



DIR-632

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

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CHAPTER 1. INTRODUCTION

Contents and Audience

This manual describes the router DIR-632 and explains how to configure and operate it.

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

Conventions

Example	Description
text	The body text of the manual.
<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.).
192.168.0.1	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, describes its appearance and the package contents.

Chapter 3 explains how to install the router DIR-632 and configure a PC in order to access its web-based interface.

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

Chapter 5 includes safety instructions and tips for networking and connecting additional equipment.

Chapter 6 introduces abbreviations and acronyms used in this manual.

CHAPTER 2. OVERVIEW

General Information

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

The router is equipped with a USB port for connecting a USB modem¹, which can be used to establish connection to the Internet. In addition, to the USB port of the router you can connect a USB storage device, which will be used as a network drive.

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

Using the DIR-632 device, you are able to quickly create a wireless network at home or in your office, which lets your relatives or employees connect to your wireless network virtually anywhere (within the operational range of your wireless network). The router is designed to work with 802.11n wireless devices (at the rate up to 300Mbps) and supports 802.11b/g wireless devices.

The router supports multiple functions for the wireless interface: several security standards (WEP, WPA/WPA2, IEEE 802.1X), MAC address filtering, WPS.

The multifunction wireless router DIR-632 includes a built-in firewall. The advanced security functions minimize threats of hacker attacks, prevent unwanted intrusions to your network, and block access to unwanted websites for users of your LAN.

You can configure and manage the settings of the multifunction wireless router DIR-632 via the user-friendly web-based interface (the interface is available in several languages).

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 130.

Specifications

WAN Interface:

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

LAN Interface:

- 8 10/100BASE-TX Ethernet ports.

WLAN Interface:

- IEEE 802.11b/g/n.

USB Interface:

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

Network Functions:

- WAN connection types:
 - 3G
 - PPPoE
 - Static IP
 - Dynamic IP
 - PPTP/L2TP + Static IP
 - PPTP/L2TP + Dynamic IP
- DHCP server and client
- DNS relay
- VPN pass-through (PPTP)
- Dynamic DNS
- Static IP routing
- Remote management
- Network statistics for each interface
- IGMP Proxy
- RIP
- UPnP.

USB Modem:

- Auto connection to available type of supported network (3G/2G)
- Enabling/disabling PIN code check, changing PIN code².

Wireless Connection:

- WLAN splitting (up to 4 SSIDs)
- Supported security settings:
 - WEP
 - WPA/WPA2 Personal
 - WPA/WPA2 Enterprise
 - IEEE 802.1X
- MAC filter
- PBC method of WPS
- Advanced settings.

Firewall Functions:

- Network Address Translation (NAT)
- Stateful Packet Inspection (SPI)
- IP filters
- URL filter
- MAC filter
- DMZ
- Prevention of ARP and DDoS attacks
- Virtual servers.

Configuration and Management:

- Multilingual web-based interface for configuration and management
- Access via TELNET
- Firmware update via web-based interface
- Saving/restoring configuration to/from file
- Support of remote logging
- Automatic synchronization of system time with NTP server.

² The listed functions are available for some models of 3G USB modems.

LEDs:

- Power
- Internet
- WLAN
- USB
- 8 LAN LEDs
- WPS.

Power:

- External power adapter DC 5V/2.5A
- Reset to Factory Defaults button.

Operating Temperature:

- from 0 to 40 °C (from 32 to 104 °F).

Storage Temperature:

- from -20 to 65 °C (from -4 to 149 °F).

Operating Humidity:

- from 10% to 90% non-condensing.

Storage Humidity:

- from 5% to 95% non-condensing.

Product Appearance

Top Panel and Right Side Panel

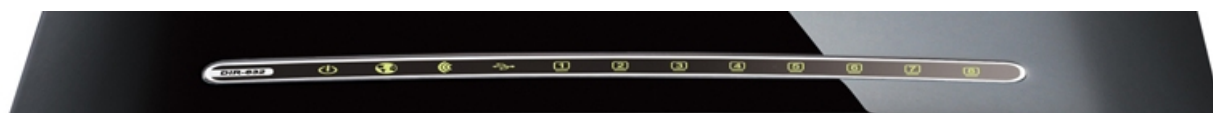


Figure 1. Top panel view.

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

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

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

Back Panel



Figure 2. Back panel view.

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

Delivery Package

The following should be included:

- Wireless router DIR-632
- Power adapter DC 5V/2.5A
- Ethernet cable (CAT 5E)
- 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 wireless router DIR-632 supporting WiMAX, 3G GSM and CDMA with a built-in switch (hereinafter referred to as “the router”) is performed via the built-in web-based interface. The web-based interface is available from any operating system that supports a web browser.

Web Browser

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

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

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

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

Wireless Connection

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

USB Modem

To connect to a WiMAX, 3G GSM or CDMA network, you should use a USB modem. Connect it to the USB port of the router, then access the web-based interface of the router, and you will be able to configure a connection to the Internet³.

WiMAX USB modem

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



3G USB modem

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

It is recommended to disable the PIN code check on the identification card prior to connecting the USB modem to the router.

³ Contact your operator to get information on the service coverage and fees.

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 LAN ports located on the back panel of the router and the Ethernet port of your PC.
3. To connect via a WiMAX, 3G GSM or CDMA network: connect your USB modem to the USB port⁴ located on the back panel of the router.

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

4. Connect the power cord to the power connector port on the back panel of the router, then plug the power adapter into an electrical outlet or power strip.
5. Turn on your PC and wait until your operating system is completely loaded.

Obtaining IP Address Automatically

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.

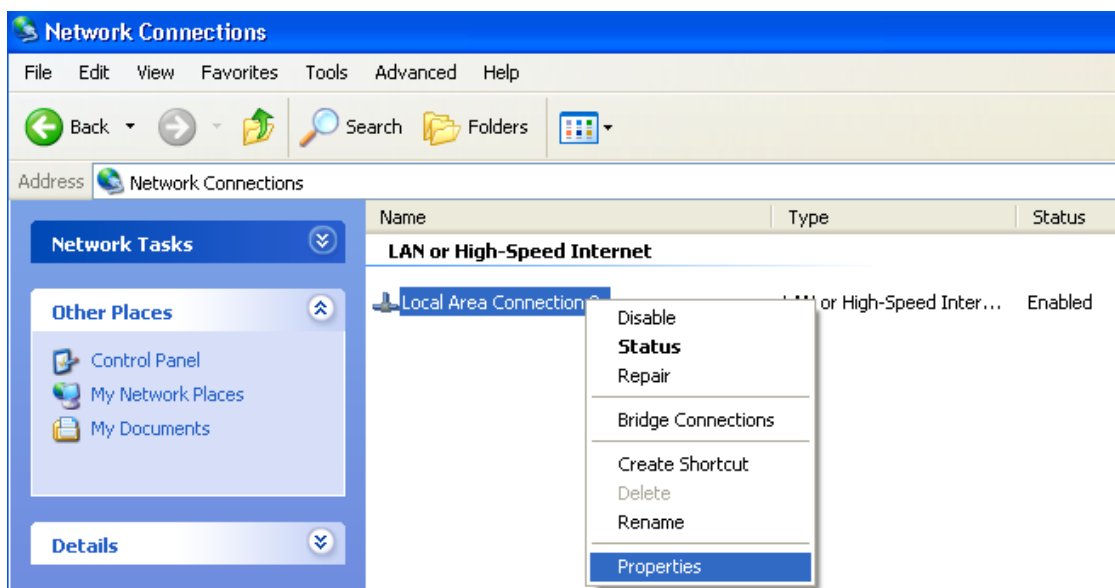


Figure 3. The **Network Connections** window.

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

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

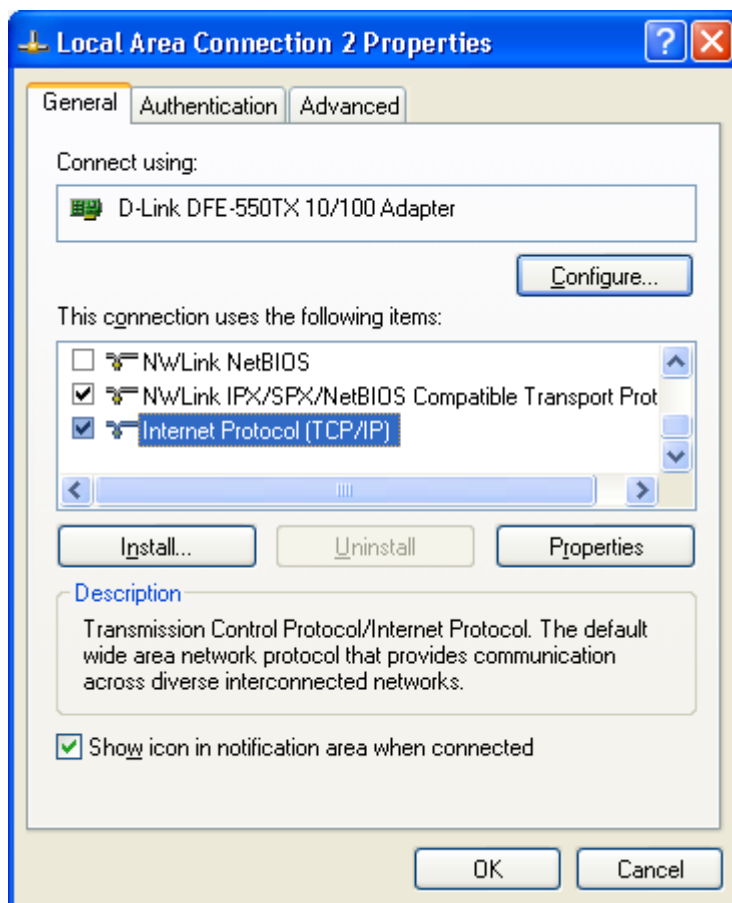


Figure 4. The **Local Area Connection Properties** window.

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

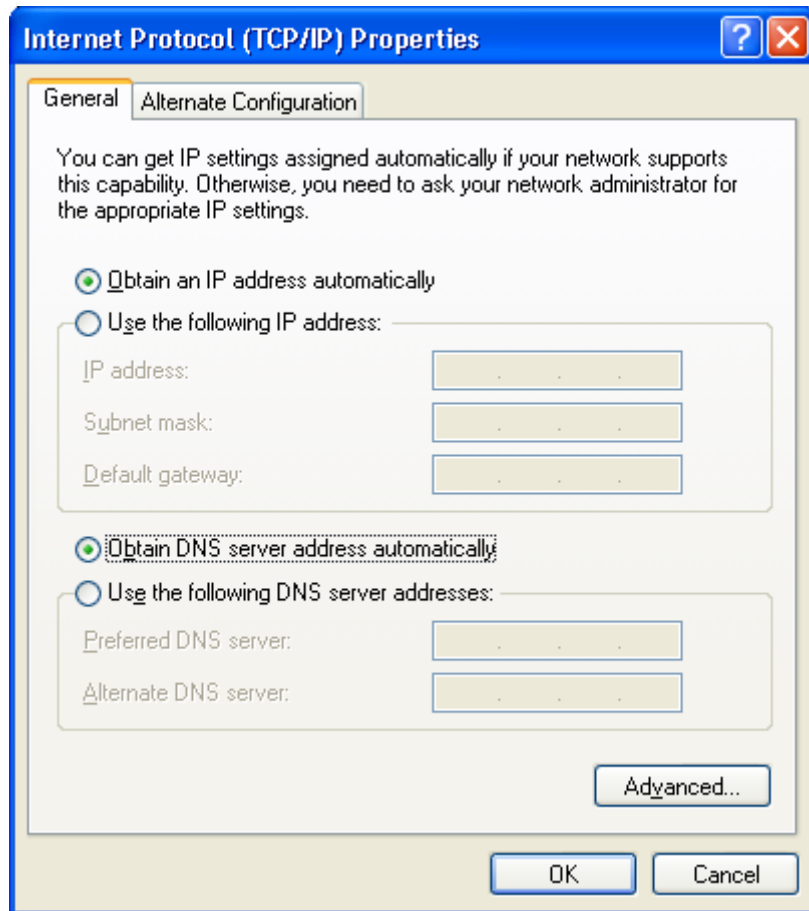


Figure 5. The **Internet Protocol (TCP/IP) Properties** window.

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

PC with Wi-Fi Adapter

1. To connect via a WiMAX, 3G GSM or CDMA network: connect your USB modem to the USB port⁵ 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. Connect the power cord to the power connector port on the back panel of the router, then plug the power adapter into an electrical outlet or power strip.
3. Turn on your PC and wait until your operating system is completely loaded.
4. Turn on your Wi-Fi adapter. As a rule, modern notebooks with built-in wireless NICs are equipped with a button or switch that turns on/off the wireless adapter (refer to your PC documents). If your PC is equipped with a pluggable wireless NIC, install the software provided with your Wi-Fi adapter.

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.

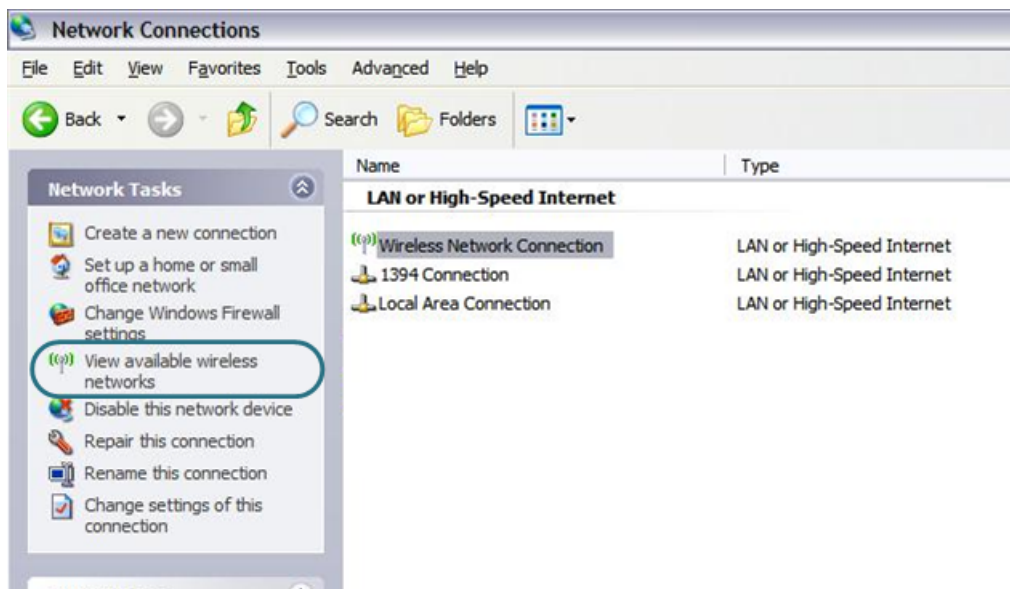


Figure 6. The **Network Connections** window.

3. Search for available wireless networks.
4. In the opened **Wireless Network Connection** window, select the needed wireless network (**DIR-632**) and click the **Connect** button.

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

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

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

1. Start a web browser (see the *Before You Begin* section, page 13).
2. In the address bar of the web browser, enter the IP address of the router (by default, the following IP address is specified: **192 . 168 . 0 . 1**). Press the **Enter** key.



Figure 7. Connecting to the web-based interface of the DIR-632 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** link.

A screenshot of the D-Link DIR-632 login page. The page features the D-Link logo and "DIR-632" text. There is a "Language" dropdown menu. Below that are "Login:" and "Password:" labels with corresponding input fields. The "Login:" field contains "admin" and the "Password:" field contains ".....". At the bottom, there are "Enter" and "Clear" links.

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.

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

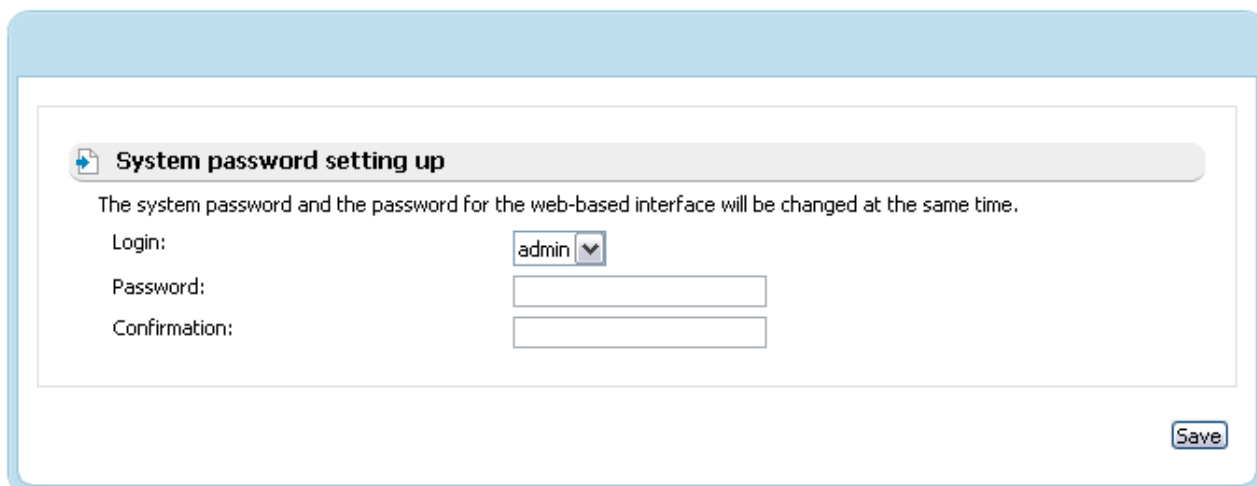


Figure 9. The page for changing the default administrator password.

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

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

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

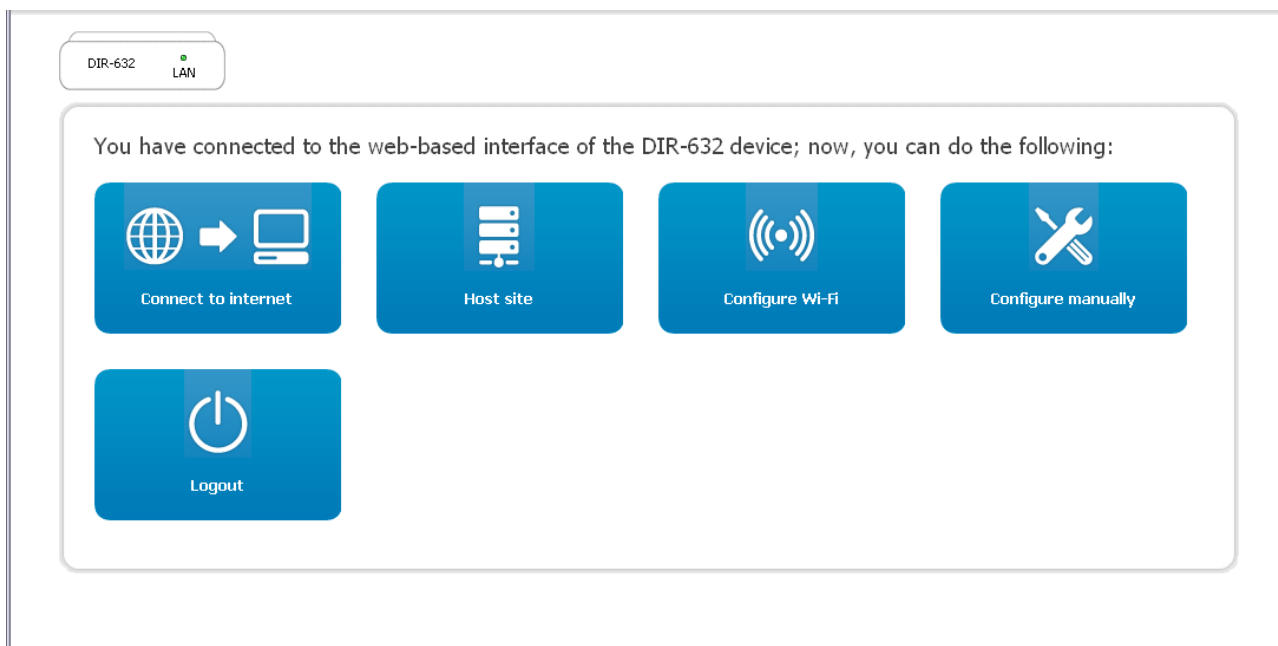


Figure 10. The quick settings page.

To configure connection to the Internet, click the **Connect to internet** button. After clicking the button, the Internet Setup Wizard opens (see the *Internet Setup Wizard* section, page 24).

To configure access from the Internet to a web server located in your LAN, click the **Host site** button. After clicking the button, the Site Setup Wizard opens (see the *Site Setup Wizard* section, page 47).

To configure the router's wireless network, click the **Configure Wi-Fi** button. After clicking the button, the Wi-Fi Setup Wizard opens (see the *Wi-Fi Setup Wizard* section, page 48).

To configure all parameters of the router independently without the Wizards, click the **Configure manually** button.

After clicking the button the system statistics page opens. The page displays general information on the router and its software (the version and the date of the firmware, the IP address of the device, the name of the WLAN, etc.).

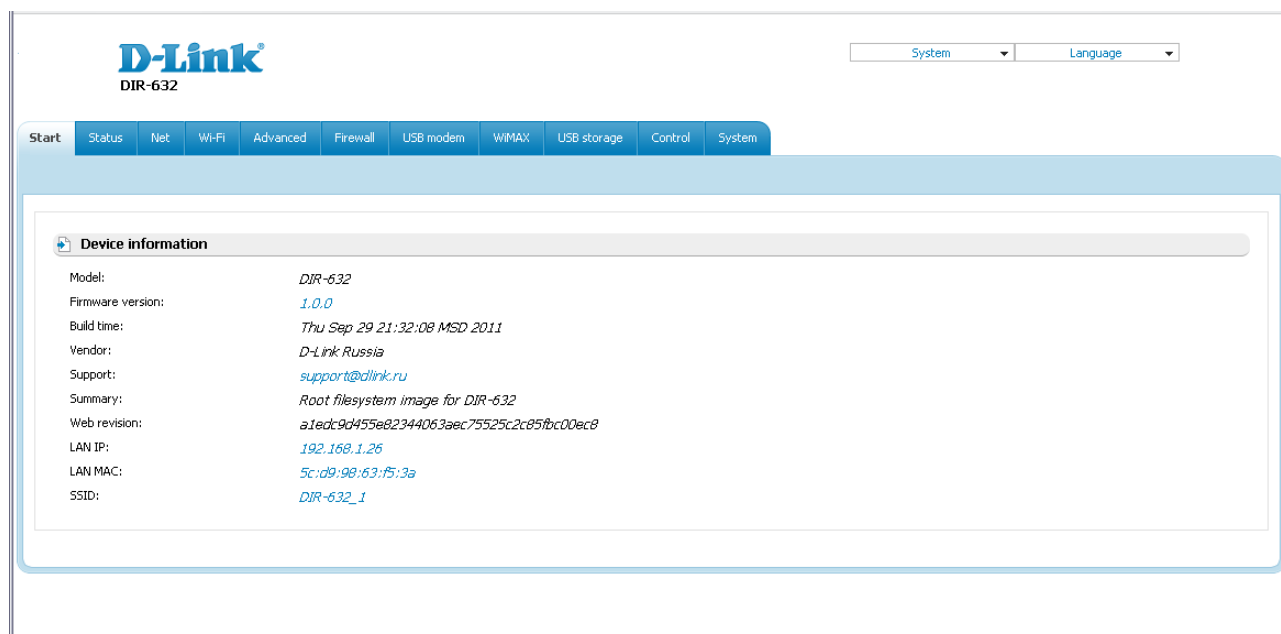


Figure 11. The system statistics page.

