checkbox.
2. Click the **Change** button.
3. Select the **PIN** value from the **WPS Method** drop-down list.
4. Select the PIN method in the software of the wireless device that you want to connect to the router's WLAN.
5. Click the relevant button in the software or on the cover of the wireless device that you want to connect to the WLAN.
6. Right after that, enter the PIN code specified on the cover of the wireless device or in its software in the **PIN Code** field.
7. Click the **Connect** button in the web-based interface of the router.

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

1. Select the **WPS Enable** checkbox.
2. Click the **Change** button.
3. Select the **PBC** value from the **WPS Method** drop-down list.
4. Select the PBC method in the software of the wireless device that you want to connect to the router's WLAN.
5. Click the relevant button in the software or on the cover of the wireless device that you want to connect to the WLAN.
6. Click the **Connect** button in the web-based interface of the router.

Using WPS Function without Web-based Interface

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

1. Configure a type of WPA encryption for the WLAN.
2. Select the **WPS Enable** checkbox.
3. Click the **Change** button.
4. Save the settings and close the web-based interface (click the **Save** line in the top-page menu displayed when the mouse pointer is over the **System** caption, then click the **Logout** line).

Later you will be able to add wireless devices to the WLAN by clicking the router's WPS button.

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 on the cover of the wireless device that you want to connect to the WLAN.
3. Click the WPS button of the router.

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

Advanced Settings

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

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

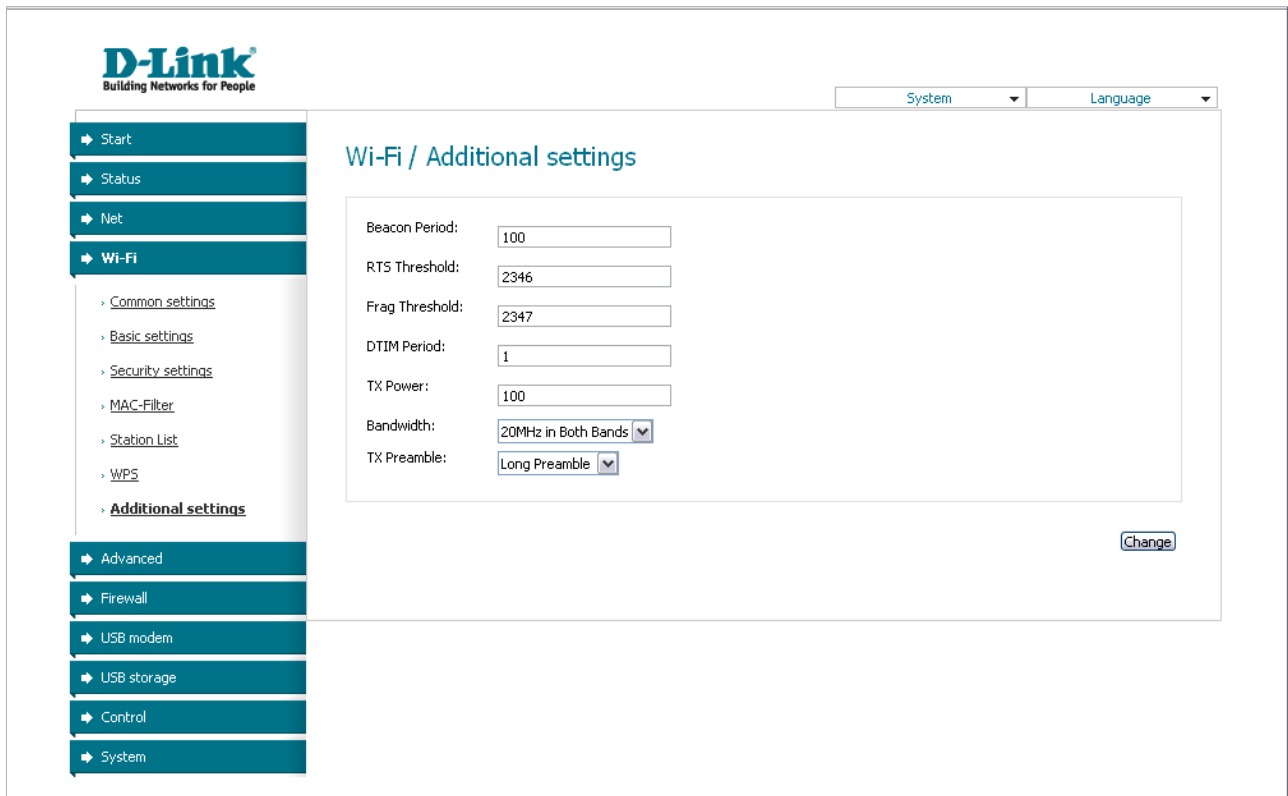


Figure 41. Advanced settings of the WLAN.

The following fields are available on the page:

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

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

Advanced

This menu provides advanced settings of the router. On the pages of this menu, you can define static routes and rules for remote access to the web-based interface, add name servers, enable the UPnP function, define interface groups and allow the router to connect to a private Ethernet line, configure a DDNS service, enable the SNMP agent, and edit the ADSL connection parameters.

SNMP

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

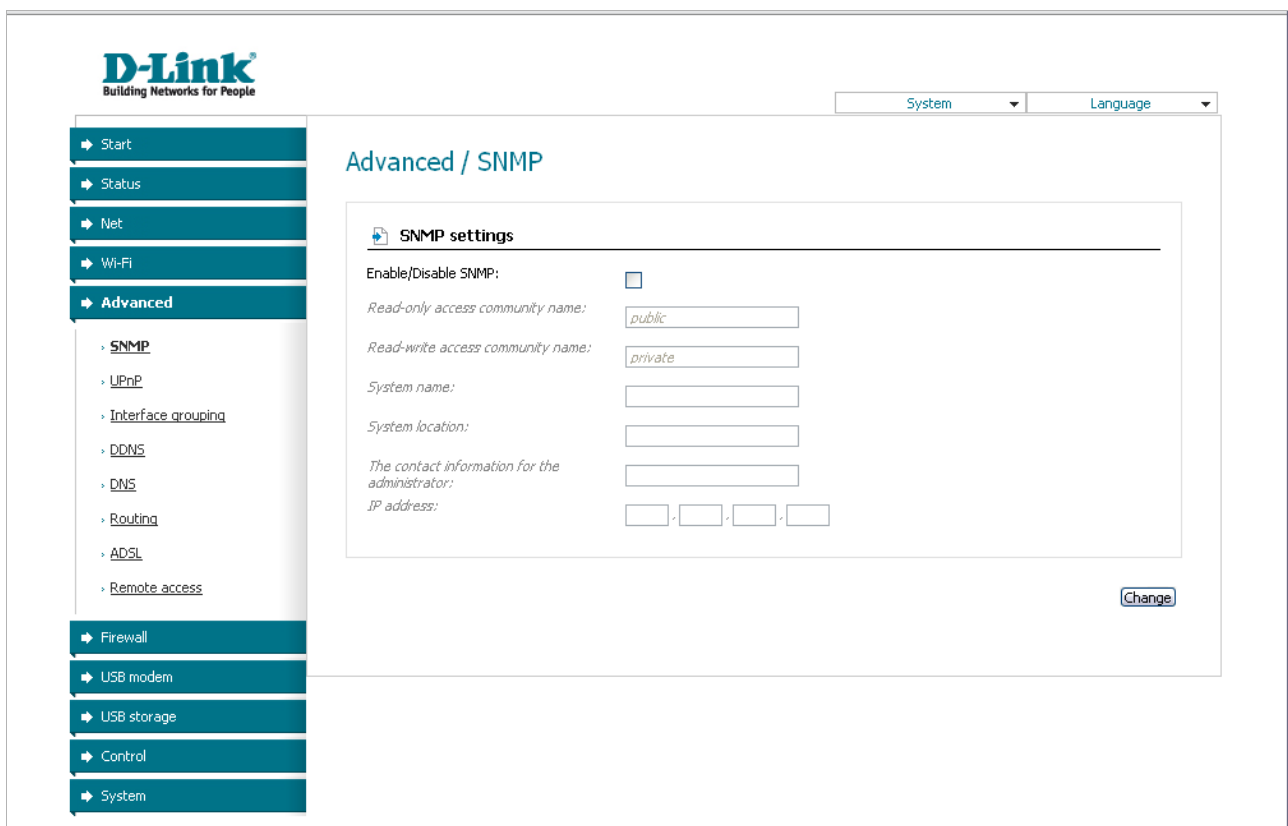


Figure 42. The Advanced / SNMP page.

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

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

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

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

UPnP

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

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

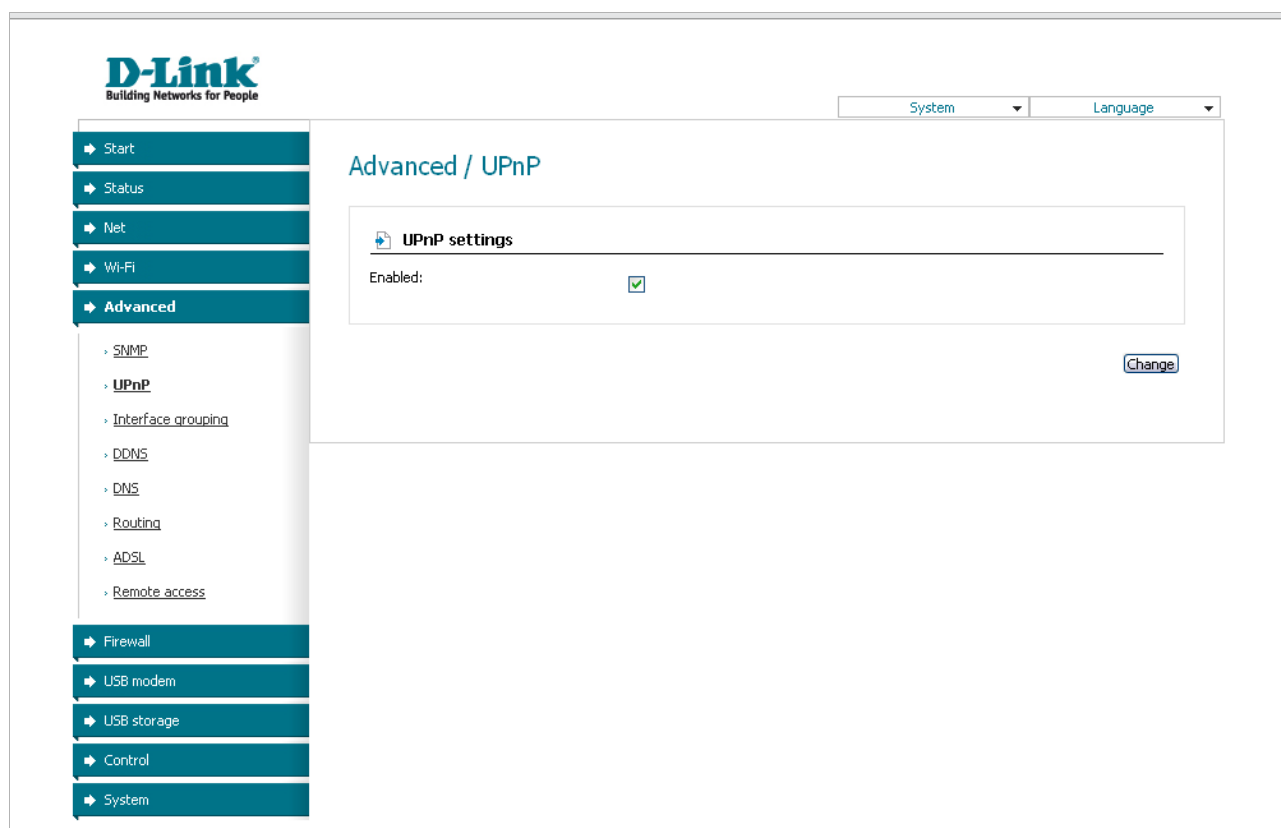


Figure 43. The **Advanced / UPnP** page.

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

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

Interface Grouping

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



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

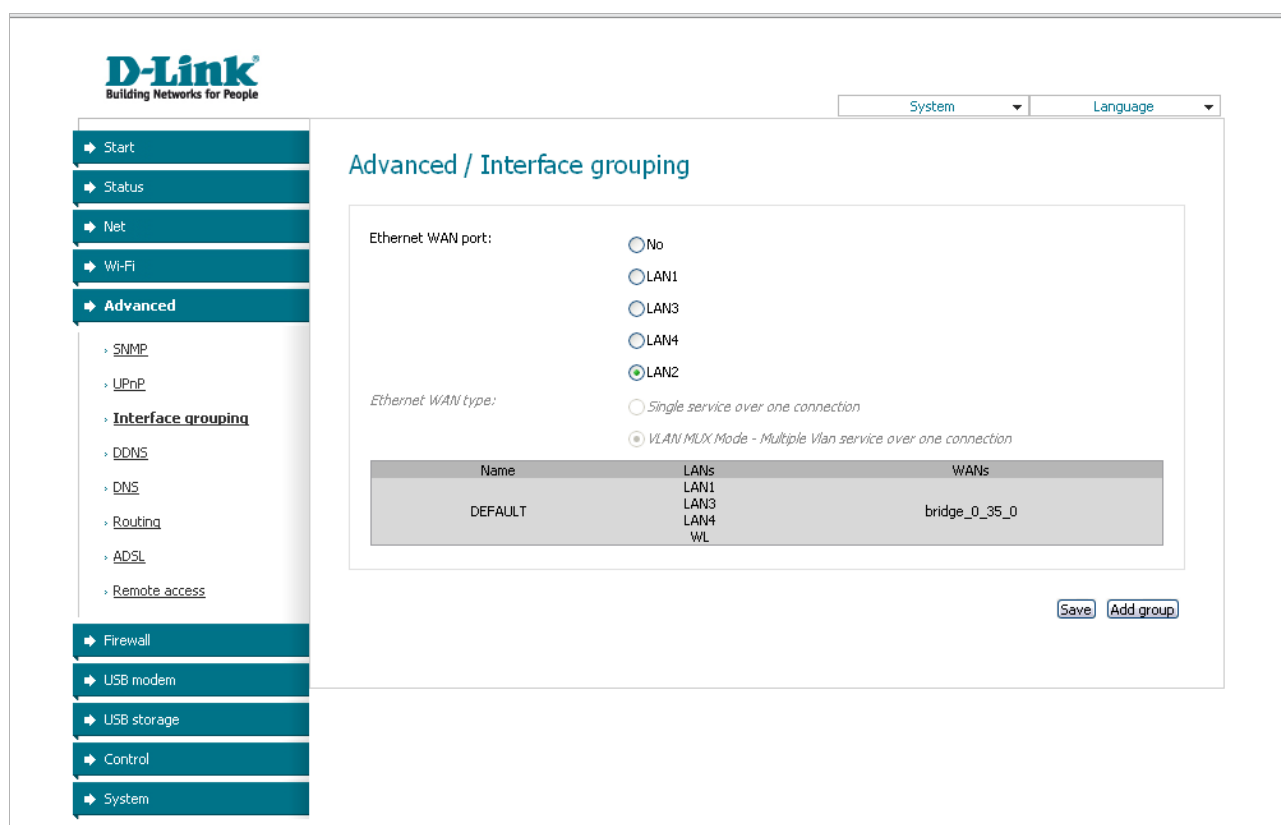


Figure 44. The **Advanced / Interface grouping** page.

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

1. Select the choice corresponding to the LAN port that will be used as the WAN port of the **Ethernet WAN port** radio button.
2. If you need to connect one or more VLANs to the created Ethernet WAN interface, select the **VLAN MUX Mode** choice of the **Ethernet WAN type** radio button.
3. Click the **Save** button.

