D-Link®

DSL-2500U

ADSL2/2+ Router
(Annex B)

Contents

CHAPTER 1. INTRODUCTION

Contents and Audience

This manual describes the router DSL-2500U and explains how to configure and operate it.

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

Conventions

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

Document Structure

Chapter 1 describes the purpose and structure of the document.

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

Chapter 3 explains how to install the router DSL-2500U 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 introduces abbreviations and acronyms used in this manual.

CHAPTER 2.   OVERVIEW

General Information

The DSL-2500U device is an affordable high-end ADSL router developed for home and SOHO (*Small Office/Home Office*) networks. It provides fast and simple broadband access to the Internet and a shared connection for multi users.

DSL-2500U provides all the essentials for creating a secure high-speed wired network: ADSL/ADSL2/ADSL2+ standards, Fast Ethernet standard, the built-in firewall, the QoS engine, numerous additional features, and an Ethernet port, which can be used to connect to one computer or a switch.

The router DSL-2500U includes a built-in firewall. The advanced security functions minimize threats of hacker attacks, prevent unwanted intrusions to your network, and block access to unwanted websites for users of your LAN.

You can configure and manage the settings of the router DSL-2500U via the user-friendly web-based interface (the interface is available in several languages).

Specifications

Interfaces:

- ADSL: 1 RJ-11 port
- LAN: 1 RJ-45 10/100BASE-TX Fast Ethernet port with auto-MDI/MDIX.

ADSL Standards:

- ADSL:
  - ANSI T1.413-1998 Issue 2; ITU-T G.992.1 (G.dmt) Annex B, ITU-T G.992.2 (G.lite) Annex B.
- ADSL2:
  - ITU-T G.992.3 Annex B.
- ADSL2+:
  - ITU-T G.992.5 Annex B.

WAN Connection Types:

- PPPoA
- PPPoE
- IPoE
- IPoA
- Bridge.

ATM/PPP Protocols:

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

Network Protocols and Functions:

- Static IP routing

- NAT (*Network Address Translation*)

- DHCP server/client/relay

- DNS relay

- DDNS

- UPnP

- Support of VLAN

- IGMP proxy

- RIP.

Firewall and Access Management Functions:

- Network Address Translation (NAT)

- Stateful Packet Inspection (SPI)

- URL filter

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

- Virtual servers

- Prevention of DoS attacks

- Intrusion detection system

- DMZ

- Port Triggering.

QoS:

- 3 priority queues.

Configuration and Management:

- Multilingual web-based interface for configuration and management

- Access via TELNET

- Firmware update via web-based interface

- Saving/restoring configuration to/from file

- Support of remote logging

- Automatic synchronization of system time with NTP server

- Ping function.

Power:

- External power adapter DC 5V/1A

- Reset to Factory Defaults button.

Product Appearance

Front Panel
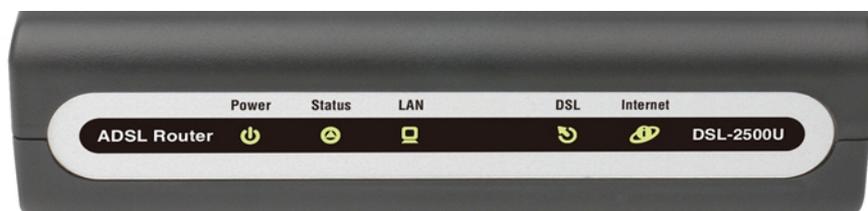
Figure 1. Front panel view.

LED	Mode	Description
Power	*Solid green*	The router is powered on.
	No light	The router is powered off.
	Solid red	The router is in the crash recovery mode.
Status	*Blinking green*	Traffic (Internet traffic) is passing through the router.
	No light or solid green	A failure of the system.
LAN	*Solid green*	A device is connected to the LAN port of the router.
	Blinking green	The LAN port is active (upstream or downstream traffic).
DSL	*Solid green*	DSL has been synchronized.
	Blinking green	Detecting a carrier signal and synchronizing DSL.
	No light	No carrier signal.
Internet	*Solid green*	A WAN connection is established.
	Blinking green	Authorization is successful.
	No light	The router is in the bridge mode or no WAN connection is established.
	Solid red	An authorization failure.

Back Panel

Figure 2. Back panel view.

Port	Description
DSL	A DSL port to connect the router to the telephone line.
LAN	An Ethernet port to connect a computer or switch.
RESET	A button to restore the factory default settings. To restore the factory defaults, push the button (with the device turned on), hold it for 7-10 seconds, and then release the button.
5V=1A	Power connector.

Delivery Package

The following should be included:

- Router DSL-2500U

- Power adapter DC 5V/1A

- RJ-11 telephone cable

- Straight-through Ethernet cable (CAT 5E)

- Splitter

- CD-ROM with "*User Manual*" and "*Quick Installation Guide*"

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

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

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.

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 router DSL-2500U (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.

NIC (Ethernet Adapter)

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

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 the Ethernet port located on the back panel of the router and the Ethernet port of your PC.

3. 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.

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

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

Obtaining IP Address Automatically

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.
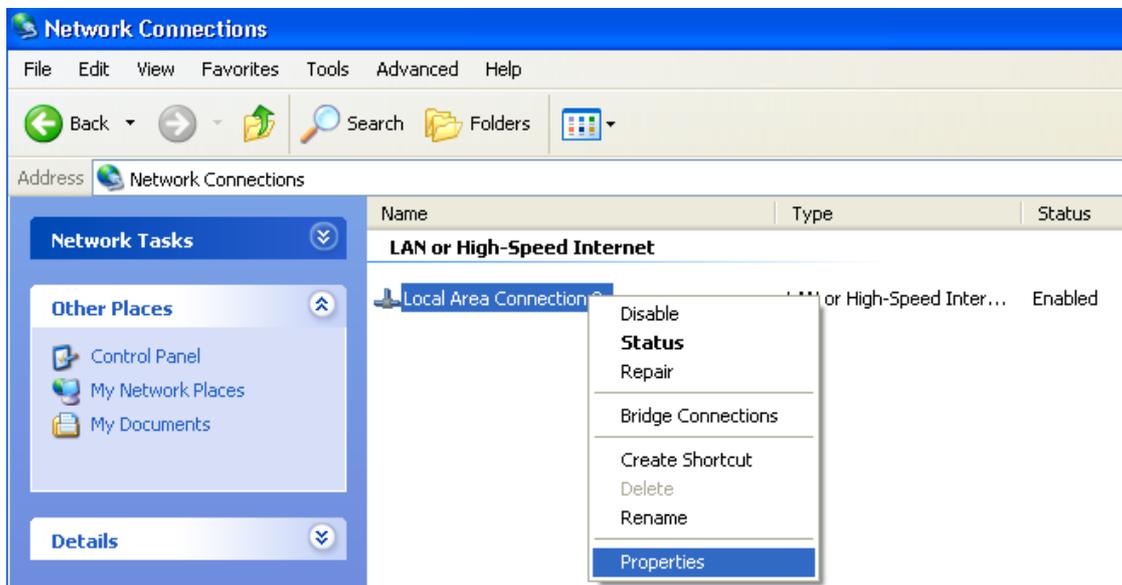

*Figure 3. The **Network Connections** window.*

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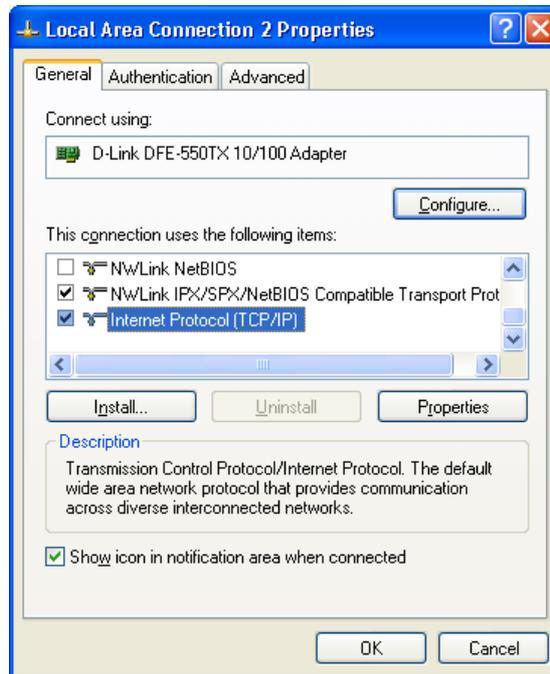
*Figure 4. The **Local Area Connection Properties** window.*

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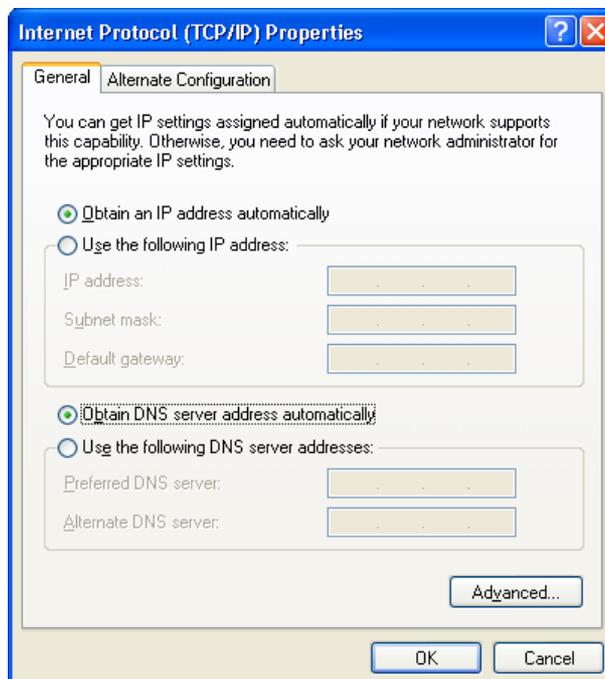
*Figure 5. The **Internet Protocol (TCP/IP) Properties** window.*

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

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, 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 6. Connecting to the web-based interface of the DSL-2500U 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.
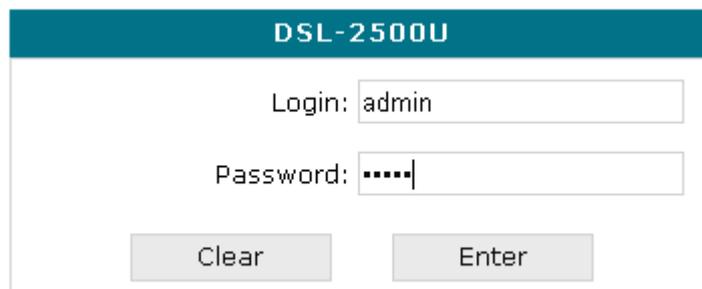
Figure 7. The login page.

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.
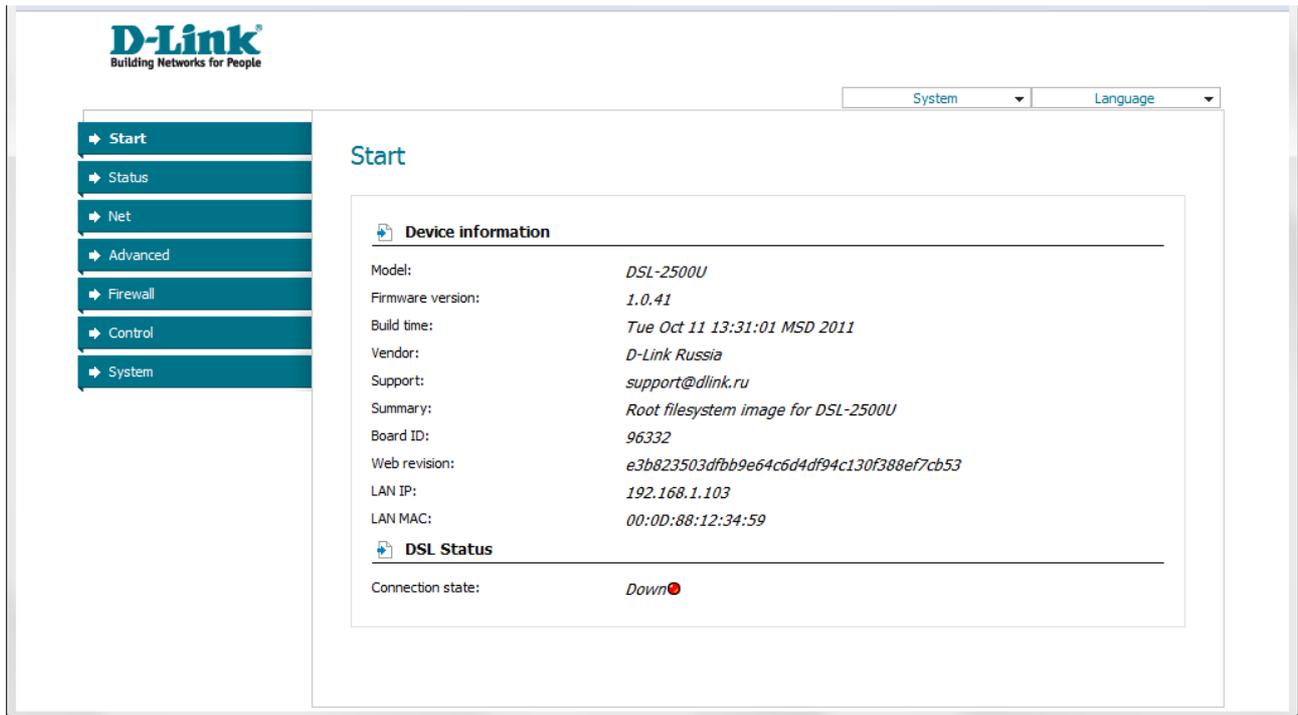
Figure 8. The system statistics page.

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

Figure 9. 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 10. 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.
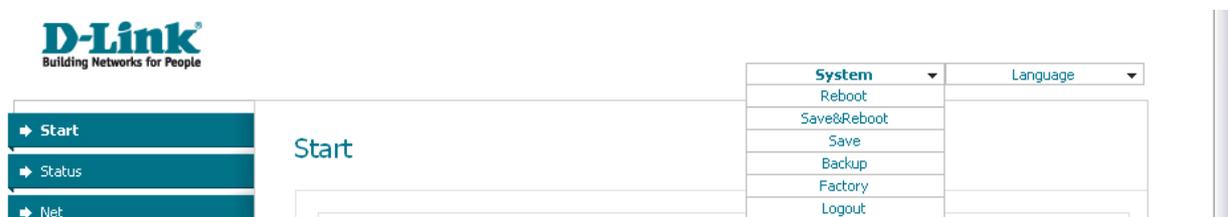
Figure 11. The top-page menu.