From the system statistics page you can proceed to the page for upgrading the router's firmware, contact the technical support group, and proceed to the settings of the local interface or the device's WLAN.

To upgrade the firmware of the router, left-click the current firmware version (the right column of the **Firmware version** line). After clicking the line, the **System / Firmware upgrade** page opens (see the *Firmware Upgrade* section, page 127).

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

To edit the router's local interface parameters, left-click the IP or MAC address of the local interface (the right column of the **LAN IP** line or **LAN MAC** line correspondingly). After clicking the line, the page for editing the LAN interface opens (see the *LAN* section, page 81).

To configure the router's WLAN parameters, left-click the SSID of the WLAN (the right column of the **SSID** line). After clicking the line, the **Wi-Fi / Basic settings** page opens (see the *Basic Settings* section, page 84).

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 12. Changing the language of the web-based interface.

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

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.

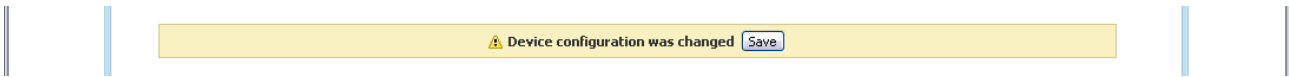


Figure 13. The notification on unsaved changes.

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

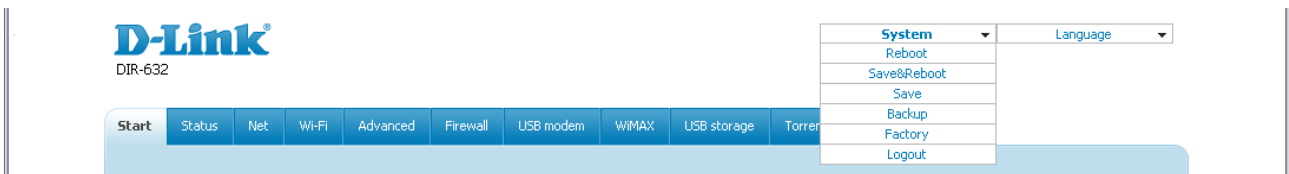


Figure 14. The top-page menu.

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

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

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

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

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

Also you can restore the factory default settings via the hardware Reset button. The hole of the button is located on the back panel of the router next to the power connector. Use a small paperclip to activate the button; insert it into the hole (with the router turned on), push, and hold for 10 seconds. Then remove the paperclip. Wait for about 30 seconds. 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

Wizards

Internet Setup Wizard

To configure connection to the Internet, click the **Connect to internet** button.

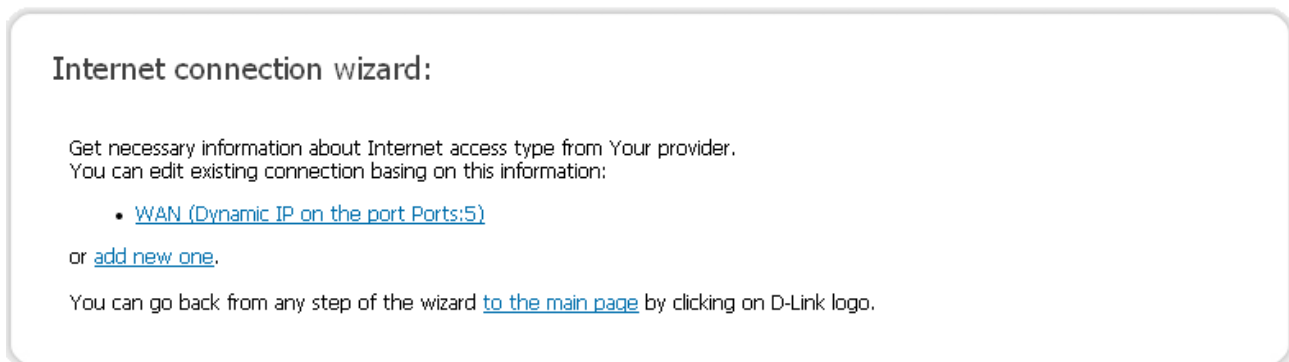


Figure 15. Configuring connection to the Internet.

By default, the **WAN** connection is configured in the system. To edit this connection, click the **WAN** link and change the relevant parameters (see the *Dynamic IP Connection* section, page 32).

To create a new WAN connection, click the **add new connection** link.

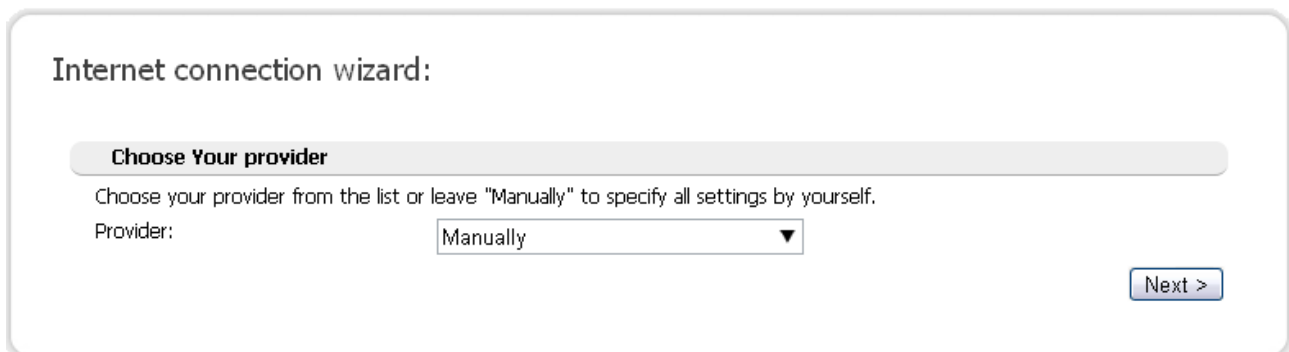


Figure 16. The page for selecting a 3G network operator.

On the opened page, from the **Provider** drop-down list, select your country and operator if you are going to configure a 3G network connection, or leave the **Manual** value, if you are going to configure a wired or WiMAX WAN connection or you want to specify all settings for your 3G WAN connection independently.

Click the **Next** button to continue.

Internet connection wizard:

Select connection type:

- PPPoE**
A connection of this type requires a username and password. This type is used for connection via Ethernet or via DSL.
- Static IP**
A connection of this type allows using a fixed IP address, provided by your ISP.
- Dynamic IP**
A connection of this type allows obtaining an IP address automatically from your ISP.
- PPTP + Static IP**
A connection of this type is protected by a special tunnel in the standard non-protected network. This type is used by some ISPs. It requires a username and password. When this type is selected, you can specify a fixed IP address for the non-protected network before configuring the tunnel.
- PPTP + Dynamic IP**
A connection of this type is protected by a special tunnel in the standard non-protected network. This type is used by some ISPs. It requires a username and password. When this type is selected, you automatically obtain an IP address for the non-protected network from the ISP.
- L2TP + Static IP**
A connection of this type is protected by a special tunnel in the standard non-protected network. This type is used by some ISPs. It requires a username and password. When this type is selected, you can specify a fixed IP address for the non-protected network before configuring the tunnel.
- L2TP + Dynamic IP**
A connection of this type is protected by a special tunnel in the standard non-protected network. This type is used by some ISPs. It requires a username and password. When this type is selected, you automatically obtain an IP address for the non-protected network from the ISP.
- 3G**
A connection of this type is established via a USB modem. It requires a username and password.

Figure 17. The page for selecting the connection type.

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

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

PPPoE Connection

Internet connection wizard:

Connection name

The connection name has been generated automatically according to the specified parameters. You can specify another name or skip to the next step.

Name:

< Back Next >

Figure 18. Configuring PPPoE WAN connection.

In the **Name** field, specify a name for the connection for easier identification and click the **Next** button.

Internet connection wizard:

Ethernet

MTU:

MAC: <Select address> ▼

PPP

PPP Username:

Without authorization:

Password:

Password confirmation:

Advanced PPP settings

< Back Next >

Figure 19. Configuring PPPoE WAN connection.

If needed, in the **MTU** field, change the maximum size of units transmitted by the interface.

If your ISP uses MAC address binding, in the **MAC** field, enter the MAC address registered by your ISP upon concluding the agreement.

You can click the **Clone MAC** button to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment).

Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list located to the right of the field (the field will be filled in automatically).

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

If authorization is not required, select the **Without authorization** checkbox.

If needed, specify additional settings for your PPPoE WAN connection.

Internet connection wizard:

▶ **Ethernet**

PPP

PPP Username:

Without authorization:

Password:

Password confirmation:

▼ **Advanced PPP settings**

Service name:

Authentication algorithm: ▼

MTU:

Keep Alive:

LCP interval (sec):

LCP fails:

Dial on demand:

PPP IP extension:

Use Static IP Address:

PPP debug:

PPPoE pass through:

Figure 20. Configuring PPPoE WAN connection.

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

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

Click the **Next** button to continue.

If needed, change the connection settings available in the **Miscellaneous** section.

Internet connection wizard:

Miscellaneous

Enable RIP:

Enable IGMP Multicast:

NAT:

firewall:

Figure 21. Configuring PPPoE WAN connection.

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

Click the **Next** button to continue.

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

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

Static IP Connection

Internet connection wizard:

Connection name

The connection name has been generated automatically according to the specified parameters. You can specify another name or skip to the next step.

Name:

< Back Next >

Figure 22. Configuring Static IP WAN connection.

In the **Name** field, specify a name for the connection for easier identification and click the **Next** button.

Internet connection wizard:

▼ **Ethernet**

MTU:

MAC: <Select address> ▼

IP

IP Address:

Netmask:

Gateway IP address:

Primary DNS server:

Secondary DNS server:

▶ **Advanced IP settings**

< Back Next >

Figure 23. Configuring Static IP WAN connection.

If needed, in the **MTU** field, change the maximum size of units transmitted by the interface.

If your ISP uses MAC address binding, in the **MAC** field, enter the MAC address registered by your ISP upon concluding the agreement.

You can click the **Clone MAC** button to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment).

Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list located to the right of the field (the field will be filled in automatically).

Fill in the **IP address** and **Netmask** fields.

In the **Gateway IP address** field, enter the IP address of the gateway used by this WAN connection.

In the **Primary DNS server** and **Secondary DNS server** fields, enter the addresses of the primary and secondary DNS servers.

Click the **Next** button to continue.

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

Internet connection wizard:

Routing configuration

Here you can add IP addresses of your ISP's local resources.
Click mouse right button on the table header to add, delete, or edit addresses.

Destination network	Destination netmask
---------------------	---------------------

Context menu: Add, Edit, Delete

Navigation: < Back, Next >

Figure 24. Configuring Static IP WAN connection.

To add a route, right-click the routing table heading and select the **Add** line from the shortcut menu displayed.

Click the **Next** button to continue.

If needed, change the connection settings available in the **Miscellaneous** section.

Internet connection wizard:

Miscellaneous

Enable RIP:

Enable IGMP Multicast:

NAT:

firewall:

Navigation: < Back, Next >

Figure 25. Configuring Static IP WAN connection.

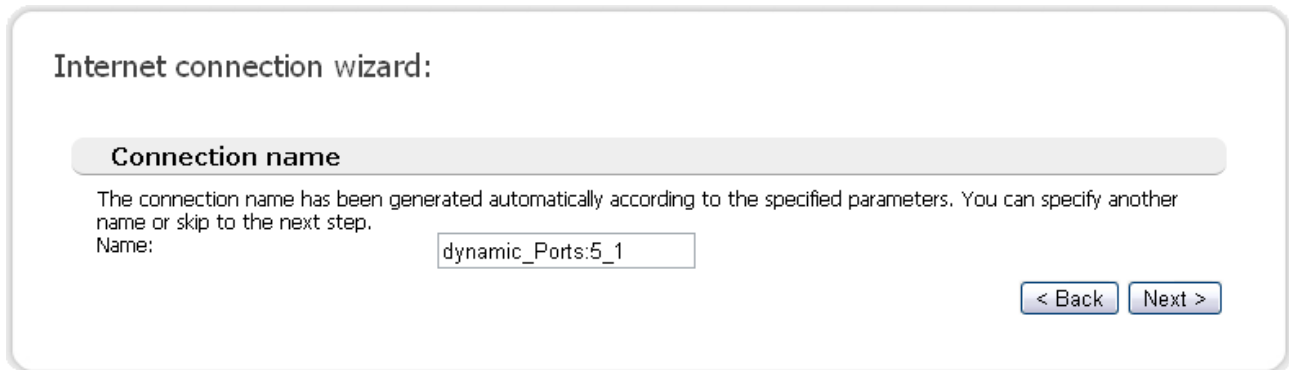
Parameter	Description
Enable RIP	Select the checkbox to allow using RIP for this connection.
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all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

Click the **Next** button to continue.

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

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

Dynamic IP Connection



Internet connection wizard:

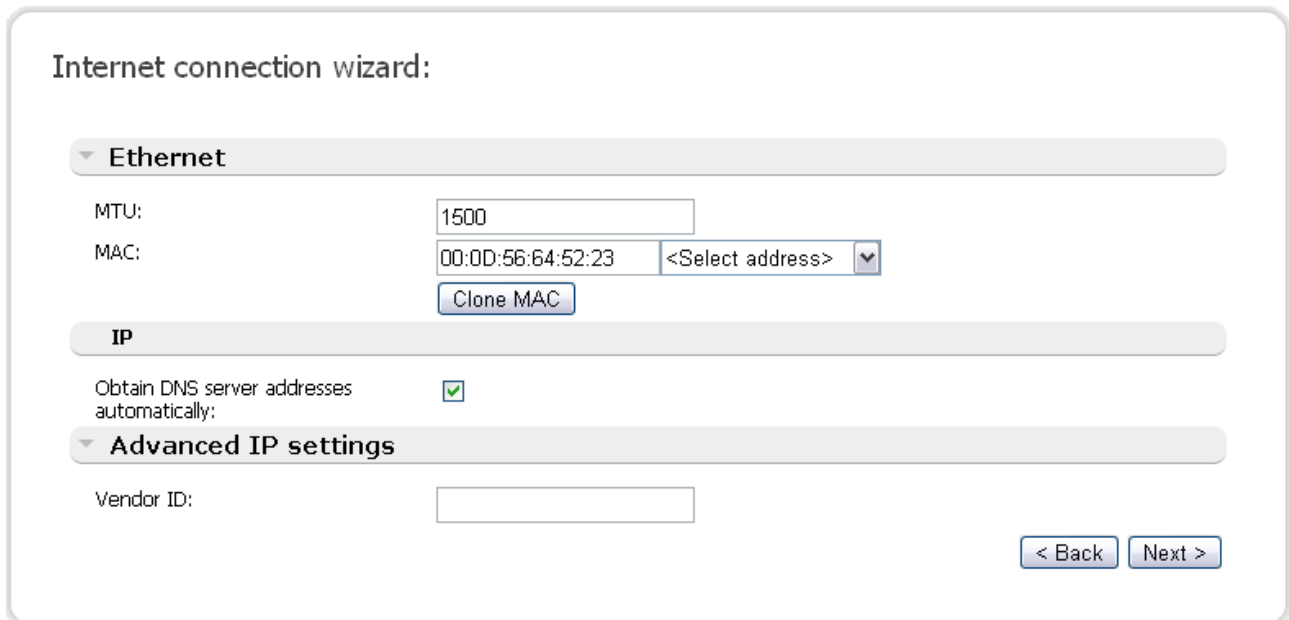
Connection name

The connection name has been generated automatically according to the specified parameters. You can specify another name or skip to the next step.

Name:

Figure 26. Configuring Dynamic IP WAN connection.

In the **Name** field, specify a name for the connection for easier identification and click the **Next** button.



Internet connection wizard:

Ethernet

MTU:

MAC:

IP

Obtain DNS server addresses automatically:

Advanced IP settings

Vendor ID:

Figure 27. Configuring Dynamic IP WAN connection.

If needed, in the **MTU** field, change the maximum size of units transmitted by the interface.

If your ISP uses MAC address binding, in the **MAC** field, enter the MAC address registered by your ISP upon concluding the agreement.

You can click the **Clone MAC** button to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment).

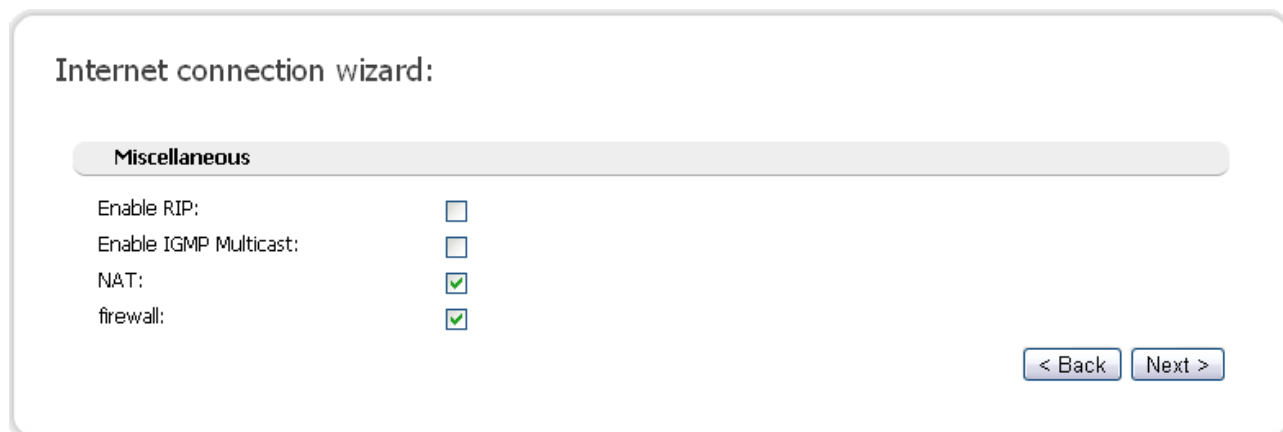
Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list located to the right of the field (the field will be filled in automatically).

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

If your ISP has provided its identifier, fill in the **Vendor ID** field.

Click the **Next** button to continue.

If needed, change the connection settings available in the **Miscellaneous** section.



The screenshot shows a web-based configuration interface titled "Internet connection wizard:". Below the title is a section labeled "Miscellaneous" with a light gray background. This section contains four settings, each with a checkbox: "Enable RIP:" (unchecked), "Enable IGMP Multicast:" (unchecked), "NAT:" (checked), and "firewall:" (checked). At the bottom right of the "Miscellaneous" section are two buttons: "< Back" and "Next >".

Figure 28. Configuring Dynamic IP WAN connection.

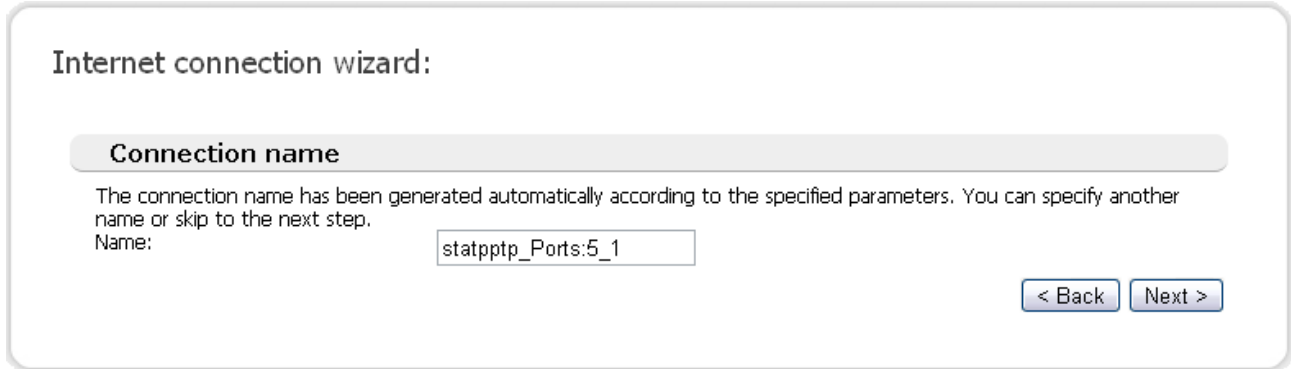
Parameter	Description
Enable RIP	Select the checkbox to allow using RIP for this connection.
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all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

Click the **Next** button to continue.