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

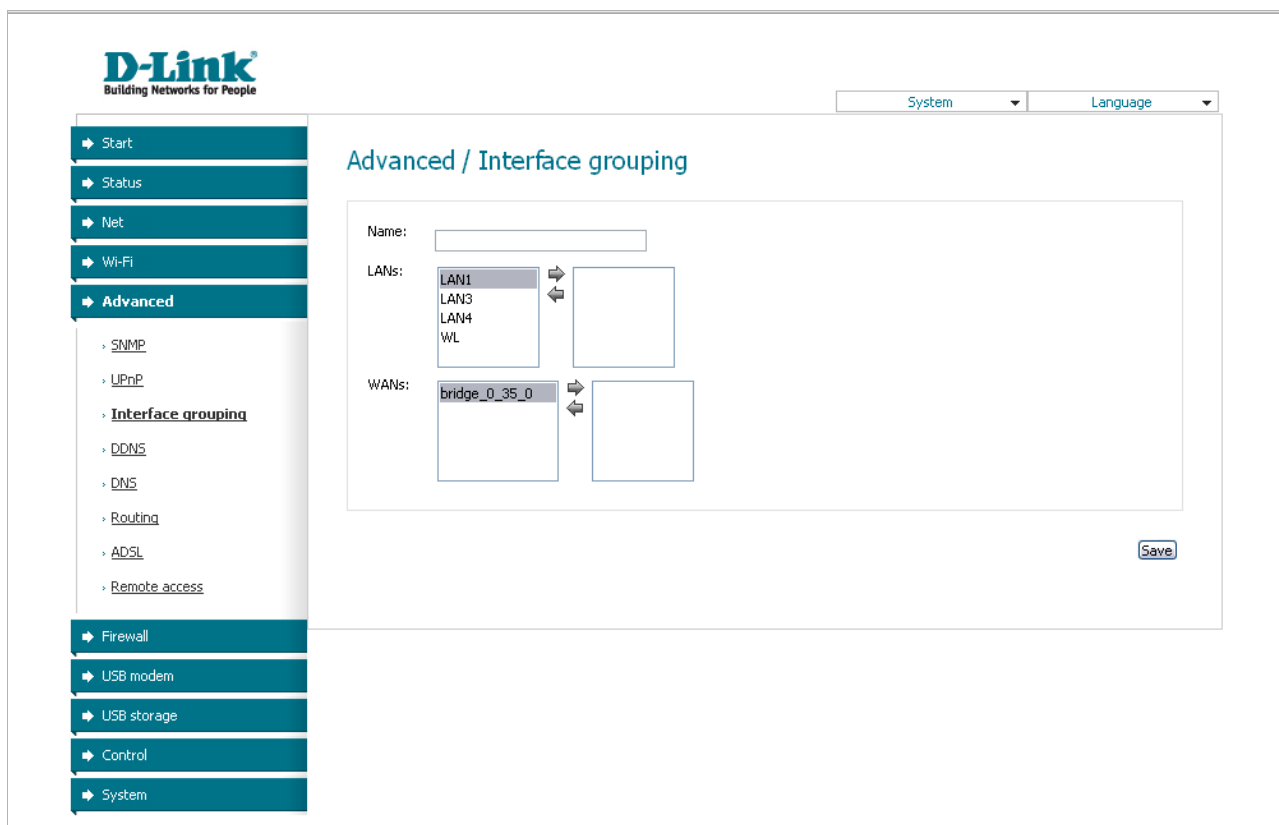


Figure 45. The page for adding a new group of ports.

You can specify the following parameters:

Parameter	Description
Name	A name for the group for easier identification. You can specify any name.
LANs	The list of available internal interfaces is displayed in the left column of the line. Use the button ==> to select interfaces. The selected interfaces will be displayed in the right column of the field.
WANs	WAN connections to which the new group will be assigned. Use the button ==> to select WAN connections. The selected connections will be displayed in the right column of the field.

Click the **Save** button.

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

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

DDNS

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

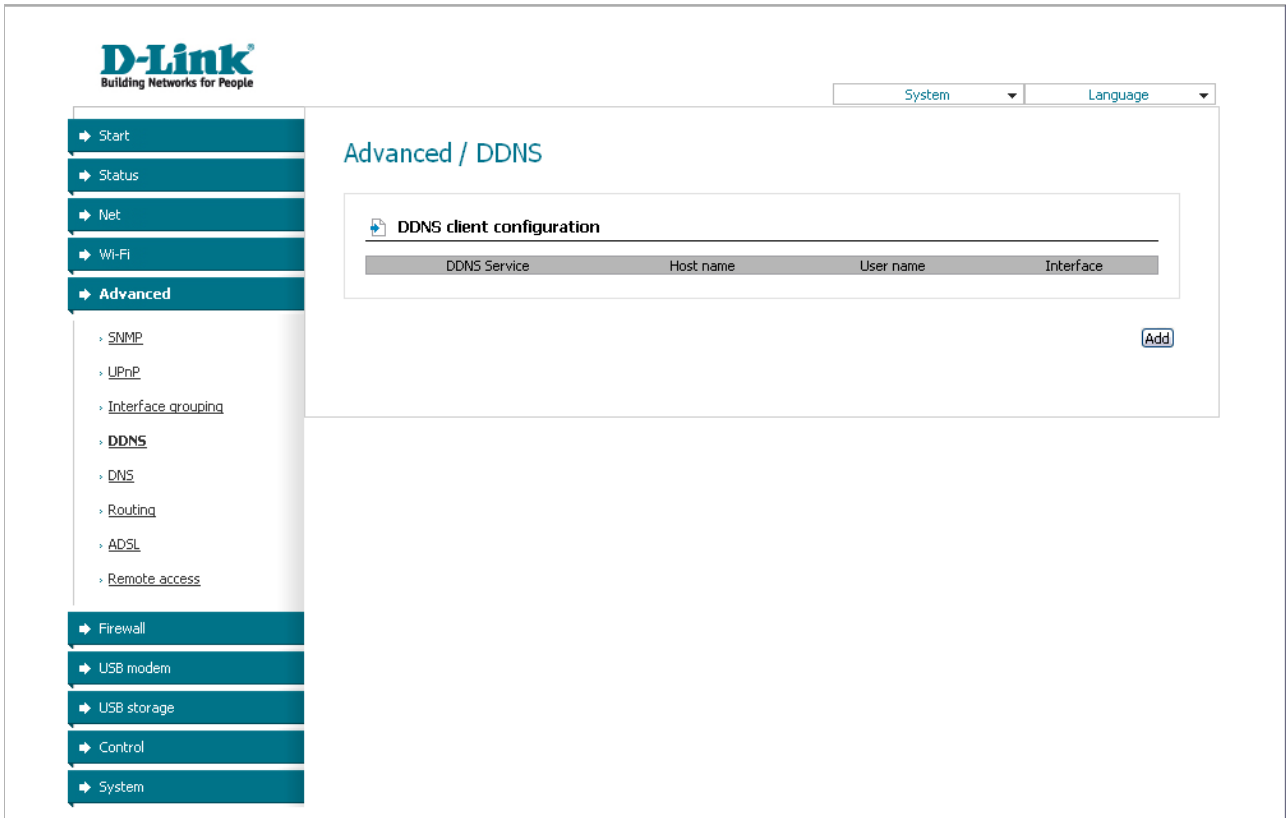


Figure 46. The **Advanced / DDNS** page.

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

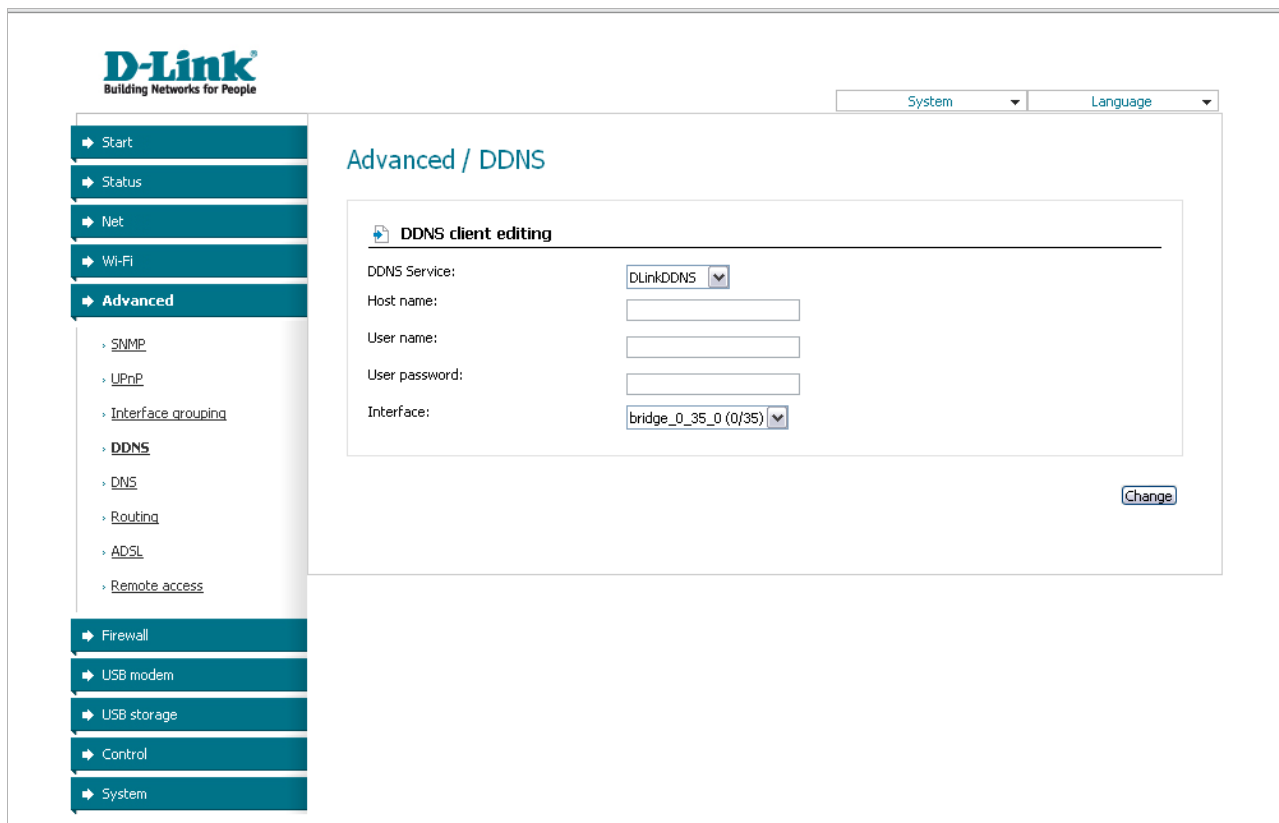


Figure 47. The page for adding a DDNS service.

You can specify the following parameters:

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

Click the **Change** button.

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

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

DNS

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

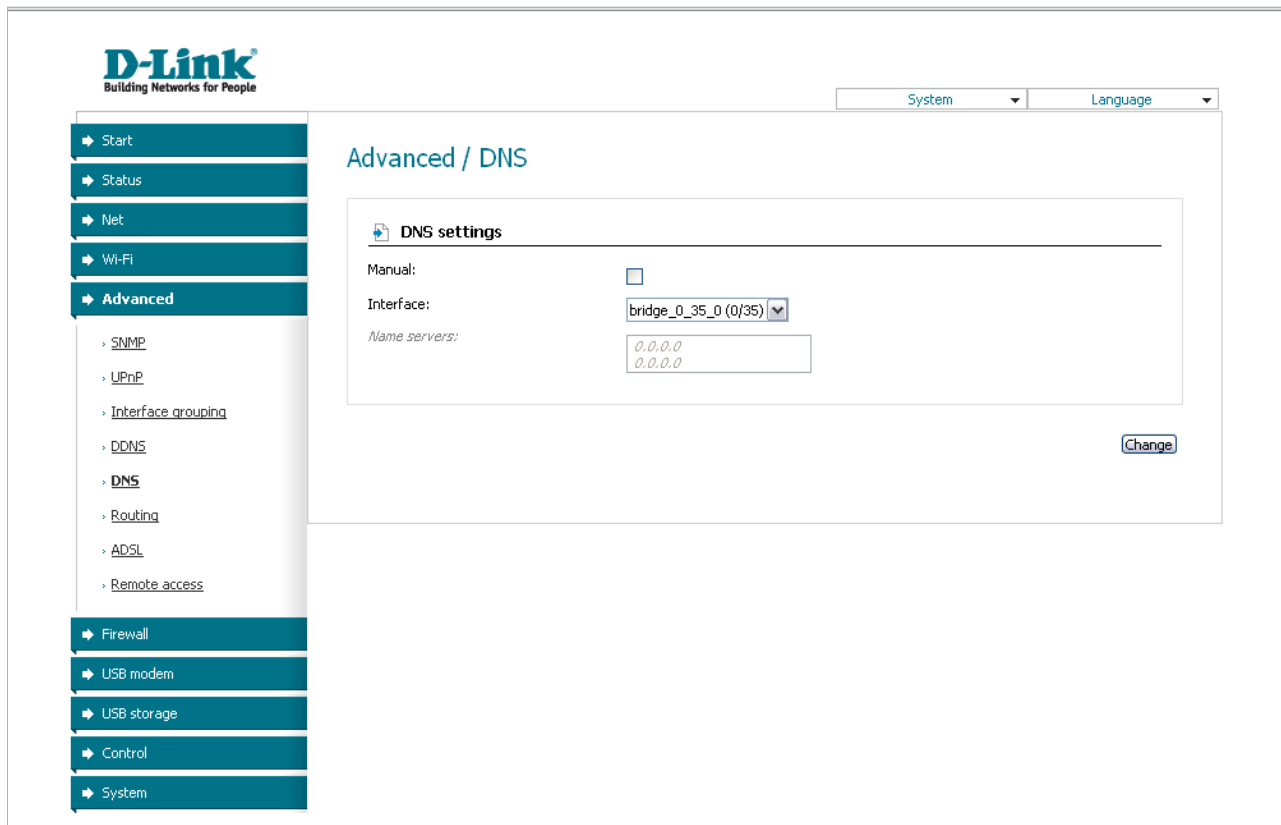


Figure 48. The **Advanced / DNS** page.

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

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

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

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

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

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

Routing

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

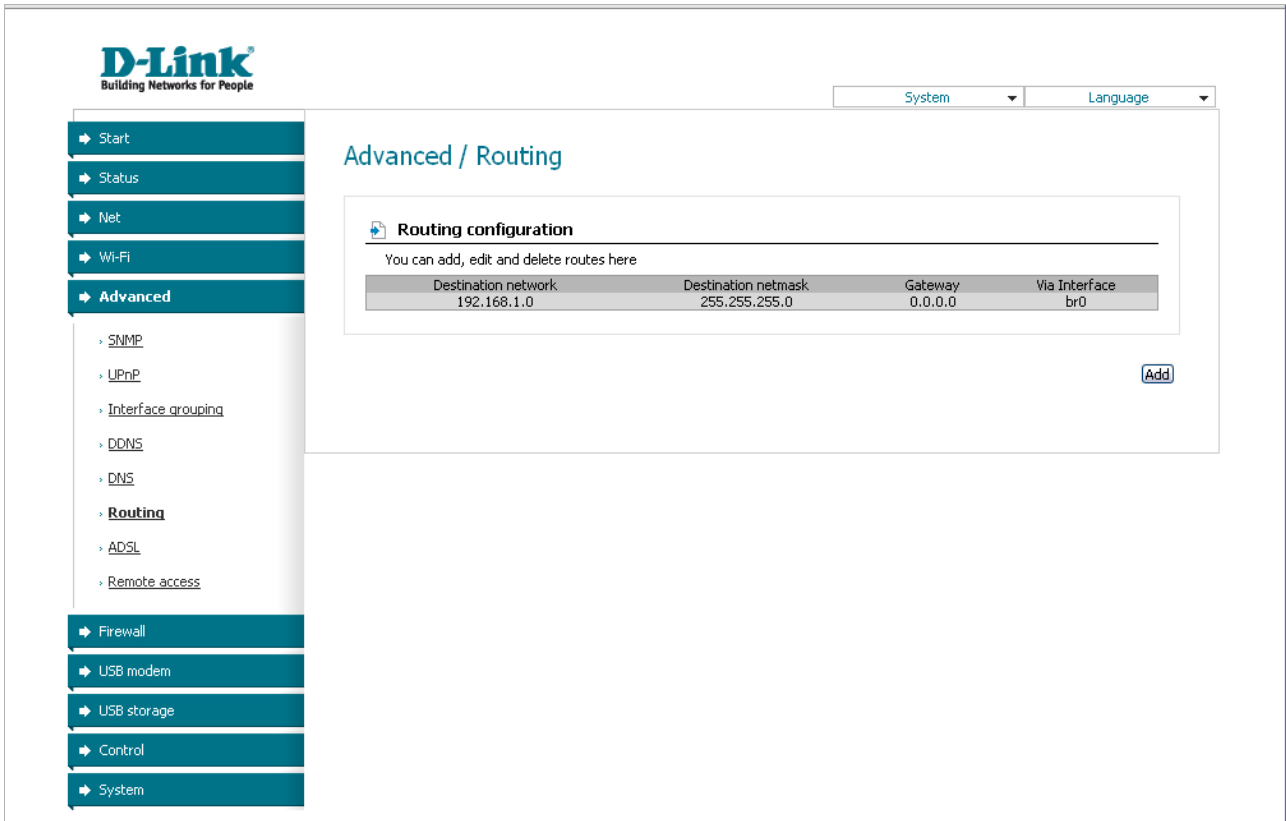


Figure 49. The **Advanced / Routing** page.