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

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

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

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

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

Also you can restore the factory default settings via the hardware **Reset** button located on the back panel of the router. Use a small paperclip to activate the button; insert it into the hole (with the device turned on), push, and hold for 7-10 seconds. Release the button and wait until the router is rebooted (about a minute). Now you can access the web-based interface of the router using the default IP address, username and password.

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

CHAPTER 4.   CONFIGURING   VIA   WEB-BASED INTERFACE

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 (connections) existing in the system. For each connection the following data are displayed: state, IP address, subnet mask and gateway (if the connection is established), MAC address, MTU value, and volume of data received and transmitted (with increase of the volume the units of measurement are changed automatically: byte, Kbyte, Mbyte, Gbyte).
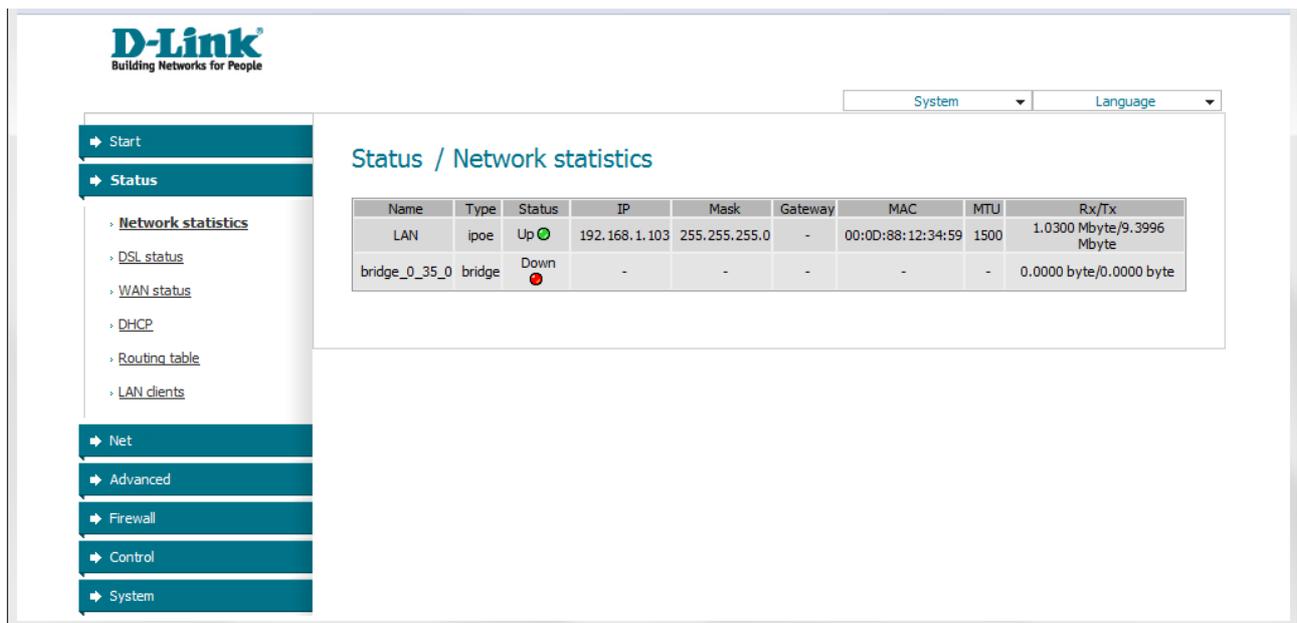
*Figure 12. The **Status / Network statistics** page.*

DSL Status

The information shown on the tabs of the **Status / DSL status** page can be used for troubleshooting and diagnosing connection problems.
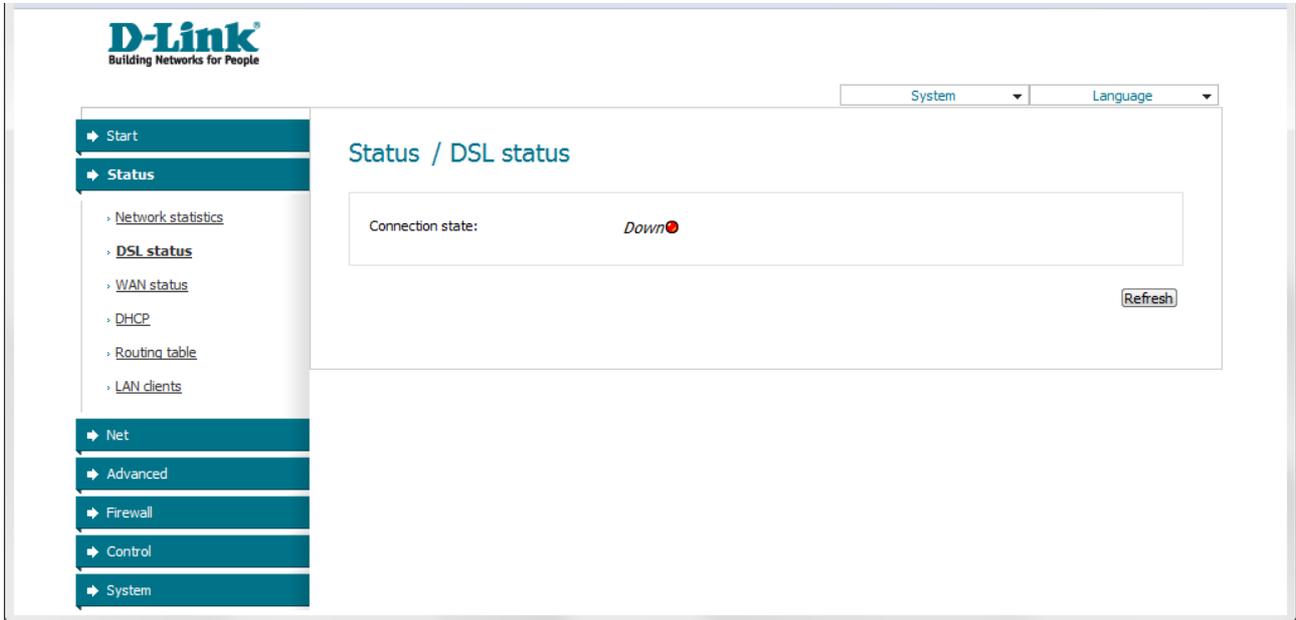
*Figure 13. The **Status / DSL status** page.*

WAN Status

The **Status / WAN status** page displays active WAN connections.
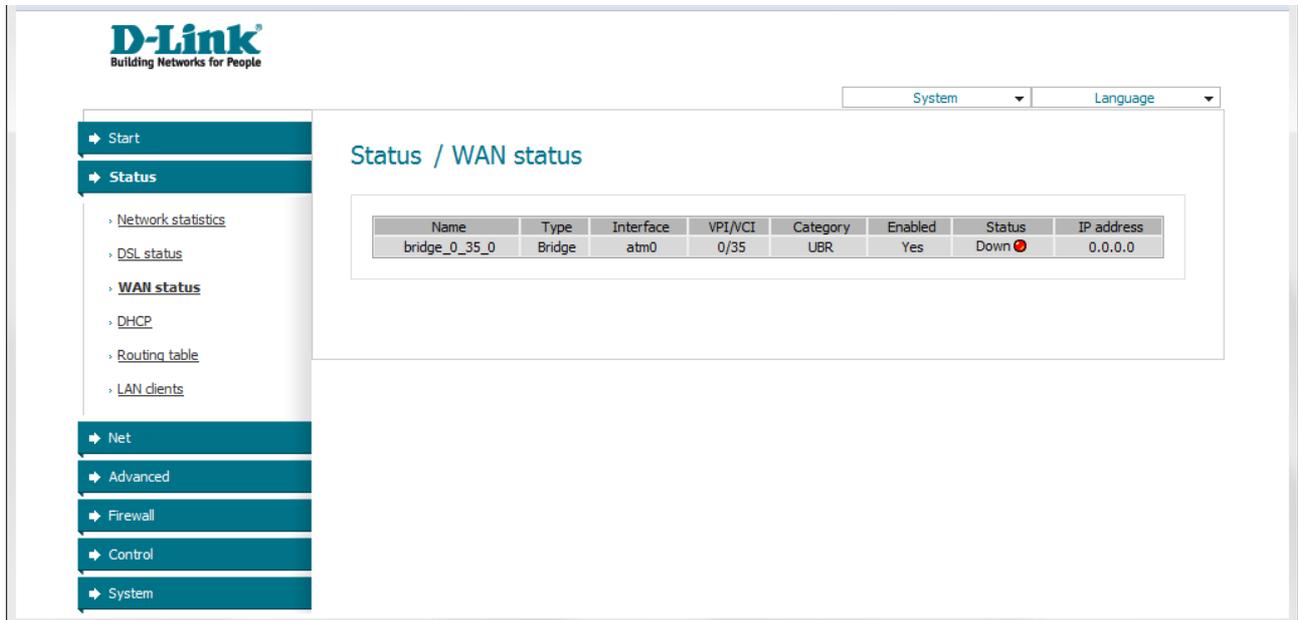
*Figure 14. The **Status / WAN status** page.*

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).
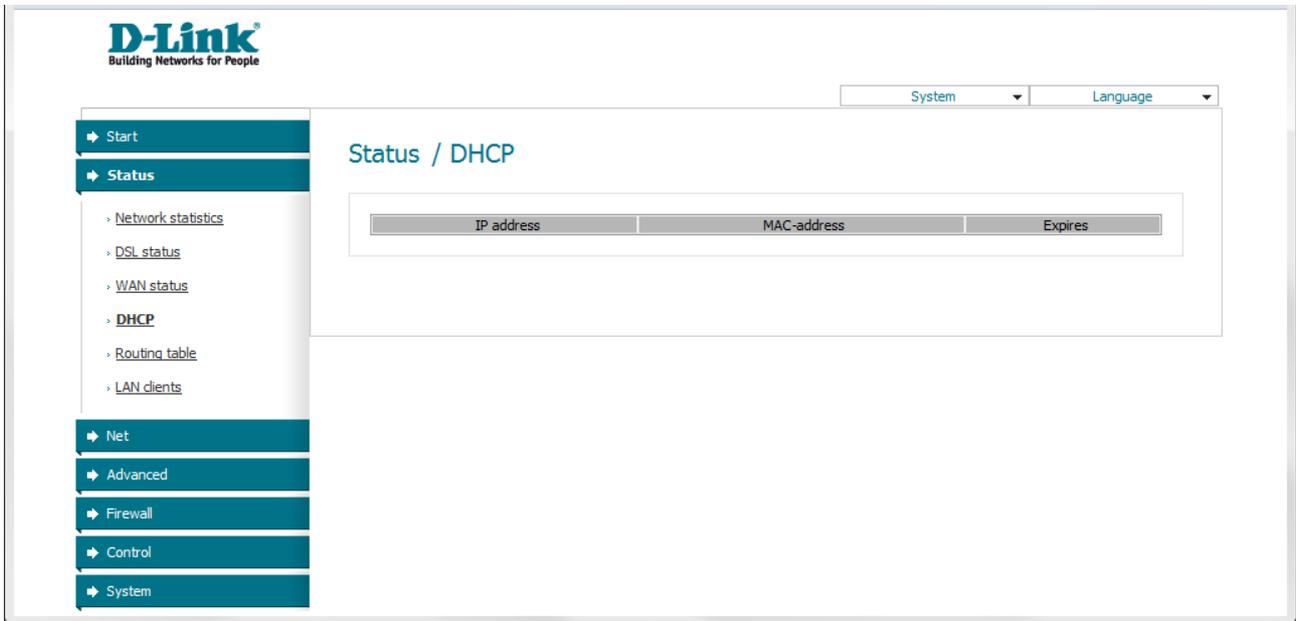
*Figure 15. The **Status / DHCP** page.*

Routing Table

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

*Figure 16. 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 local area network of the router, and devices accessing the web-based interface of the router.
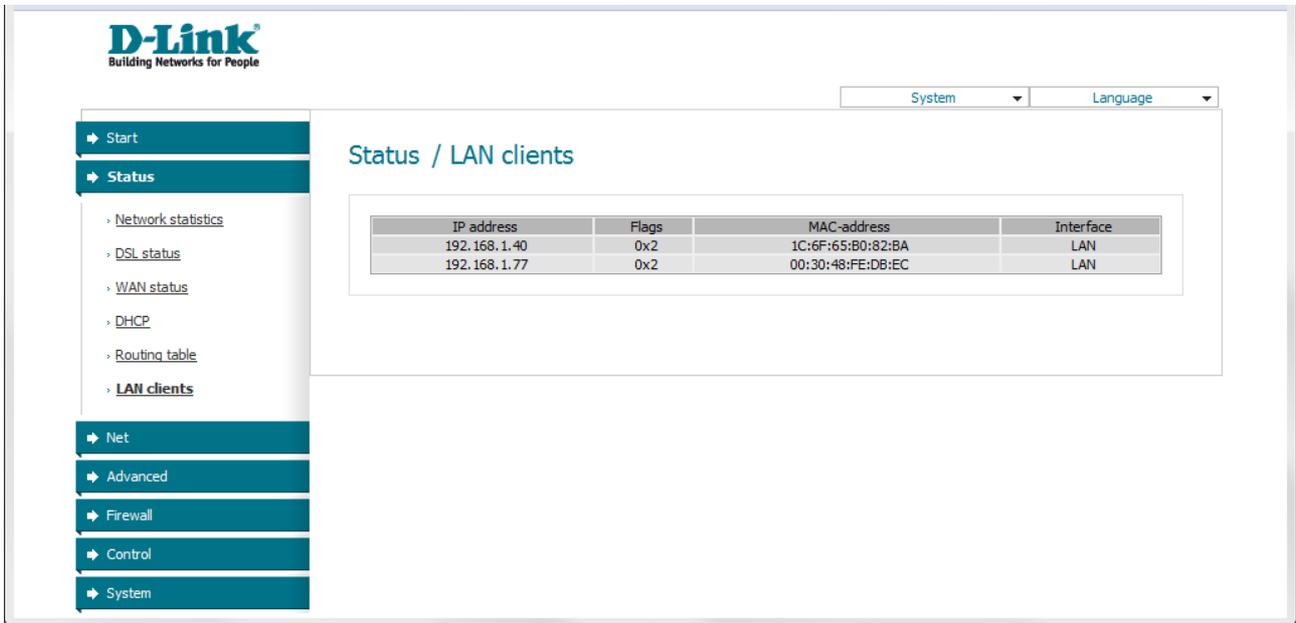
*Figure 17. The **Status / LAN clients** page.*

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**). You cannot delete this connection.
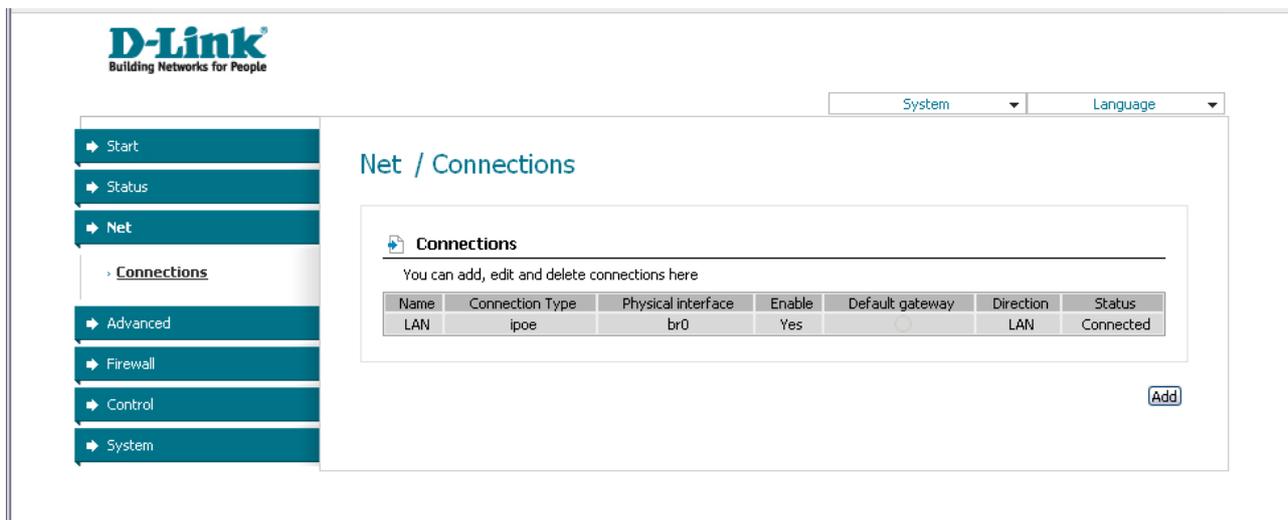
*Figure 18. The **Net / Connections** page.*

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.