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

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

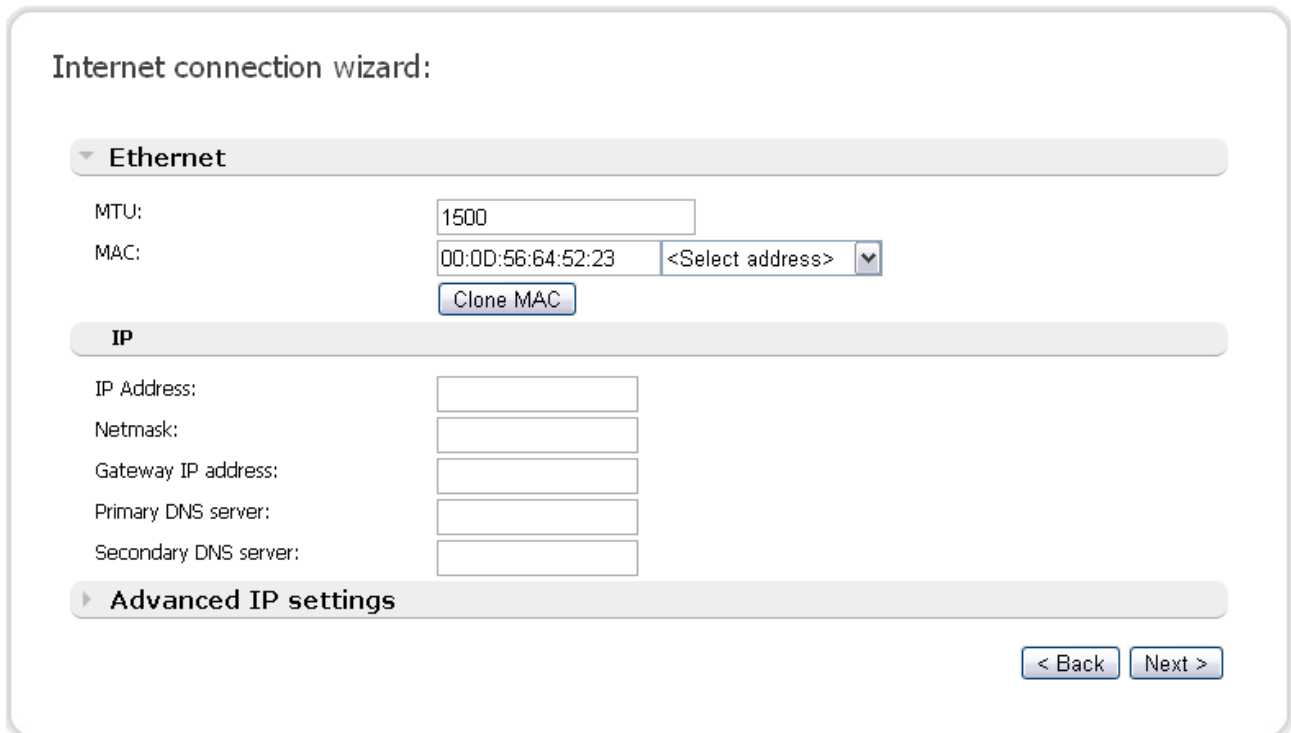
PPTP + Static IP or L2TP + Static IP Connection



The screenshot shows the 'Internet connection wizard' interface. At the top, it says 'Internet connection wizard:'. Below that is a section titled 'Connection name'. A text box contains the name 'statpntp_Ports:5_1'. To the right of the text box are two buttons: '< Back' and 'Next >'. Above the text box, there is a note: 'The connection name has been generated automatically according to the specified parameters. You can specify another name or skip to the next step.'

Figure 29. Configuring PPTP + Static IP WAN connection.

In the **Name** field, specify a name for the connection for easier identification and click the **Next** button.



The screenshot shows the 'Internet connection wizard' interface with the 'Ethernet' section expanded. Under 'Ethernet', there are fields for 'MTU:' (value: 1500) and 'MAC:' (value: 00:0D:56:64:52:23). To the right of the MAC field is a dropdown menu with '<Select address>' and a downward arrow. Below the MAC field is a 'Clone MAC' button. Below the Ethernet section is the 'IP' section, which has fields for 'IP Address:', 'Netmask:', 'Gateway IP address:', 'Primary DNS server:', and 'Secondary DNS server:'. At the bottom of the IP section is an expandable section titled 'Advanced IP settings'. To the right of the IP section are two buttons: '< Back' and 'Next >'.

Figure 30. Configuring PPTP + Static IP WAN connection.

If needed, in the **MTU** field, change the maximum size of units transmitted by the interface.

If your ISP uses MAC address binding, in the **MAC** field, enter the MAC address registered by your ISP upon concluding the agreement.

You can click the **Clone MAC** button to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment).

Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list located to the right of the field (the field will be filled in automatically).

Fill in the **IP address** and **Netmask** fields.

In the **Gateway IP address** field, enter the IP address of the gateway used by this WAN connection.

In the **Primary DNS server** and **Secondary DNS server** fields, enter the addresses of the primary and secondary DNS servers.

Click the **Next** button to continue.

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



Figure 31. Configuring PPTP + Static IP WAN connection.

To add a route, right-click the routing table heading and select the **Add** line from the shortcut menu displayed.

Click the **Next** button to continue.

If needed, change the connection settings available in the **Miscellaneous** section.

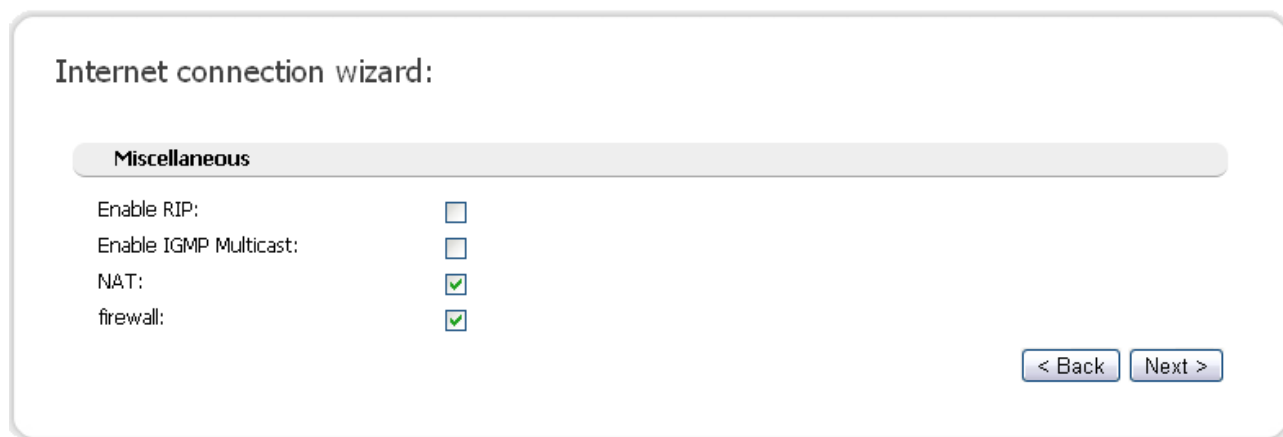


Figure 32. Configuring PPTP + Static IP WAN connection.

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

Click the **Next** button to continue.

Internet connection wizard:

VPN

Connect automatically:

PPP Username:

Without authorization:

Password:

Password confirmation:

VPN server address:

Advanced PPP settings

Encryption:

Authentication algorithm:

MTU:

Keep Alive:

Extra options:

IP received:

Figure 33. Configuring PPTP + Static IP WAN connection.

Leave the **Connect automatically** checkbox selected to allow automatic start of the connection upon the load of the router.

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

If authorization is not required, select the **Without authorization** checkbox.

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

If needed, specify additional settings for your PPTP + Static IP or L2TP + Static IP WAN connection.

Parameter	Description
Encryption	<p>Select a method of MPPE encryption.</p> <ul style="list-style-type: none">• No encrypt: MPPE encryption is not applied.• MPPE 40/128 bit: MPPE encryption with a 40-bit or 128-bit key is applied.• MPPE 40 bit: MPPE encryption with a 40-bit key is applied.• MPPE 128 bit: MPPE encryption with a 128-bit key is applied. <p>MPPE encryption can be applied only if the MSCHAP, MACHAPv2, or AUTO value is selected from the Authentication algorithm drop-down list.</p>
Authentication algorithm	Select a required authentication method from the drop-down list or leave the AUTO value.
MTU	The maximum size of units transmitted by the interface.
Keep Alive	Select the checkbox if you want the router to keep you connected to your ISP even when the connection has been inactive for a specified period of time. When the checkbox is selected, the LCP interval and LCP fails fields are available. Specify the required values.
Extra options	Advanced options of the pppd daemon which need to be specified for this connection. <i>Optional</i> .
IP received	The IP address assigned by the ISP.

Click the **Next** button to continue.

If needed, change the settings of the VPN tunnel available in the **Miscellaneous** section.

The screenshot shows a web-based configuration interface titled "Internet connection wizard:". Below the title is a horizontal bar labeled "Miscellaneous". Underneath, the text "Additional settings of VPN tunnel" is followed by four settings, each with a checkbox: "Enable RIP:" (unchecked), "Enable IGMP Multicast:" (unchecked), "NAT:" (checked), and "firewall:" (checked). At the bottom right of the form are two buttons: "< Back" and "Next >".

Figure 34. Configuring PPTP + Static IP WAN connection.

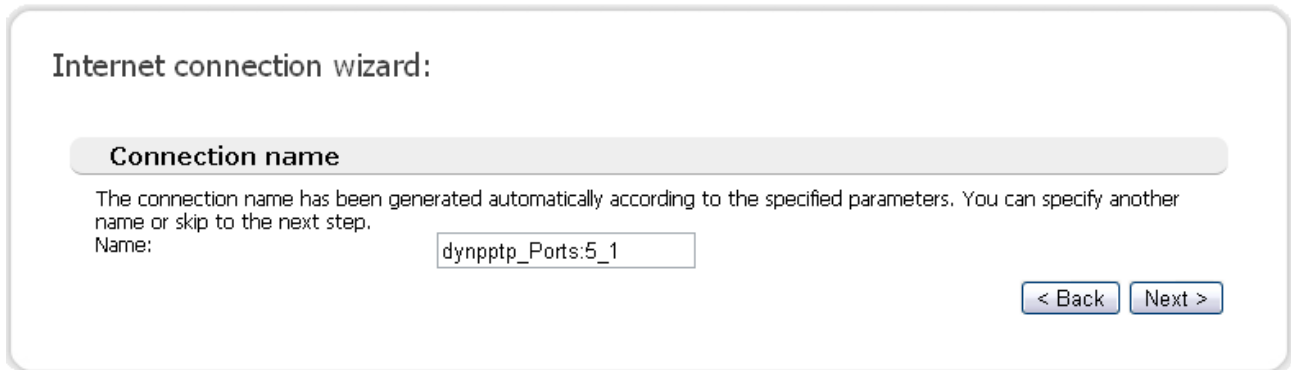
Parameter	Description
Enable RIP	Select the checkbox to allow using RIP for this connection.
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all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

Click the **Next** button to continue.

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

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

PPTP + Dynamic IP or L2TP + Dynamic IP Connection



Internet connection wizard:

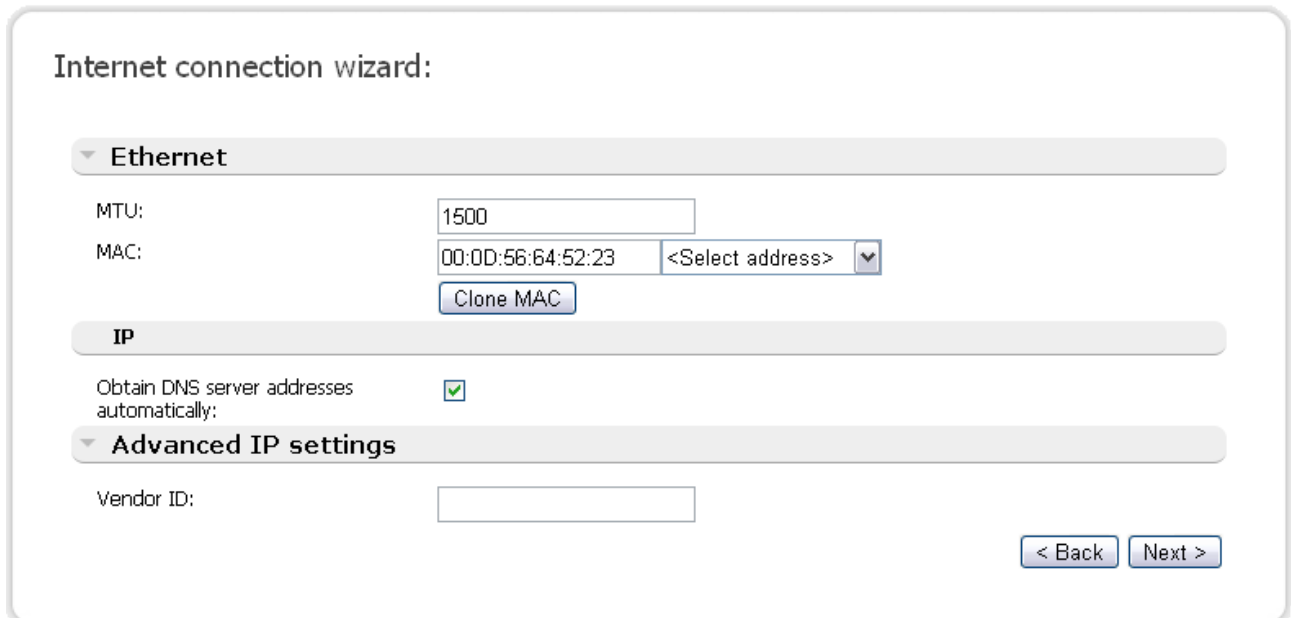
Connection name

The connection name has been generated automatically according to the specified parameters. You can specify another name or skip to the next step.

Name:

Figure 35. Configuring PPTP + Dynamic IP WAN connection.

In the **Name** field, specify a name for the connection for easier identification and click the **Next** button.



Internet connection wizard:

Ethernet

MTU:

MAC:

IP

Obtain DNS server addresses automatically:

Advanced IP settings

Vendor ID:

Figure 36. Configuring PPTP + Dynamic IP WAN connection.

If needed, in the **MTU** field, change the maximum size of units transmitted by the interface.

If your ISP uses MAC address binding, in the **MAC** field, enter the MAC address registered by your ISP upon concluding the agreement.

You can click the **Clone MAC** button to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment).

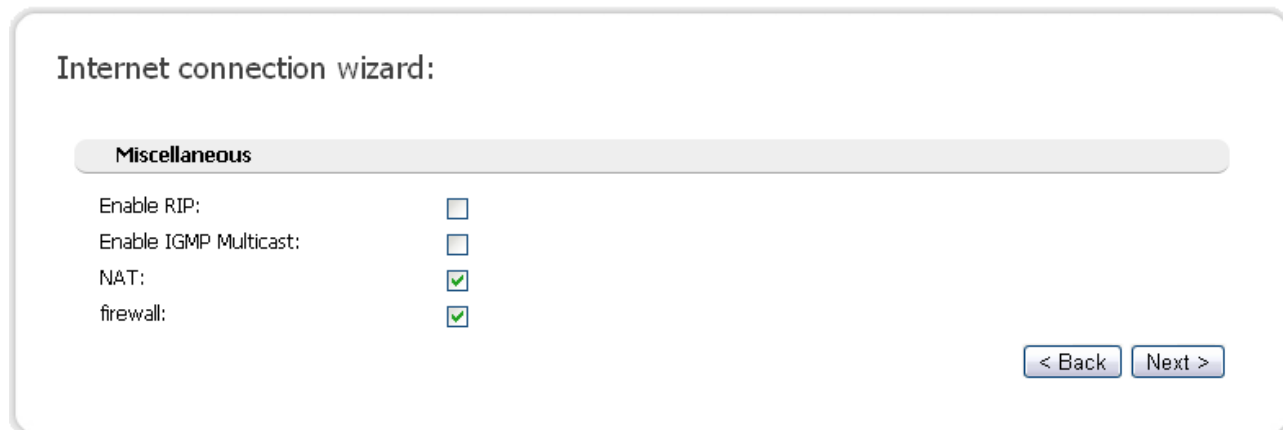
Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list located to the right of the field (the field will be filled in automatically).

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

If your ISP has provided its identifier, fill in the **Vendor ID** field.

Click the **Next** button to continue.

If needed, change the connection settings available in the **Miscellaneous** section.



The screenshot shows a web-based configuration interface for an internet connection wizard. The title is "Internet connection wizard:". Below the title is a horizontal bar labeled "Miscellaneous". Underneath this bar, there are four settings, each with a checkbox: "Enable RIP:" with an unchecked checkbox, "Enable IGMP Multicast:" with an unchecked checkbox, "NAT:" with a checked checkbox, and "firewall:" with a checked checkbox. At the bottom right of the form, there are two buttons: "< Back" and "Next >".

Figure 37. Configuring PPTP + Dynamic IP WAN connection.

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

Click the **Next** button to continue.

Internet connection wizard:

VPN

Connect automatically:

PPP Username:

Without authorization:

Password:

Password confirmation:

VPN server address:

Advanced PPP settings

Encryption:

Authentication algorithm:

MTU:

Keep Alive:

Extra options:

IP received:

Figure 38. Configuring PPTP + Dynamic IP WAN connection.

Leave the **Connect automatically** checkbox selected to allow automatic start of the connection upon the load of the router.

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

If authorization is not required, select the **Without authorization** checkbox.

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

If needed, specify additional settings for your PPTP + Dynamic IP or L2TP + Dynamic IP WAN connection.

Parameter	Description
Encryption	<p>Select a method of MPPE encryption.</p> <ul style="list-style-type: none"> • No encrypt: MPPE encryption is not applied. • MPPE 40/128 bit: MPPE encryption with a 40-bit or 128-bit key is applied. • MPPE 40 bit: MPPE encryption with a 40-bit key is applied. • MPPE 128 bit: MPPE encryption with a 128-bit key is applied. <p>MPPE encryption can be applied only if the MSCHAP, MACHAPv2, or AUTO value is selected from the Authentication algorithm drop-down list.</p>
Authentication algorithm	<p>Select a required authentication method from the drop-down list or leave the AUTO value.</p>
MTU	<p>The maximum size of units transmitted by the interface.</p>
Keep Alive	<p>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.</p>
Extra options	<p>Advanced options of the pppd daemon which need to be specified for this connection. <i>Optional.</i></p>
IP received	<p>The IP address assigned by the ISP.</p>

Click the **Next** button to continue.

If needed, change the settings of the VPN tunnel available in the **Miscellaneous** section.

Internet connection wizard:

Miscellaneous

Additional settings of VPN tunnel

Enable RIP:

Enable IGMP Multicast:

NAT:

firewall:

< Back Next >

Figure 39. Configuring PPTP + Dynamic IP WAN connection.

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

Click the **Next** button to continue.

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

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

3G Connection

Internet connection wizard:

Connection name

The connection name has been generated automatically according to the specified parameters. You can specify another name or skip to the next step.

Name:

< Back Next >

Figure 40. Configuring 3G connection.

In the **Name** field, specify a name for the connection for easier identification and click the **Next** button.

Internet connection wizard:

▼ 3G

Mode:

PPP

PPP Username:

Without authorization:

Password:

Password confirmation:

APN:

Dial number:

▼ **Advanced PPP settings**

Authentication algorithm:

MTU:

Keep Alive:

LCP interval (sec):

LCP fails:

Extra options:

< Back Next >

Figure 41. Configuring 3G connection.

In the **Mode** drop-down list, leave the **auto** value in order to let the router connect automatically to an available type of network, or select a needed value from the drop-down list. *For GSM USB modems only.*

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

If authorization is not required, select the **Without authorization** checkbox.

In the **APN** field, enter the access point name, and in the **Dial number** field, enter the number dialed to connect to the authorization server of the operator.

If needed, specify additional settings for your 3G WAN connection.

Parameter	Description
Authentication algorithm	Select a required authentication method from the drop-down list or leave the AUTO value.
MTU	The maximum size of units transmitted by the interface. <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>

Click the **Next** button to continue.

Internet connection wizard:

Miscellaneous

Enable IGMP Multicast:

NAT:

firewall:

< Back Next >

Figure 42. Configuring 3G connection.

If needed, change the connection settings available in the **Miscellaneous** section.

Parameter	Description
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.

Click the **Next** button to continue.

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

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

Site Setup Wizard

To create a virtual server for redirecting incoming Internet traffic to a specified IP address in the LAN, click the **Host site** button.

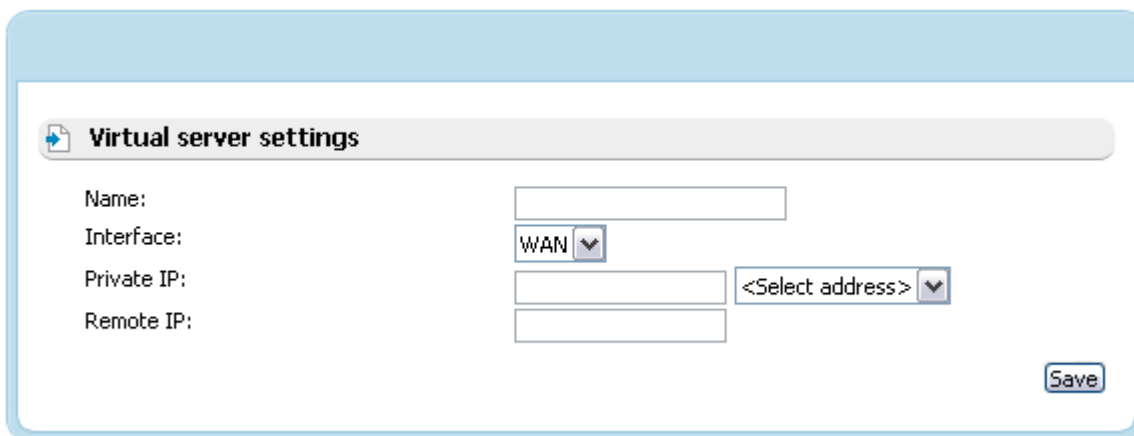


Figure 43. The page for adding a virtual server.

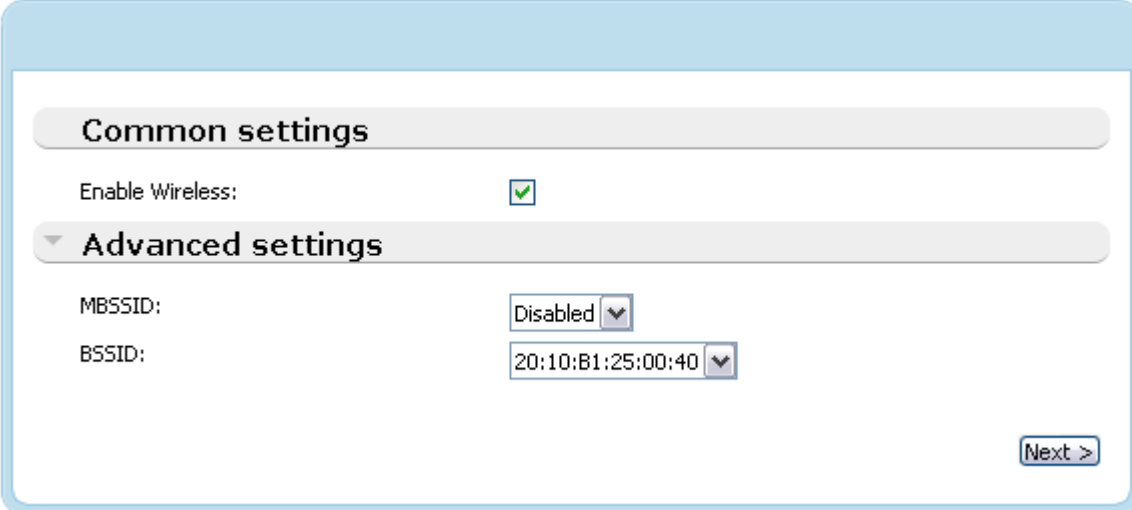
On the opened page, you can specify the following parameters:

Parameter	Description
Name	Enter a name for the virtual server for easier identification. You can specify any name.
Interface	Select a WAN connection to which this virtual server will be assigned.
Private IP	Enter the IP address of the server from the local area network. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list located to the right of the Private IP field (the field will be filled in automatically).
Remote IP	Enter the IP address of the server from the external network.