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

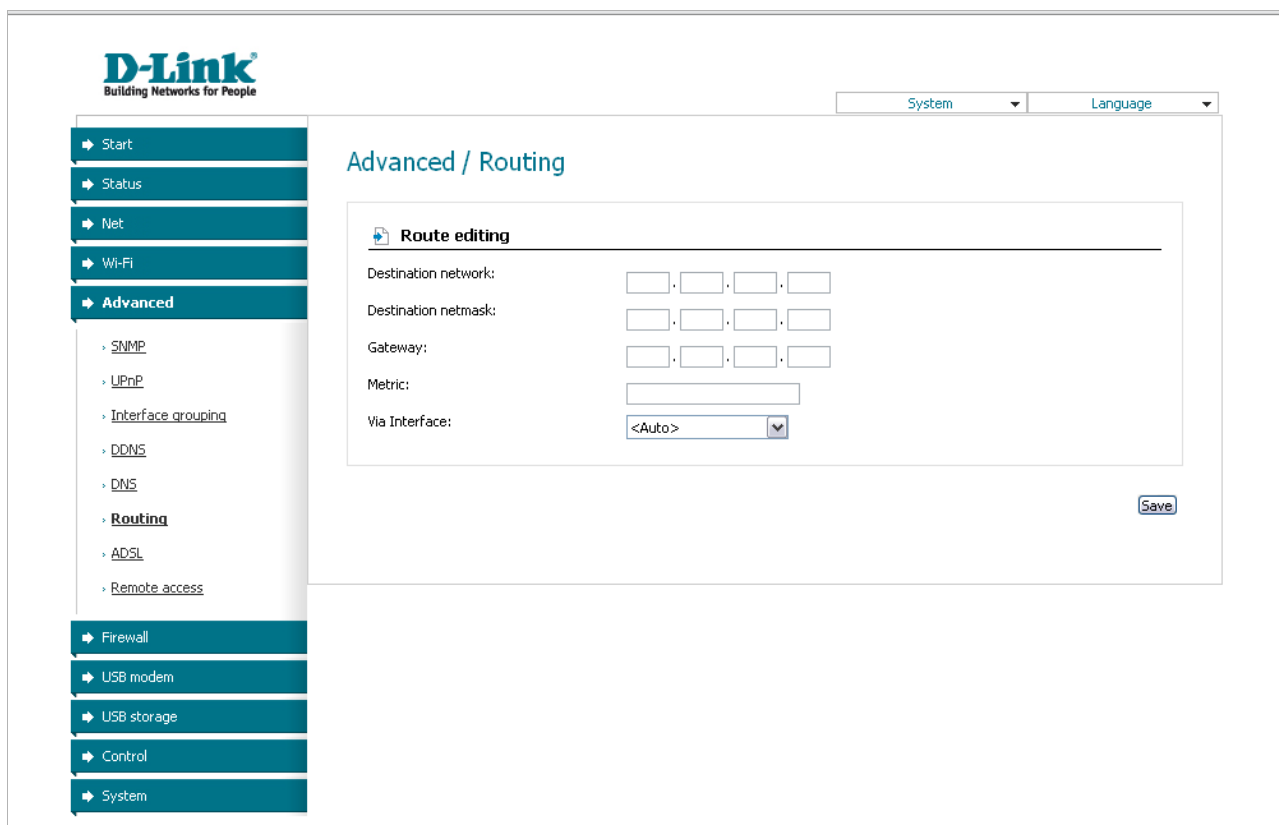


Figure 50. The page for adding a static route.

You can specify the following parameters:

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

Click the **Save** button.

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

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

ADSL

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

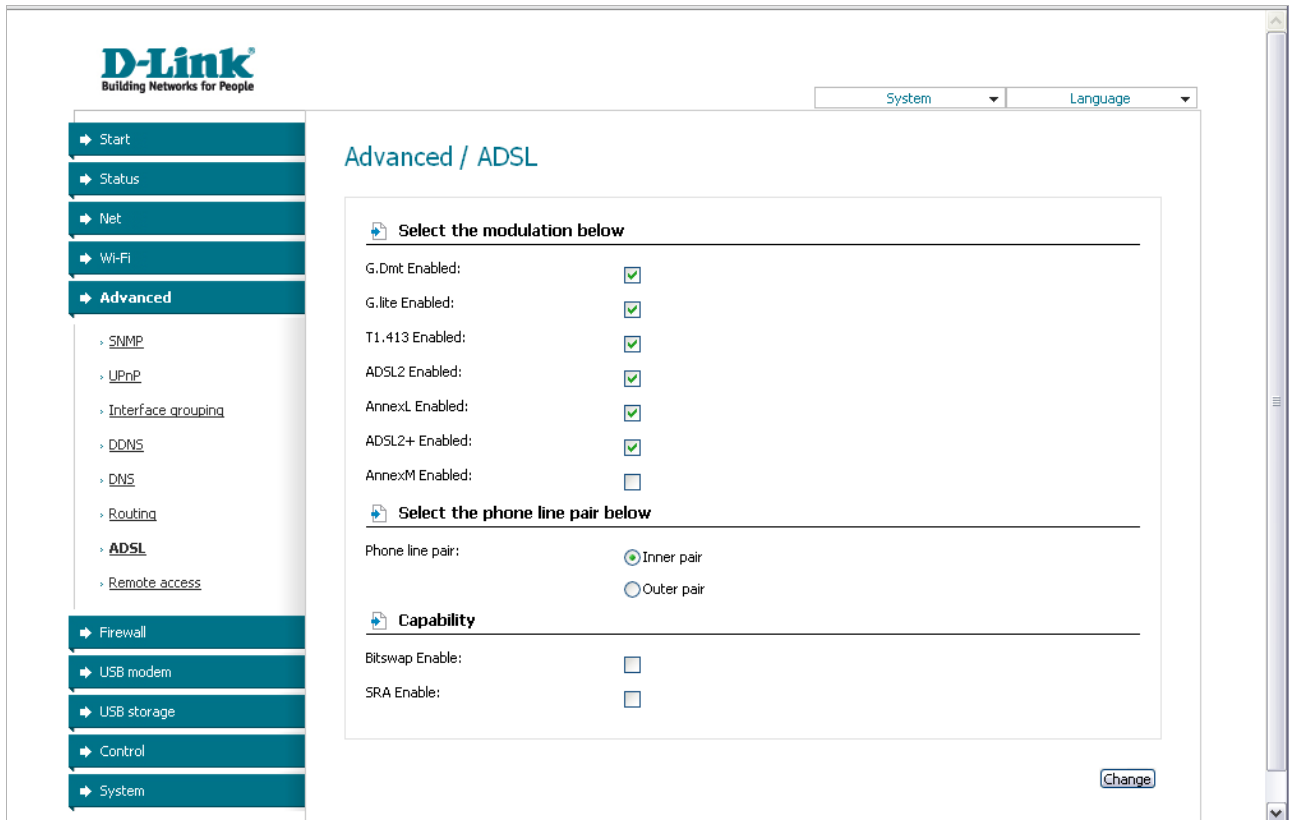


Figure 51. The **Advanced / ADSL** page.

Remote Access

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

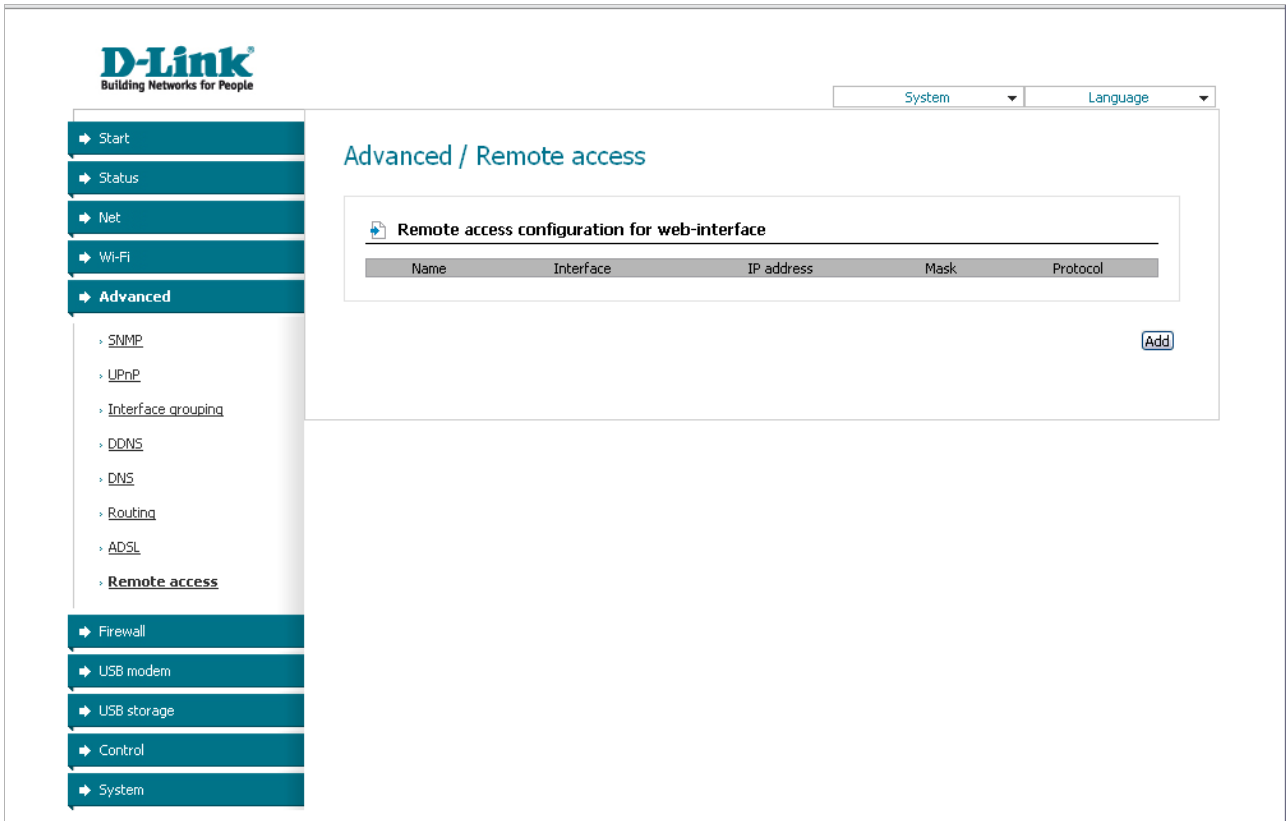


Figure 52. The **Advanced / Remote access** page.

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

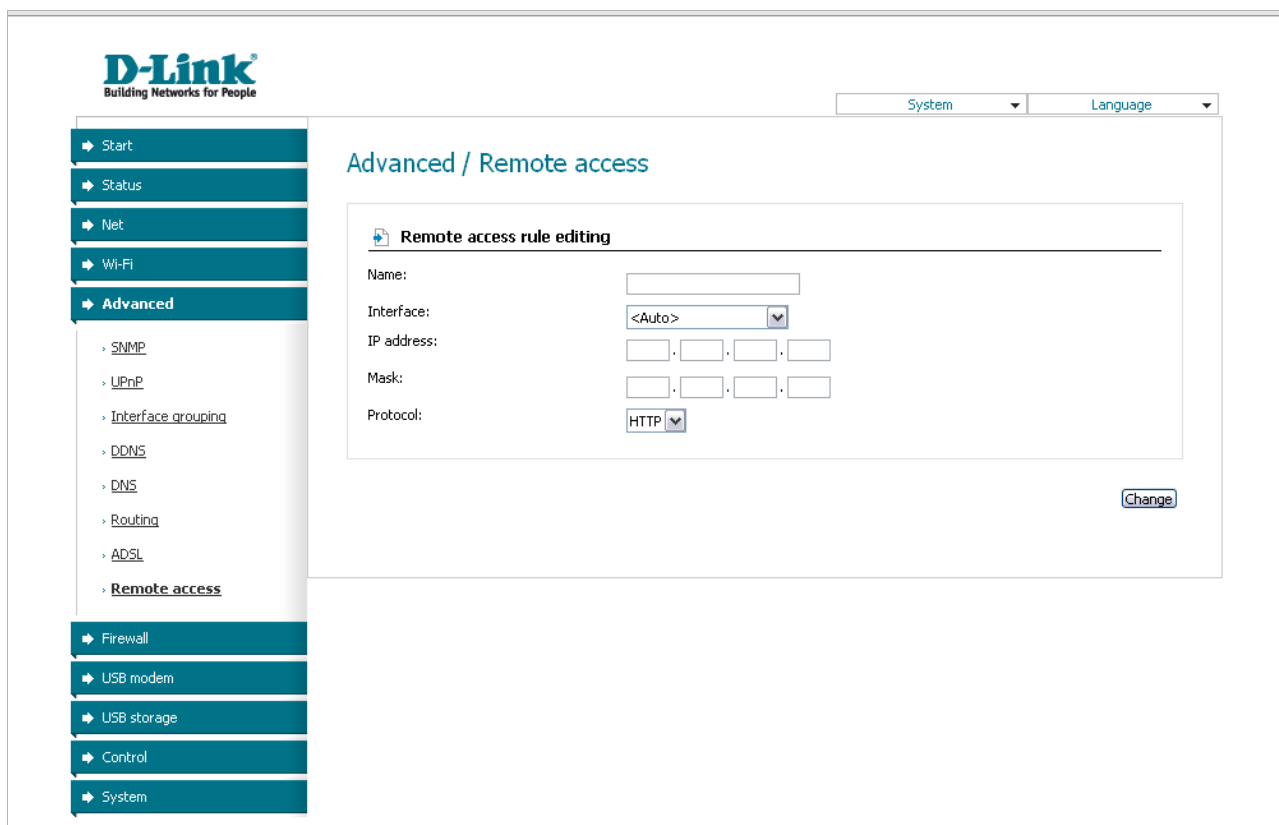


Figure 53. The page for adding a rule for remote management.

You can specify the following parameters:

Parameter	Description
Name	A name for the rule for easier identification. You can specify any name.
Interface	A physical interface through which the web-based interface of the router is accessed.
IP address	A host or a subnet to which the rule is applied.
Mask	The mask of the subnet.
Protocol	The protocol available for remote management of the router.

Click the **Change** button.

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

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

Firewall

In this menu you can configure the firewall of the router: add rules for IP filtering, define a DMZ-zone, create virtual servers, configure MAC-filters and the Port Triggering function.