Figure 19. 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.

Figure 20. The tab for configuring the DHCP server.

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

Figure 21. 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 WAN Connection

*Figure 22. 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: • **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.

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

Parameter	Description
VLAN settings	
Use multi PVC	Select the checkbox to allow the router to use several untagged VLAN connections.
Use VLAN	Select the checkbox to allow the router to use tagged VLAN connections.
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**.

*Figure 23. 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.

*Figure 24. 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.

Parameter	Description
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	*Displayed for the PPPoE type only.* Select the checkbox if you want to allow PPPoE clients of computers from your LAN to connect to the Internet through this PPPoE connection of the router.
Interface	The name assigned to the connection by the system.

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

Figure 25. The page for creating a new connection. The IP settings section.

Parameter	Description
IP settings	
Obtain an IP address automatically	*Displayed for the IPoE type only.* 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). *Optional*.
Interface	The name assigned to the connection by the system.

Click the **Save** 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, configure a DDNS service, enable RIP, and edit the ADSL connection parameters.

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.
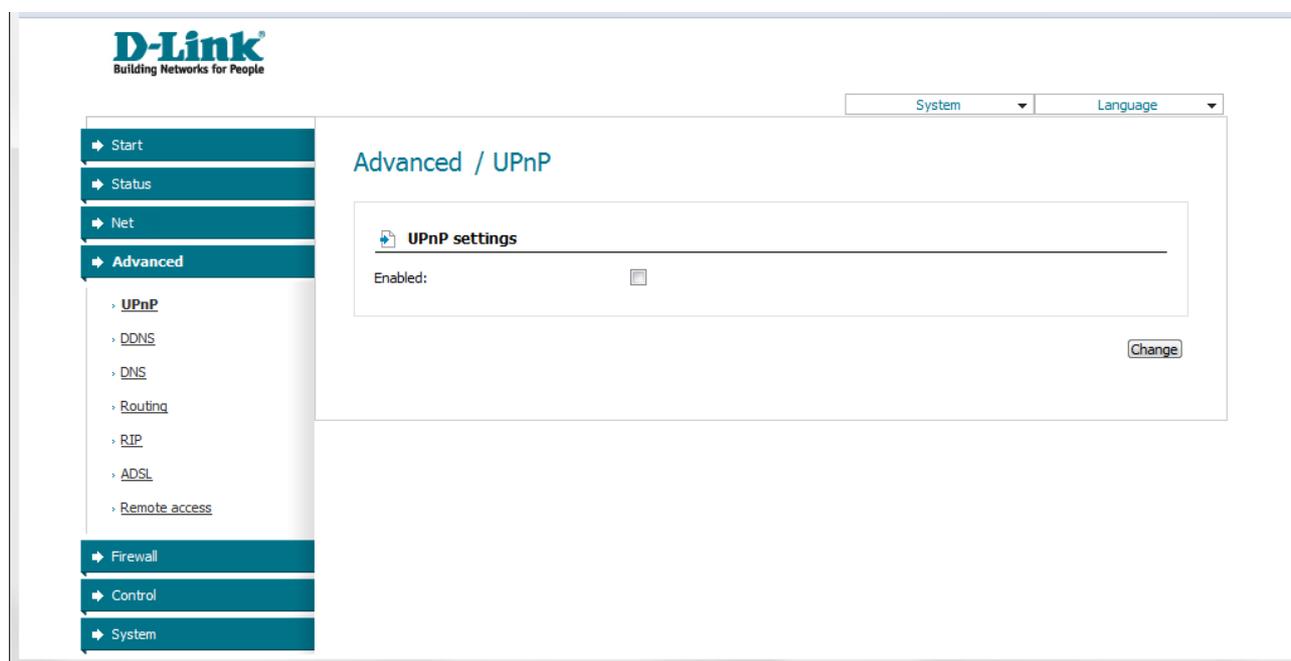
*Figure 26. The **Advanced / UPnP** page.*

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.

DDNS

On the **Advanced / DDNS** page, you can define parameters of the DDNS service, which allows associating a domain name with dynamic IP addresses.
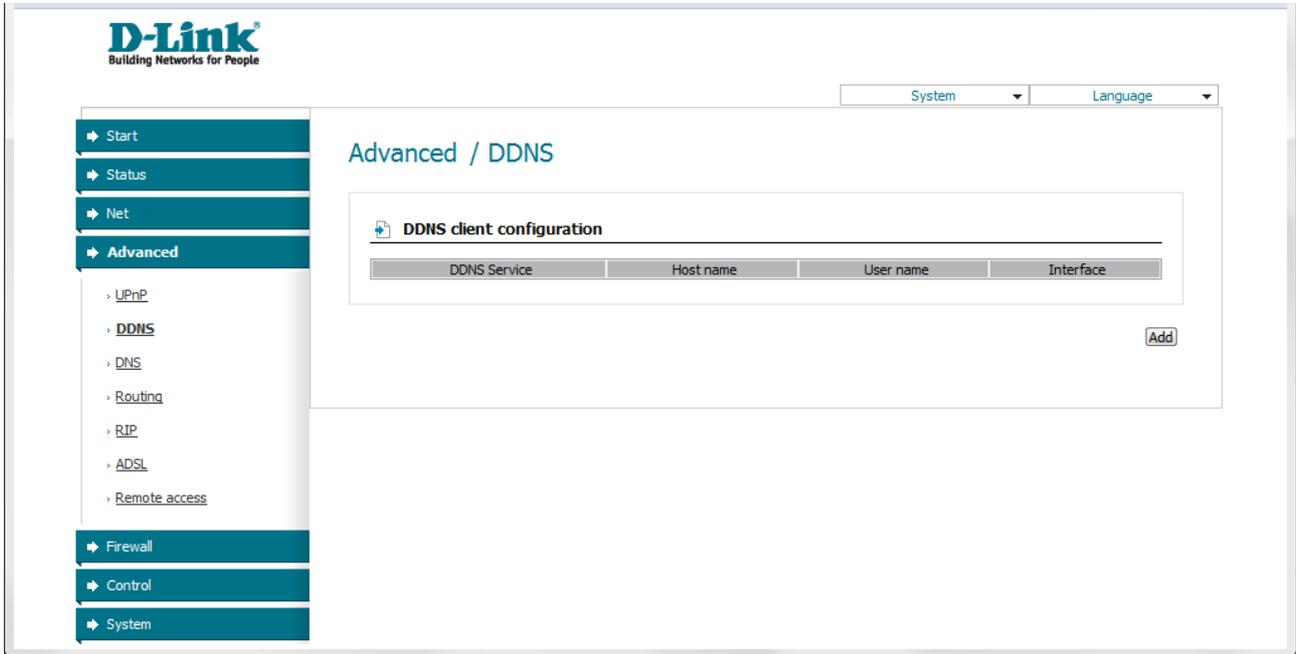
*Figure 27. The **Advanced / DDNS** page.*

To add a new DDNS service, click the **Add** button.
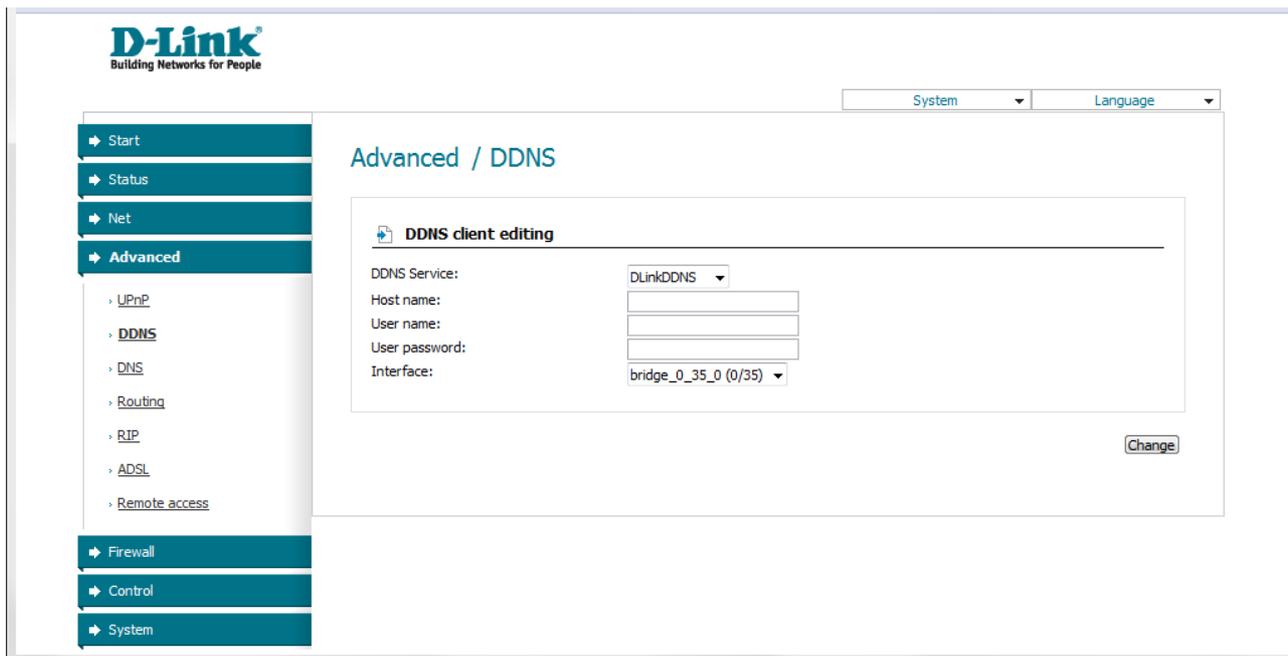
Figure 28. The page for adding a DDNS service.

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.
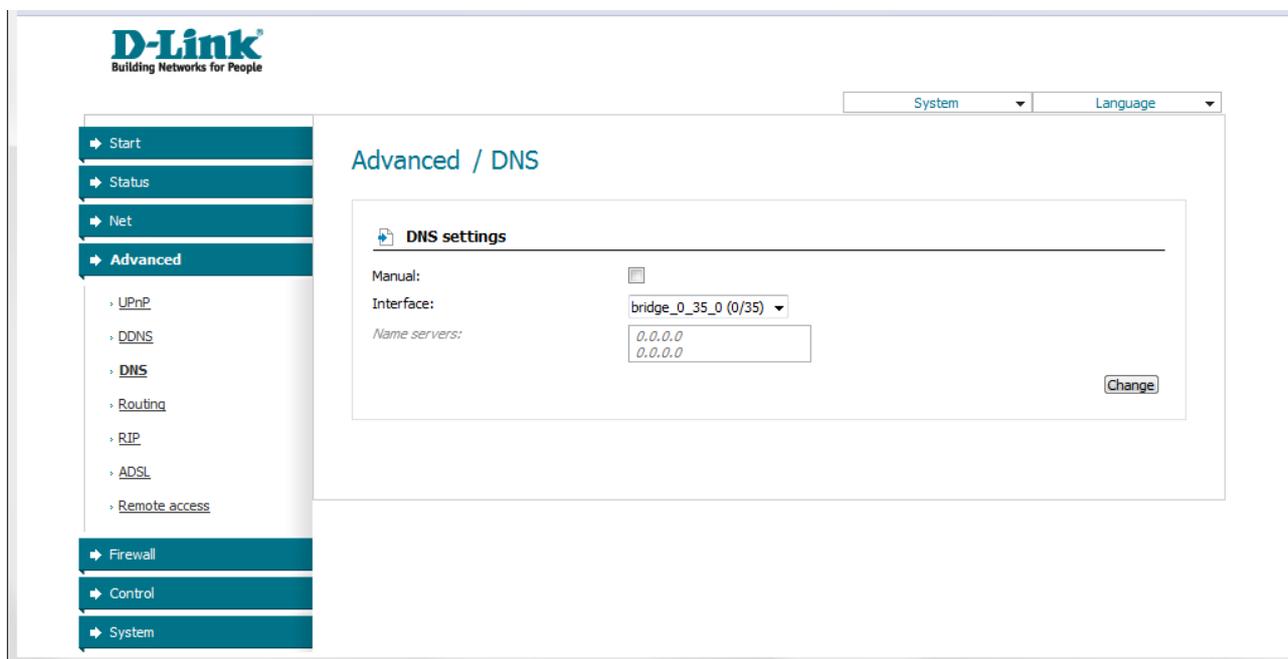
*Figure 29. The **Advanced / DNS** page.*