When needed settings are configured, click the **Save** button. After that you get to the quick settings page.

Wi-Fi Setup Wizard

To specify all needed settings for your wireless network, click the **Configure Wi-Fi** button.



The screenshot shows a web-based configuration interface for a wireless LAN. It is divided into two main sections: 'Common settings' and 'Advanced settings'. In the 'Common settings' section, there is a checkbox labeled 'Enable Wireless' which is checked with a green checkmark. The 'Advanced settings' section is expanded, showing two dropdown menus: 'MBSSID' is set to 'Disabled' and 'BSSID' is set to '20:10:B1:25:00:40'. A 'Next >' button is located in the bottom right corner of the form area.

Figure 44. Common and advanced settings of the wireless LAN.

On the opened page, in the **Common settings** section, select the **Enable Wireless** checkbox (if it was deselected before) to enable Wi-Fi connections.

In the **Advanced settings** section, you can split your network into several parts. To do this, select the relevant value (**2**, **3**, or **4**) from the **MBSSID** drop-down list.

Click the **Next** button to continue.

In the **Basic settings** section, you can change the basic parameters of your router's WLAN: “hide” your wireless network (**Hide Access Point**), specify a name for the network (**SSID**), select your country (**Country**) and the wireless channel number (**Channel**), specify the operating mode (**Wireless Mode**) and the maximum number of devices connected to the wireless network (**Max Associated Clients**).

The screenshot shows the 'Basic settings' page for the wireless LAN configuration. It includes the following fields and controls:

- Hide Access Point:
- SSID: DIR-632
- Country: RUSSIAN FEDERATION (dropdown menu)
- Channel: auto (dropdown menu)
- Wireless mode: 802.11 G (dropdown menu)
- Max Associated Clients: 0

Navigation buttons: < Back, Next >

Figure 45. Basic settings of the wireless LAN.

Click the **Next** button to continue.

On the next page, you can modify security settings of the WLAN. By default, the **Open** network authentication type with no encryption is specified for the WLAN.

The screenshot shows the 'Security settings' page for the wireless LAN configuration. It includes the following fields and controls:

- Network Authentication: Open (dropdown menu)
- WEP Encryption settings (expanded section):
 - Enable Encryption WEP:

Navigation buttons: < Back, Next >

Figure 46. The default security settings.



The default security settings do not provide sufficient protection for the WLAN. Please, specify your own security settings for the WLAN (or each part of the WLAN if the network was splitted into parts).

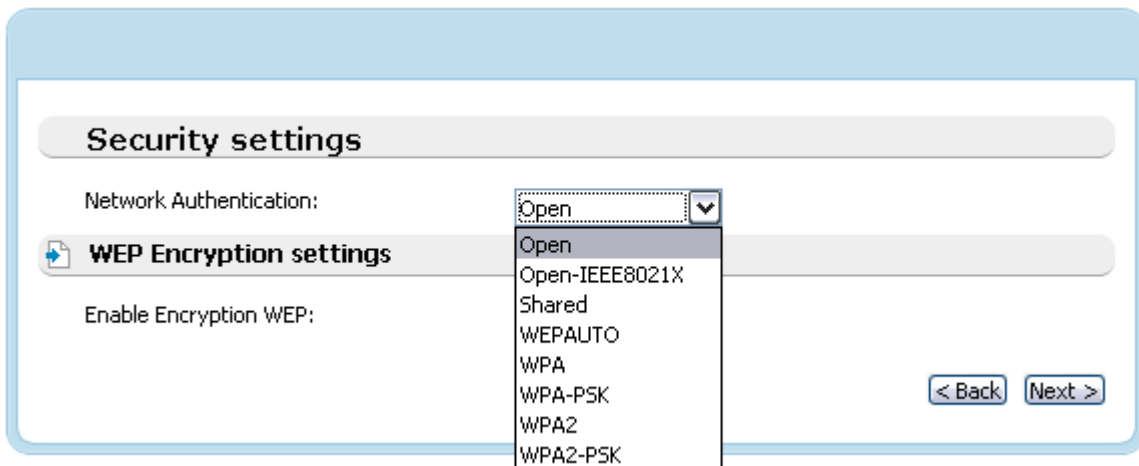


Figure 47. Network authentication types supported by the router.

The router supports the following authentication types:

Authentication type	Description
Open	Open authentication (with or without WEP encryption).
Open-IEEE8021X	Open authentication using a RADIUS server (with or without WEP encryption).
Shared	Shared key authentication with WEP encryption.
WEPAUTO	A mixed type of authentication. When this value is selected, devices using the Open authentication type with enabled WEP encryption and devices using the Shared authentication type can connect to the router's WLAN.
WPA	WPA-based authentication using a RADIUS server.
WPA-PSK	WPA-based authentication using a PSK.
WPA2	WPA2-based authentication using a RADIUS server.
WPA2-PSK	WPA2-based authentication using a PSK.

! The **Open-IEEE8021X**, **WPA**, and **WPA2** authentication types require a RADIUS server.

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

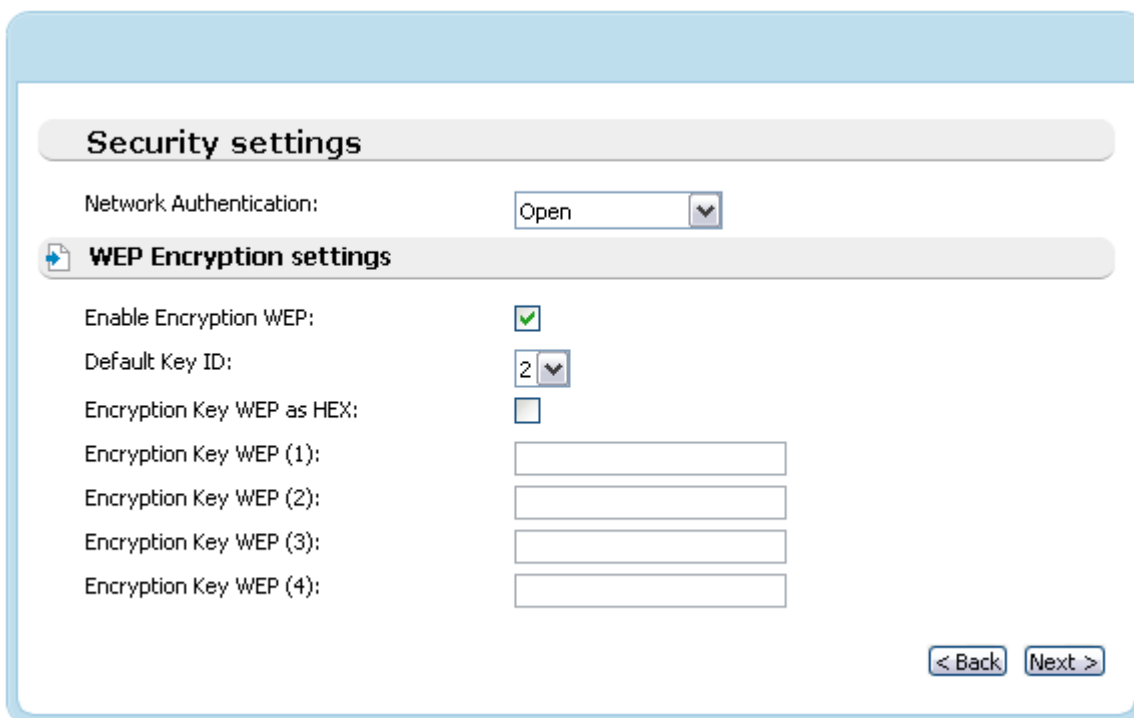


Figure 48. The **Open** value is selected from the **Network Authentication** drop-down list.

Parameter	Description
Enable Encryption WEP	The checkbox activating WEP encryption. When the checkbox is selected, the Default Key ID field, the Encryption Key WEP as HEX checkbox, and four Encryption Key WEP fields are displayed on the page. For the Shared and WEPAUTO authentication types the checkbox is always selected.
Default Key ID	The number of the key (from first to fourth) which will be used for WEP encryption.
Encryption Key WEP as HEX	Select the checkbox to set a hexadecimal number as a key for encryption.
Encryption Key WEP (1-4)	Keys for WEP encryption. The router uses the key selected from the Default Key ID drop-down list. It is required to specify all the fields. You can specify keys containing 5 or 13 symbols (use digits and/or Latin characters). If the Encryption Key WEP as HEX checkbox is selected, you can specify only keys containing 10 symbols (the digits 0-9 and the characters A-F).

When the **Open-IEEE8021X** value is selected, the **WEP Encryption settings** and **RADIUS settings** sections are displayed:

The screenshot displays the 'Security settings' page. At the top, 'Network Authentication' is set to 'Open-IEEE8021X'. Below this, the 'WEP Encryption settings' section is active, showing a checked 'Enable Encryption WEP' box, a 'Default Key ID' dropdown set to '2', an unchecked 'Encryption Key WEP as HEX' box, and four empty text boxes for 'Encryption Key WEP (1)' through '(4)'. The 'RADIUS settings' section is also active, with 'IP address' set to '192.168.0.254', 'Port' set to '1812', and 'RADIUS encryption key' set to 'dlink'. Navigation buttons '< Back' and 'Next >' are located at the bottom right of the settings area.

Figure 49. The **Open-IEEE8021X** value is selected from the **Network Authentication** drop-down list.

Parameter	Description
Enable Encryption WEP	The checkbox activating WEP encryption. When the checkbox is selected, the Default Key ID field, the Encryption Key WEP as HEX checkbox, and four Encryption Key WEP fields are displayed on the page.
Default Key ID	The number of the key (from first to fourth) which will be used for WEP encryption.
Encryption Key WEP as HEX	Select the checkbox to set a hexadecimal number as a key for encryption.
Encryption Key WEP (1-4)	Keys for WEP encryption. The router uses the key selected from the Default Key ID drop-down list. It is required to specify all the fields. You can specify keys containing 5 or 13 symbols (use digits and/or Latin characters). If the Encryption Key WEP as HEX checkbox is selected, you can specify only keys containing 10 symbols (the digits 0-9 and the characters A-F).

IP address	The IP address of the RADIUS server.
Port	A port of the RADIUS server.
RADIUS encryption key	A password to access the RADIUS server.

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

Figure 50. 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 the **WPA** or **WPA2** value is selected, the **RADIUS settings** and **WPA Encryption settings** sections are available:

The screenshot shows a web-based configuration interface for a wireless router. It is divided into three main sections: 'Security settings', 'RADIUS settings', and 'WPA Encryption settings'. In the 'Security settings' section, 'Network Authentication' is set to 'WPA2' and 'WPA2 Pre-authentication' is unchecked. The 'RADIUS settings' section includes fields for 'IP address' (192.168.0.254), 'Port' (1812), and 'RADIUS encryption key' (dlink). The 'WPA Encryption settings' section shows 'WPA Encryption' set to 'TKIP' and 'WPA renewal' set to '3600'. Navigation buttons for '< Back' and 'Next >' are located at the bottom right of the form.

Figure 51. The **WPA2** value is selected from the **Network Authentication** drop-down list.

Parameter	Description
WPA2 Pre-authentication	The checkbox activating preliminary authentication (displayed only for the WPA2-PSK authentication type).
IP address	The IP address of the RADIUS server.
Port	A port of the RADIUS server.
RADIUS encryption key	A password to access the RADIUS server.
WPA Encryption	An encryption method: TKIP , AES , or TKIP+AES .
WPA renewal	The time period (in seconds), at the end of which a new key for WPA encryption is generated. When the value 0 is specified for this field, the key is not renewed.

Click the **Next** button to continue.

When all the steps of configuring the WLAN are completed, the specified settings are displayed on the page. Check their correctness and then click the **Save** button. After that you get to the quick settings page.

Status

This menu displays data on the current state of the router. The following are represented: statistics for every active interface, IP addresses leased by DHCP server, data on devices connected to the router's network and its web-based interface, and the routing table.

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).

Name	Type	Status	IP	Mask	Gateway	MAC	MTU	Rx/Tx
LAN		Up	192.168.1.26	255.255.255.0	-	5C:D9:98:63:F5:3A	1500	65.339 Mbyte/96.201 Mbyte

Figure 52. The Status / Network statistics page.

DHCP

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

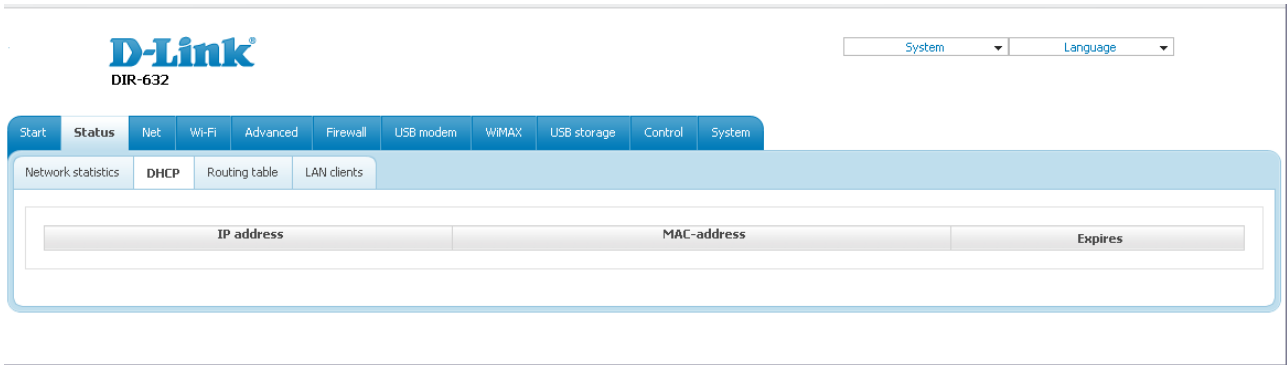


Figure 53. The **Status / DHCP** page.

Routing Table

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

The screenshot shows the D-Link DIR-632 web interface. At the top left is the D-Link logo and model number DIR-632. On the top right, there are dropdown menus for 'System' and 'Language'. Below the logo is a navigation bar with tabs: Start, Status (selected), Net, Wi-Fi, Advanced, Firewall, USB modem, WiMAX, USB storage, Control, and System. Under the 'Status' tab, there are sub-tabs: Network statistics, DHCP, Routing table (selected), and LAN clients. The main content area displays a table with the following data:

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

Figure 54. 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.

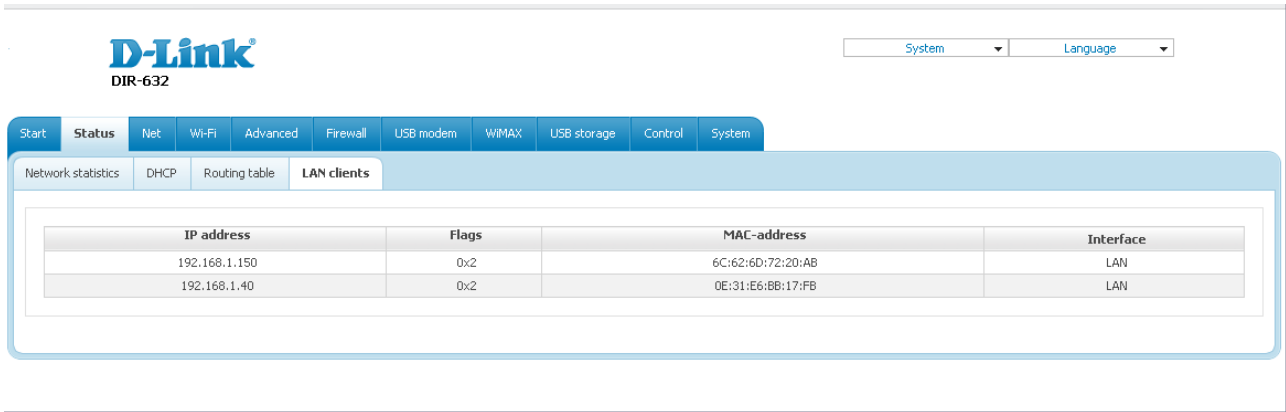


Figure 55. The **Status / LAN clients** page.

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 LAN interface of the router and configure connection to the Internet (a WAN connection).

WAN

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

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

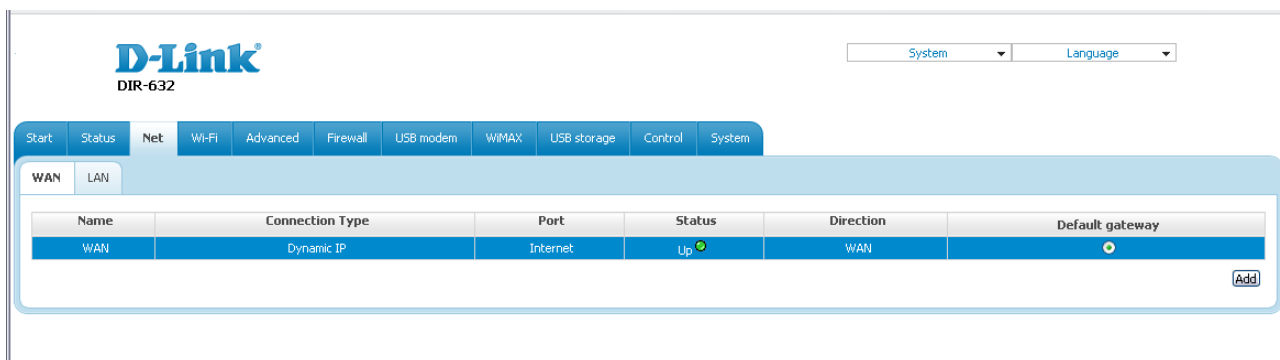


Figure 56. The **Net / WAN** page.

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

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

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

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

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

The screenshot shows a web-based configuration interface. At the top, there is a tab labeled 'General settings'. Below it, several configuration options are listed:

- Provider: Manually (dropdown menu)
- Connection Type: 3G (dropdown menu)
- Port: USB (dropdown menu)
- Name: 3g_USB_1 (text input field)
- Enable: (checkbox)
- Direction: WAN (text input field)

Below the 'General settings' section, there is a section titled '3G' with a 'Mode' dropdown menu set to 'auto'.

Figure 57. The page for creating a new connection. The **General settings** and **3G** sections.

Parameter	Description
General settings	
Provider	To automatically specify all settings required to connect to the Internet, select your country and operator from the drop-down list. To specify all settings independently, leave the Manual value.
Port	Select the USB value.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
3G	
Mode	The value of the field specifies the type of the network to which the router connects. Leave the auto value to let the router connect automatically to an available type of network, or select a needed value from the drop-down list. <i>For GSM USB modems only.</i>

PPP

PPP Username:

Without authorization:

Password:

Password confirmation:

APN:

Dial number:

Authentication algorithm: AUTO ▼

MTU:

Keep Alive:

LCP interval (sec):

LCP fails:

Extra options:

Miscellaneous

Enable IGMP Multicast:

NAT:

firewall:

Figure 58. The page for creating a new connection. The **PPP** and **Miscellaneous** sections.

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

Parameter	Description
Extra options	In the field, you can specify additional data for encryption or authentication. <i>Optional.</i>
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.

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

Creating PPPoE WAN Connection

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

General settings

Provider:

Connection Type:

Port:

Name:

Enable:

Direction: WAN

Ethernet

MTU:

MAC:

Figure 59. The page for creating a new connection. The **General settings** and **Ethernet** sections.

Parameter	Description
General settings	
Provider	Leave the Manual value.
Port	A physical interface to which the new connection will be assigned. Select the USB-WIMAX value to assign this connection to the WiMAX USB modem.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
Ethernet	
MTU	The maximum size of units transmitted by the interface.

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

+ **PPP**

PPP Username:

Without authorization:

Password:

Password confirmation:

Service name:

Authentication algorithm: AUTO ▼

MTU:

Keep Alive:

LCP interval (sec):

LCP fails:

Dial on demand:

PPP IP extension:

Use Static IP Address:

PPP debug:

PPPoE pass through:

+ **Miscellaneous**

Enable RIP:

Enable IGMP Multicast:

NAT:

firewall:

Figure 60. The page for creating a new connection. The **PPP** and **Miscellaneous** sections.

Parameter	Description
PPP	
PPP Username	A username (login) to access the Internet.
Without authorization	Select the checkbox if you don't need to enter a username and password to access the Internet.
Password	A password to access the Internet.
Password confirmation	The confirmation of the entered password (to avoid mistypes).
Service name	The name of the PPPoE authentication server.
Authentication algorithm	Select a required authentication method from the drop-down list or leave the AUTO value.
MTU	The maximum size of units transmitted by the interface.
Keep Alive	Select the checkbox if you want the router to keep you connected to your ISP even when the connection has been inactive for a specified period of time. When the checkbox is selected, the LCP interval and LCP fails fields are available. Specify the required values.
Dial on demand	Select the checkbox if you want the router to establish connection to the Internet on demand. In the Maximum idle time field, specify a period of inactivity (in seconds) after which the connection should be terminated.
PPP IP extension	This option is used by some ISPs. Contact your ISP to clarify if this checkbox needs to be enabled.
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.
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.

Parameter	Description
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.

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

Creating Static IP WAN Connection

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

General settings

Provider:

Connection Type:

Port:

Name:

Enable:

Direction: WAN

Ethernet

MTU:

MAC:

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

Parameter	Description
General settings	
Provider	Leave the Manual value.
Port	A physical interface to which the new connection will be assigned. Select the USB-WIMAX value to assign this connection to the WiMAX USB modem.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
Ethernet	
MTU	The maximum size of units transmitted by the interface.

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

 **IP**

IP Address:

Netmask:

Gateway IP address:

Primary DNS server:

Secondary DNS server:

 **Miscellaneous**

Enable RIP:

Enable IGMP Multicast:

NAT:

firewall:

Figure 62. The page for creating a new connection. The **IP** and **Miscellaneous** sections.

Parameter	Description
IP	
IP Address	Enter an IP address for this WAN connection.
Netmask	Enter a subnet mask for this WAN connection.
Gateway IP Address	Enter an IP address of the gateway used by this WAN connection.
Primary DNS server/ Secondary DNS server	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.

Parameter	Description
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.

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

Creating Dynamic IP WAN Connection

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

General settings

Provider:

Connection Type:

Port:

Name:

Enable:

Direction: WAN

Ethernet


MTU:

MAC:

Figure 63. The page for creating a new connection. The **General settings** and **Ethernet** sections.