IP Filters

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

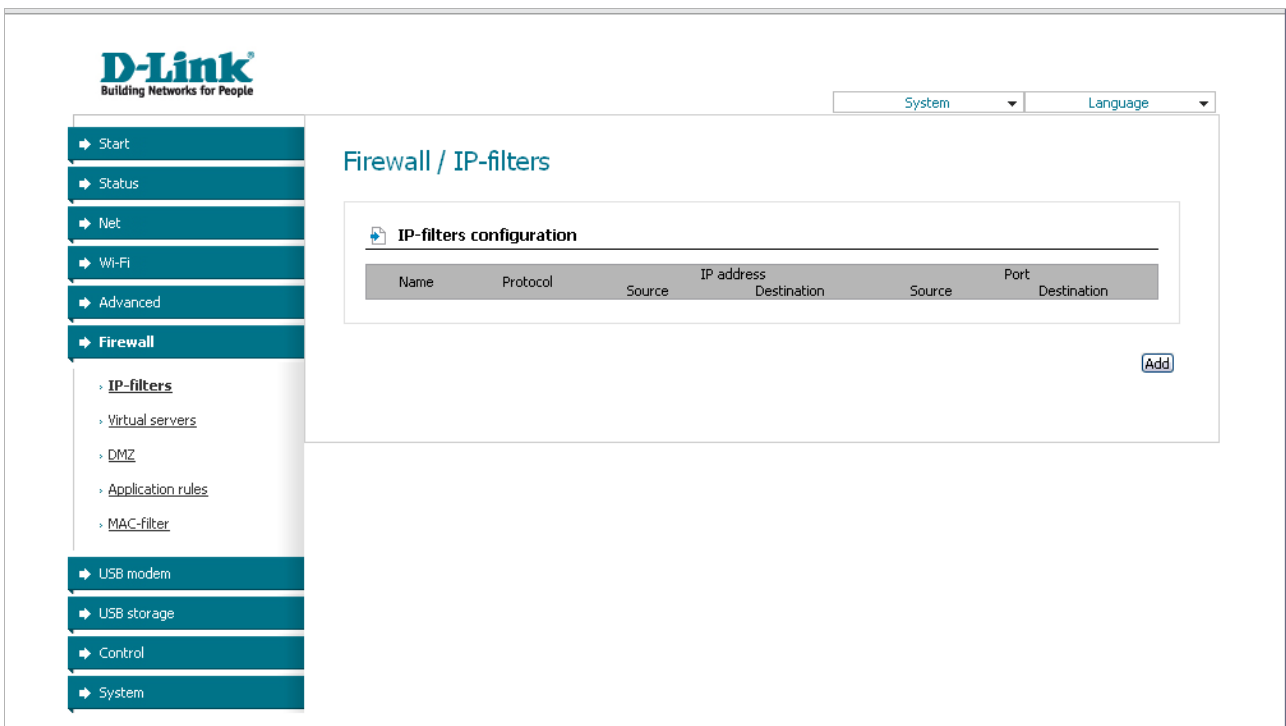


Figure 54. The **Firewall / IP-filters** page.

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

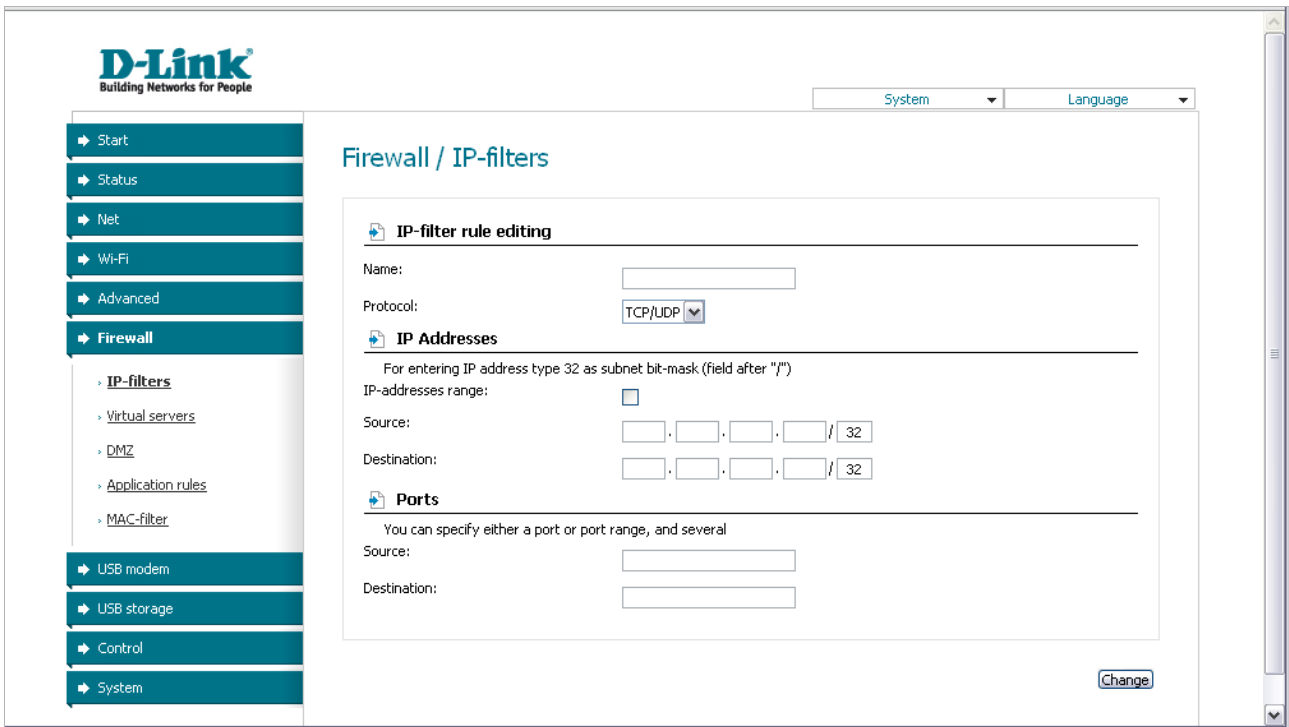


Figure 55. The page for adding a rule for IP filtering.

You can specify the following parameters:

Parameter	Description
IP-filter rule editing	
Name	A name for the rule for easier identification.
Protocol	A protocol for network packet transmission. Select a value from the drop-down list.
IP Addresses	
Source	The source host/subnet IP address. To specify an IP address leave 32 in the field following the slash character (/).
Destination	The destination host/subnet IP address. To specify an IP address leave 32 in the field following the slash character (/).
Ports	
Source	A port of the source IP address. You can specify one port, several ports separated by a comma, or a range of ports separated by a colon.
Destination	A port of the destination IP address. You can specify one port, several ports separated by a comma, or a range of ports separated by a colon.

Click the **Change** button.

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

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

Virtual Servers

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

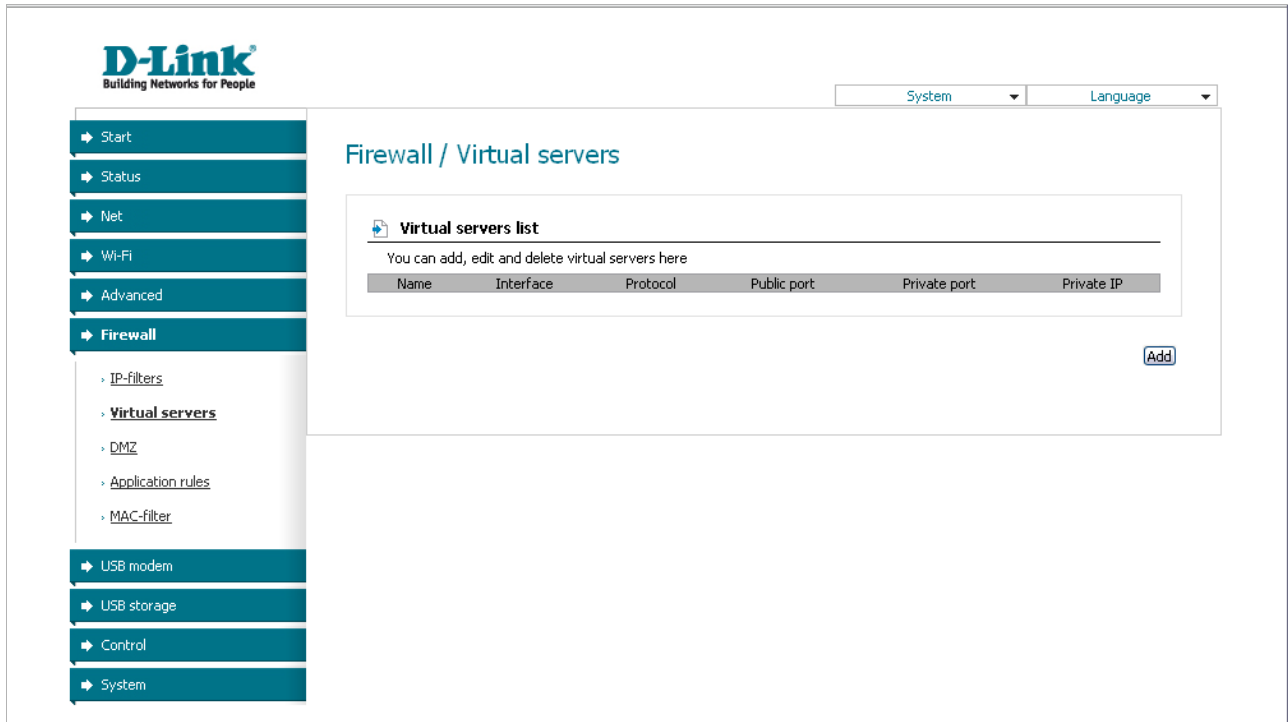


Figure 56. The **Firewall / Virtual servers** page.

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

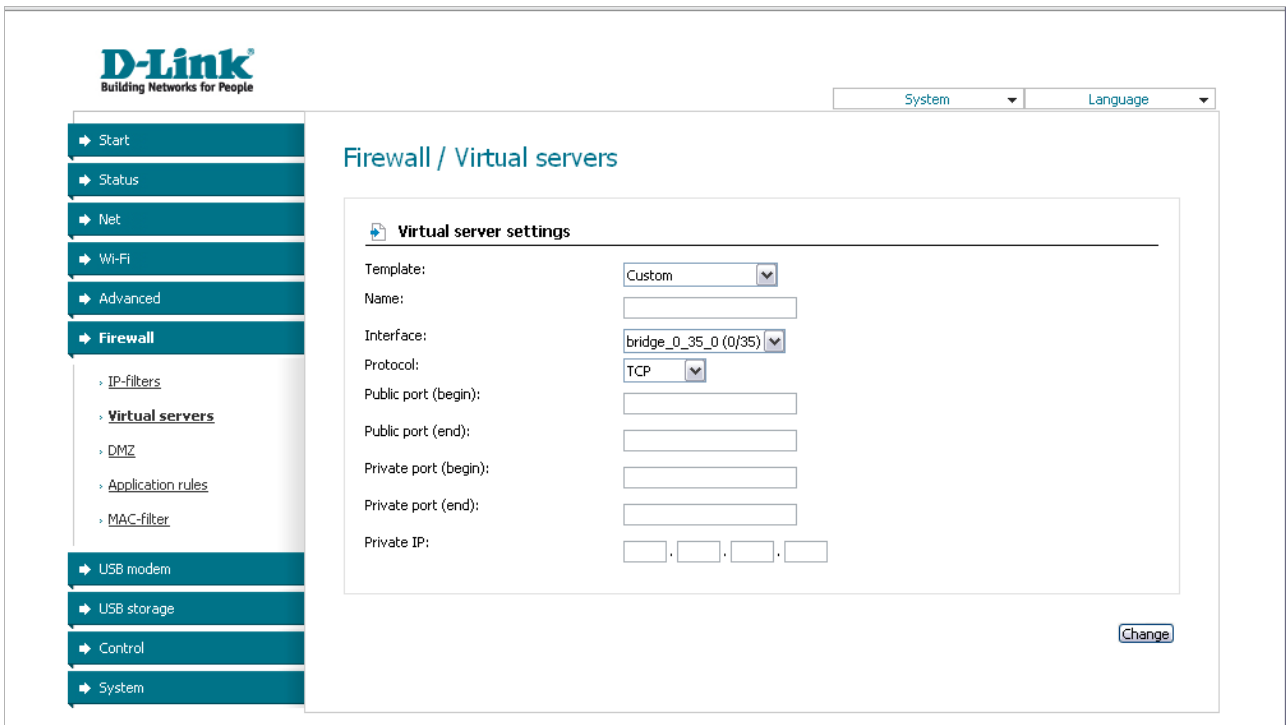


Figure 57. The page for adding a virtual server.

You can specify the following parameters:

Parameter	Description
Template	Select a virtual server template from the drop-down list, or select Custom to specify all parameters of the new virtual server manually.
Name	A name for the virtual server for easier identification. You can specify any name.
Interface	A WAN connection to which this virtual server will be assigned.
Protocol	A protocol that will be used by the new virtual server. Select a value from the drop-down list.
Public port (begin)/ Public port (end)	A port of the router from which traffic is directed to the IP address specified in the Private IP field. Specify the start and the end value for the port range. If you need to specify one port, enter the needed value in the Public port (begin) field and leave the Public port (end) field blank.
Private port (begin)/ Private port (end)	A port of the IP address specified in the Private IP field to which traffic is directed from the Public port . Specify the start and the end value for the port range. If you need to specify one port, enter the needed value in the Private port (begin) field and leave the Private port (end) field blank.
Private IP	The IP address of the server from the local area network.

Click the **Change** button.

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

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

DMZ

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

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

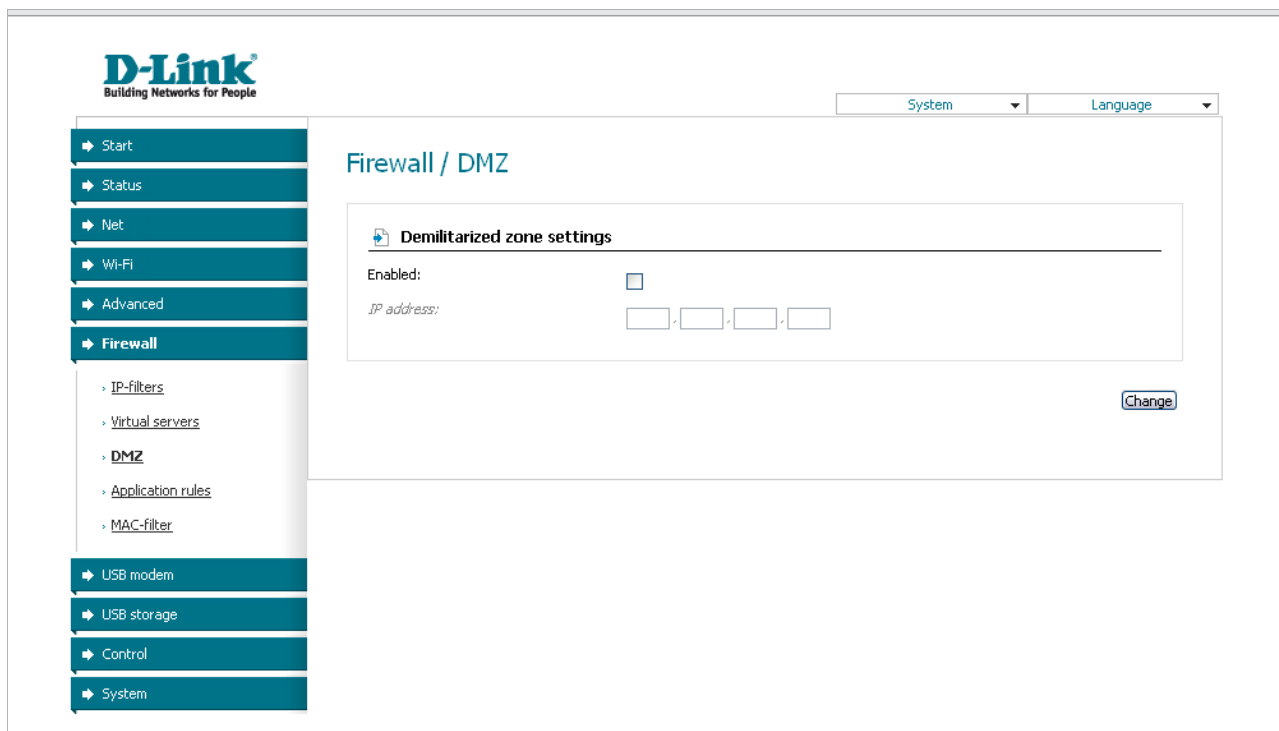


Figure 58. The **Firewall / DMZ** page.