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.
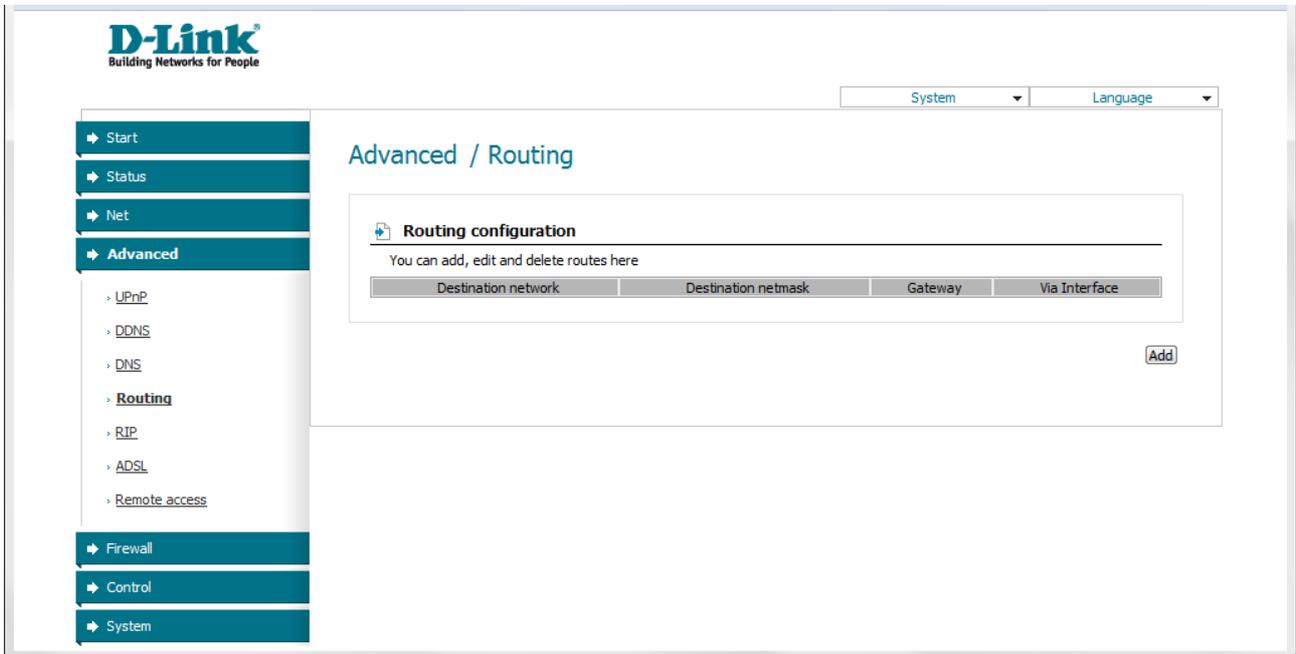
*Figure 30. The **Advanced / Routing** page.*

To create a new route, click the **Add** button.
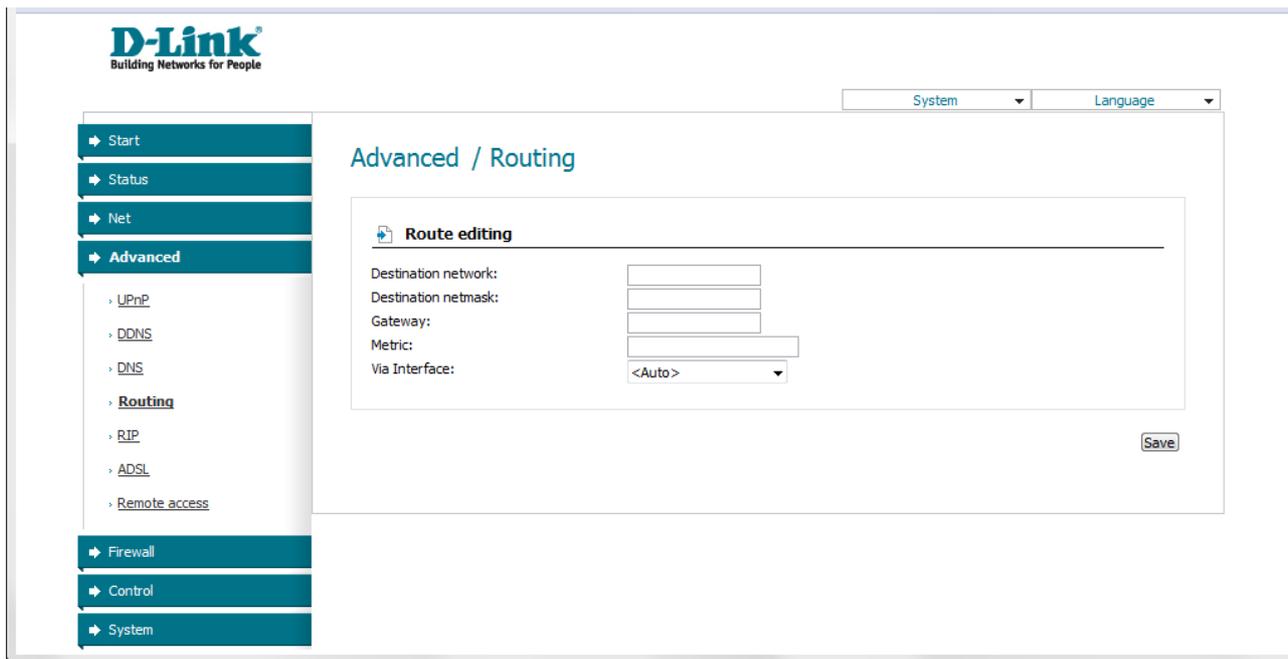
Figure 31. The page for adding a static route.

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. *Optional*.
Via Interface	Select an interface (connection) through which the destination network can be accessed from the drop-down list. If you have selected the **<Auto>** value of this drop-down list, the router itself sets the interface on the basis of data on connected networks.

Click the **Save** button.

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

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

RIP

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

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

You can allow the router to apply RIP for WAN connections available on this page and specify a version of the protocol and an operating mode of the router.
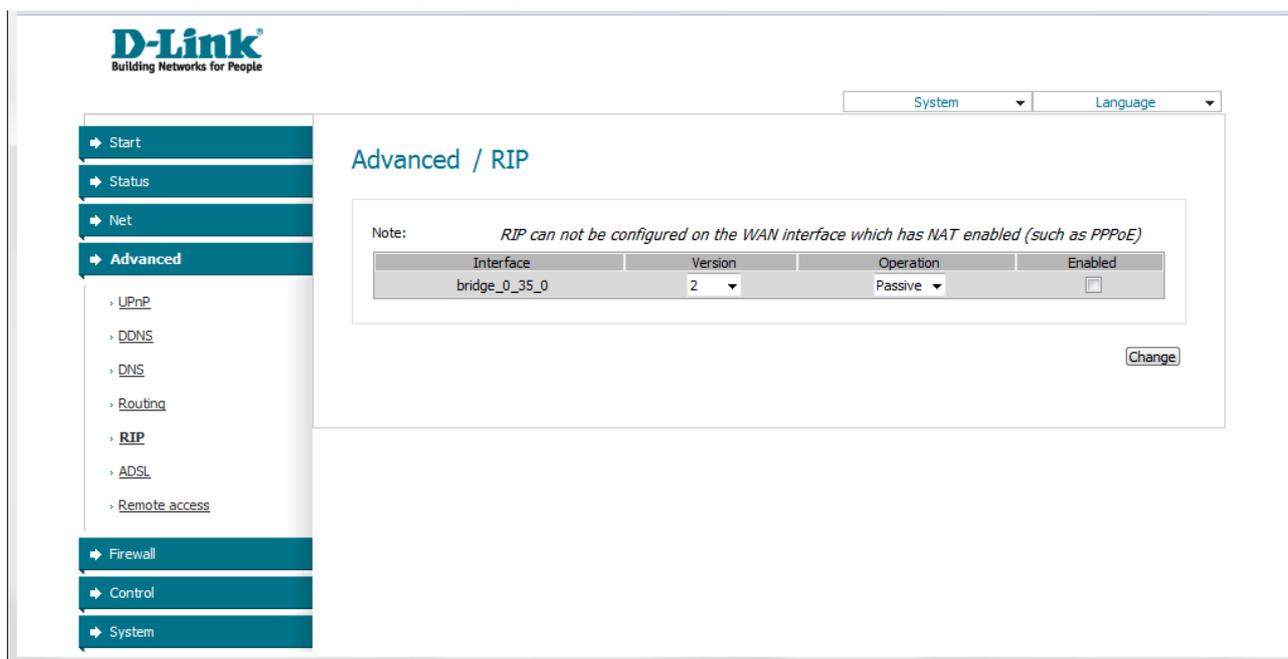
*Figure 32. The **Advanced / RIP** page.*

To configure application of RIP for a specific WAN connection, in the line corresponding to this connection, specify the following parameters.

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

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

3. Select the **Enabled** checkbox.

4. Click the **Change** button.

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

ADSL

The **Advanced / ADSL** page includes the set of ADSL standards that should be defined by an ISP. Contact your ISP to set proper parameters. Select the relevant options and click the **Change** button.
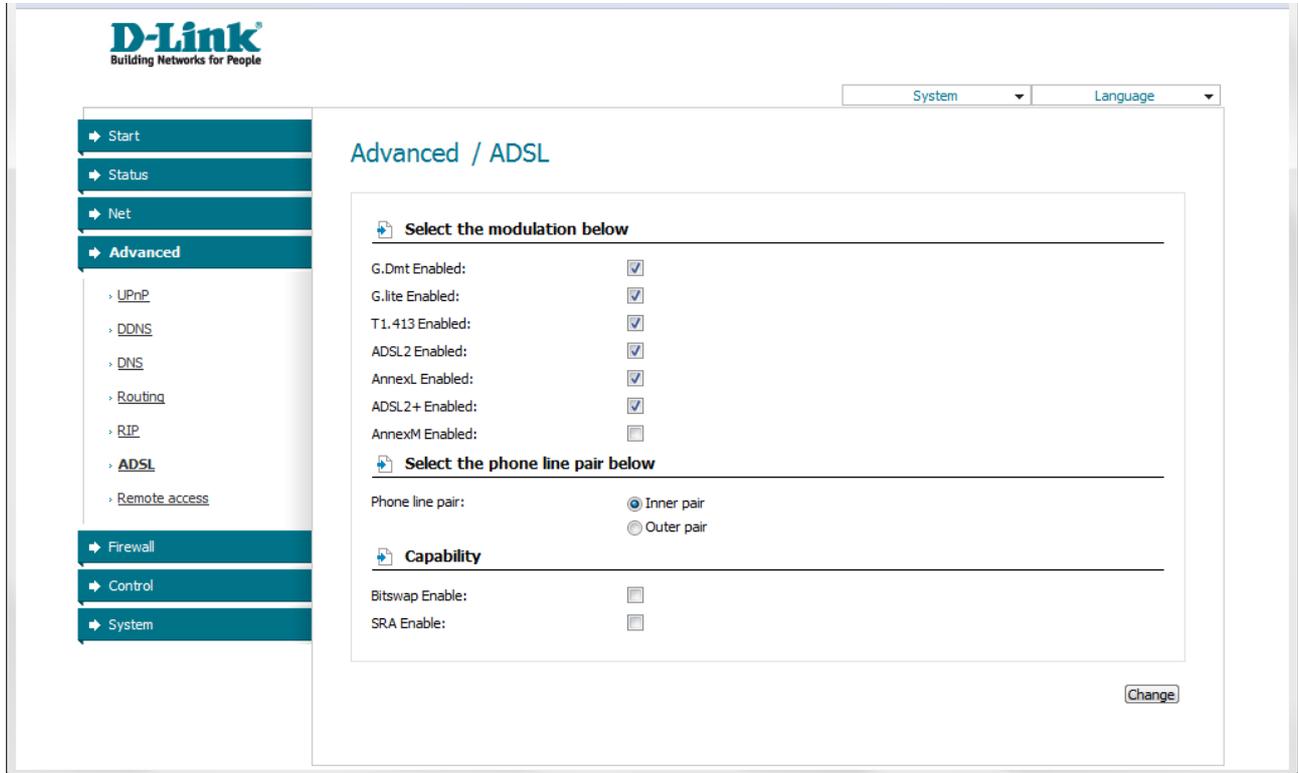
*Figure 33. The **Advanced / ADSL** page.*

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.
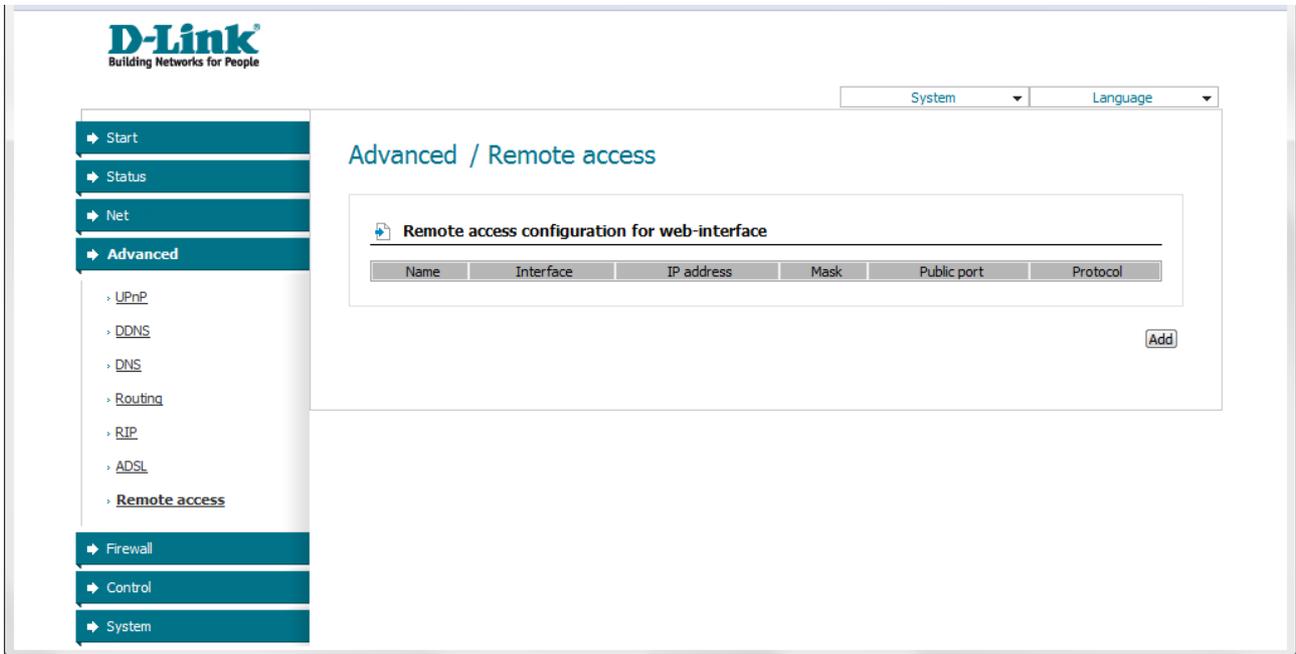
*Figure 34. The **Advanced / Remote access** page.*