Parameter	Description
General settings	
Provider	Leave the Manual value.
Port	A physical interface to which the new connection will be assigned. Select the USB-WIMAX value to assign this connection to the WiMAX USB modem.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
Ethernet	
MTU	The maximum size of units transmitted by the interface.

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

 **IP**

Obtain DNS server addresses automatically:

Vendor ID:

 **Miscellaneous**

Enable RIP:

Enable IGMP Multicast:

NAT:

firewall:

Figure 64. The page for creating a new connection. The **IP** and **Miscellaneous** sections.

Parameter	Description
IP	
Obtain DNS server addresses automatically	Select the checkbox to configure automatic assignment of DNS server addresses. If the checkbox is selected, the Primary DNS server and Secondary DNS server fields are not displayed.
Primary DNS server/ Secondary DNS server	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Vendor ID	The identifier of your ISP. <i>Optional.</i>
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.

Parameter	Description
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.

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

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

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

General settings

Provider:

Connection Type:

Port:

Name:

Enable:

Direction: WAN

Ethernet


MTU:

MAC:

Figure 65. The page for creating a new connection. The **General settings** and **Ethernet** sections.

Parameter	Description
General settings	
Provider	Leave the Manual value.
Port	A physical interface to which the new connection will be assigned. Select the USB-WiMAX value to assign this connection to the WiMAX USB modem.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
Ethernet	
MTU	The maximum size of units transmitted by the interface.

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

 **IP**


IP Address:

Netmask:

Gateway IP address:

Primary DNS server:

Secondary DNS server:

 **Miscellaneous**

Enable RIP:

Enable IGMP Multicast:

NAT:

firewall:

Figure 66. The page for creating a new connection. The **IP** and **Miscellaneous** sections.

Parameter	Description
IP	
IP Address	Enter an IP address for this WAN connection.
Netmask	Enter a subnet mask for this WAN connection.
Gateway IP Address	Enter an IP address of the gateway used by this WAN connection.
Primary DNS server/ Secondary DNS server	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.

Parameter	Description
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.

VPN

Connect automatically:

PPP Username:

Without authorization:

Password:

Password confirmation:

VPN server address:

Encryption:

Authentication algorithm:

MTU:

Keep Alive:

Extra options:

IP received:

Miscellaneous

Enable RIP:

Enable IGMP Multicast:

NAT:

firewall:

Figure 67. The page for creating a new connection. The **VPN** and **Miscellaneous** sections.

Parameter	Description
VPN	
Connect automatically	Select the checkbox to enable auto-start of the connection upon the boot-up of the router.
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).

Parameter	Description
VPN server address	The IP or URL address of the PPTP or L2TP authentication server.
Encryption	<p>Select a method of MPPE encryption.</p> <ul style="list-style-type: none"> • No encrypt: MPPE encryption is not applied. • MPPE 40/128 bit: MPPE encryption with a 40-bit or 128-bit key is applied. • MPPE 40 bit: MPPE encryption with a 40-bit key is applied. • MPPE 128 bit: MPPE encryption with a 128-bit key is applied. <p>MPPE encryption can be applied only if the MSCHAP, MACHAPv2, or AUTO value is selected from the Authentication algorithm drop-down list.</p>
Authentication algorithm	Select a required authentication method from the drop-down list or leave the AUTO value.
MTU	The maximum size of units transmitted by the interface.
Keep Alive	Select the checkbox if you want the router to keep you connected to your ISP even when the connection has been inactive for a specified period of time. When the checkbox is selected, the LCP interval and LCP fails fields are available. Specify the required values.
Extra options	Advanced options of the pppd daemon which need to be specified for this connection. <i>Optional.</i>
IP received	The IP address assigned by the ISP.
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all computers of your LAN.
Firewall	Select the checkbox to enable protection against ARP and DDoS attacks.

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

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

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

General settings

Provider:

Connection Type:

Port:

Name:

Enable:

Direction: WAN

Ethernet


MTU:

MAC:

Figure 68. The page for creating a new connection. The **General settings** and **Ethernet** sections.


Parameter	Description
General settings	
Provider	Leave the Manual value.
Port	A physical interface to which the new connection will be assigned. Select the USB-WIMAX value to assign this connection to the WiMAX USB modem.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
Ethernet	
MTU	The maximum size of units transmitted by the interface.

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

 **IP**

Obtain DNS server addresses automatically:

Vendor ID:

 **Miscellaneous**

Enable RIP:

Enable IGMP Multicast:

NAT:

firewall:

Figure 69. The page for creating a new connection. The **IP** and **Miscellaneous** sections.

Parameter	Description
IP	
Obtain DNS server addresses automatically	Select the checkbox to configure automatic assignment of DNS server addresses. If the checkbox is selected, the Primary DNS server and Secondary DNS server fields are not displayed.
Primary DNS server/ Secondary DNS server	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Vendor ID	The identifier of your ISP. <i>Optional.</i>
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.

Parameter	Description
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.

VPN

Connect automatically:

PPP Username:

Without authorization:

Password:

Password confirmation:

VPN server address:

Encryption: ▼

Authentication algorithm: ▼

MTU:

Keep Alive:

Extra options:

IP received:

Miscellaneous

Enable RIP:

Enable IGMP Multicast:

NAT:

firewall:

Figure 70. The page for creating a new connection. The **VPN** and **Miscellaneous** sections.

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

Parameter	Description
Encryption	<p>Select a method of MPPE encryption.</p> <ul style="list-style-type: none"> • No encrypt: MPPE encryption is not applied. • MPPE 40/128 bit: MPPE encryption with a 40-bit or 128-bit key is applied. • MPPE 40 bit: MPPE encryption with a 40-bit key is applied. • MPPE 128 bit: MPPE encryption with a 128-bit key is applied. <p>MPPE encryption can be applied only if the MSCHAP, MACHAPv2, or AUTO value is selected from the Authentication algorithm drop-down list.</p>
Authentication algorithm	Select a required authentication method from the drop-down list or leave the AUTO value.
MTU	The maximum size of units transmitted by the interface.
Keep Alive	Select the checkbox if you want the router to keep you connected to your ISP even when the connection has been inactive for a specified period of time. When the checkbox is selected, the LCP interval and LCP fails fields are available. Specify the required values.
Extra options	Advanced options of the pppd daemon which need to be specified for this connection. <i>Optional</i> .
IP received	The IP address assigned by the ISP.
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all computers of your LAN.
Firewall	Select the checkbox to enable protection against ARP and DDoS attacks.

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

LAN

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

The screenshot shows the D-Link DIR-632 web interface. At the top, there's a navigation menu with tabs for Start, Status, Net, Wi-Fi, Advanced, Firewall, USB modem, WiMAX, USB storage, Control, and System. The 'Net' tab is selected, and the 'LAN' sub-tab is active. The main content area is divided into three sections: IP, Static DHCP, and DHCP server. The IP section has input fields for IP Address (192.168.0.1) and Netmask (255.255.255.0). The Static DHCP section has input fields for IP address, MAC address, and Host name, with a table below for listing these entries. The DHCP server section has a Mode dropdown set to 'Enable', and input fields for Start IP (192.168.0.2), End IP (192.168.0.254), and Lease time (86400). A 'Save' button is located at the bottom right of the form.

Figure 71. The page for configuring the local interface.

In the **IP** section, you can edit the basic parameters of the local interface.

Parameter	Description
IP Address	The IP address of the router in the local subnet. By default, the following value is specified: 192.168.0.1 .
Netmask	The mask of the local subnet. By default, the following value is specified: 255.255.255.0 .

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

In the **Static DHCP** section, you can specify MAC address and IP address pairs (set a fixed IP address in the local area network for a device with a certain MAC address). The router assigns IP addresses in accordance with the specified pairs only when the DHCP server is enabled (in the **DHCP server** section, in the **Mode** drop-down list, the **Enable** value is selected).

To create a MAC-IP pair, click the **Add** button and specify the following parameters:

Parameter	Description
IP address	An IP address which will be assigned to the device with the specified MAC address.
MAC address	The MAC address of the device from the LAN.
Host name	A network name of the device for easier identification. <i>Optional</i> .

When all needed MAC-IP pairs are specified, click the **Save** button.

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

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

Parameter	Description
Mode	An operating mode of the router's DHCP server. Enable: the router assigns IP addresses to clients automatically in accordance with the specified parameters. When this value is selected, the Start IP , End IP , and the Lease time fields are displayed on the page. Disable: the router's DHCP server is disabled, clients' IP addresses are assigned manually. Relay: an external DHCP server is used to assign IP addresses to clients. When this value is selected, the External DHCP server IP field is displayed on the page.
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.

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) and split it into parts.

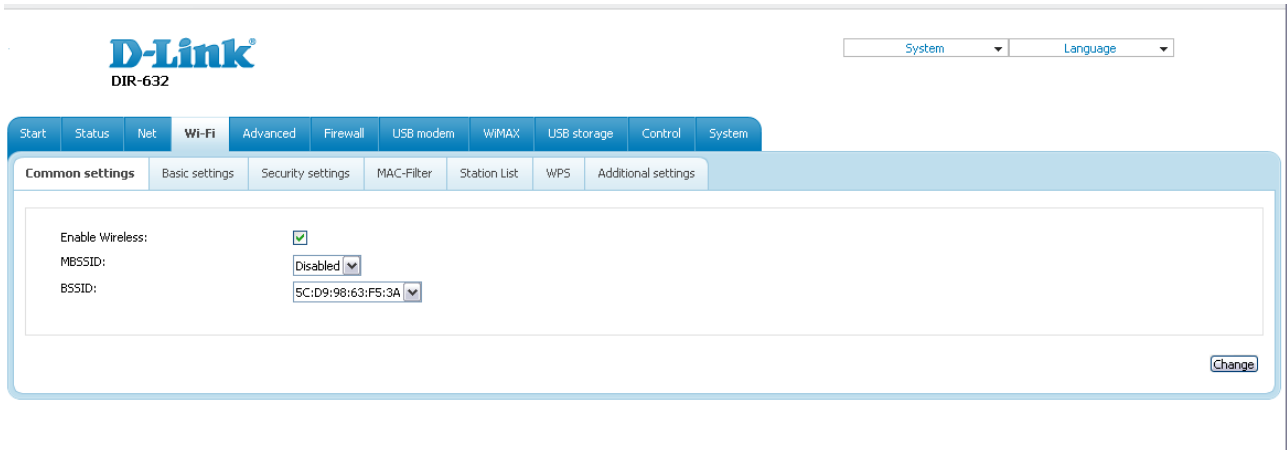


Figure 72. Common settings of the wireless LAN.

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

The router allows splitting your WLAN into several parts (up to four) with their own names (SSIDs) and unique identifiers (BSSIDs). To split the network into several parts, select a relevant value (**2**, **3**, or **4**) from the **MBSSID** drop-down list. By default, the wireless network is not splitted (the **Disabled** value is selected from the list).

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

If you have splitted your WLAN into parts, the **BSSID** drop-down list contains several values. Each identifier corresponds to a single part of the WLAN.

For every part of the WLAN you can specify a name (SSID), security settings, and rules for MAC filtering. To specify these values, select the needed part from the **BSSID** drop-down list and click the **Change** button. Then proceed to the relevant page of the **Wi-Fi** menu section.

Basic Settings

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

The screenshot displays the D-Link DIR-632 web interface. At the top left is the D-Link logo and the model number DIR-632. To the right are dropdown menus for 'System' and 'Language'. Below this is a navigation bar with tabs for 'Start', 'Status', 'Net', 'Wi-Fi', 'Advanced', 'Firewall', 'USB modem', 'WiMAX', 'USB storage', 'Control', and 'System'. Under the 'Wi-Fi' tab, there are sub-tabs for 'Common settings', 'Basic settings', 'Security settings', 'MAC-Filter', 'Station List', 'WPS', and 'Additional settings'. The 'Basic settings' sub-tab is active, showing a form with the following fields: 'Hide Access Point:' with an unchecked checkbox; 'SSID:' with a text box containing 'DIR-632'; 'Country:' with a dropdown menu showing 'RUSSIAN FEDERATION'; 'Channel:' with a dropdown menu showing 'auto'; 'Wireless mode:' with a dropdown menu showing '802.11 B'; and 'Max. Associated Clients:' with a text box containing '0'. A 'Change' button is located at the bottom right of the form area.

Figure 73. Basic settings of the wireless LAN.

Parameter	Description
Hide Access Point	If the checkbox is selected, other users cannot see your Wi-Fi network. (It is recommended not to select this checkbox in order to simplify initial configuration of your WLAN.)
SSID	A name for the WLAN. By default, the value DIR-632 is specified. If your network is splitted into parts, each part has the default name (DIR-632.2 , DIR-632.3 , and DIR-632.4). It is recommended to specify another name for the network upon initial configuration (use digits and Latin characters).
Country	The country you are in. Select a value from the drop-down list.
Channel	The wireless channel number. When the auto value is selected, the router itself chooses the channel with the least interference.
Wireless mode	<p>Operating mode of the router's WLAN. This parameter defines standards of the devices that will be able to use your WLAN. By default, the router automatically selects a mode for clients connected to it. You can specify your restrictions.</p> <p>802.11 B: Only 802.11 b devices can connect to the WLAN.</p> <p>802.11 G: Only 802.11b/g devices can connect to the WLAN.</p> <p>802.11 N 20MHz: 802.11b/g/n devices can connect to the WLAN; 802.11n devices operate at 20MHz channels.</p> <p>802.11 N 40MHz +: 802.11b/g/n devices can connect to the WLAN, 802.11n devices operate at 40MHz channels (the channel is combined with the next adjacent channel).</p> <p>802.11 N 40MHz -: 802.11b/g/n devices can connect to the WLAN, 802.11n devices operate at 40MHz channels (the channel is combined with the previous adjacent channel).</p>
Max Associated Clients	The maximum number of devices connected to the wireless network of the router. When the value 0 is specified, the router does not limit the number of connected clients.

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

Security Settings

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

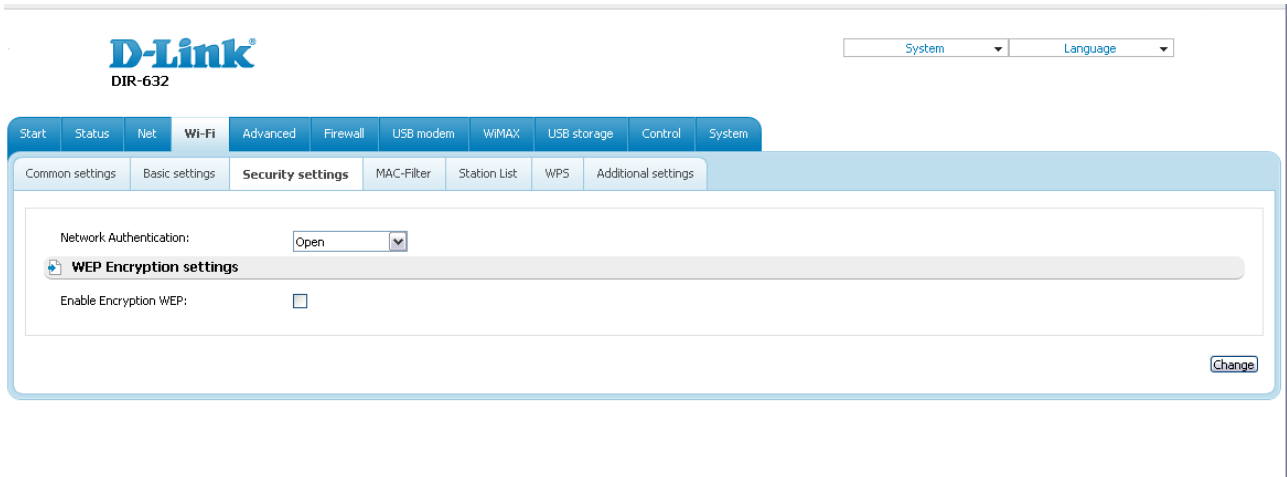


Figure 74. The default security settings.

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



The default security settings do not provide sufficient protection for the WLAN. Please, specify your own security settings for the WLAN (or each part of the WLAN if the network was splitted into parts).



Figure 75. Network authentication types supported by the router.

The router supports the following authentication types:

Authentication type	Description
Open	Open authentication (with or without WEP encryption).
Open-IEEE8021X	Open authentication using a RADIUS server (with or without WEP encryption).
Shared	Shared key authentication with WEP encryption.
WEPAUTO	A mixed type of authentication. When this value is selected, devices using the Open authentication type with enabled WEP encryption and devices using the Shared authentication type can connect to the router's WLAN.
WPA	WPA-based authentication using a RADIUS server.
WPA-PSK	WPA-based authentication using a PSK.
WPA2	WPA2-based authentication using a RADIUS server.
WPA2-PSK	WPA2-based authentication using a PSK.

! The **Open-IEEE8021X**, **WPA**, and **WPA2** authentication types require a RADIUS server.

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

Network Authentication:

WEP Encryption settings

Enable Encryption WEP:

Default Key ID:

Encryption Key WEP as HEX:

Encryption Key WEP (1):

Encryption Key WEP (2):

Encryption Key WEP (3):

Encryption Key WEP (4):

[Change](#)

Figure 76. The **Open** value is selected from the **Network Authentication** drop-down list.

Parameter	Description
Enable Encryption WEP	The checkbox activating WEP encryption. When the checkbox is selected, the Default Key ID field, the Encryption Key WEP as HEX checkbox, and four Encryption Key WEP fields are displayed on the page. For the Shared and WEPAUTO authentication types the checkbox is always selected.
Default Key ID	The number of the key (from first to fourth) which will be used for WEP encryption.
Encryption Key WEP as HEX	Select the checkbox to set a hexadecimal number as a key for encryption.
Encryption Key WEP (1-4)	Keys for WEP encryption. The router uses the key selected from the Default Key ID drop-down list. It is required to specify all the fields. You can specify keys containing 5 or 13 symbols (use digits and/or Latin characters). If the Encryption Key WEP as HEX checkbox is selected, you can specify only keys containing 10 symbols (the digits 0-9 and the characters A-F).

When the **Open-IEEE8021X** value is selected, the **WEP Encryption settings** and **RADIUS settings** sections are displayed:

Network Authentication:

WEP Encryption settings

Enable Encryption WEP:

Default Key ID:

Encryption Key WEP as HEX:

Encryption Key WEP (1):

Encryption Key WEP (2):

Encryption Key WEP (3):

Encryption Key WEP (4):

RADIUS settings

IP address:

Port:

RADIUS encryption key:

[Change](#)

Figure 77. The **Open-IEEE8021X** value is selected from the **Network Authentication** drop-down list.

Parameter	Description
Enable Encryption WEP	The checkbox activating WEP encryption. When the checkbox is selected, the Default Key ID field, the Encryption Key WEP as HEX checkbox, and four Encryption Key WEP fields are displayed on the page.
Default Key ID	The number of the key (from first to fourth) which will be used for WEP encryption.
Encryption Key WEP as HEX	Select the checkbox to set a hexadecimal number as a key for encryption.
Encryption Key WEP (1-4)	Keys for WEP encryption. The router uses the key selected from the Default Key ID drop-down list. It is required to specify all the fields. You can specify keys containing 5 or 13 symbols (use digits and/or Latin characters). If the Encryption Key WEP as HEX checkbox is selected, you can specify only keys containing 10 symbols (the digits 0-9 and the characters A-F).
IP address	The IP address of the RADIUS server.
Port	A port of the RADIUS server.
RADIUS encryption key	A password to access the RADIUS server.

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

Network Authentication:

Encryption Key PSK:

WPA2 Pre-authentication:

WPA Encryption settings

WPA Encryption:

WPA renewal:

[Change](#)

Figure 78. 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 the **WPA** or **WPA2** value is selected, the **RADIUS settings** and **WPA Encryption settings** sections are available:

Network Authentication:

WPA2 Pre-authentication:

RADIUS settings

IP address:

Port:

RADIUS encryption key:

WPA Encryption settings

WPA Encryption:

WPA renewal:

[Change](#)

Figure 79. The **WPA2** value is selected from the **Network Authentication** drop-down list.

Parameter	Description
WPA2 Pre-authentication	The checkbox activating preliminary authentication (displayed only for the WPA2-PSK authentication type).
IP address	The IP address of the RADIUS server.
Port	A port of the RADIUS server.
RADIUS encryption key	A password to access the RADIUS server.
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.

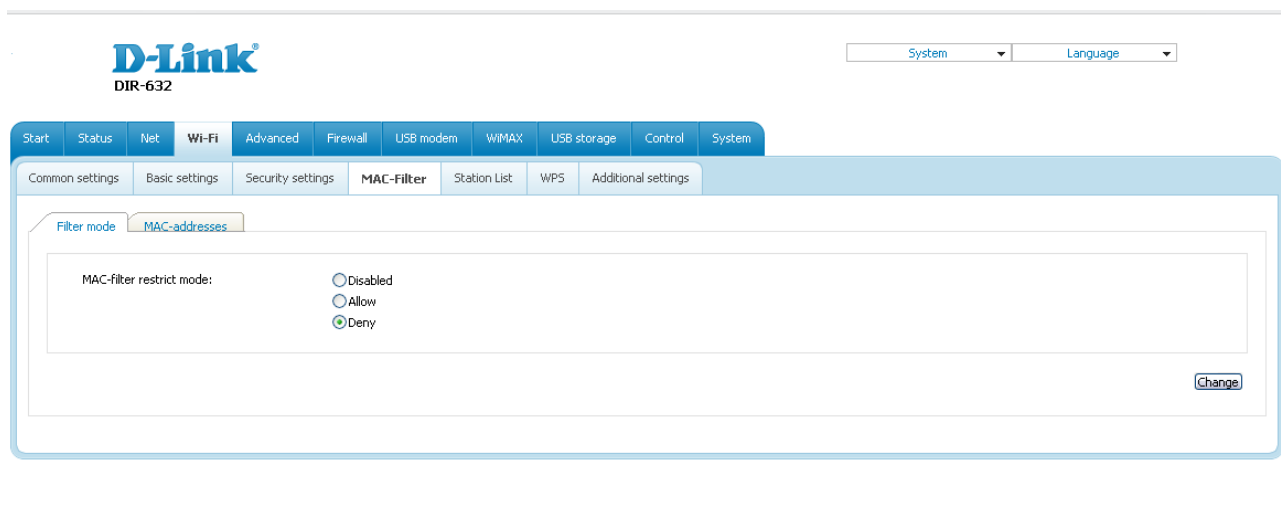


Figure 80. The MAC filter for the wireless network.

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.