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

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

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

Application Rules

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

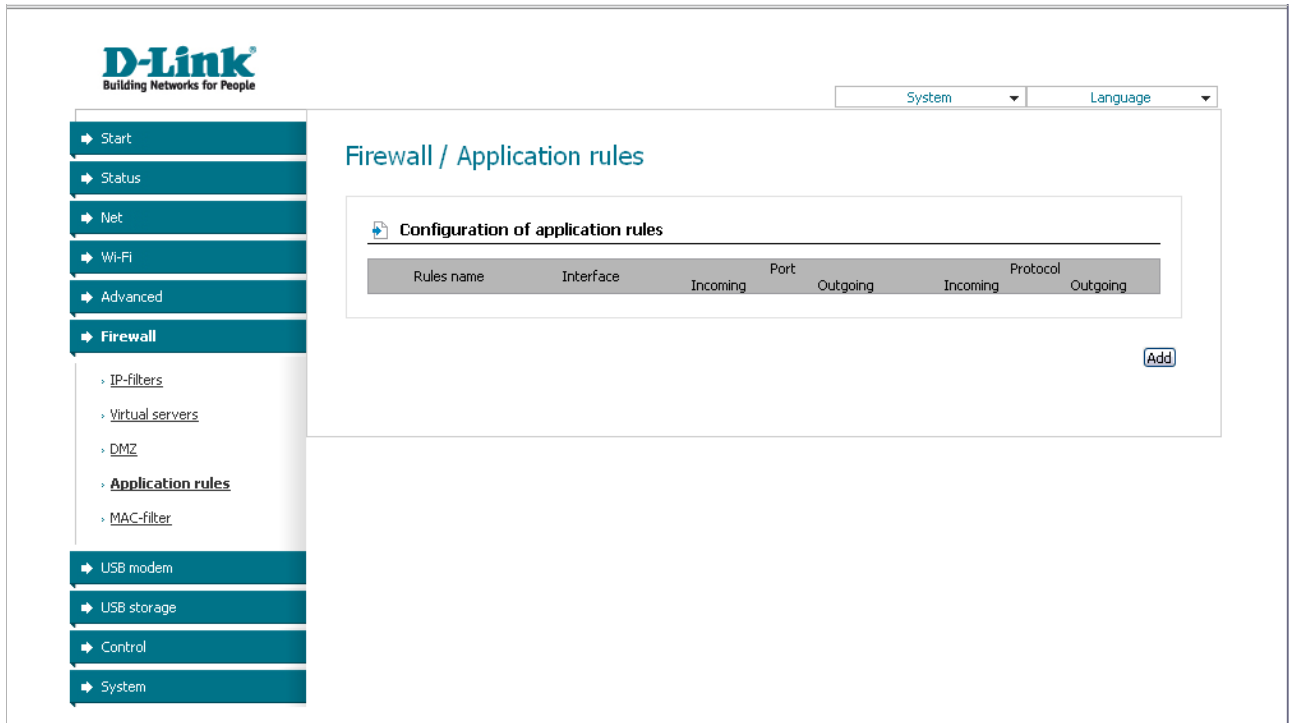


Figure 59. The **Firewall / Application rules** page.

To add a new rule for the Port Triggering function, click the **Add** button.

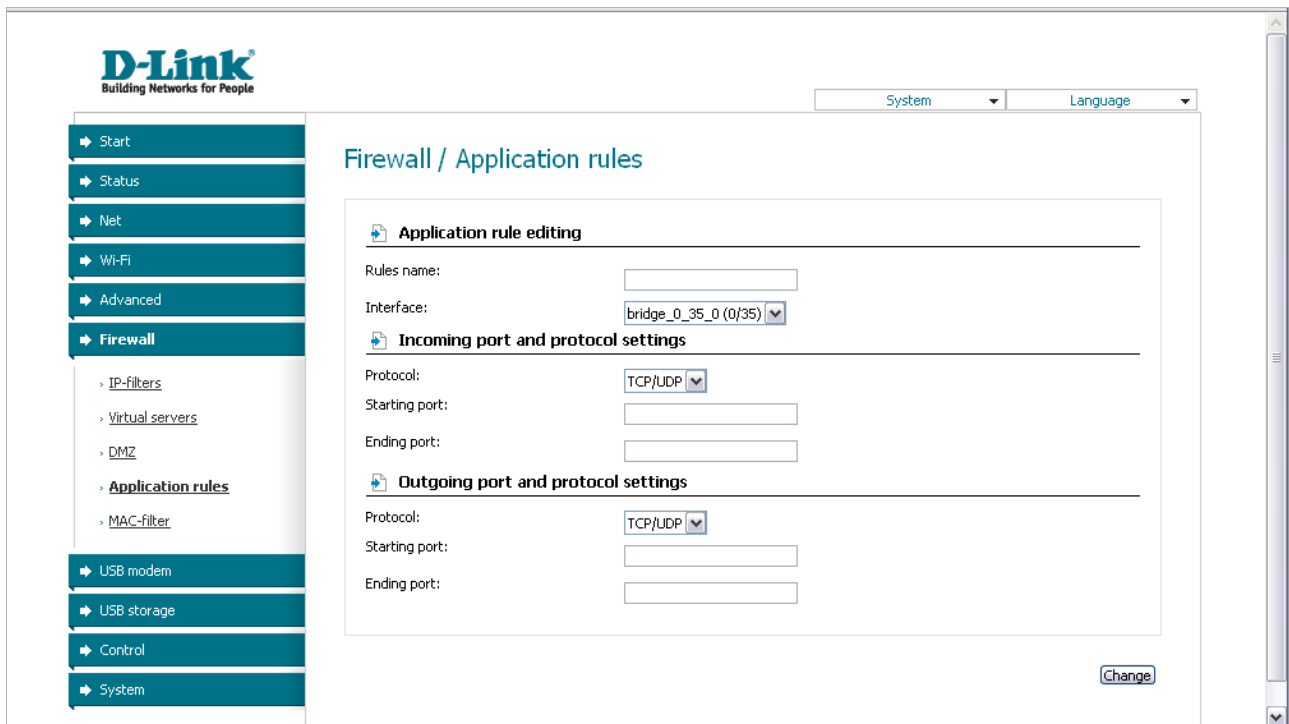


Figure 60. The page for adding a rule for the Port Triggering function.

You can specify the following parameters:

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

Click the **Change** button.

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

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

MAC Filter

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

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

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

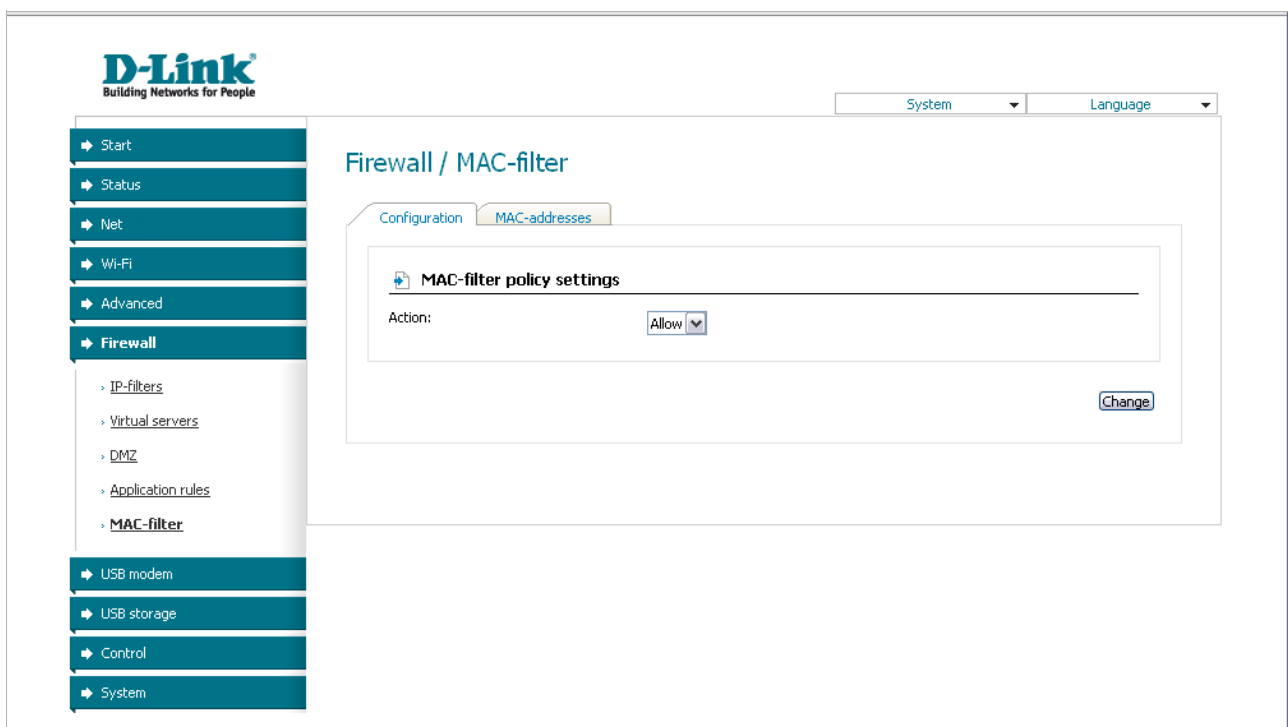


Figure 61. The **Firewall / MAC-filter** page. The **Configuration** tab.

To create a new rule, proceed to the **MAC-addresses** tab and click the **Add** button.

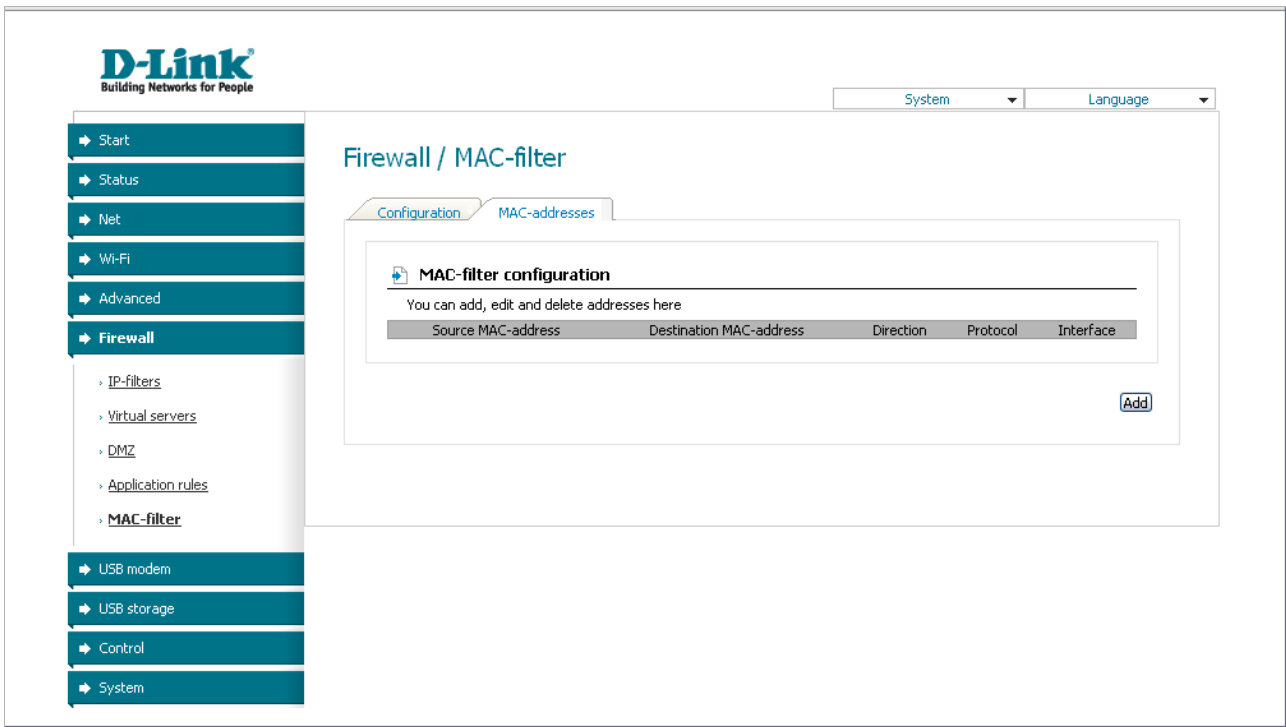


Figure 62. The **Firewall / MAC-filter** page. The **MAC-addresses** tab.

On the opened page, specify the needed parameters.

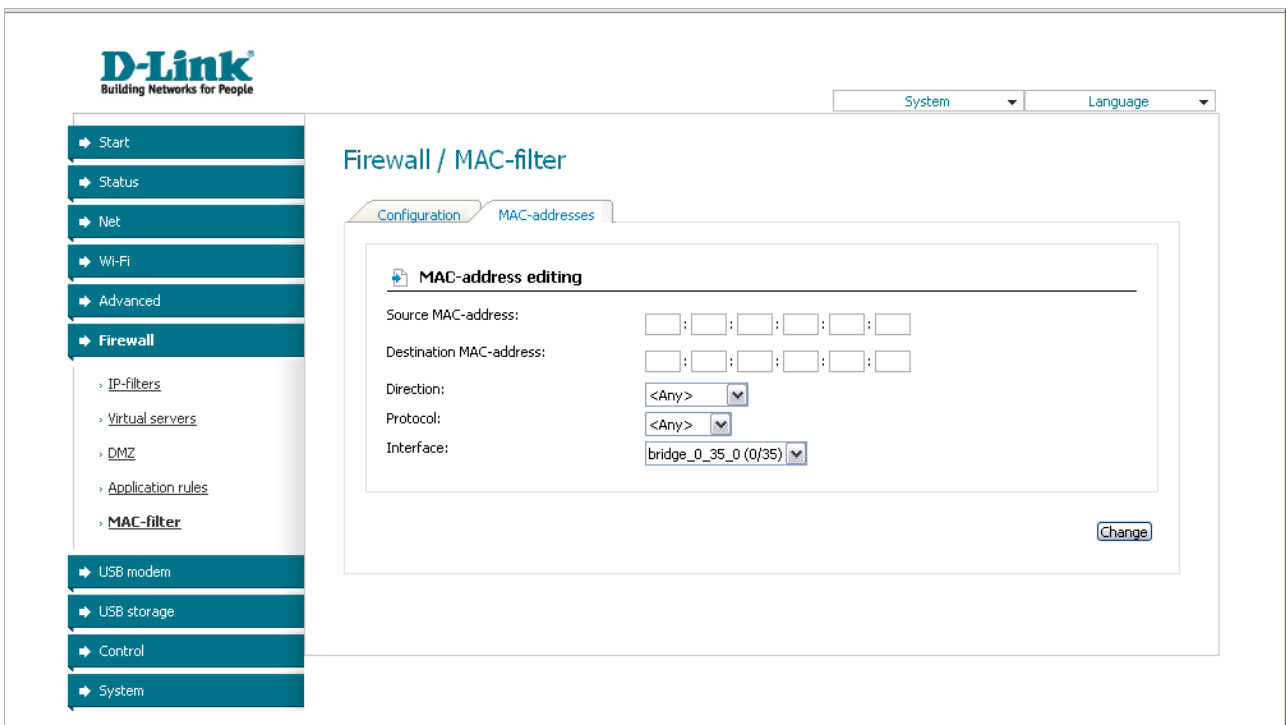


Figure 63. The page for adding a rule for MAC-address-based filtering.

Parameter	Description
Source MAC-address	The MAC address of the source host.
Destination MAC-address	The MAC address of the destination host.
Direction	Select a direction for which the rule will be applied.
Protocol	Select a protocol for which the rule will be applied. The <Any> value means any protocol from those displayed in the list.
Interface	Select a WAN connection (with the Bridge connection type only) for which the rule will be applied.

Click the **Change** button.

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

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

USB Modem

This menu is designed to operate USB modems.

If the PIN code check for the SIM card inserted into your USB modem is not disabled, then upon the first access to the pages of the **USB modem** menu (under the current web-interface session) the page for checking the PIN code is displayed.

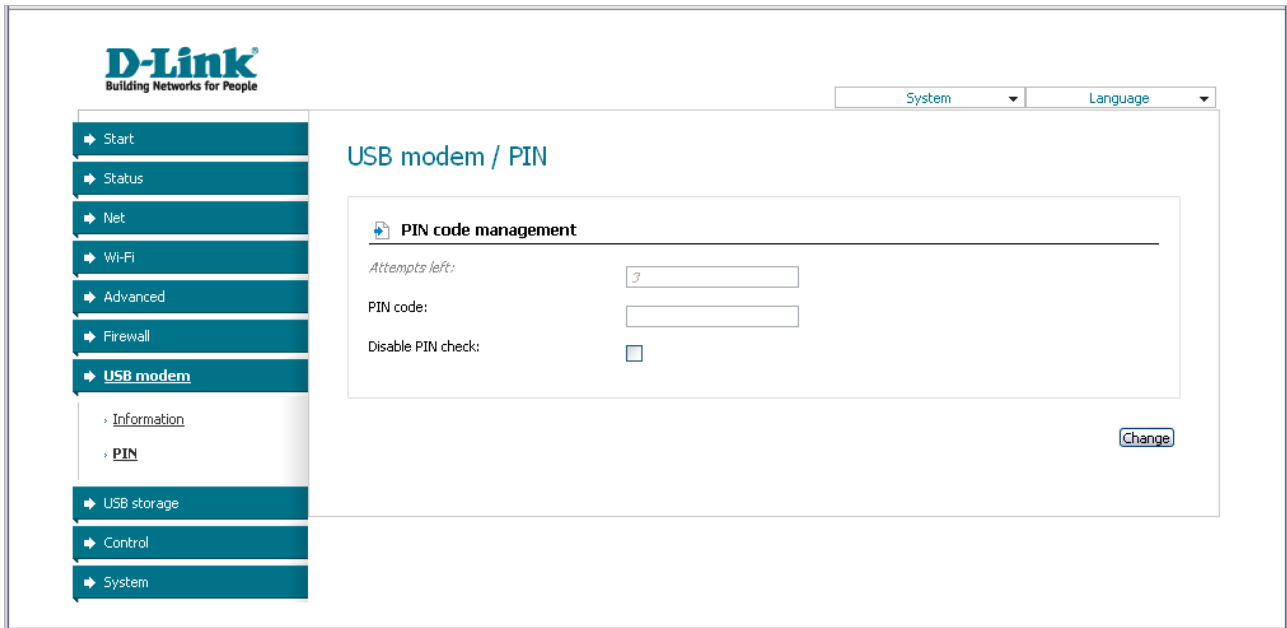


Figure 64. The page for checking the PIN code.