To create a new rule, click the **Add** button.
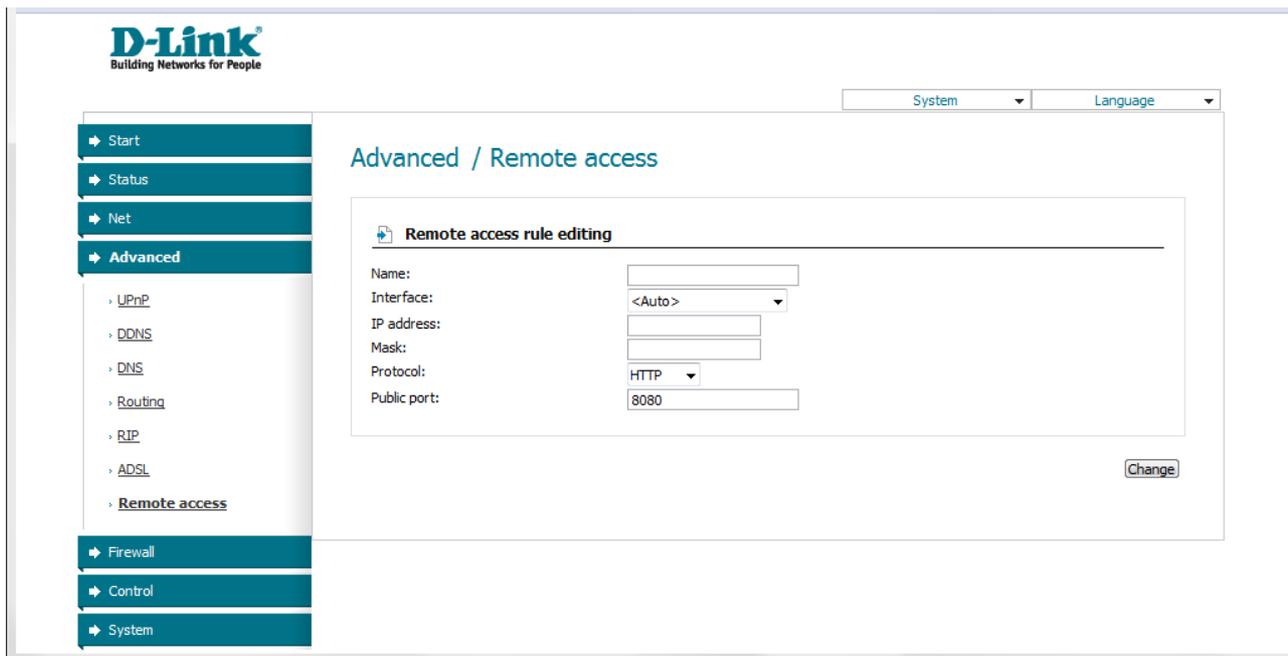
Figure 35. The page for adding a rule for remote management.

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.
Public port	An external port of the router. You can specify only one port.

Click the **Change** button.

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

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

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.
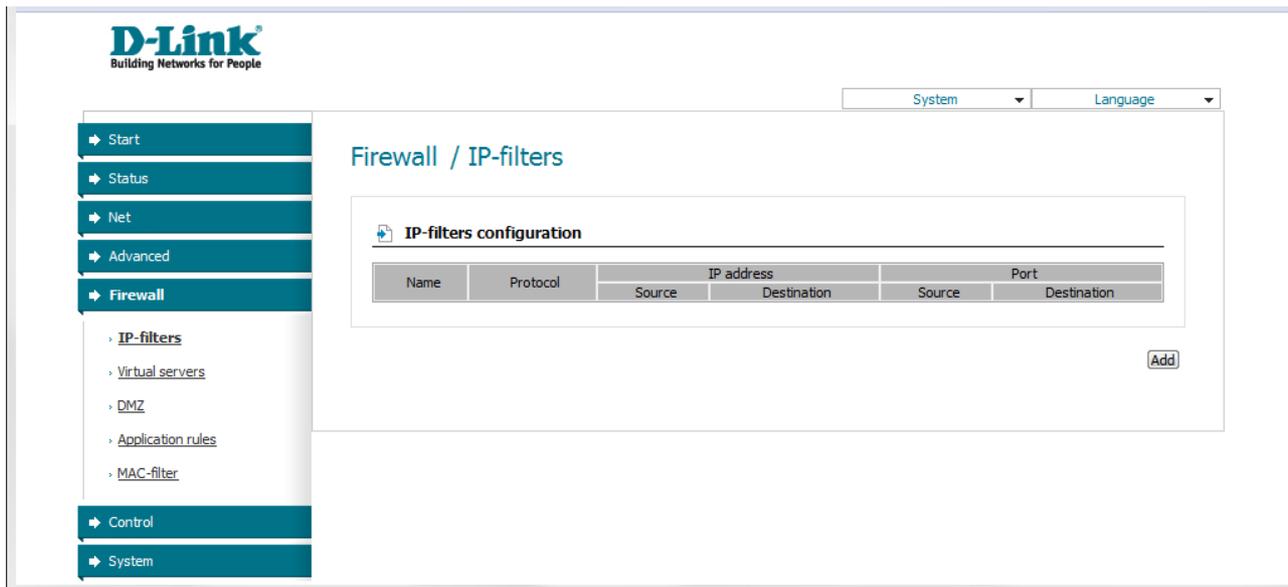
*Figure 36. The **Firewall / IP filters** page.*

To create a new rule, click the **Add** button.
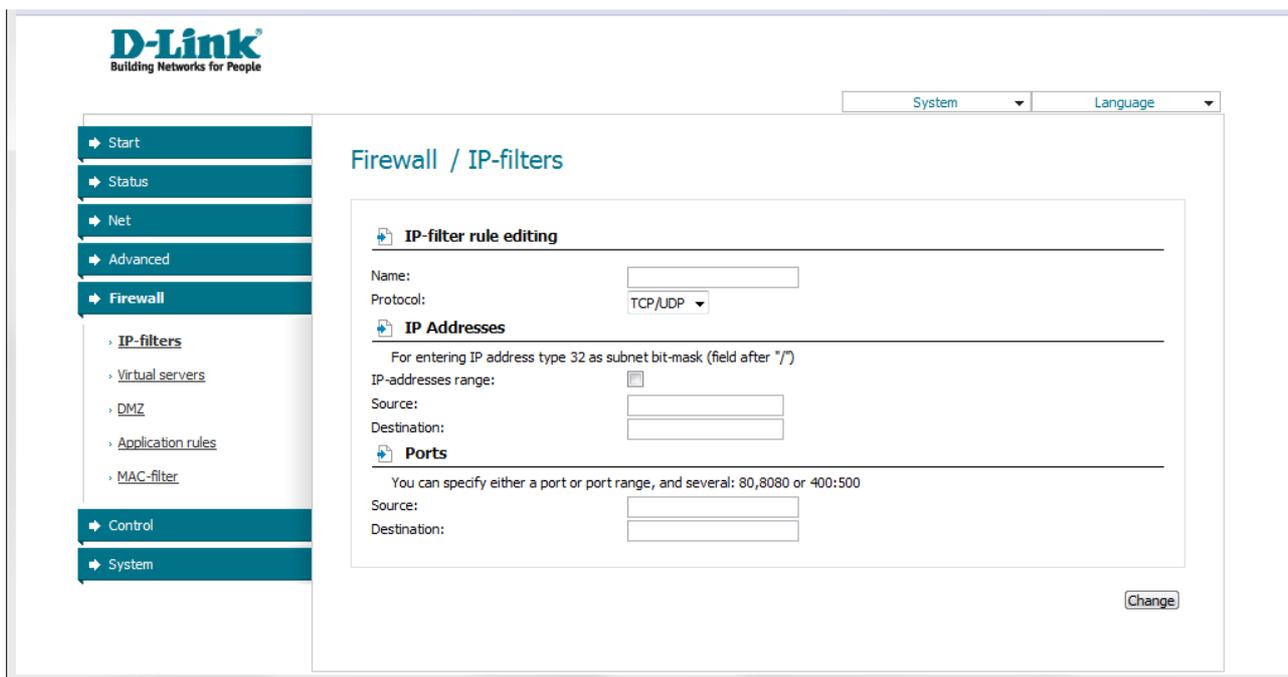
Figure 37. The page for adding a rule for IP filtering.

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	
IP address range	Select the checkbox if you want to specify a range of IP addresses as the source or destination IP address.
Source	The source host/subnet IP address. To specify an IP address add `/32`.
Destination	The destination host/subnet IP address. To specify an IP address add `/32`.
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.
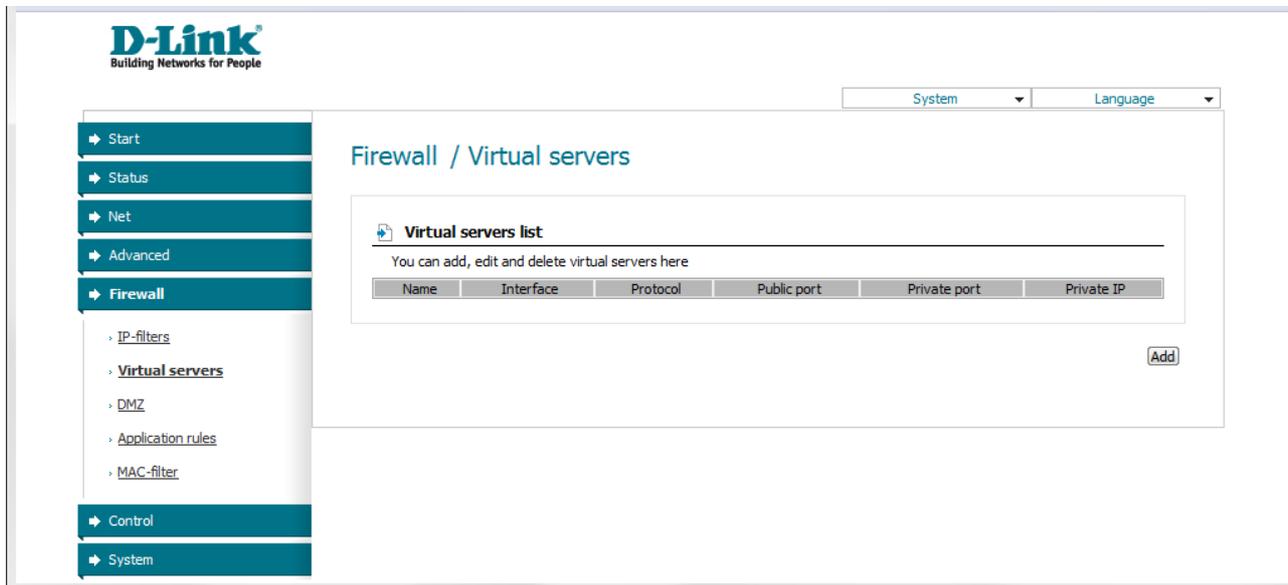
*Figure 38. The **Firewall / Virtual servers** page.*

To create a new virtual server, click the **Add** button.
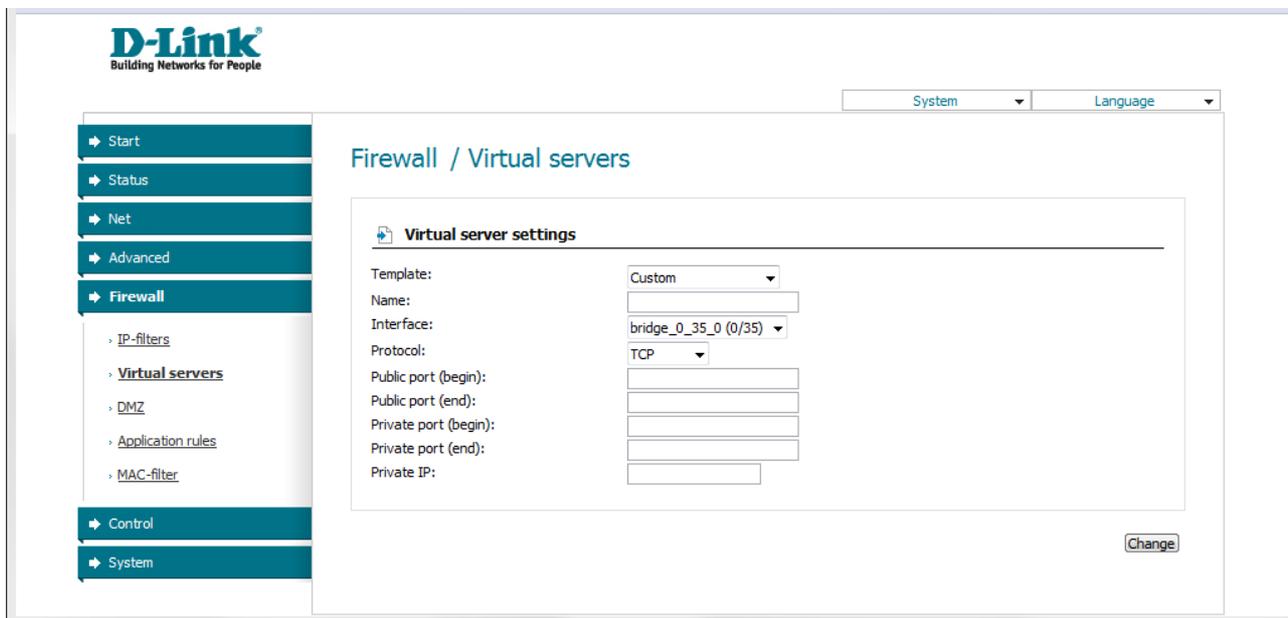
Figure 39. The page for adding a virtual server.