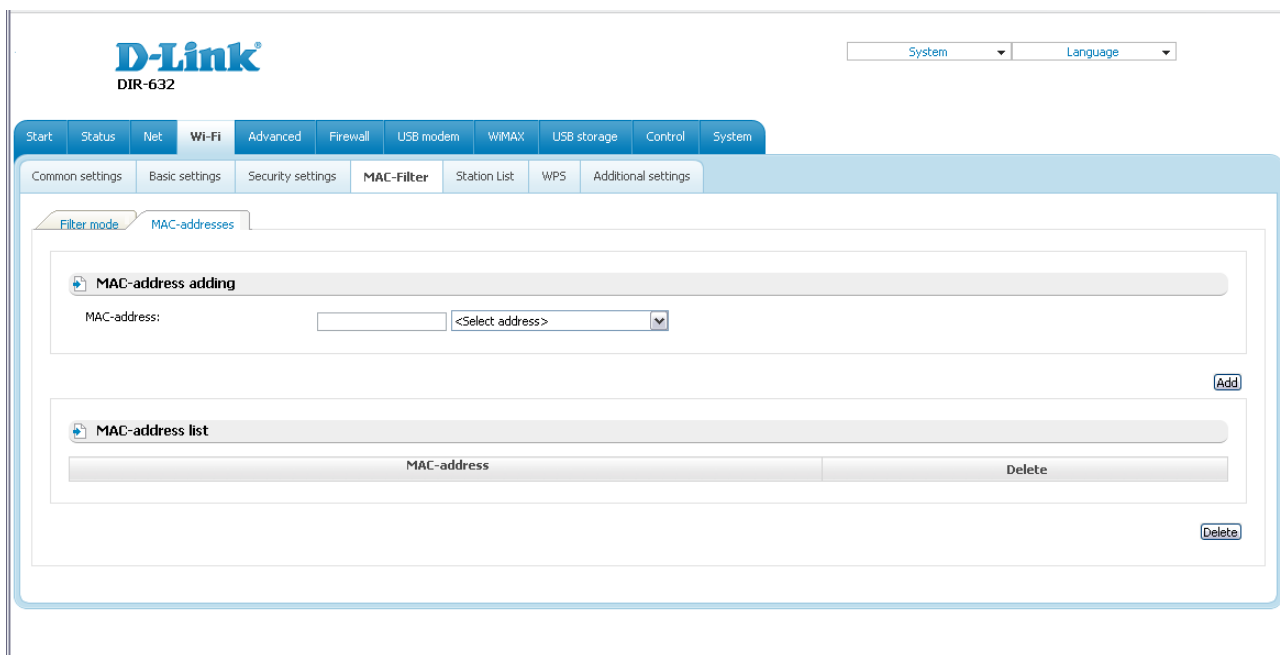


Figure 81. The tab for adding a MAC address.

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

To add the MAC address of a device connected to the router's LAN at the moment, select the value containing the MAC and IP address of this device from the drop-down list located to the right of the **MAC address** field (the field will be filled in automatically) and click the **Add** button.

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

Station List

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

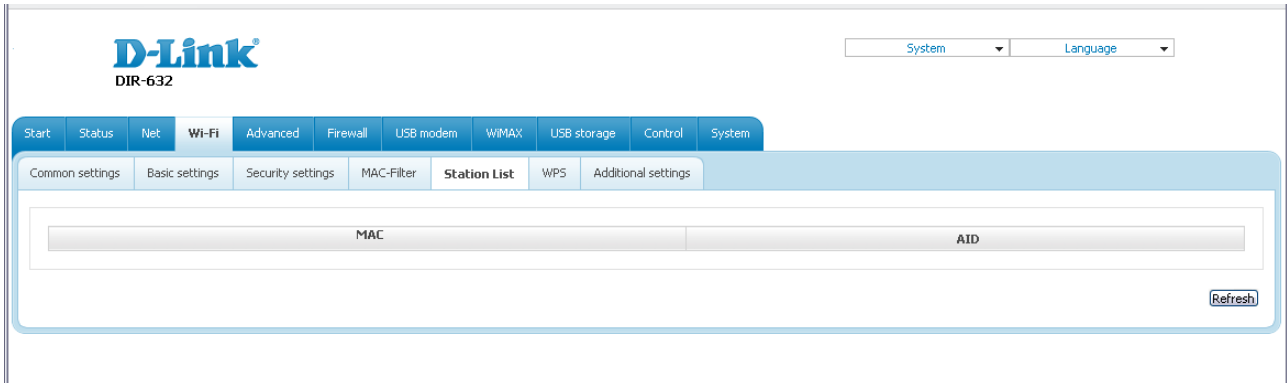


Figure 82. The list of the router's wireless clients.

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.

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.

! If the router's WLAN is splitted into parts (the value **2**, **3**, or **4** is selected from the **MBSSID** drop-down list on the **Wi-Fi / Common settings** page), the WPS function can be used only for the first part of the WLAN (the first value from the **BSSID** drop-down list).

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

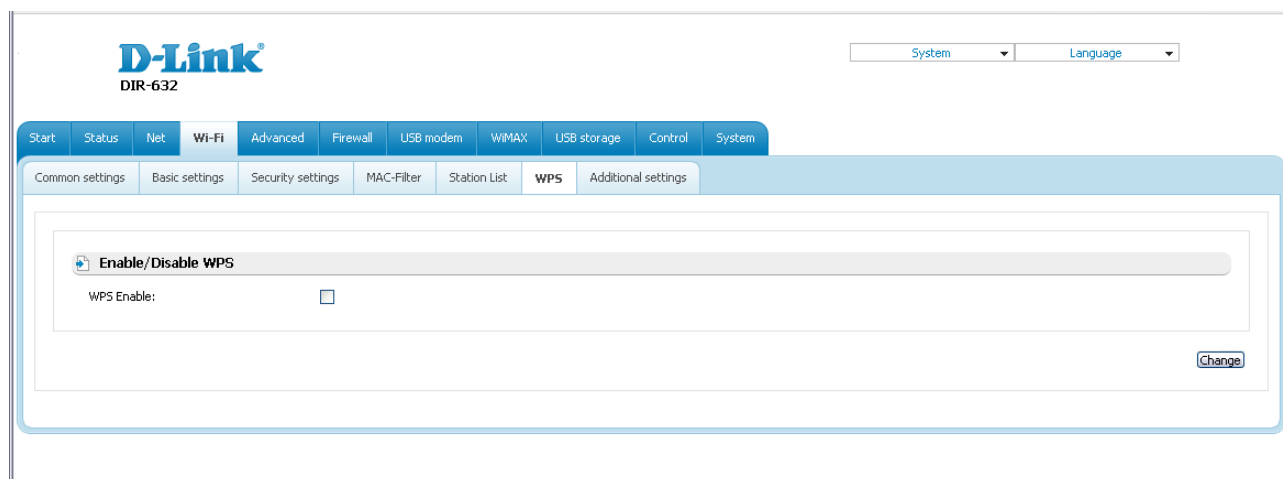


Figure 83. The page for configuring the WPS function.

To activate the WPS function, select the **WPS Enable** checkbox and click the **Change** button.

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

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 on the right side panel of the router.

Additional Settings

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

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

The screenshot shows the D-Link DIR-632 web interface. At the top left is the D-Link logo and 'DIR-632'. At the top right are 'System' and 'Language' dropdown menus. Below is a navigation bar with tabs: Start, Status, Net, **Wi-Fi**, Advanced, Firewall, USB modem, WiMAX, USB storage, Control, System. Under the 'Wi-Fi' tab, there are sub-tabs: Common settings, Basic settings, Security settings, MAC-Filter, Station List, WPS, and **Additional settings**. The 'Additional settings' sub-tab is active and contains the following configuration fields:

Beacon Period:	<input type="text" value="100"/>
RTS Threshold:	<input type="text" value="2347"/>
Frag Threshold:	<input type="text" value="2346"/>
DTIM Period:	<input type="text" value="1"/>
TX Power:	<input type="text" value="100"/>
BG Protection:	<input type="text" value="Auto"/>
TX Preamble:	<input type="text" value="Long Preamble"/>

A 'Change' button is located at the bottom right of the settings area.

Figure 84. Additional settings of the WLAN.

The following fields are available on the page:

Parameter	Description
Beacon Period	The time interval (in milliseconds) between packets sent to synchronize the wireless network.
RTS Threshold	The minimum size (in bites) of a packet for which an RTS frame is transmitted.
Frag Threshold	The maximum size (in bites) of a non-fragmented packet. Larger packets are fragmented (divided).
DTIM Period	The time period (in seconds) between sending a DTIM (a message notifying on broadcast or multicast transmission) and data transmission.
TX Power	The router's transmit power (in percentage terms).
BG Protection	<p>The 802.11b and 802.11g protection function is used to minimize collisions between devices of your wireless network.</p> <p>Select a value from the drop-down list.</p> <p>Auto: The protection function is enabled and disabled automatically depending on the state of the network (this value is recommended if your wireless local area network consists of both 802.11b and 802.11g devices).</p> <p>Always On: The protection function is always enabled (this setting can substantially lower the efficiency of your wireless network).</p> <p>Always Off: The protection function is always disabled.</p>
TX Preamble	<p>This parameter defines the length of the CRC block sent by the router when communicating to wireless devices.</p> <p>Select a value from the drop-down list.</p> <p>Long Preamble.</p> <p>Short Preamble (this value is recommended for networks with high-volume traffic).</p>

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

Advanced

In this menu you can configure advanced settings of the router: define static routes and rules for remote access to the web-based interface, add name servers, enable the UPnP function, configure a DDNS service, and allow the router to use IGMP.

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.

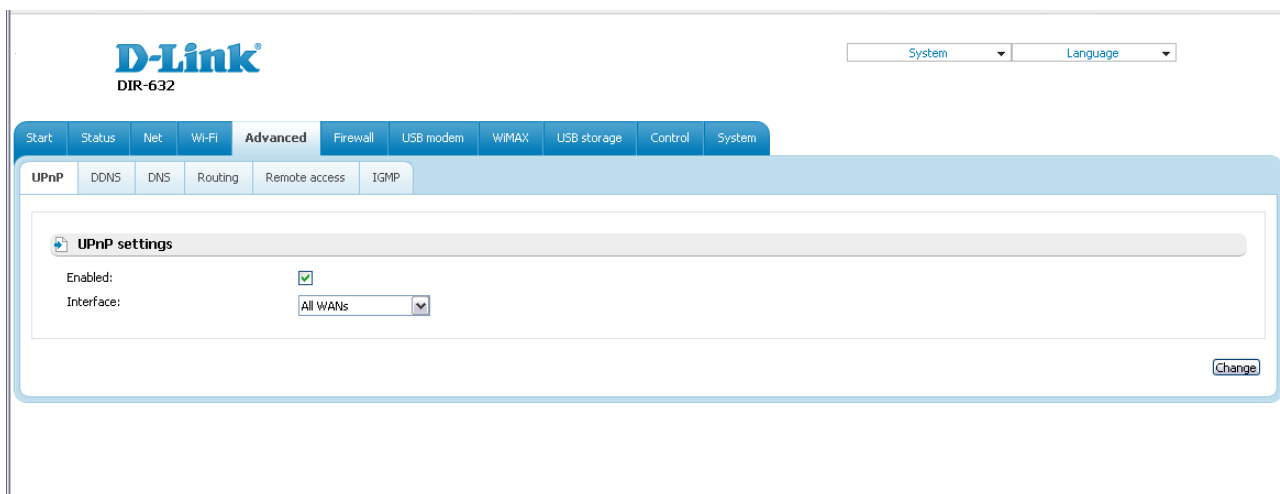


Figure 85. The **Advanced / UPnP** page.

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, select an interface for which the router's parameters will be automatically configured from the **Interface** drop-down list, 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.

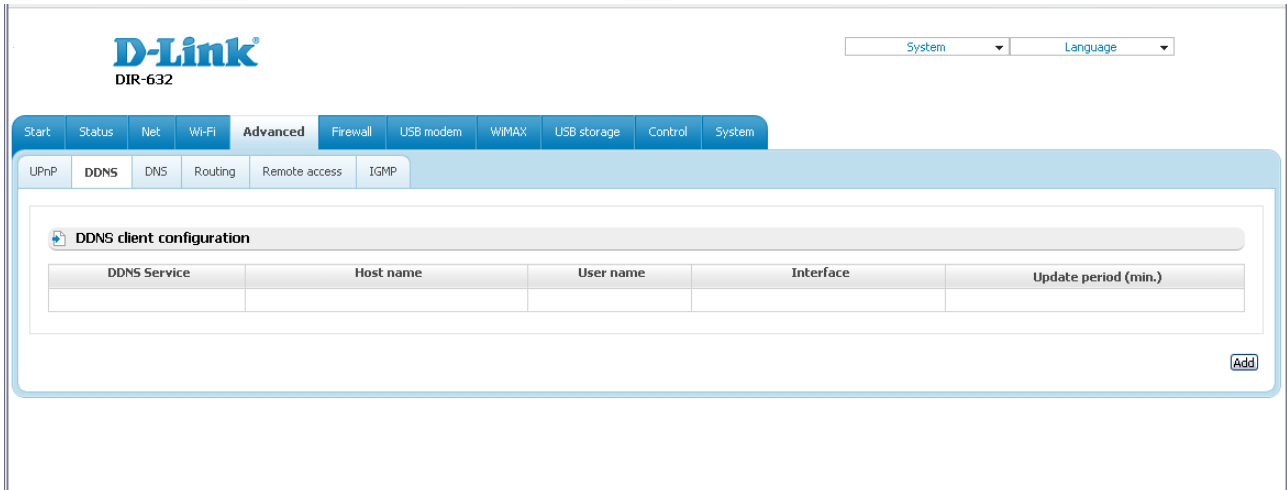


Figure 86. The **Advanced / DDNS** page.

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

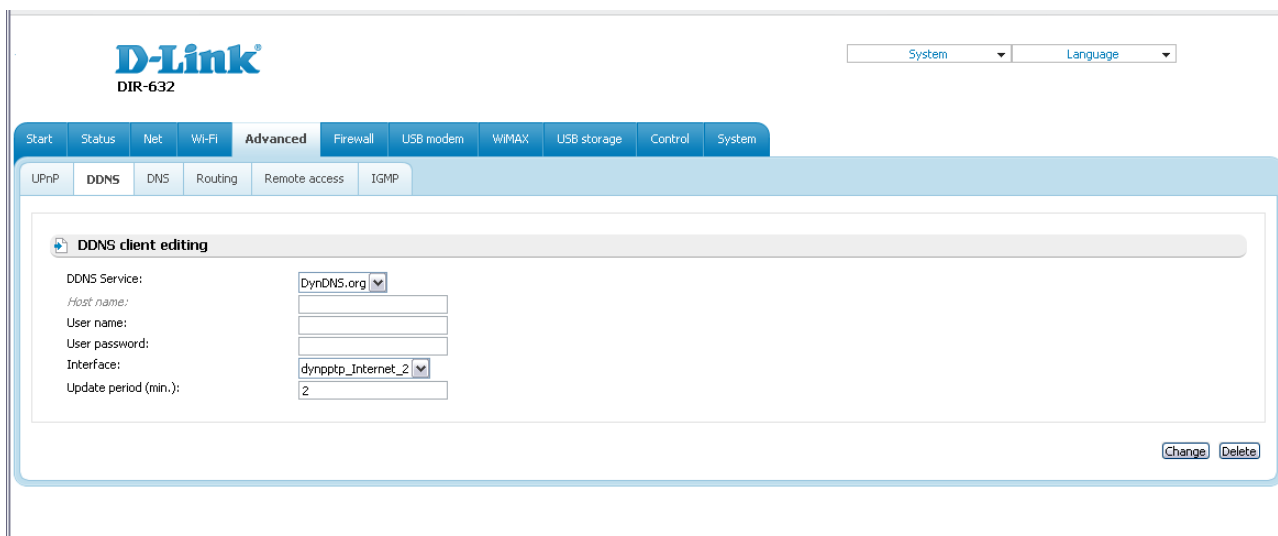


Figure 87. The page for editing the DDNS service.

You can specify the following parameters:

Parameter	Description
DDNS Service	Select a DDNS provider from the drop-down list.
Host	The domain name registered at your DDNS provider.
User name	The username to authorize for your DDNS provider.
User password	The password to authorize for your DDNS provider.
Interface	Select a WAN connection which IP address will be used to access the DDNS service.
Update period	An interval (in minutes) between sending data with the IP address of the interface specified in the field above to the relevant DDNS service.

Click the **Change** button.

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

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

DNS

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

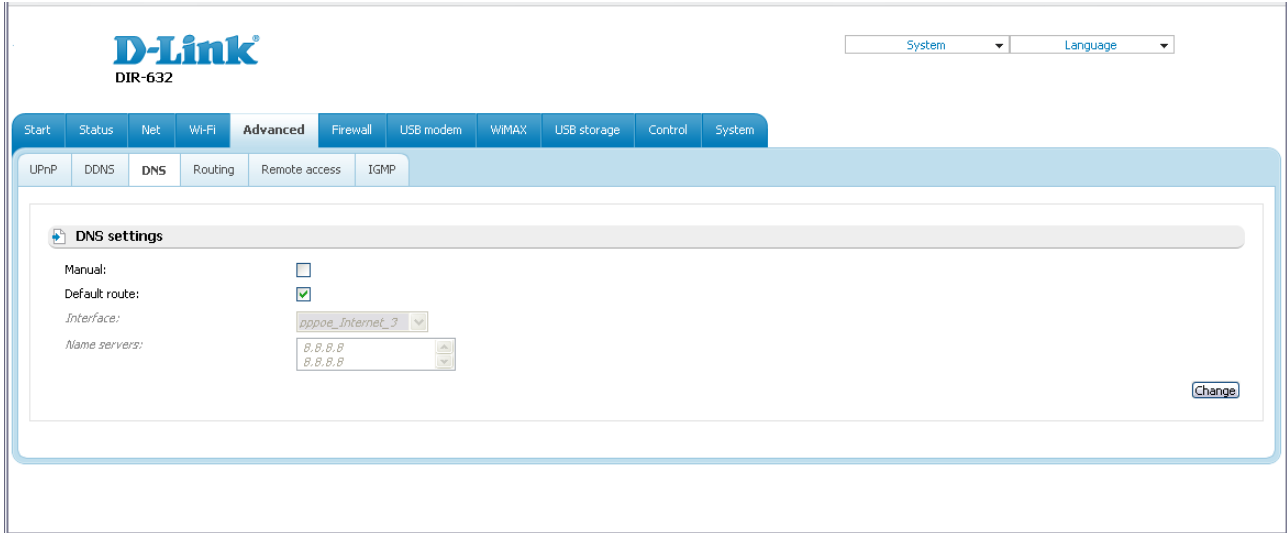


Figure 88. The **Advanced / DNS** page.

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

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

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

If you want to configure automatic obtainment of DNS servers addresses, deselect the **Manual** checkbox, select a WAN connection which will be used to obtain addresses of DNS servers automatically from the **Interface** drop-down list or select the **Default route** checkbox, so that the router could use the connection set as the default gateway (on the **Net / WAN** page) to obtain DNS server addresses, and click the **Change** button.

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

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

Routing

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

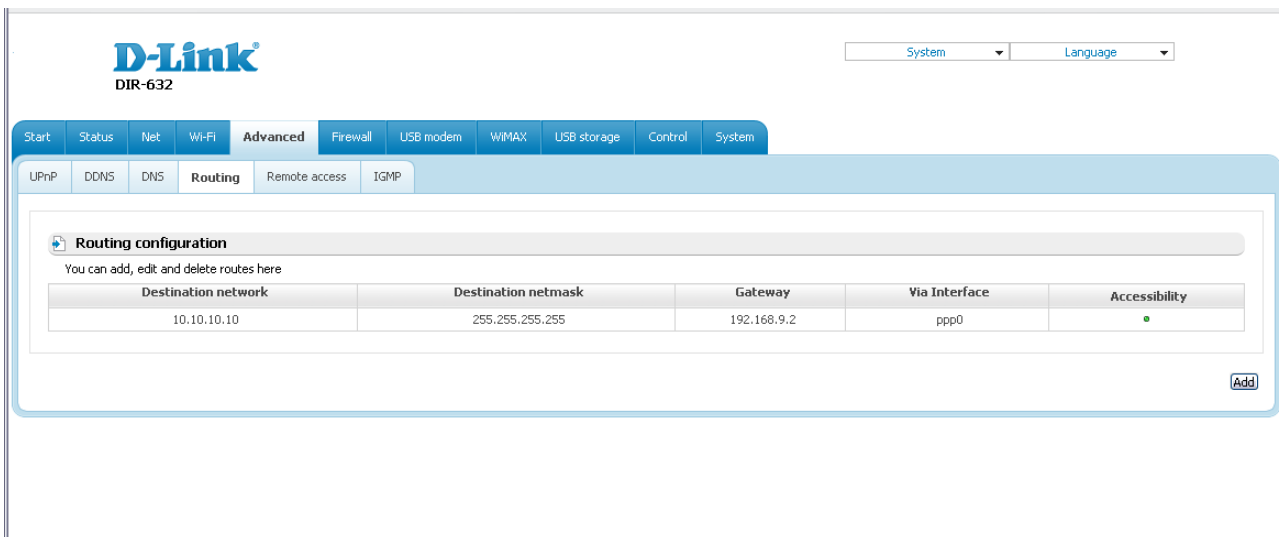


Figure 89. The **Advanced / Routing** page.

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

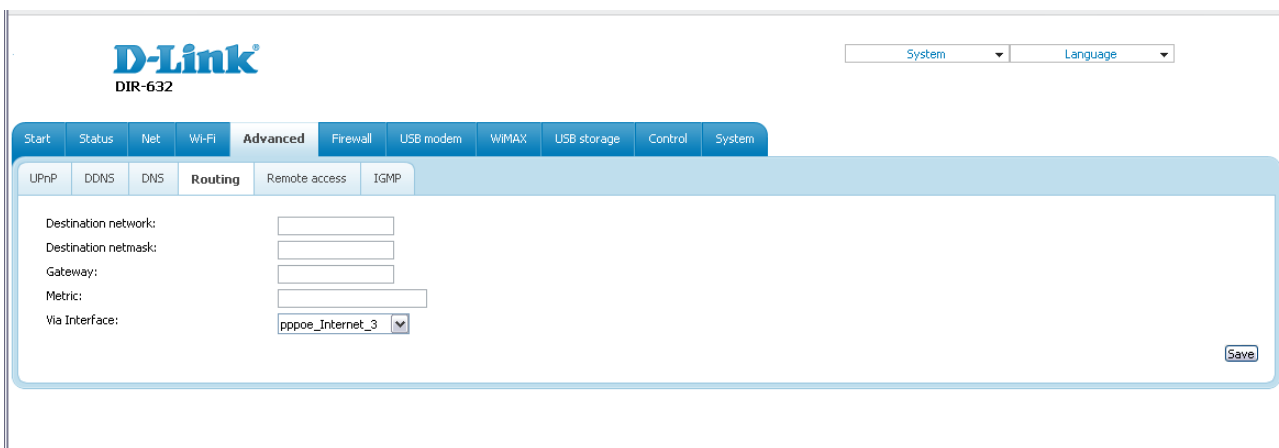


Figure 90. The page for adding a static route.