Enter the PIN code in the relevant field and click the **Change** button.

Information

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

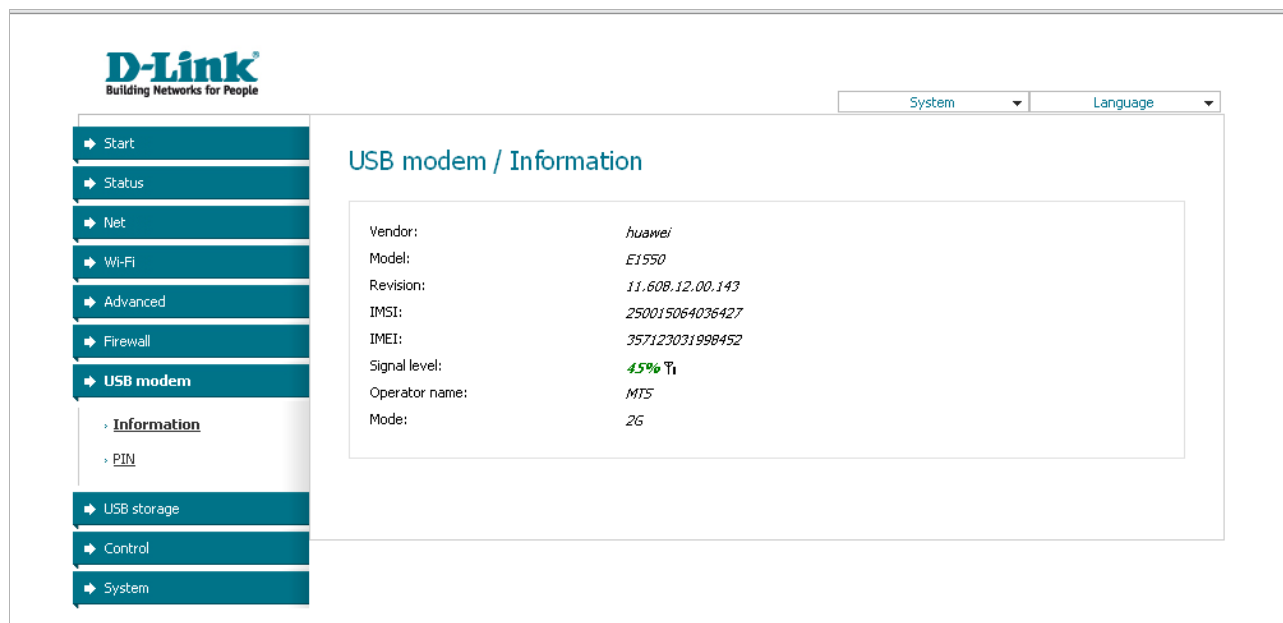


Figure 65. The **USB modem / Information** page.

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

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

PIN

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

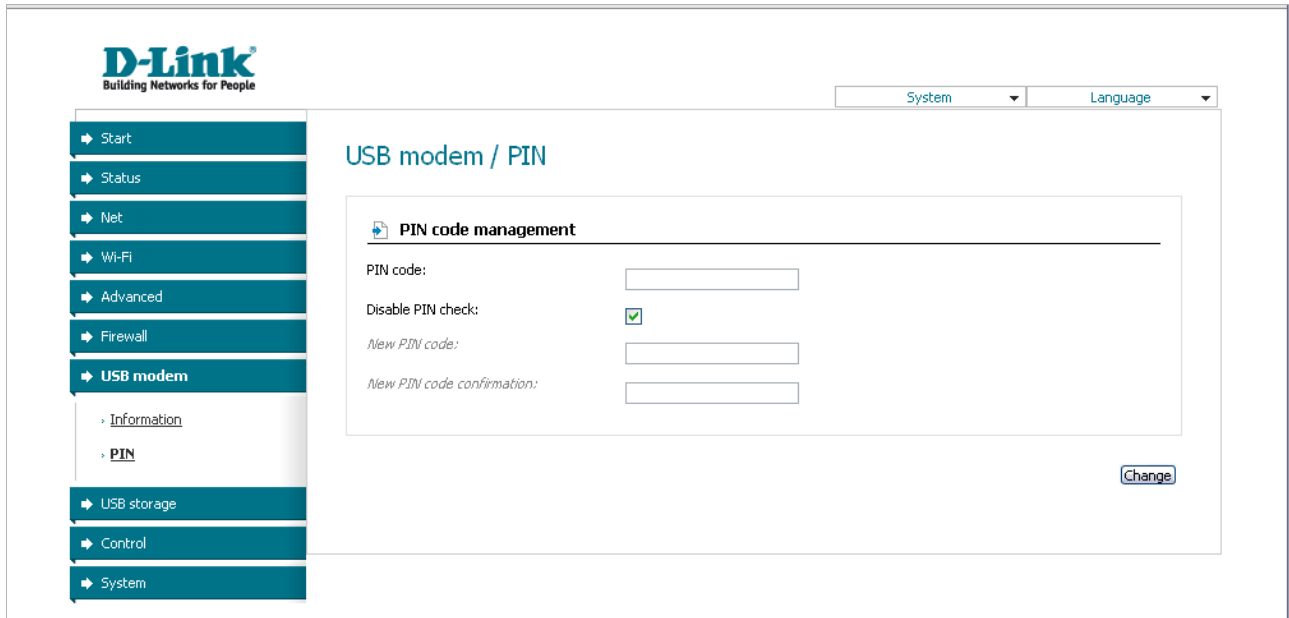


Figure 66. The **USB modem / PIN** page.

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

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

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

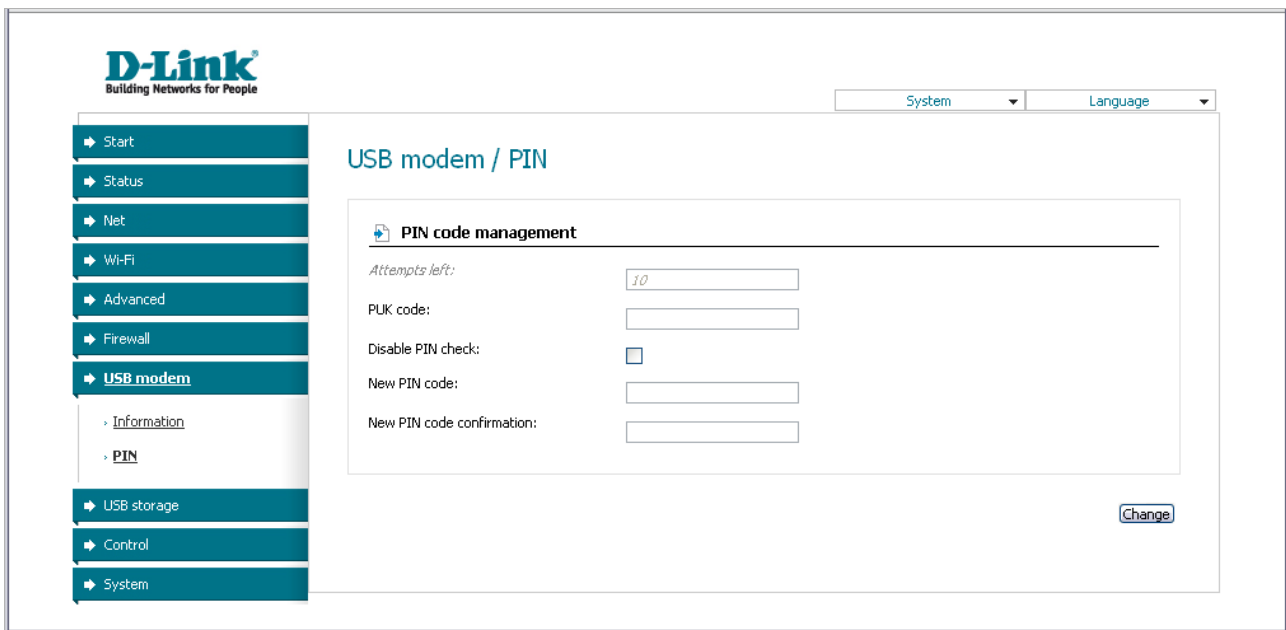


Figure 67. The **USB modem / PIN** page. The PUK code check.

If upon one of the operations described above you have entered an incorrect value in the **PIN code** field three times (the number of remaining attempts is displayed in the **Attempts left** field), the identification card inserted into your USB modem is blocked. For further use of the card, enter the PUK code in the relevant field, and then specify a new PIN code for your SIM card in the **New PIN code** and **New PIN code confirmation** fields. Click the **Change** button.

USB Storage

In this menu you can view data on the connected USB storage and configure shared access to it for your LAN users. Also you can configure the router as a print server.

Information

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

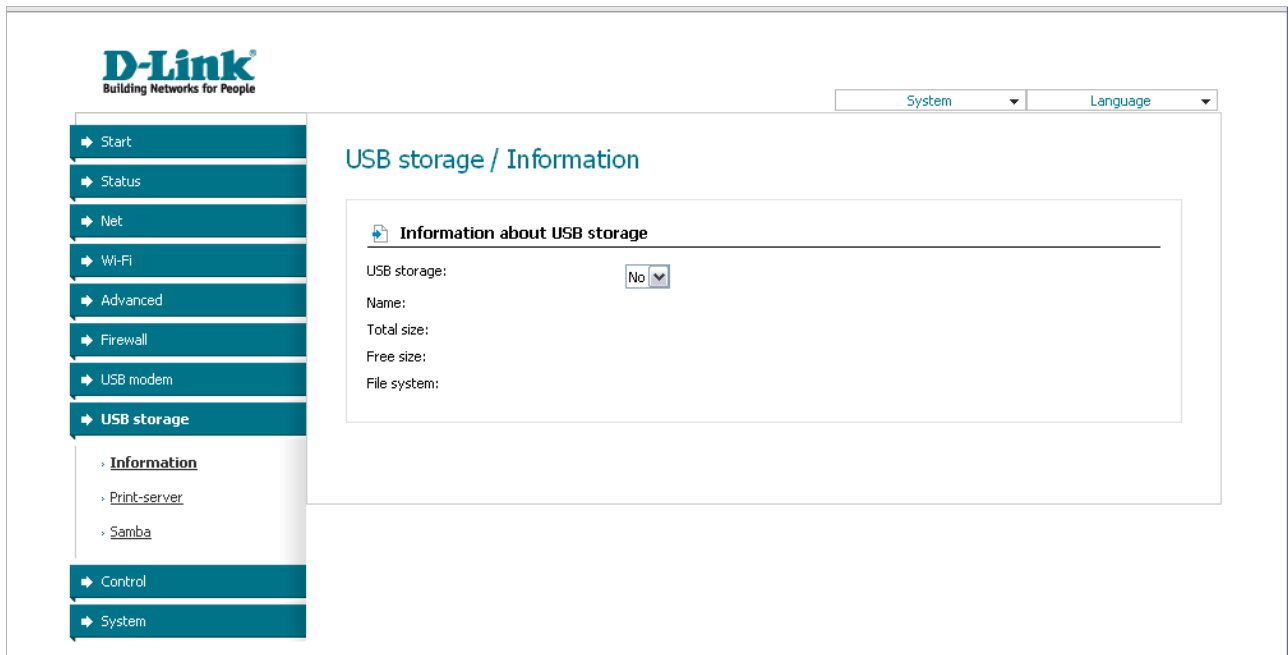


Figure 68. The **USB storage / Information** page.

The following data are presented on the page: the name, total and free volume of the storage, and the type of its filesystem.

Print Server

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

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

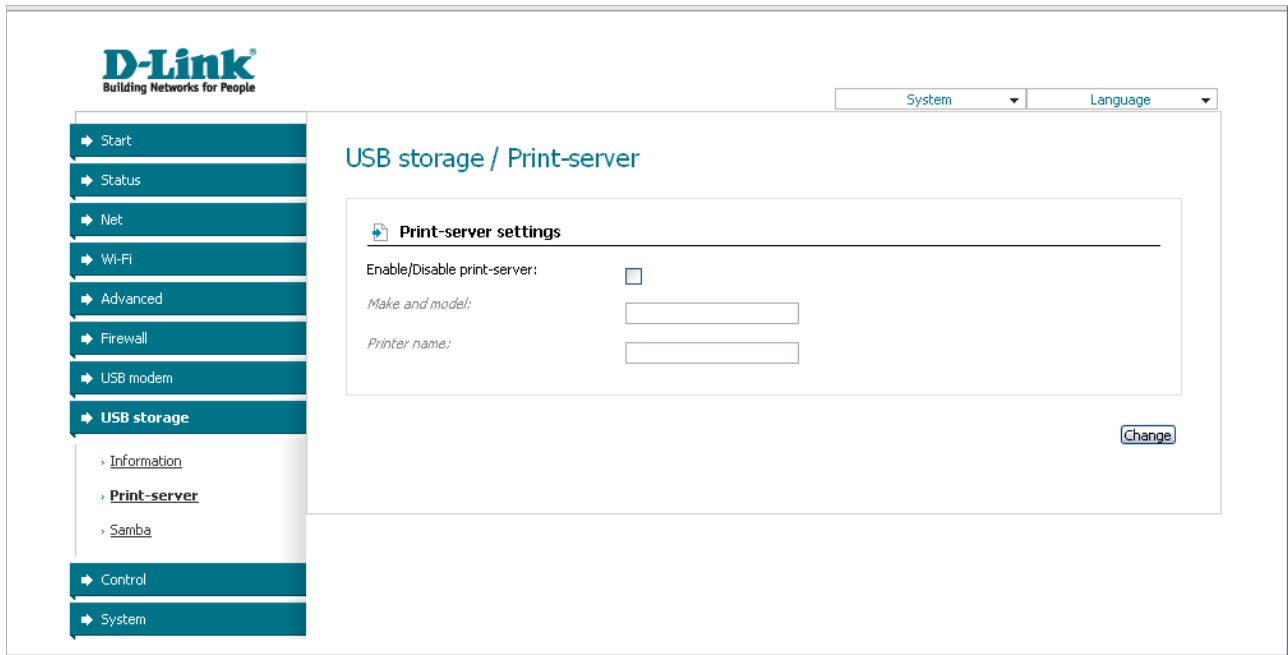


Figure 69. The **USB storage / Print-server** page.

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

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

Samba

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



Figure 70. The **USB storage / Samba** page.

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



Figure 71. The page for adding an account used to access the USB storage.

On the opened page, specify a username and password for the new account, and then select the USB storage which will be accessed via this account from the **USB storage** drop-down list. Click the **Save** button.