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.
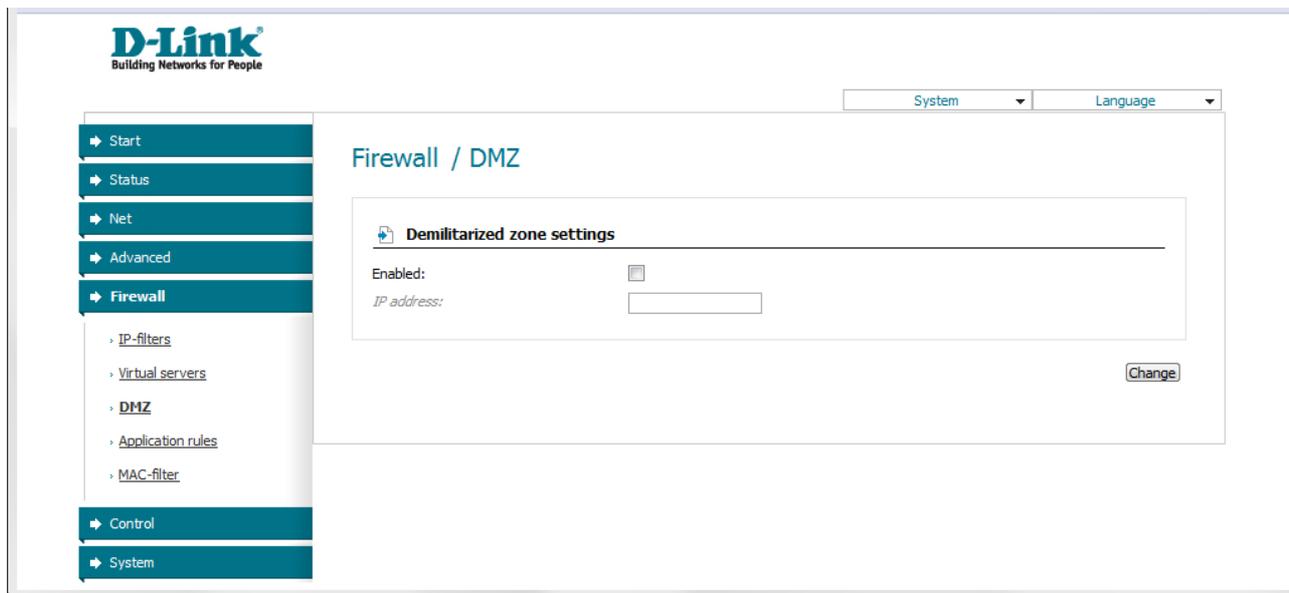
*Figure 40. The **Firewall / DMZ** page.*

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.
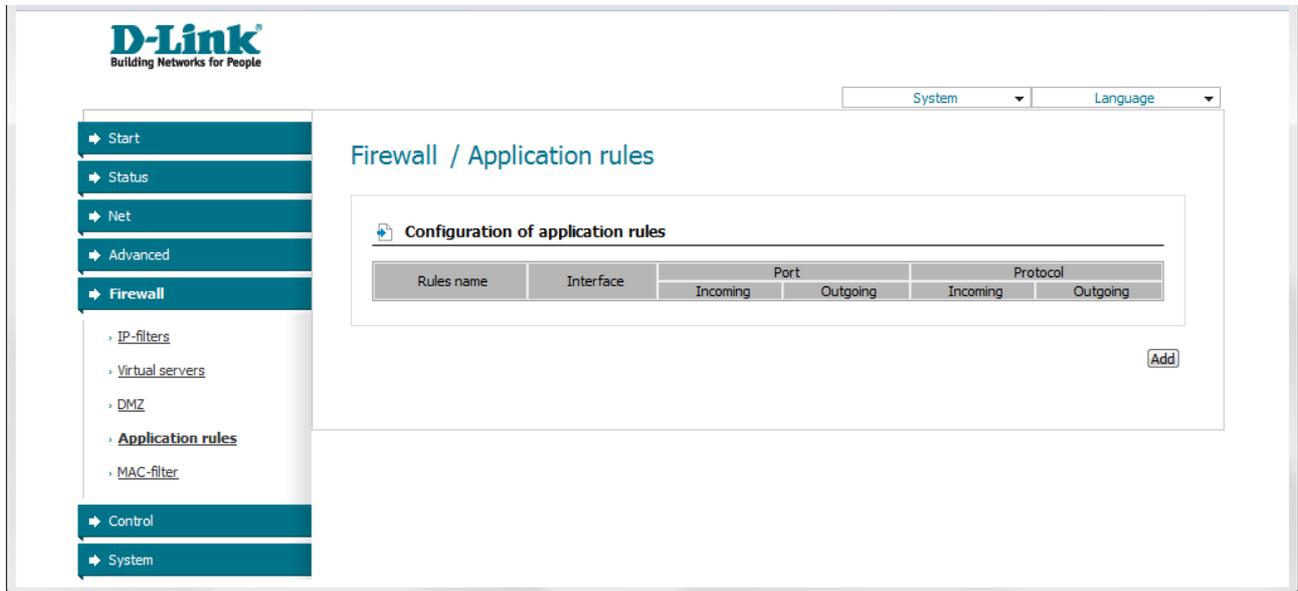
*Figure 41. The **Firewall / Application rules** page.*

To add a new rule for the Port Triggering function, click the **Add** button.
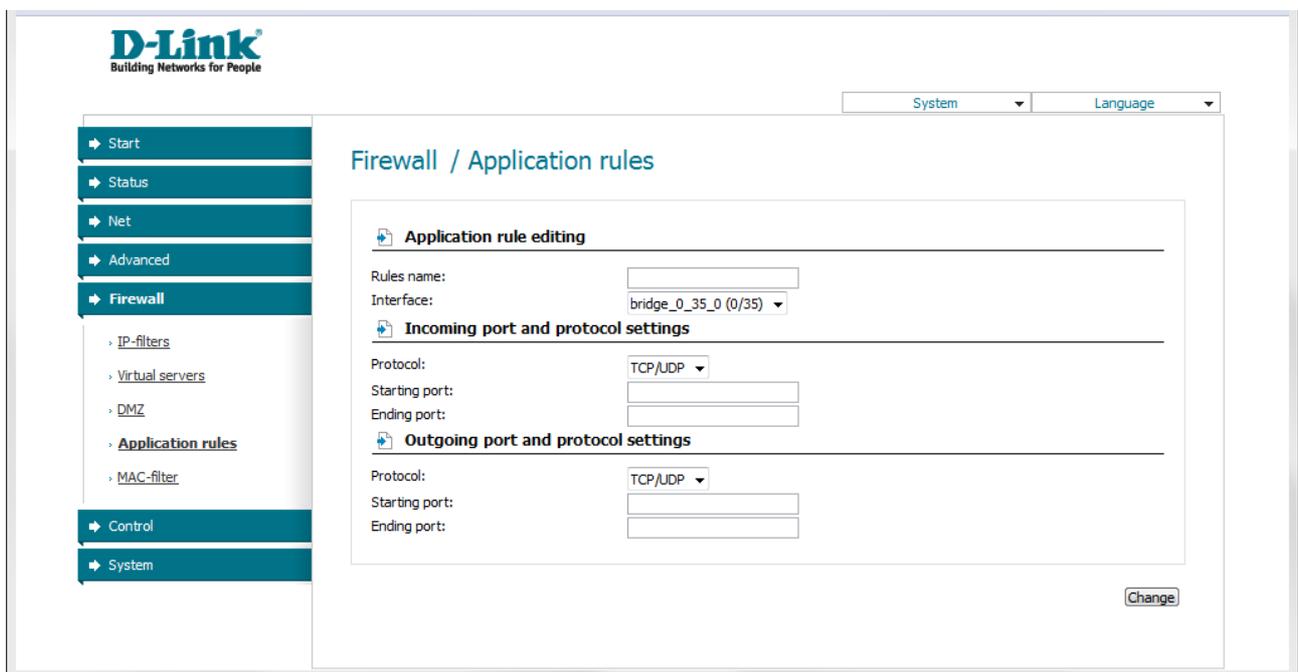
Figure 42. The page for adding a rule for the Port Triggering function.

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. On the **Firewall / MAC filter** page, you can add rules for filtering.

> **!** 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 for every WAN connection of the Bridge type.

To configure the MAC filter of the router for a certain WAN connection, create filtering rules assigned to this connection on the **MAC addresses** tab, then select the needed value from the **Action** drop-down on the **Configuration** tab. Select the **Allow** value to allow traffic affected by the rules for this connection and block the other traffic. Select the **Deny** value to block only traffic affected by the rules for this connection.
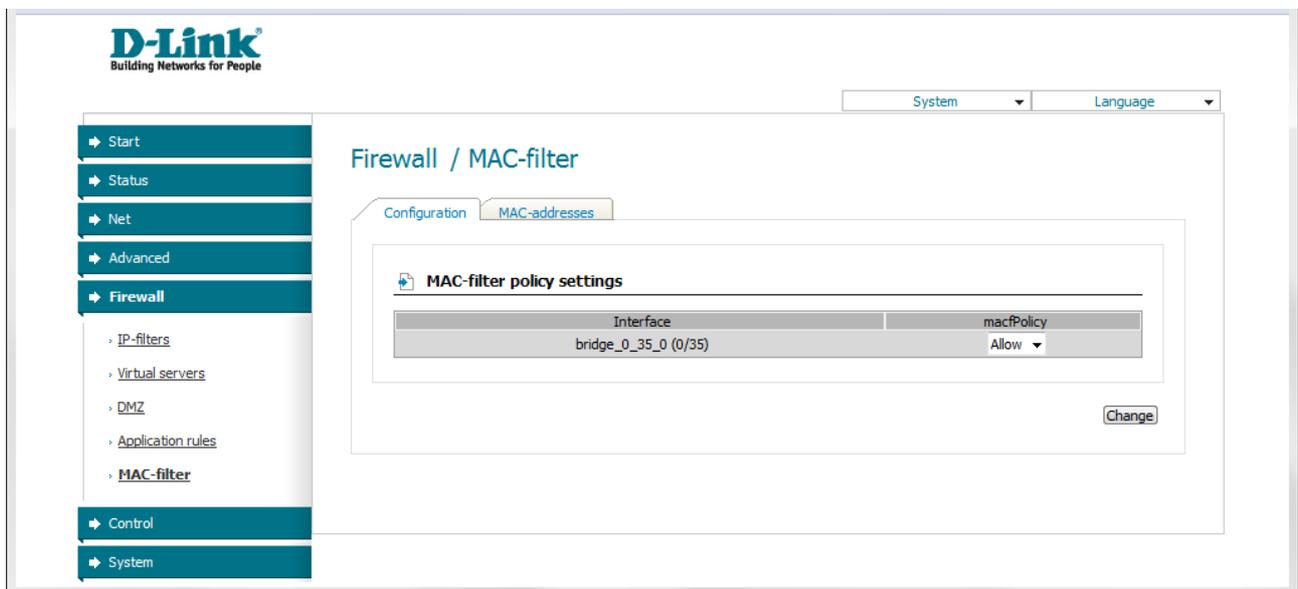
*Figure 43. The **Firewall / MAC filter** page. The **Configuration** tab.*

To create a new rule, proceed to the **MAC addresses** tab and click the **Add** button.
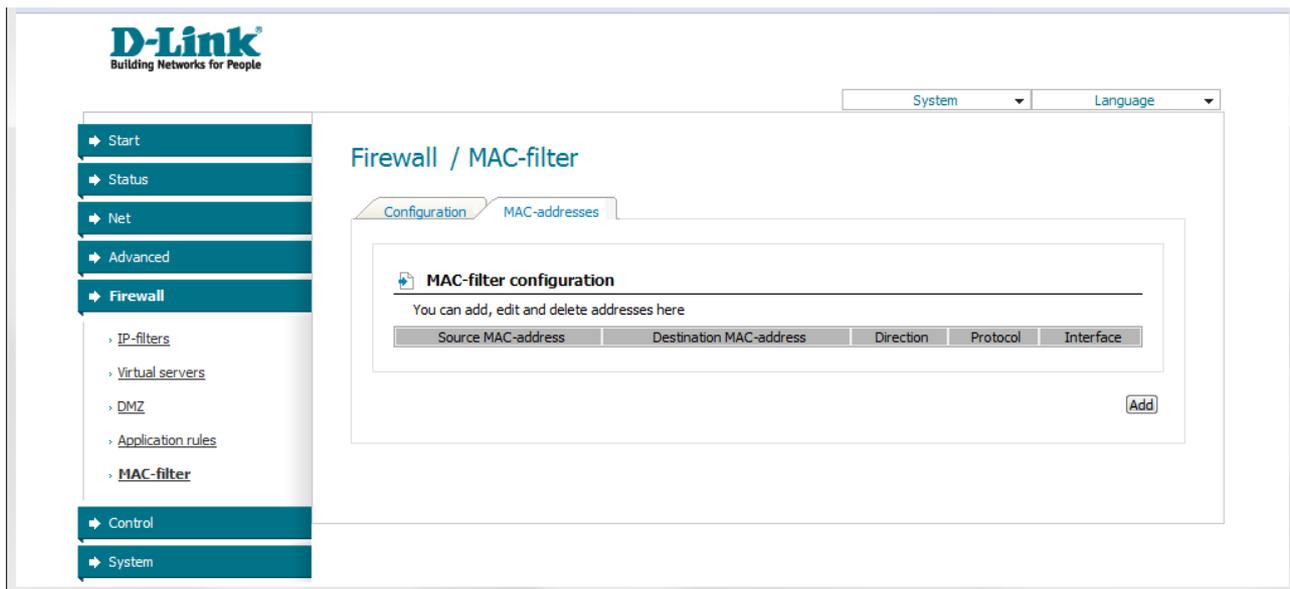
*Figure 44. The **Firewall / MAC filter** page. The **MAC addresses** tab.*

On the opened page, specify the needed parameters.
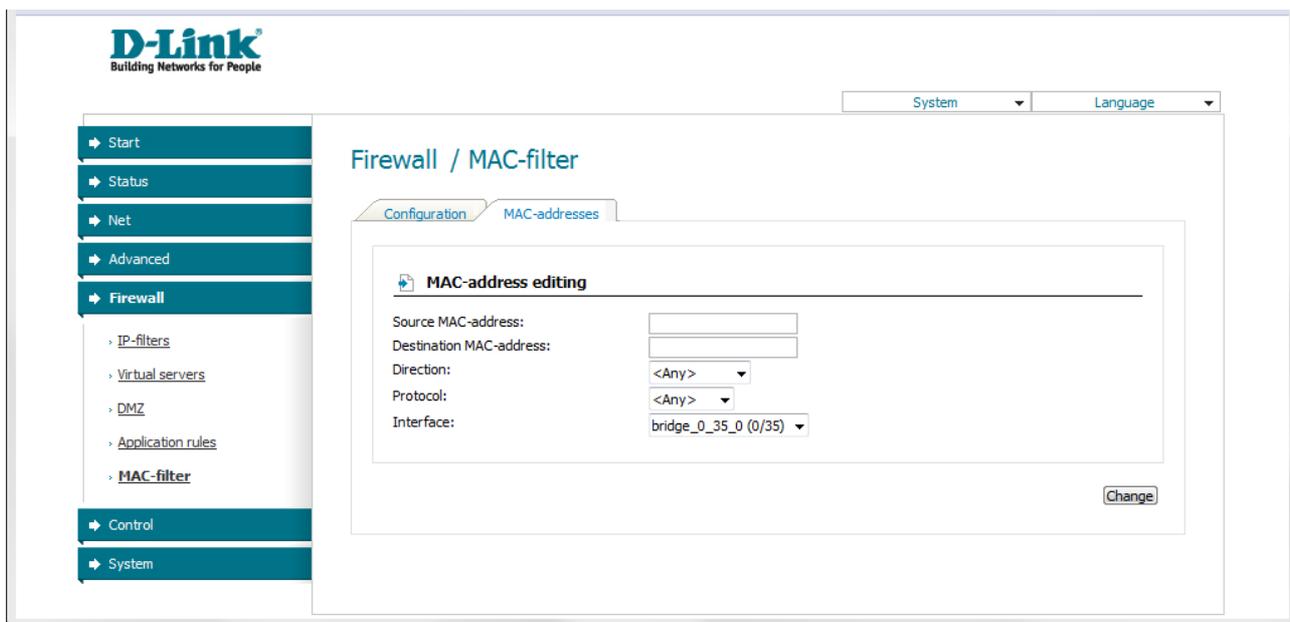
Figure 45. The page for adding a rule for MAC-address-based filtering.