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 through which the destination network can be accessed from the drop-down list. If you have selected the <Auto> value of this drop-down list, the router itself sets the interface on the basis of data on connected networks.

Click the **Save** button.

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

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

Remote Access

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

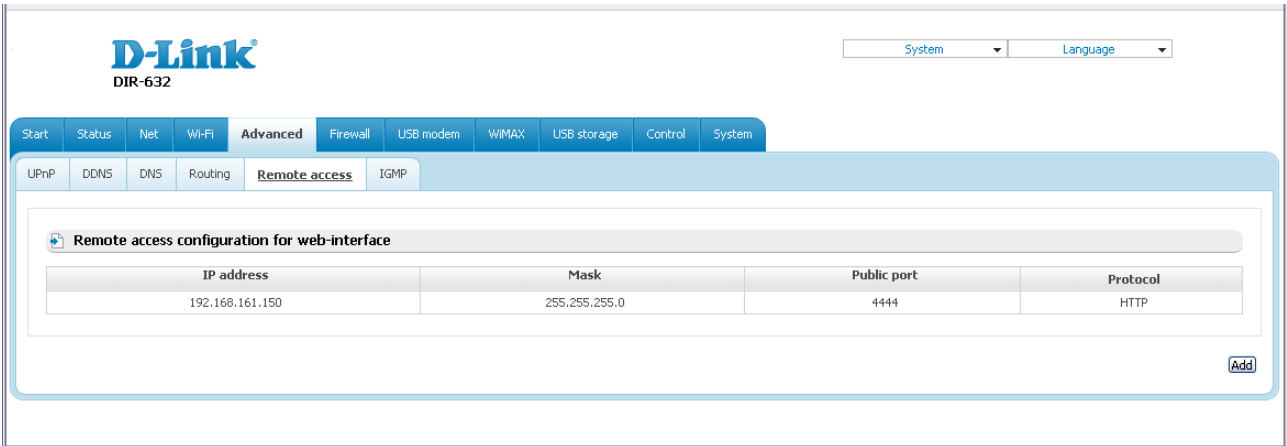


Figure 91. The **Advanced / Remote access** page.

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

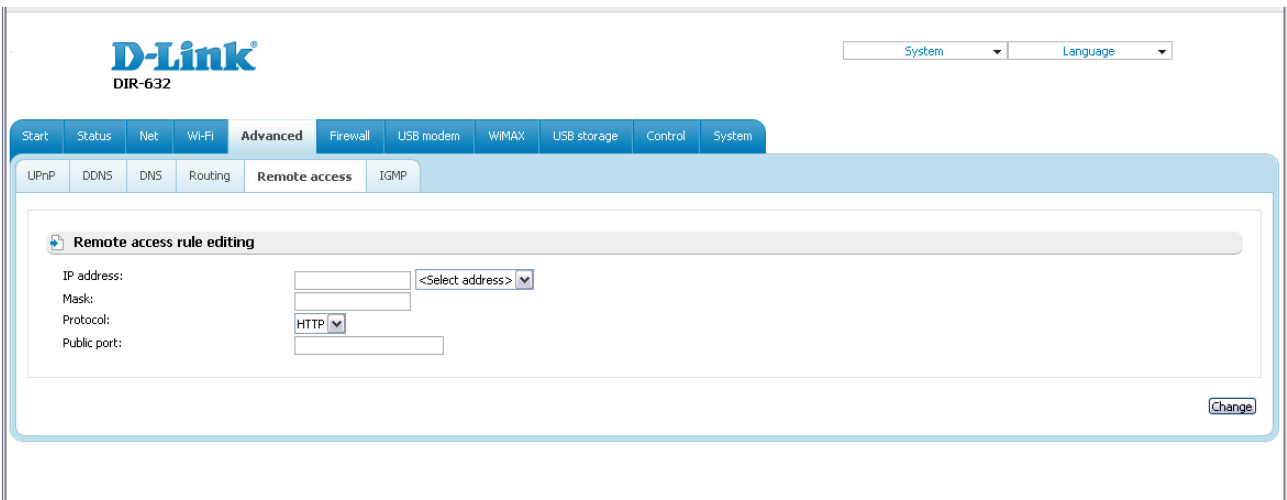


Figure 92. The page for adding a rule for remote management.

You can specify the following parameters:

Parameter	Description
IP address	A host or a subnet to which the rule is applied. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list located to the right of the field (the field will be filled in automatically).
Mask	The mask of the subnet.
Protocol	The protocol available for remote management of the router.
Public port	An external port of the router. You can specify only one port.

Click the **Change** button.

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

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

IGMP

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

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

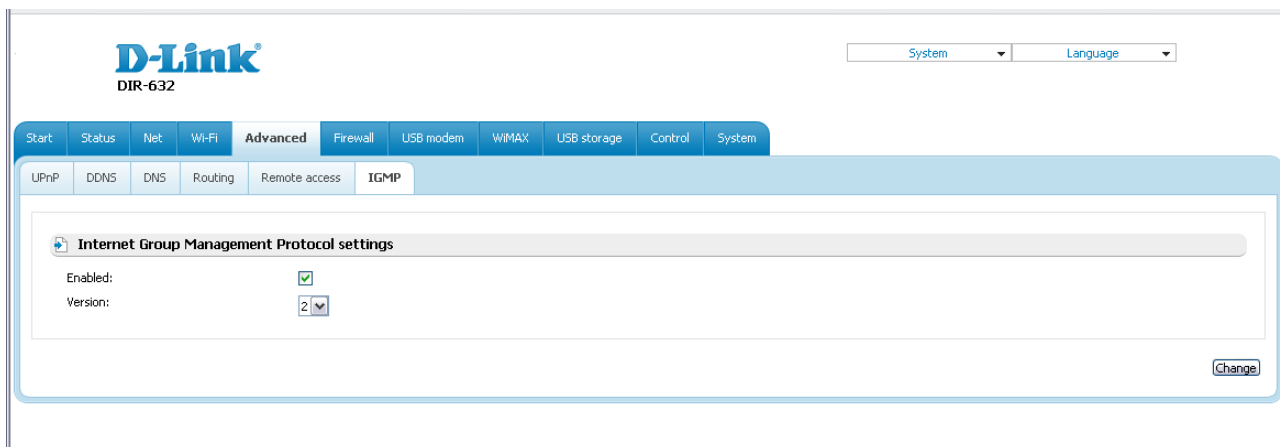


Figure 93. The **Advanced / IGMP** page.

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

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

Firewall

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

IP Filters

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

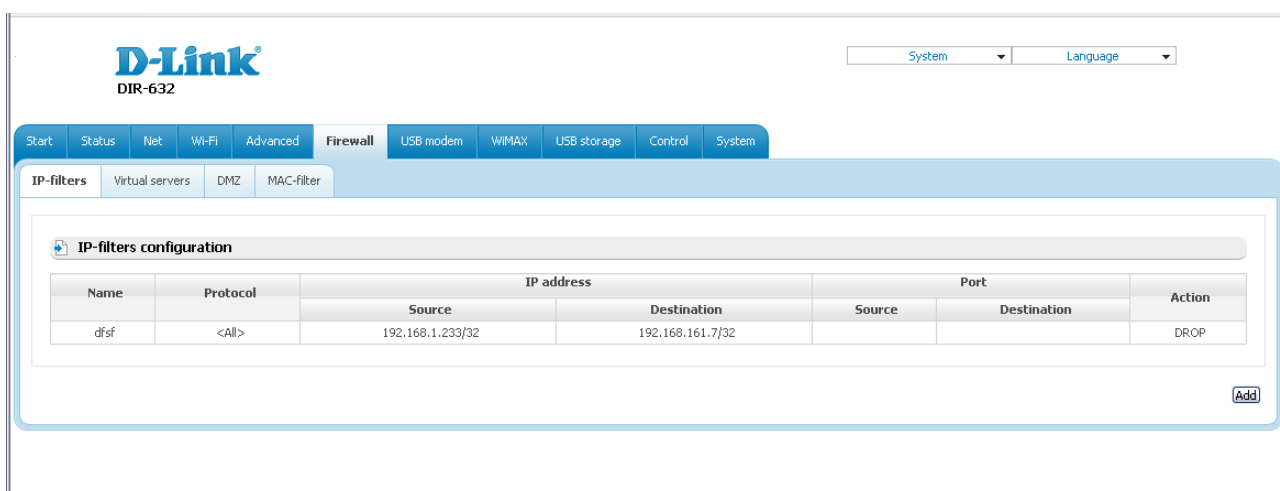


Figure 94. The Firewall / IP filters page.

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

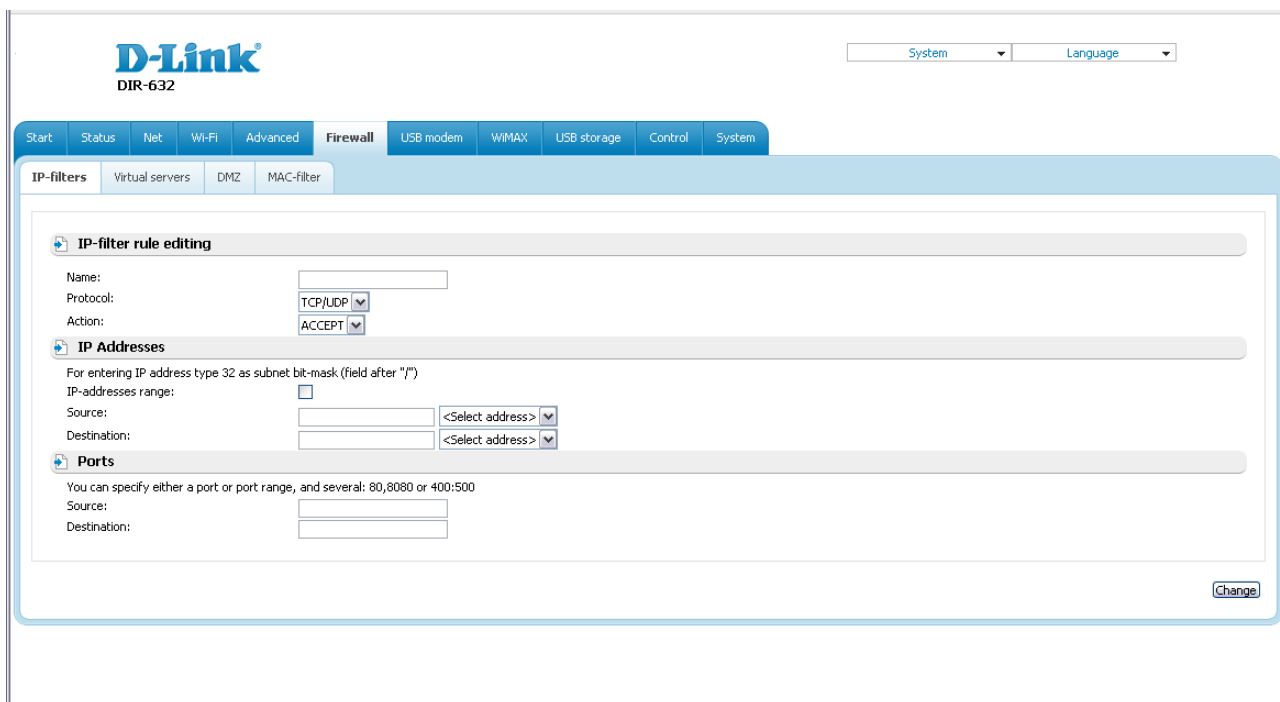


Figure 95. The page for adding a rule for IP filtering.

You can specify the following parameters:

Parameter	Description
IP-filter rule editing	
Name	A name for the rule for easier identification.
Protocol	A protocol for network packet transmission. Select a value from the drop-down list.
Action	Select an action for the rule. ACCEPT: Allows packet transmission in accordance with the criteria specified by the rule. DROP: Denies packet transmission in accordance with the criteria specified by the rule.
IP Addresses	
IP address range	Select the checkbox if you want to specify a range of IP addresses as the source or destination IP address.

Parameter	Description
Source	<p>The source host/subnet IP address.</p> <p>If the IP address range checkbox is selected, specify the starting IP address of the range in the Source (first) field and the ending IP address in the Source (last) field.</p> <p>If the IP address range checkbox is not selected, specify the IP address of the host or subnet in the Source field. To specify an IP address add <code>/32</code>.</p> <p>To choose a device connected to the router's LAN at the moment, select the relevant IP address from the drop-down list located to the right of the field (the field will be filled in automatically).</p>
Destination	<p>The destination host/subnet IP address.</p> <p>If the IP address range checkbox is selected, specify the starting IP address of the range in the Destination (first) field and the ending IP address in the Destination (last) field.</p> <p>If the IP address range checkbox is not selected, specify the starting IP address of the host or subnet in the Destination field. To specify an IP address add <code>/32</code>.</p> <p>To choose a device connected to the router's LAN at the moment, select the relevant IP address from the drop-down list located to the right of the field (the field will be filled in automatically).</p>
Ports	
Source	A port of the source IP address. You can specify one port, several ports separated by a comma, or a range of ports separated by a colon.
Destination	A port of the destination IP address. You can specify one port, several ports separated by a comma, or a range of ports separated by a colon.

Click the **Change** button.

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

To remove a rule for IP filtering, click the link to the relevant rule. On the opened page, click the **Delete** button.

Virtual Servers

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

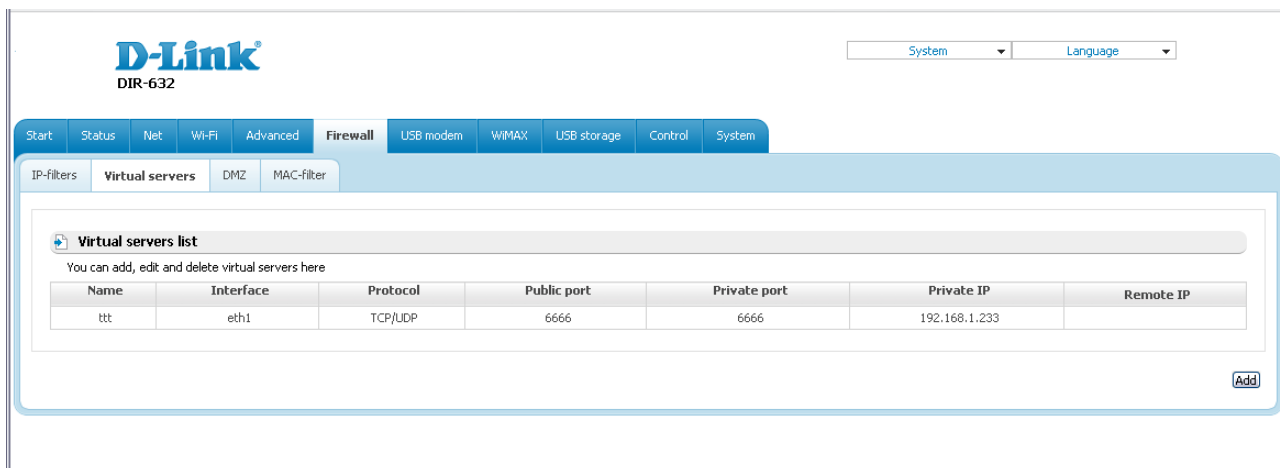


Figure 96. The **Firewall / Virtual servers** page.

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

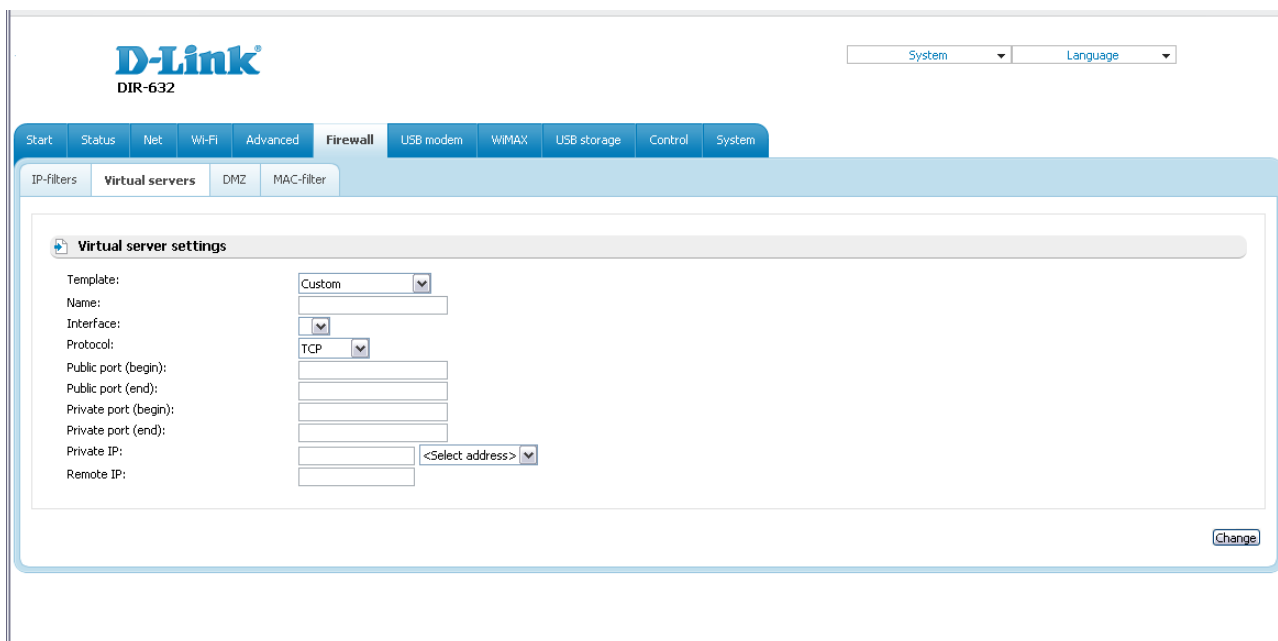


Figure 97. The page for adding a virtual server.

You can specify the following parameters:

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

Parameter	Description
Private IP	The IP address of the server from the local area network. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list located to the right of the Private IP field (the field will be filled in automatically).
Remote IP	The IP address of the server from the external network.

Click the **Change** button.

To edit the parameters of an existing server, follow the link with the name of the server. On the opened page, change the needed parameters and click the **Change** button.

To remove an existing server, follow the link with the name of the server. On the opened page, click the **Delete** button.

DMZ

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

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

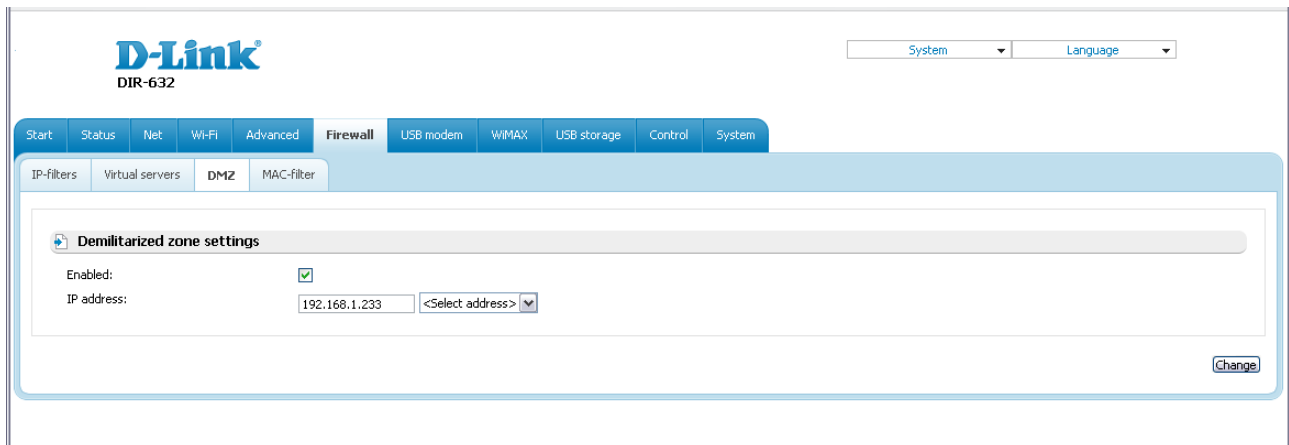


Figure 98. The **Firewall / DMZ** page.

To enable the DMZ, select the **Enabled** checkbox, enter the IP address of a host from your network in the **IP address** field. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list located to the right of the field (the field will be filled in automatically) and click the **Change** button.

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

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

MAC Filter

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

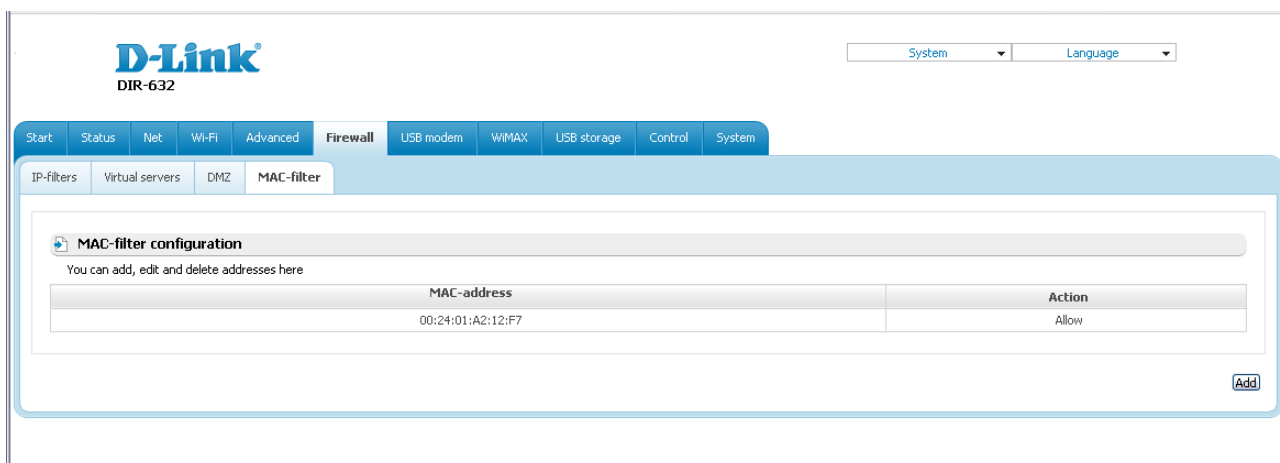


Figure 99. The **Firewall / MAC-filter** page.

To specify a new address for the MAC filter, click the **Add** button.