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

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

Control

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

Parent Control

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

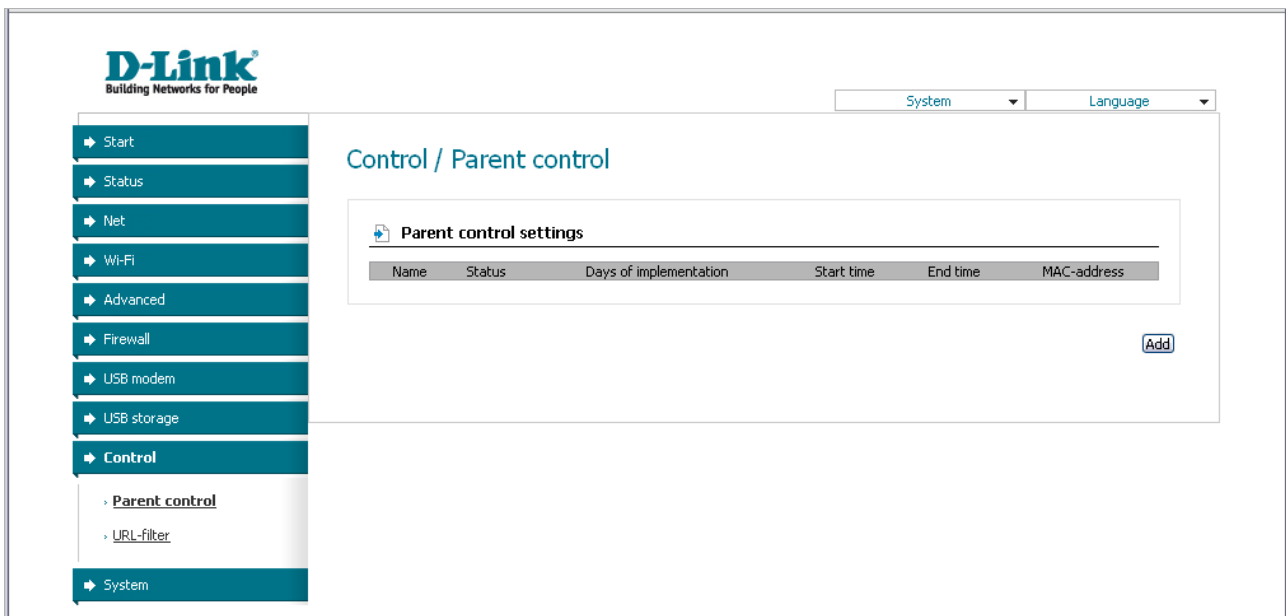


Figure 72. The **Control / Parent control** page.

Rules restricting access for computers with specified MAC addresses are presented as a table. To create a new rule, click the **Add** button.

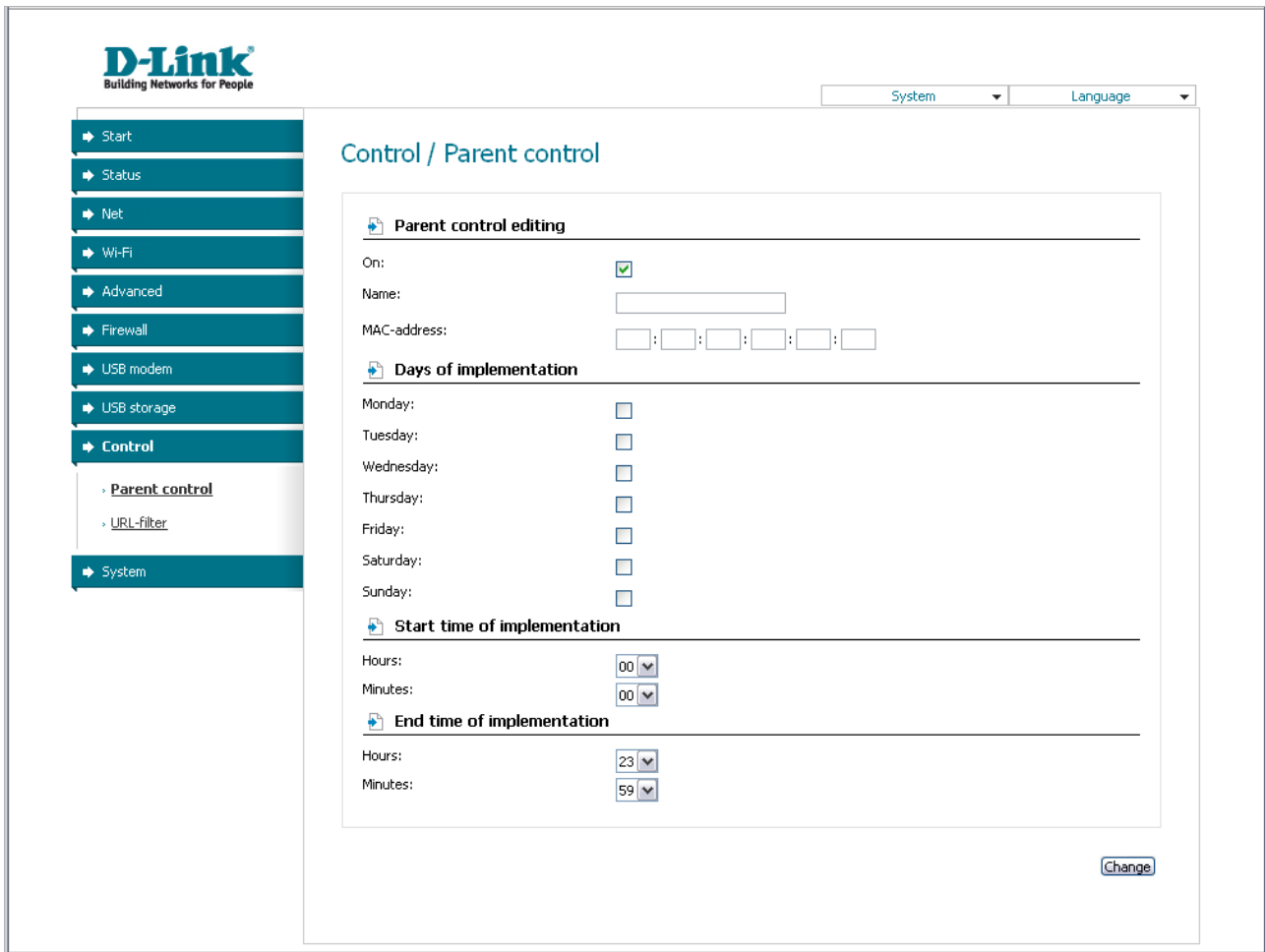


Figure 73. The page for adding a new parental control rule.

You can specify the following parameters:

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

Click the **Change** button.

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

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

URL Filter

On the **Control / URL-filter** page, you can specify restrictions on access to certain web sites.

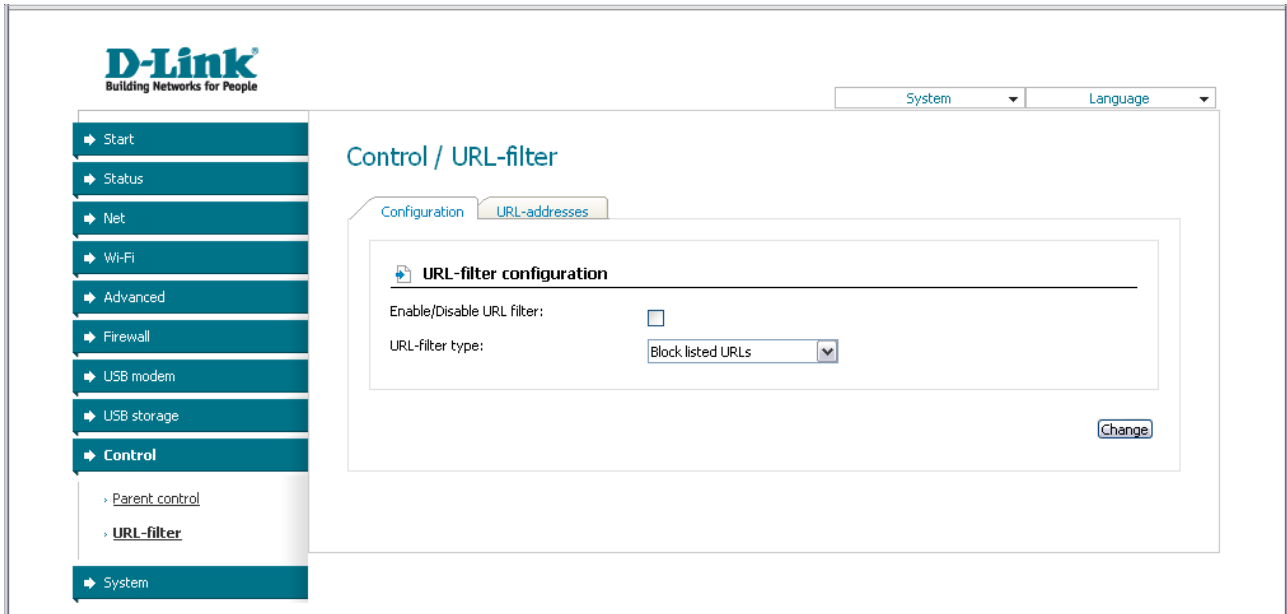


Figure 74. The **Control / URL-filter** page. The **Configuration** tab.

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

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

Click the **Change** button.

To specify URL addresses to which the selected filtering will be applied, go to the **URL-addresses** tab and click the **Add** button.

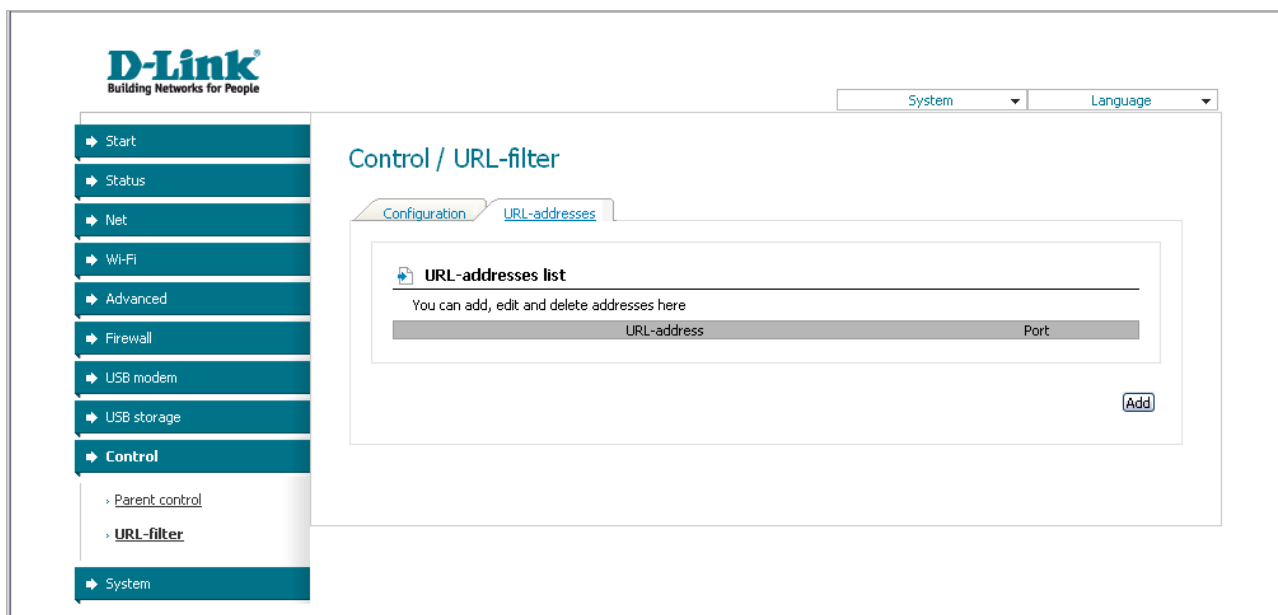


Figure 75. The **Control / URL-filter** page. The **URL-addresses** tab.

On the opened page, specify the needed parameters.

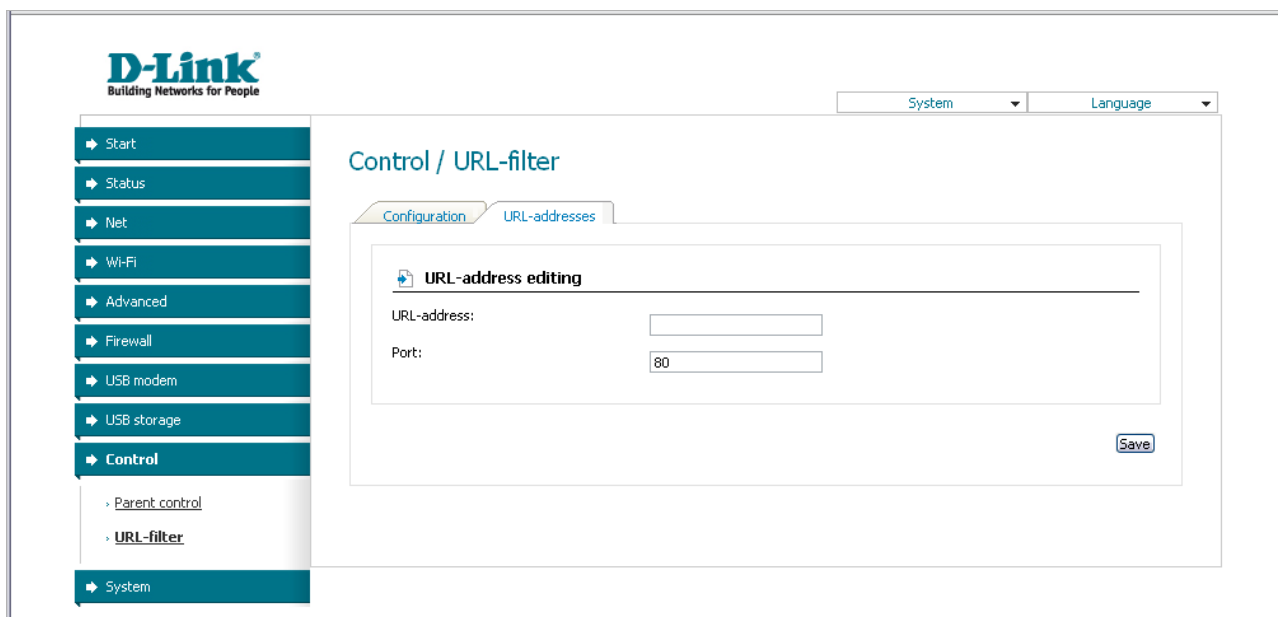


Figure 76. The page for adding an address for the URL filter.

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

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

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

System

In this menu you can save the changed settings to the non-volatile memory, create a backup of the router's configuration, restore the router's configuration from a previously saved file, restore the factory default settings, view the system log, configure automatic synchronization of the system time, update the firmware of the router, and change the password used to access the web-based interface.

Administrator Password

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

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

The screenshot displays the D-Link web-based interface for configuring the administrator password. The page title is "System / Administrator password". The main content area is titled "System password setting up" and contains a message: "The system password and the password for the web-based interface will be changed at the same time." Below this message are three input fields: "Login:" with a dropdown menu showing "admin", "Password:", and "Confirmation:". A "Save" button is located at the bottom right of the form. The left sidebar shows the navigation menu with "System" selected and "Administrator password" highlighted. The top right of the page has "System" and "Language" dropdown menus.

Figure 77. The **System / Administrator password** page.

Enter the new password for access to the web-based interface of the router in the **Password** and **Confirmation** fields and click the **Save** button.

Configuration

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

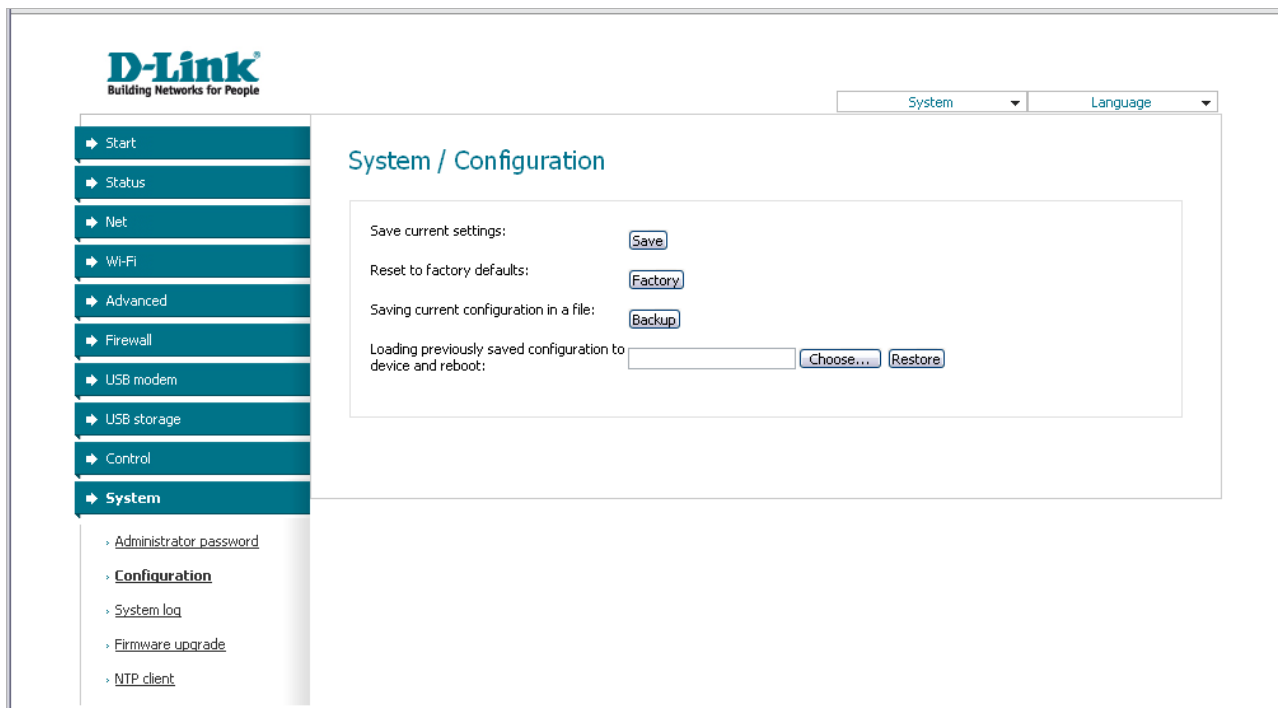


Figure 78. The **System / Configuration** page.