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.

Control

This menu is designed to limit access to certain web sites.

URL Filter

On the **Control / URL filter** page, you can specify restrictions on access to certain web sites.
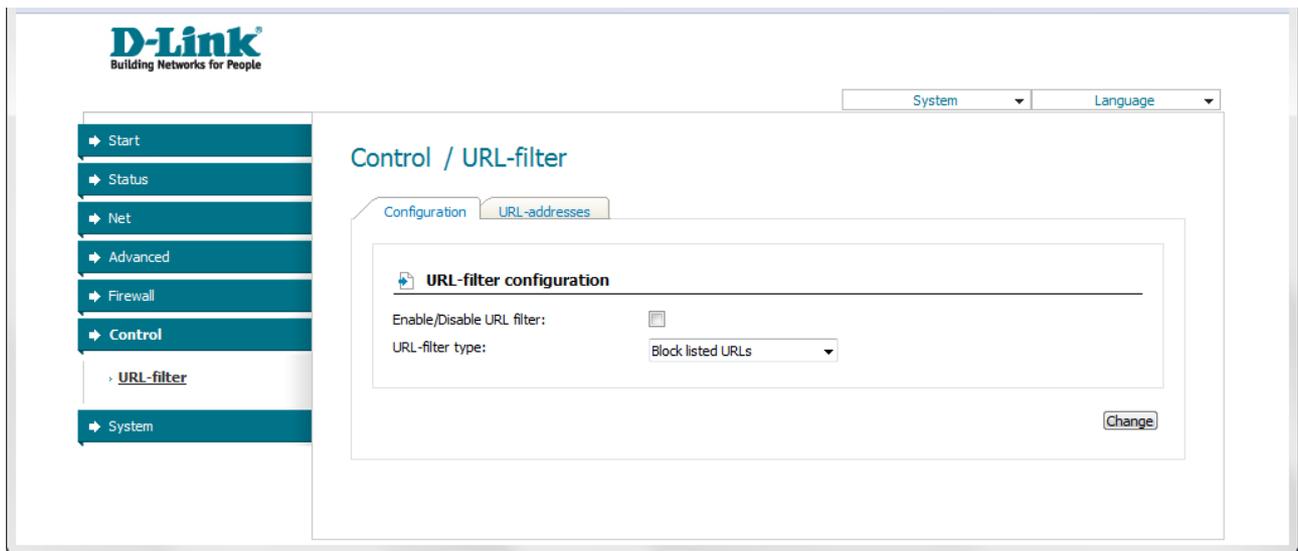
*Figure 46. The **Control / URL filter** page. The **Configuration** tab.*

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.
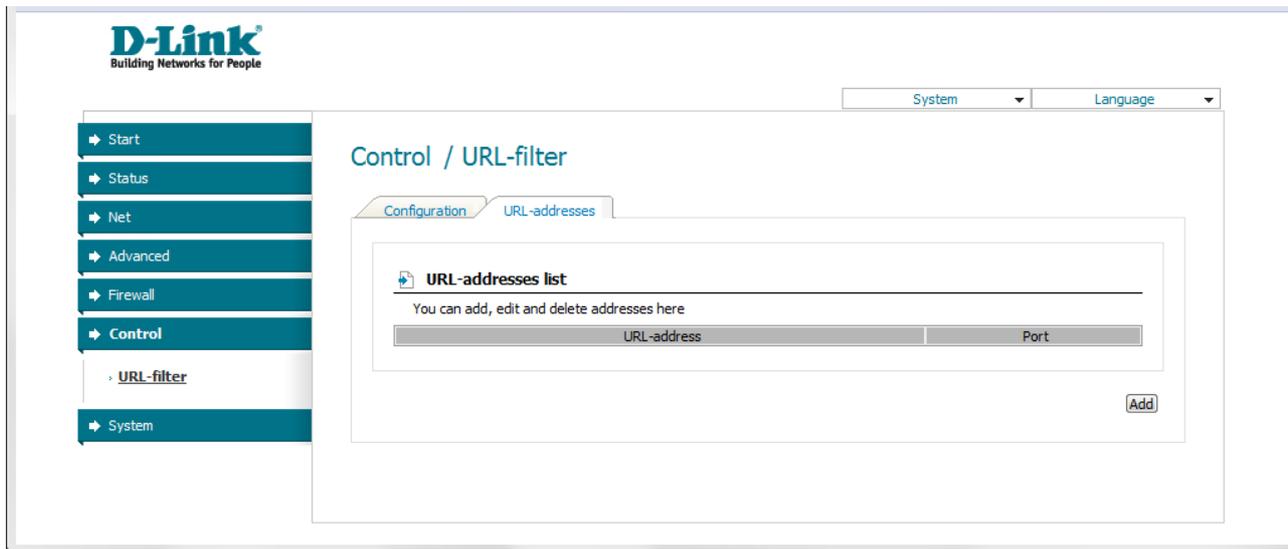
*Figure 47. The **Control / URL filter** page. The **URL addresses** tab.*

On the opened page, specify the needed parameters.
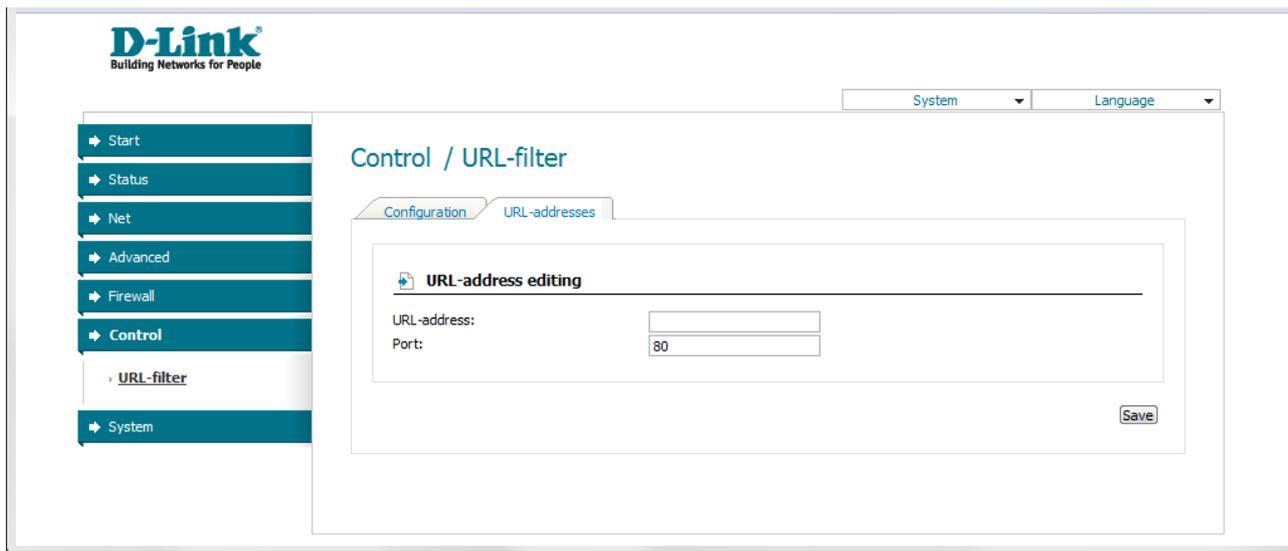
Figure 48. The page for adding an address for the URL filter.

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, check availability of a host on the Internet through the web-based interface of the router, and change the password used to access its settings.

Administrator Password

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

> **!** For security reasons, it is strongly recommended to change the administrator password upon initial configuration of the router.
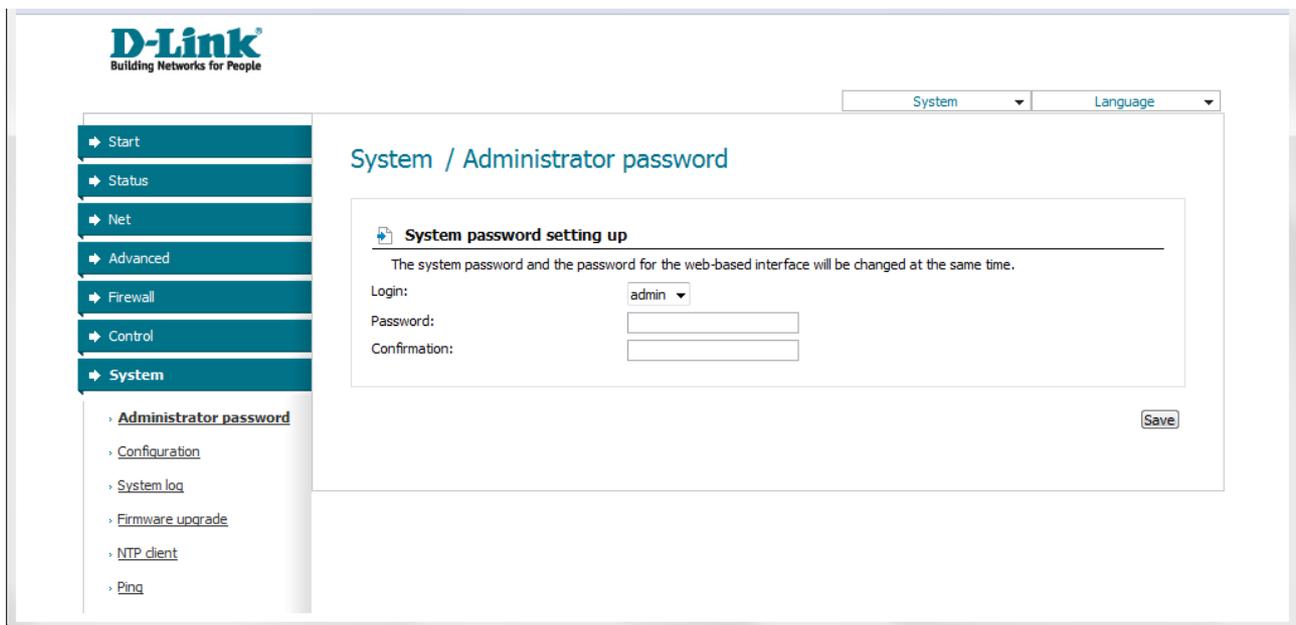
*Figure 49. The **System / Administrator password** page.*

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

Configuration

On the **System / Configuration** page, you can save the changed settings to the non-volatile memory, restore the factory defaults, backup the current configuration, or restore the router's configuration from a previously created file.
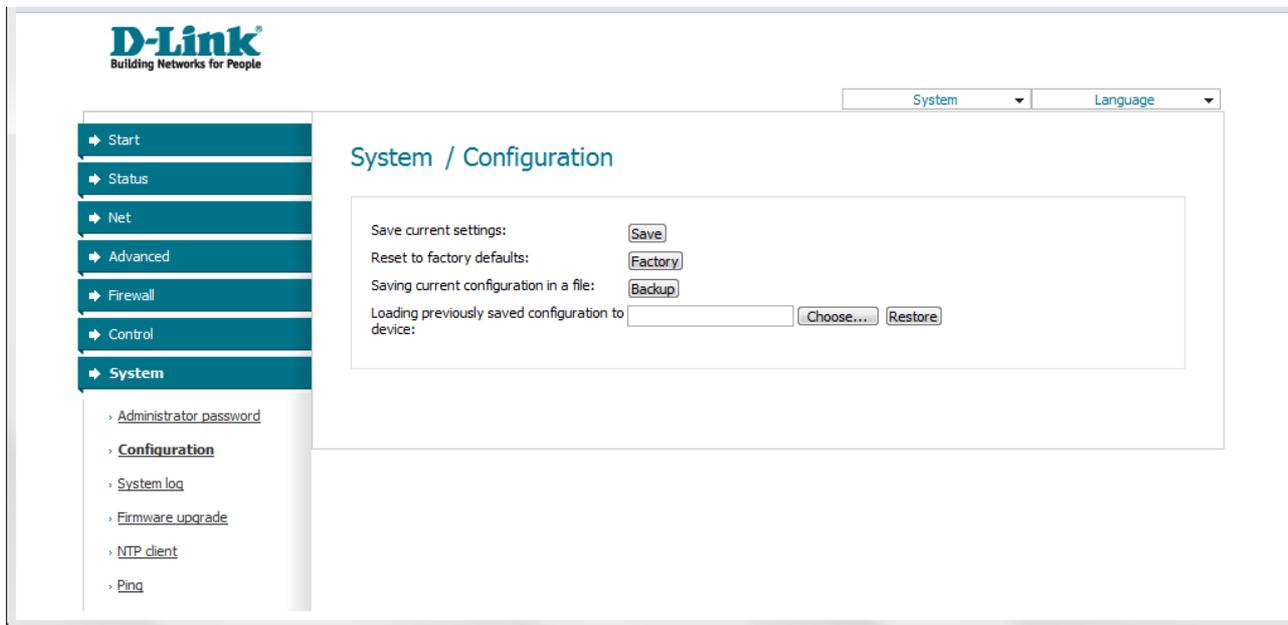
*Figure 50. The **System / Configuration** page.*

The following buttons are available on the page:

Control	Description
Save	Click the button to save settings to the non-volatile memory. Please, save settings every time you change the router's parameters. Otherwise the changes will be lost upon reboot of the router.
Factory	Click the button to restore the factory default settings. Also you can restore the factory defaults via the hardware Reset button (see the *Saving and Restoring Settings* section, page 17).
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**[1] button to select a previously saved configuration file located on your PC.

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

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1 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.
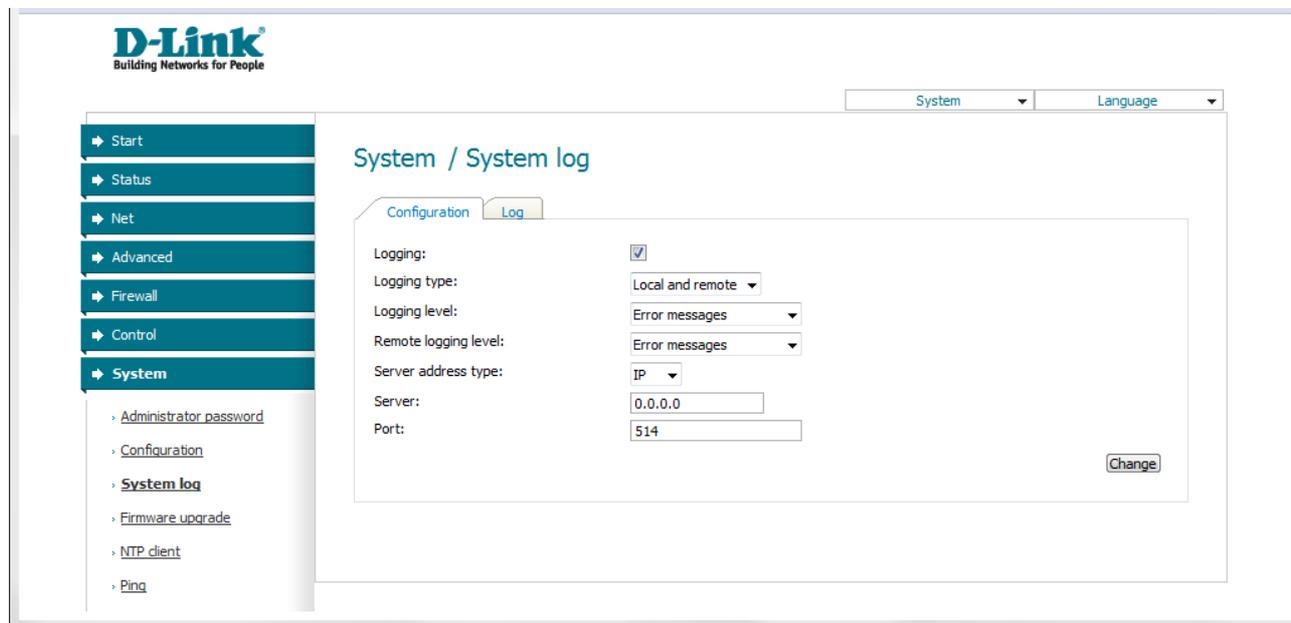
*Figure 51. The **System / System log** page. The **Configuration** tab.*

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

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

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 **Logging level** list are displayed.
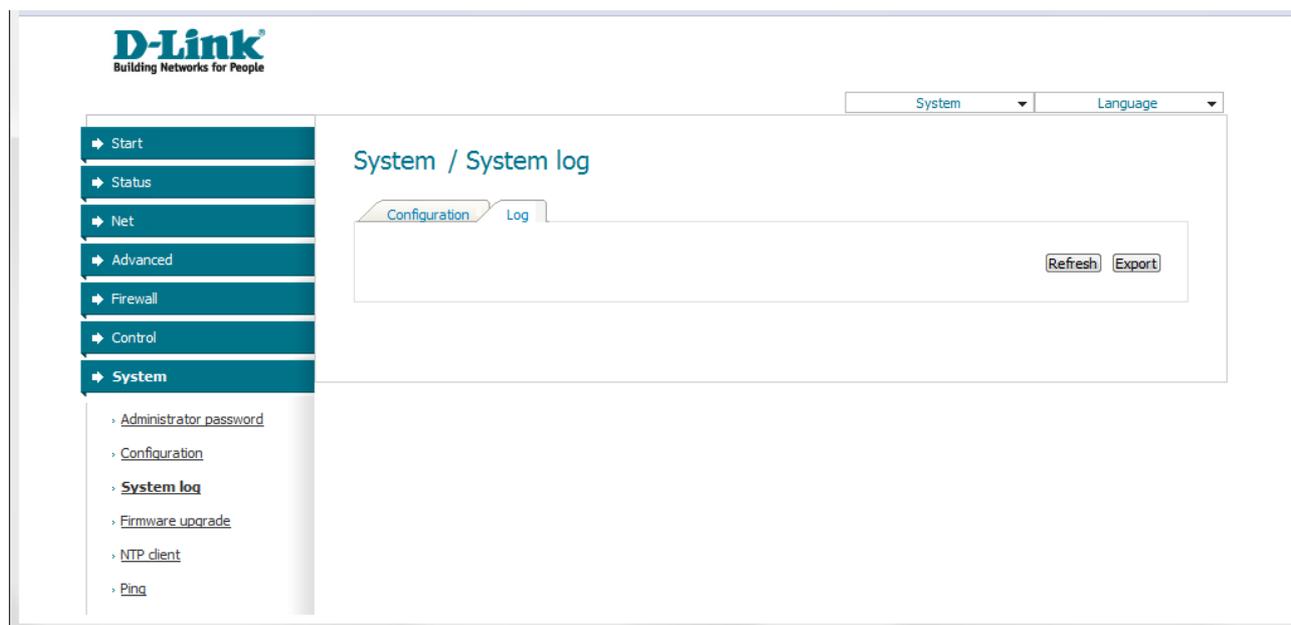
*Figure 52. The **System / System log** page. The **Log** tab.*

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.
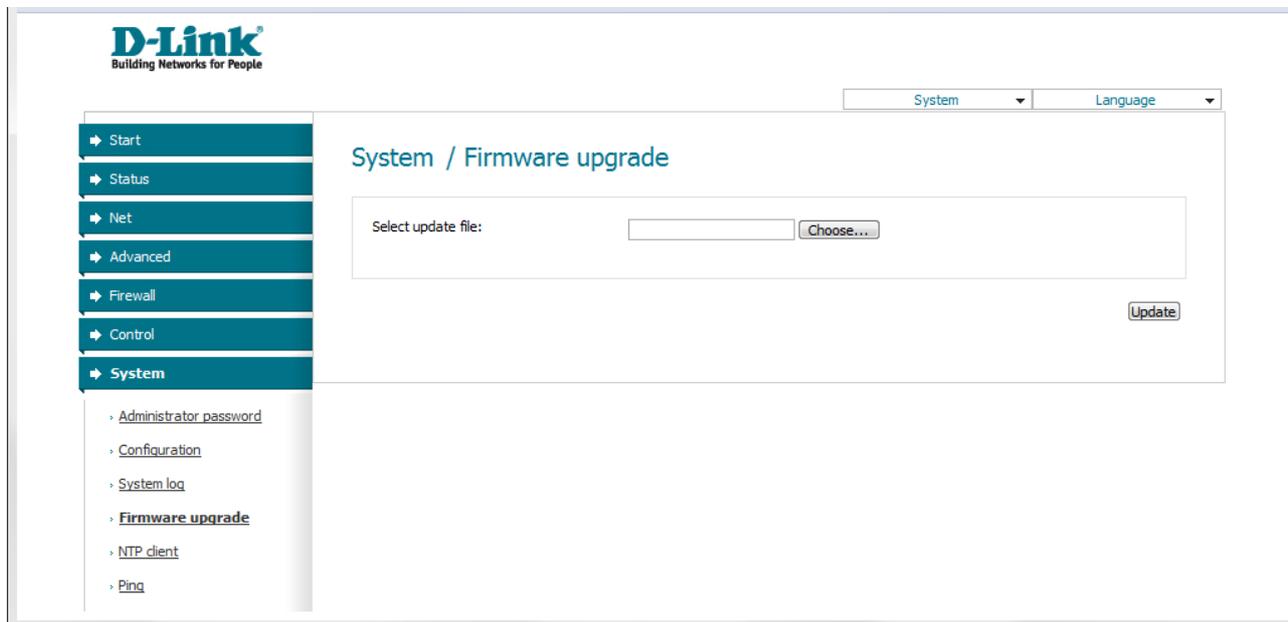
*Figure 53. The **System / Firmware upgrade** page.*

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

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

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

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

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

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

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

NTP Client

On the **System / NTP client** page, you can configure automatic synchronization of the system time with a time server on the Internet.
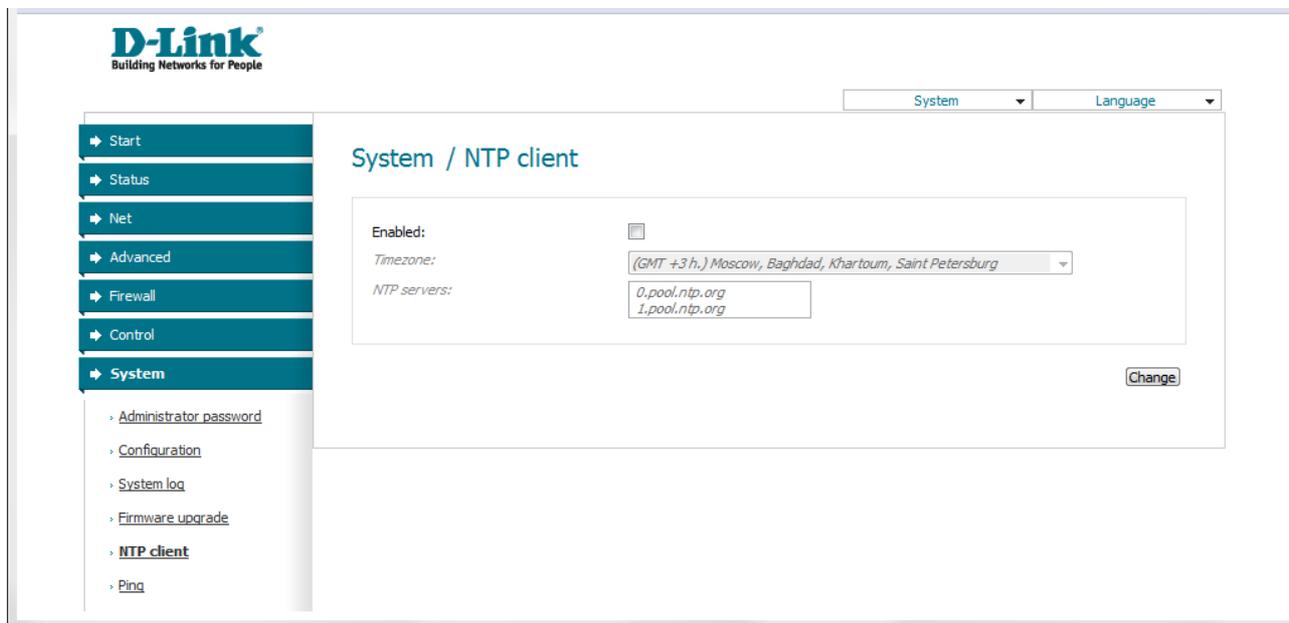
*Figure 54. The **System / NTP client** page.*

To enable automatic synchronization with a time server:

1. Select the **Enabled** checkbox.

2. Select your time zone.

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

4. Click the **Change** button.

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

Ping

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

The Ping utility sends echo requests to a specified host and receives echo replies.
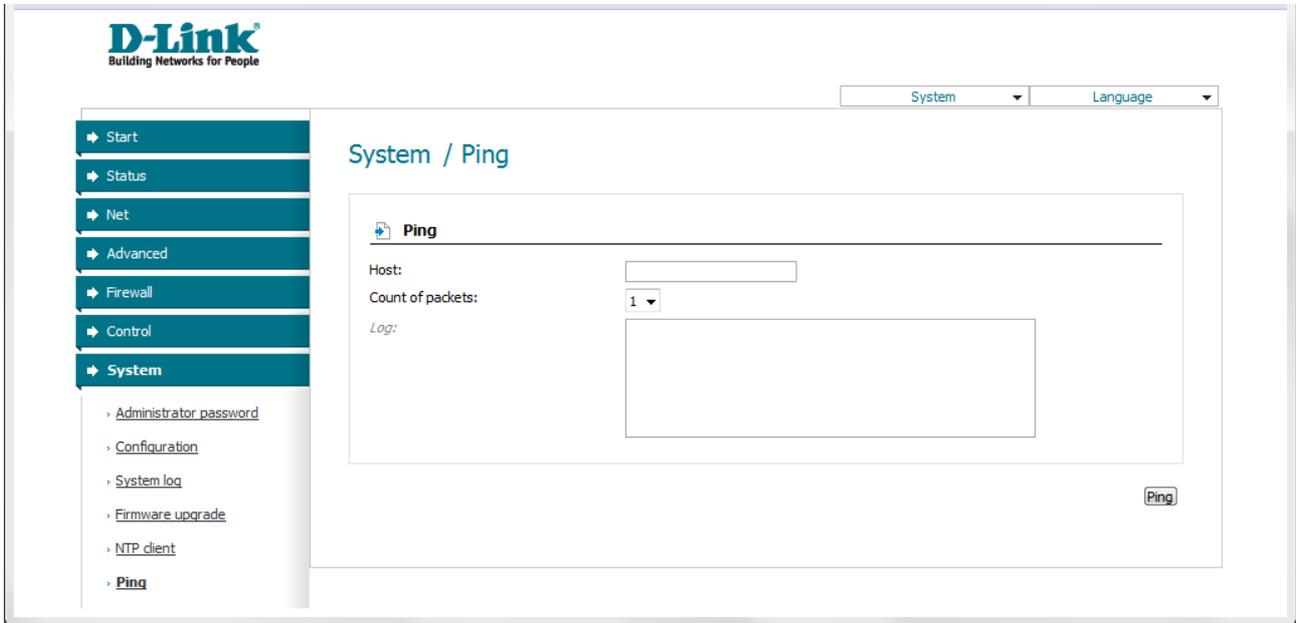
*Figure 55. The **System / Ping** page.*

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

CHAPTER 5. ABBREVIATIONS AND ACRONYMS

ARP	Address Resolution Protocol
DDNS	Dynamic Domain Name System
DDoS	Distributed Denial of Service
DHCP	Dynamic Host Configuration Protocol
DMZ	DeMilitarized Zone
DNS	Domain Name System
GMT	Greenwich Mean Time
IGMP	Internet Group Management Protocol
IP	Internet Protocol
IPoA	Internet Protocol over ATM
IPoE	Internet Protocol over Ethernet
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
PPPoA	Point-to-Point Protocol over ATM
PPPoE	Point-to-point protocol over Ethernet
QoS	Quality of Service
RIP	Routing Information Protocol
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
VC	Virtual Circuit
VCI	Virtual Circuit Identifier
VLAN	Virtual Local Area Network
VPI	Virtual Path Identifier
WAN	Wide Area Network