The following buttons are available on the page:

Control	Description
Save	Click the button to save settings to the non-volatile memory. Please, save settings every time you change the router's parameters. Otherwise the changes will be lost upon reboot of the router.
Factory	Click the button to restore the factory default settings. Also you can restore the factory defaults via the hardware Reset button (see the <i>Saving and Restoring Settings</i> section, page 19).
Backup	Click the button and follow the dialog box appeared to save the configuration (all settings of the router) to your PC.
Restore	Click the button to upload a previously saved configuration (all settings of the router) from a file on your PC. Click the Choose/Browse ³ button to select a previously saved configuration file located on your PC.

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

³ The name of the button depends upon the web browser that you use.

System Log

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

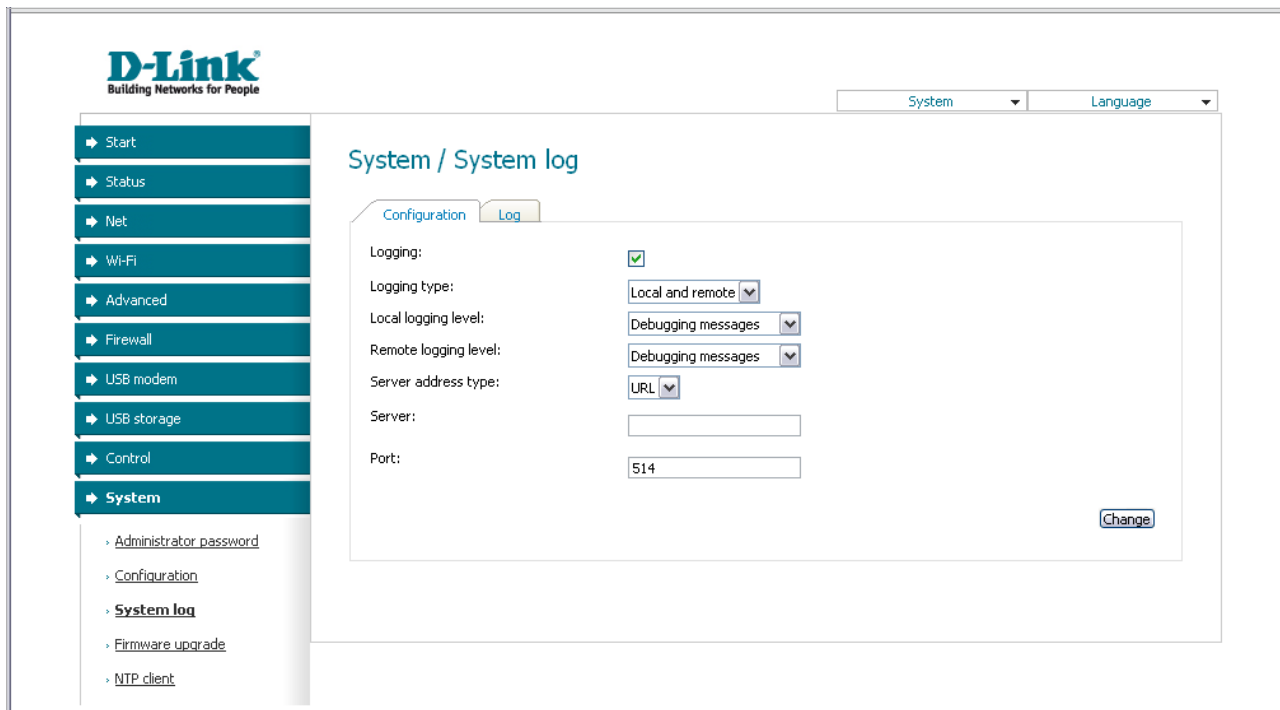


Figure 79. The **System / System log** page. The **Configuration** tab.

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

Control	Description
Logging type	<p>Select a type of logging from the drop-down list.</p> <ul style="list-style-type: none"> • Local: the system log is stored in the router's memory (and displayed on the Log tab). When this value is selected, the Server address type, Server, and Port fields are not displayed. • Remote: the system log is sent to the remote host specified in the Server field. • Local and remote: the system log is stored in the router's memory (and displayed on the Log tab) and sent to the remote host specified in the Server field.
Local logging level	<p>Select a type of messages and alerts/notifications to be stored locally in the router's memory. The field is available, when the Local or Local and remote value is selected from the Logging type drop-down list.</p>

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

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

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

On the **Log** tab, the events specified in the **Local logging level** list are displayed.

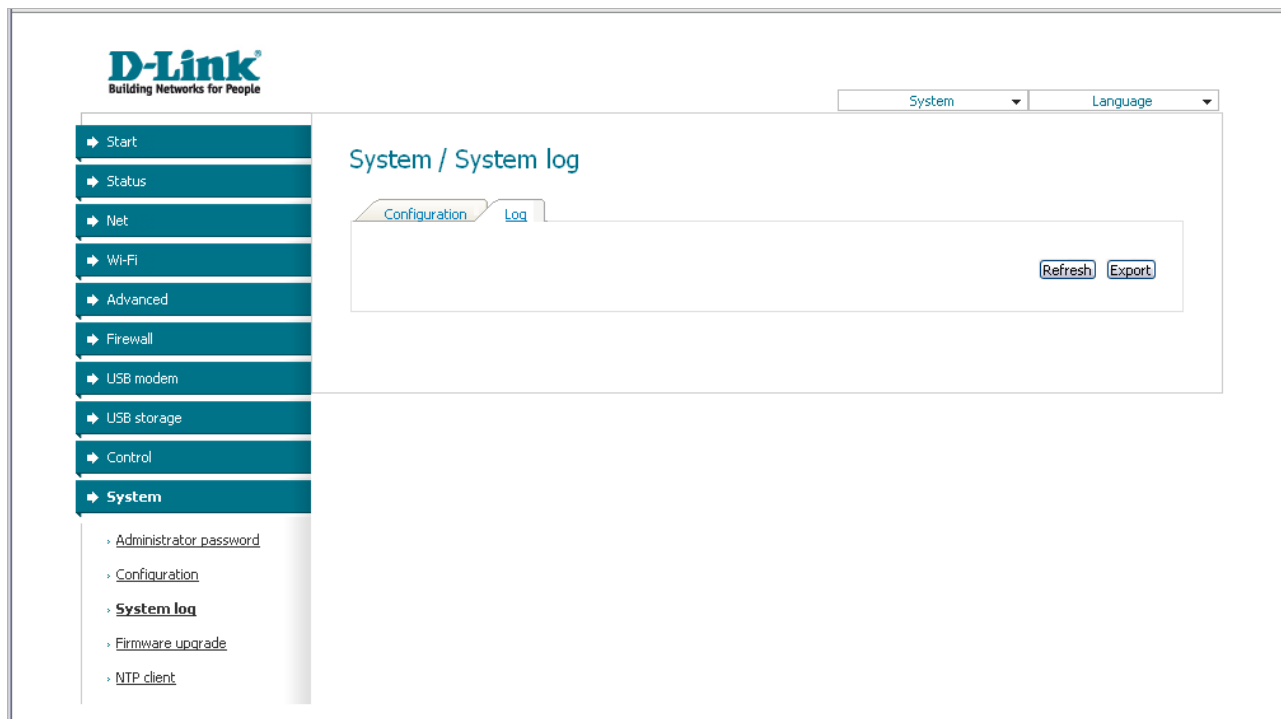


Figure 80. The **System / System log** page. The **Log** tab.

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

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

Firmware Upgrade

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

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

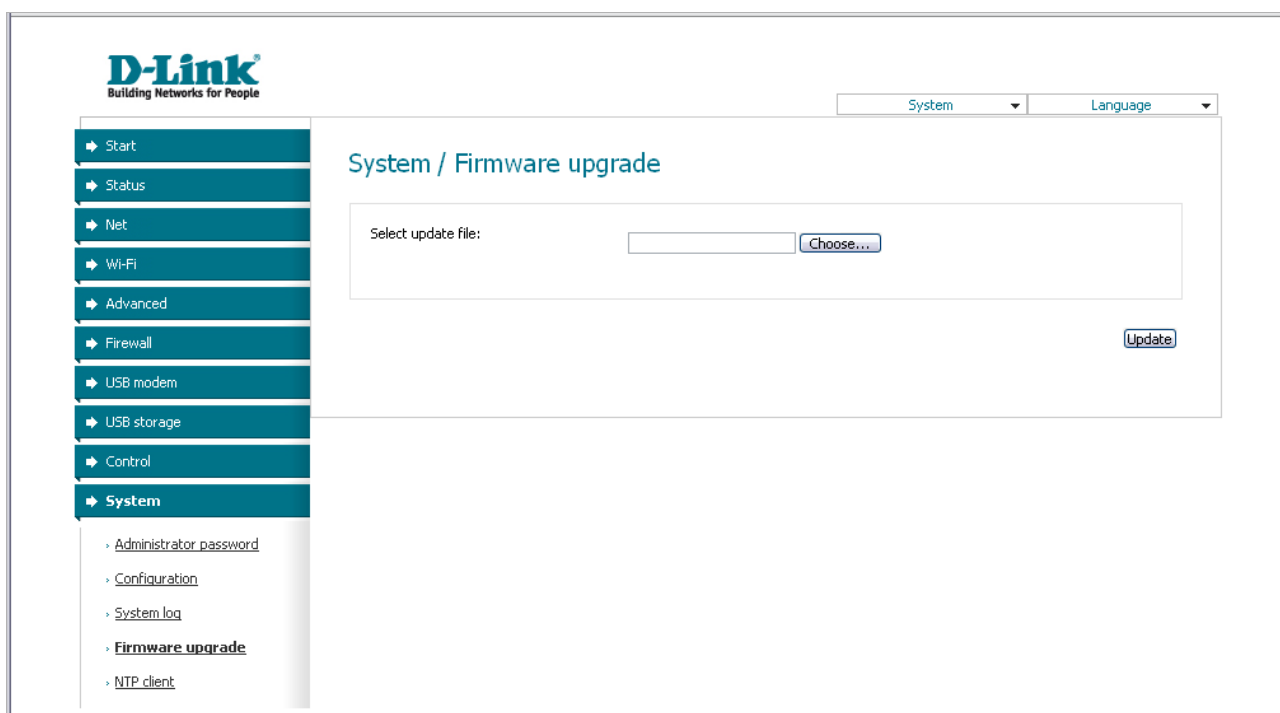


Figure 81. The **System / Firmware upgrade** page.

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

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

1. Download a new version of the firmware from www.dlink.ru.
2. Click the **Choose/Browse**⁴ button on the **System / Firmware upgrade** page to locate the new firmware file.
3. Click the **Update** button to upgrade the firmware of the router.
4. Wait until the router is rebooted (about one and a half or two minutes).
5. Log into the web-based interface using the login (**admin**) and the current password.
6. Select the **Factory** line in the top-page menu displayed when the mouse pointer is over the **System** caption.

⁴ The name of the button depends upon the web browser that you use.

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

NTP Client

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

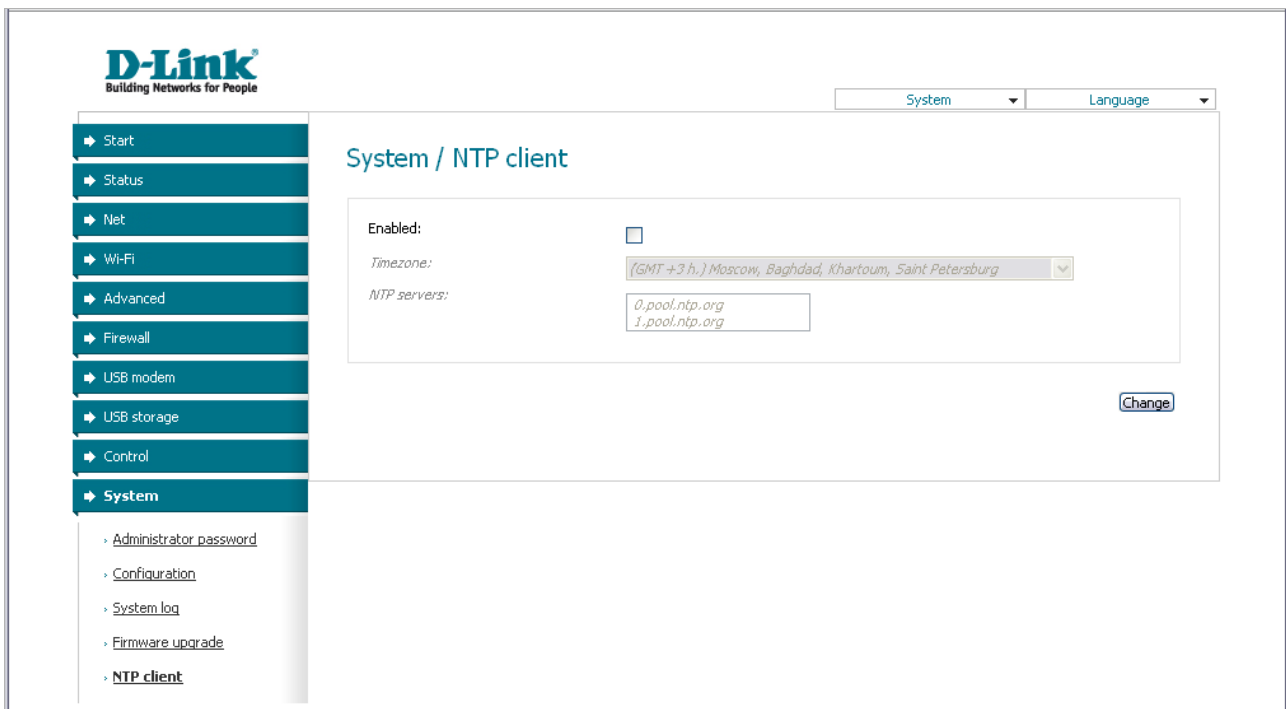


Figure 82. The **System / NTP client** page.

To enable automatic synchronization with a time server:

1. select the **Enabled** checkbox
2. select your time zone
3. specify the needed NTP server in the **Ntp servers** field or leave the server specified by default
4. click the **Change** button.



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

CHAPTER 5. OPERATION GUIDELINES

Supported USB Modems

- Huawei E150
- Huawei E1550
- Huawei E220
- ZTE MF626
- ZTE MF627.

Safety Instructions

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

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

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

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

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

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

Wireless Installation Considerations

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

1. Keep the number of walls and ceilings between the DSL-2650U/NRU 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 is not in use.

CHAPTER 6. ABBREVIATIONS AND ACRONYMS

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

NTP	Network Time Protocol
PBC	Push Button Configuration
PIN	Personal Identification Number
PPPoA	Point-to-Point Protocol over ATM
PPPoE	Point-to-point protocol over Ethernet
PSK	Pre-shared key
PUK	PIN Unlock Key
QoS	Quality of Service
RTS	Request To Send
SIM	Subscriber Identification Module
SNMP	Simple Network Management Protocol
SSID	Service Set Identifier
TKIP	Temporal Key Integrity Protocol
UMTS	Universal Mobile Telecommunications System
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