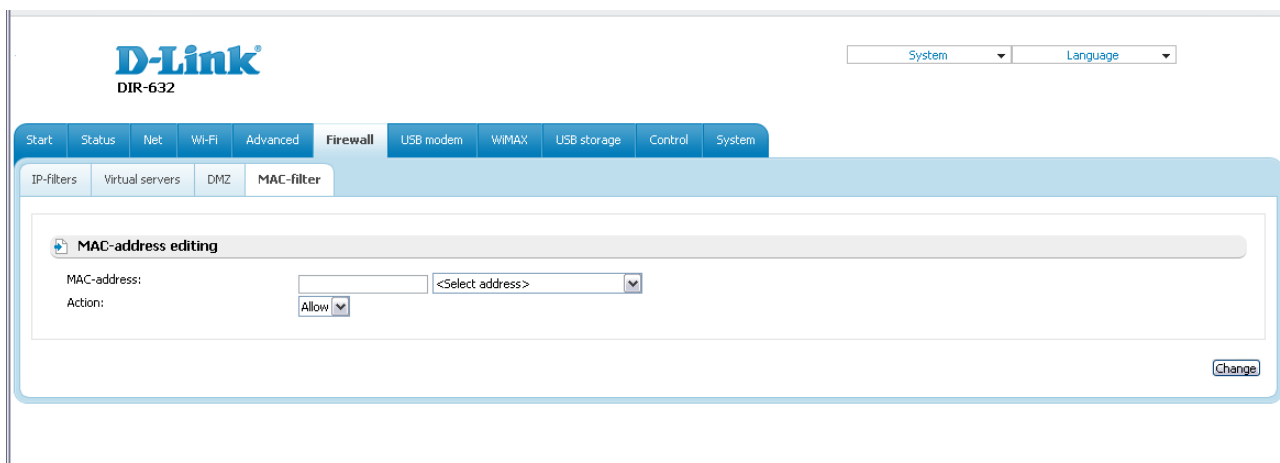


Figure 100. The page for adding an address for the MAC filter.

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

To remove an address from the list of MAC addresses for filtering, select the line with the relevant MAC address. On the opened page, click the **Delete** button.

USB Modem

This menu is designed to operate USB modems.

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

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.

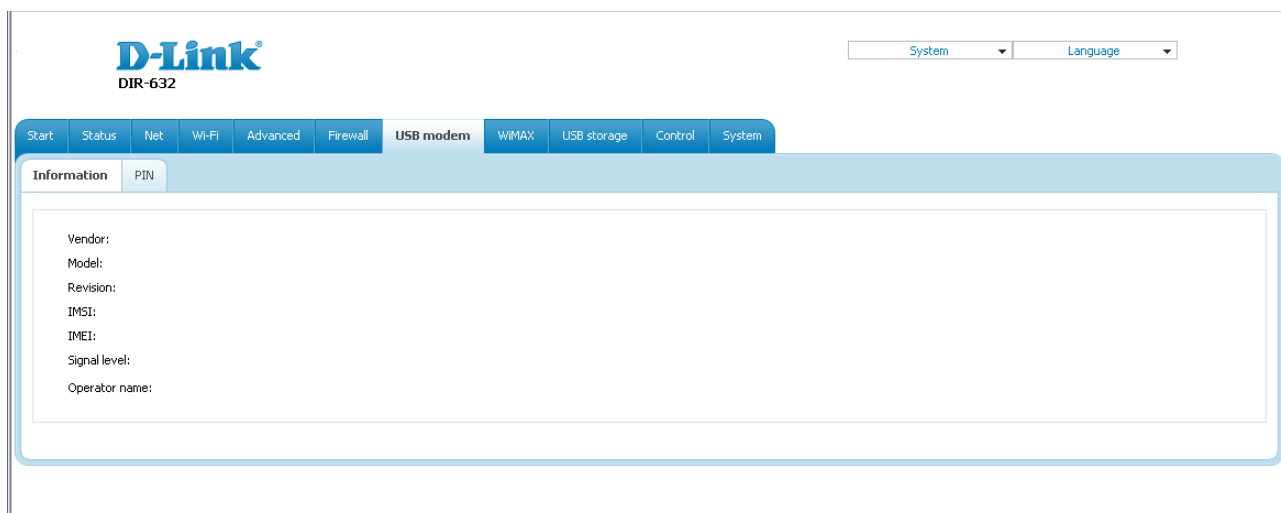


Figure 101. The **USB modem / Information** page.

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

Parameter	Description
Vendor	The manufacturer of your USB modem.
Model	The alphanumeric code of the model of your USB modem.
Revision	The revision of the firmware of your USB modem.
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.

Parameter	Description
Operator name	When the needed network is available, the name of the operator is displayed in this field.
Mode	A type of the network to which the USB modem is connected (2G or 3G).

PIN

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

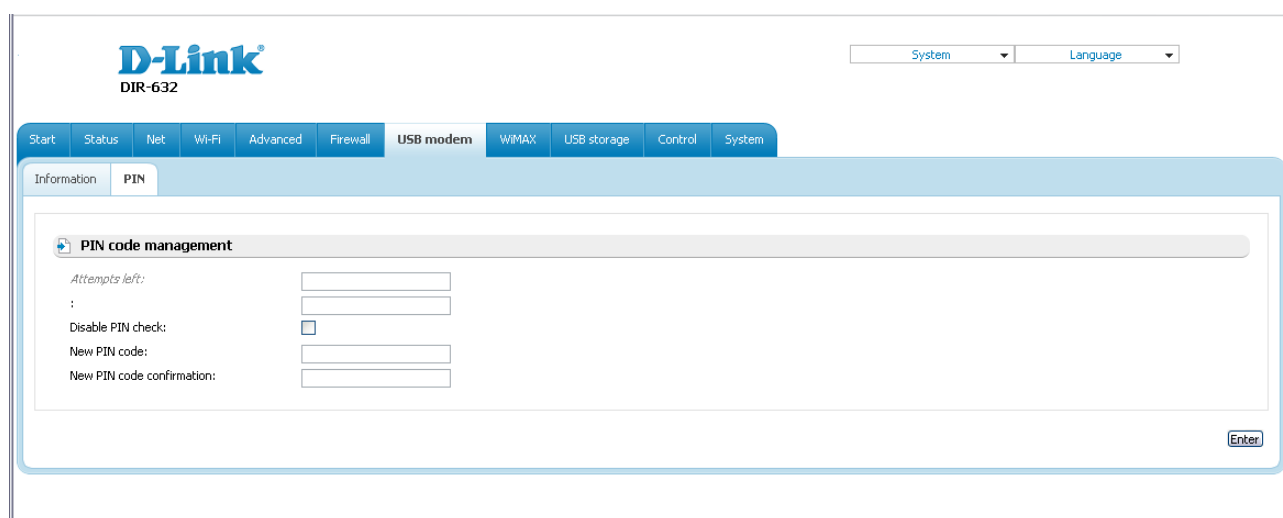


Figure 102. The **USB modem / PIN** page.

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.

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.

WiMAX

This menu is designed to operate WiMAX USB modems.

Information

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

The screenshot shows a web interface for WiMAX configuration. It includes the following fields and values:

- SSID: [Empty text box]
- Diode on modem:
- Link status: ●
- MAC-address: 00:24:91:3b:71:aX
- RSSI: -78 dB \Uparrow
- CINR: 9.00 dBm
- Base station ID: 00:00:15:0e:26:c9
- Transmit power: -81.92
- Frequency: 2515000

At the bottom right of the interface is a button labeled "Disconnect".

Figure 103. The **WiMAX / Information** page.

The following fields and controls are available on the page:

Parameter	Description
SSID	An identifier for the WiMAX network. Specify the parameter if your WiMAX ISP requires this.
Diode on modem	Select the checkbox to enable the modem's LED indicator.
Link status	The state of connection to the WiMAX network. Red light: The connection is not established. Yellow light: The USB modem is connecting to the network. Green light: The connection is established.
MAC-address	The MAC address of the WiMAX USB modem.
RSSI	The signal level at the input of the modem's receiver.
CINR	The relation of the signal level to the noise level. This parameter is used to measure the quality of the signal.
Base station ID	The identifier of the base station.
Transmit power	The signal level at the output of the modem's receiver.
Frequency	The frequency of the signal transmitted by the modem's receiver.

Parameter	Description
Connect	Click the button to connect to the WiMAX network. Beforehand, you need to create a WAN connection with relevant parameters. <i>The button is displayed when the connection is not established.</i>
Disconnect	Click the button to disconnect from the WiMAX network. <i>The button is displayed when the connection is established or is being established.</i>

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

USB Storage

In this menu you can find data on the connected USB storage and view its contents.

Information

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

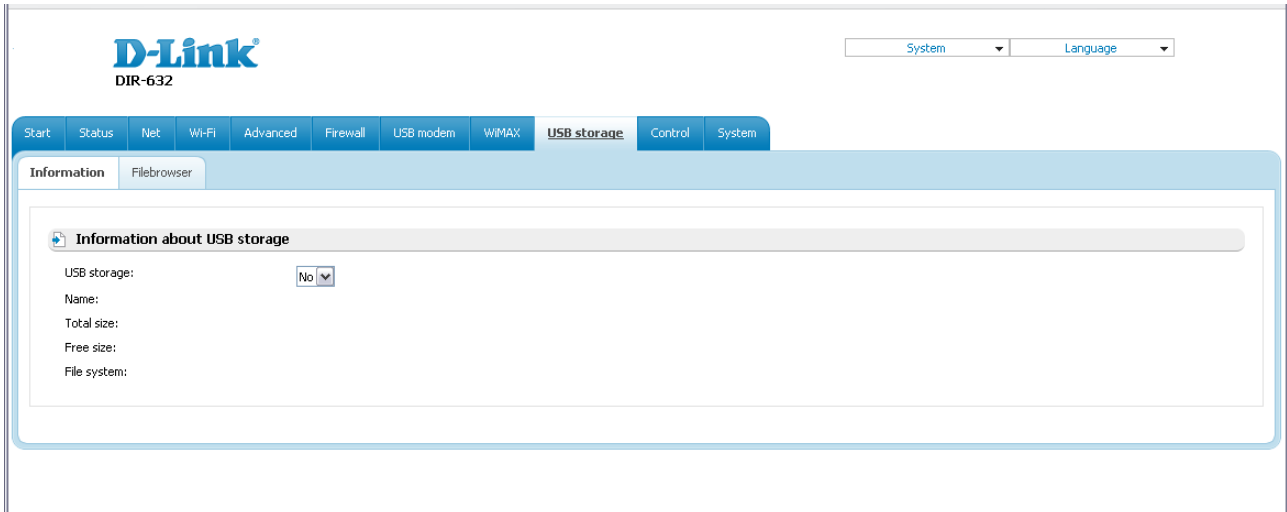


Figure 104. The **USB storage / Information** page.

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

Filebrowser

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

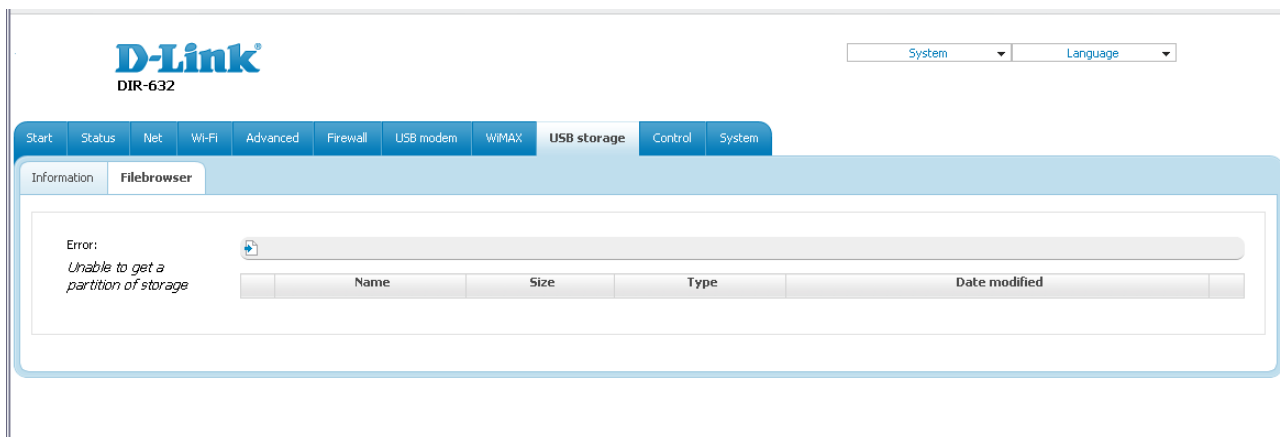


Figure 105. The **USB storage / Filebrowser** page.

To view the contents of the USB storage, click the link with its name. The list of folders and files will be displayed on the page.

To proceed to a folder, select it in the directory structure on the left part of the page.

To remove a folder or file, click the **delete** link in the line corresponding to this folder or file.

Control

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

URL Filter

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

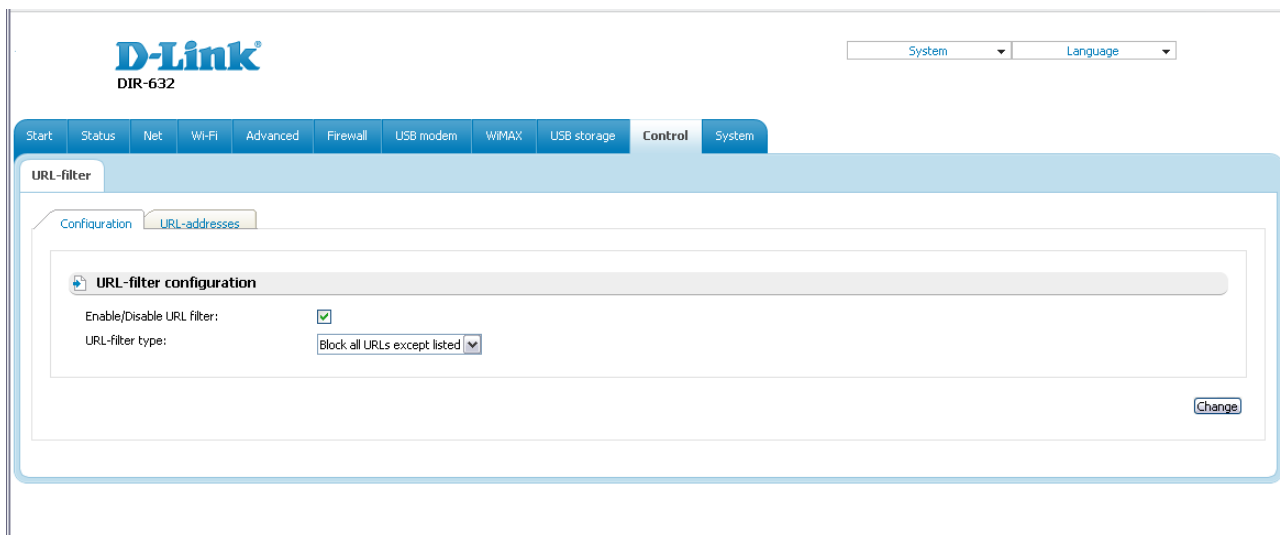


Figure 106. The **Control / URL-filter** page. The **Configuration** tab.

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.

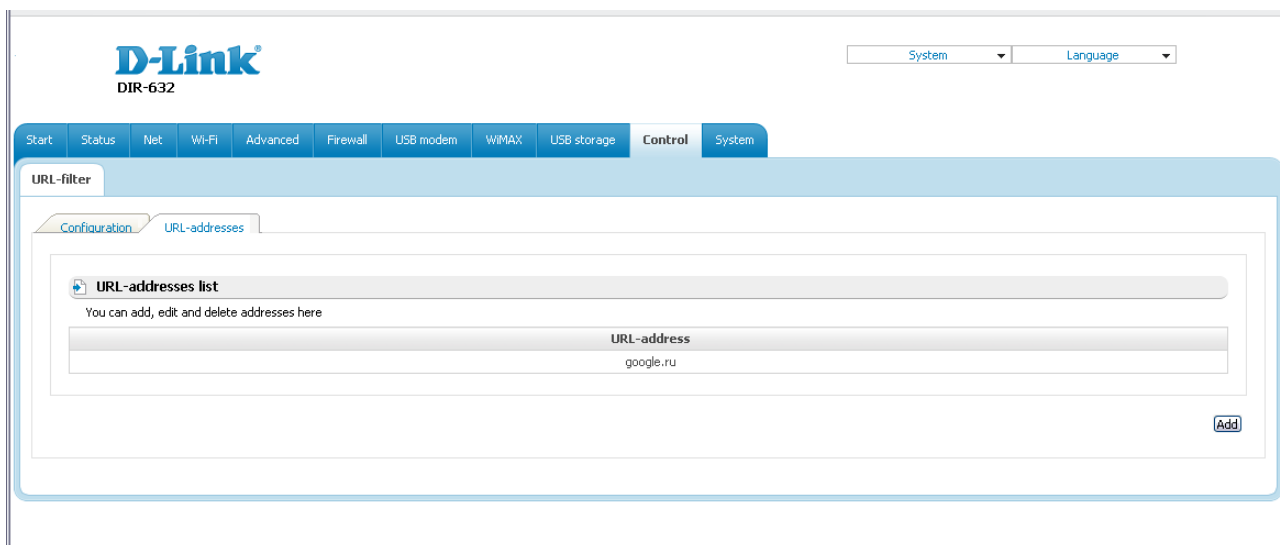


Figure 107. The **Control / URL-filter** page. The **URL-addresses** tab.

On the opened page, specify the needed parameters.

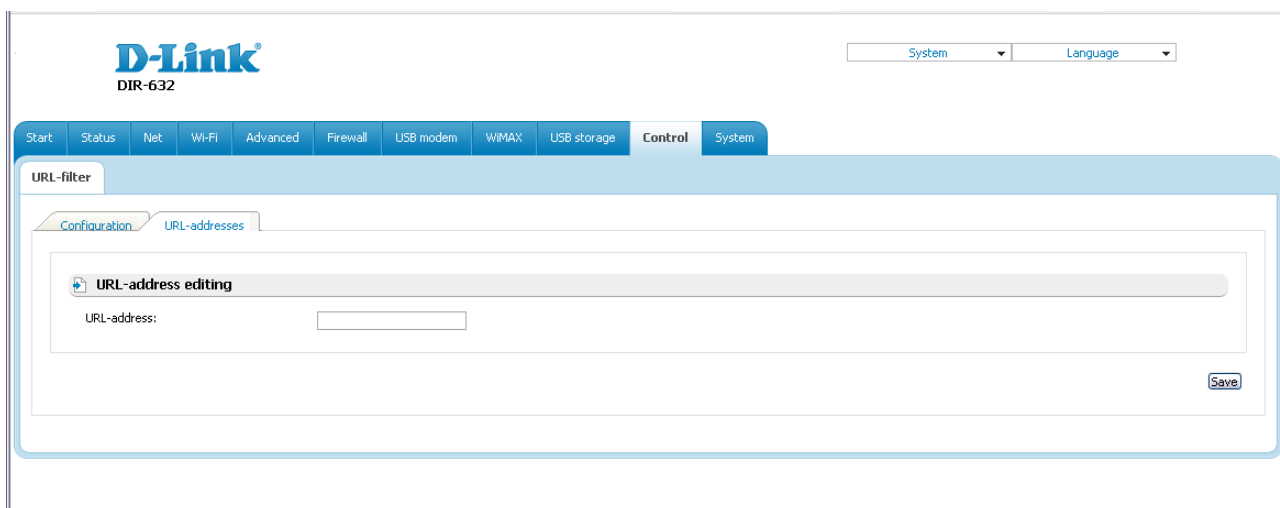


Figure 108. The page for adding an address for the URL filter.

Enter a URL address in the **URL-address** field and click the **Save** button.

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

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

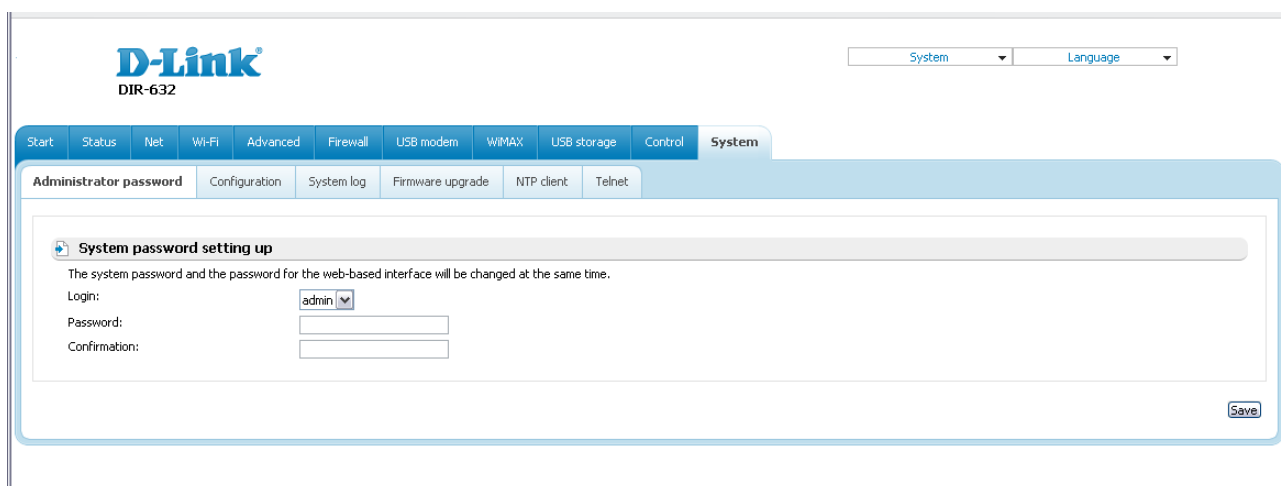
System

In this menu you can save the current settings to the non-volatile memory, create a backup of the router's configuration, restore the router's configuration from a previously saved file, restore the factory default settings, view the system log, configure automatic synchronization of the system time, allow or forbid access to the router via TELNET, update the firmware 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.



The screenshot shows the D-Link DIR-632 web interface. At the top left is the D-Link logo and model number. On the right, there are dropdown menus for 'System' and 'Language'. Below the logo is a navigation bar with tabs: Start, Status, Net, Wi-Fi, Advanced, Firewall, USB modem, WiMAX, USB storage, Control, and System (which is highlighted). Under the 'System' tab, there are sub-tabs: Administrator password (selected), Configuration, System log, Firmware upgrade, NTP client, and Telnet. The main content area is titled 'System password setting up' and contains the following text: 'The system password and the password for the web-based interface will be changed at the same time.' Below this text 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 area.

Figure 109. The page for modifying the administrator password.

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

Configuration

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

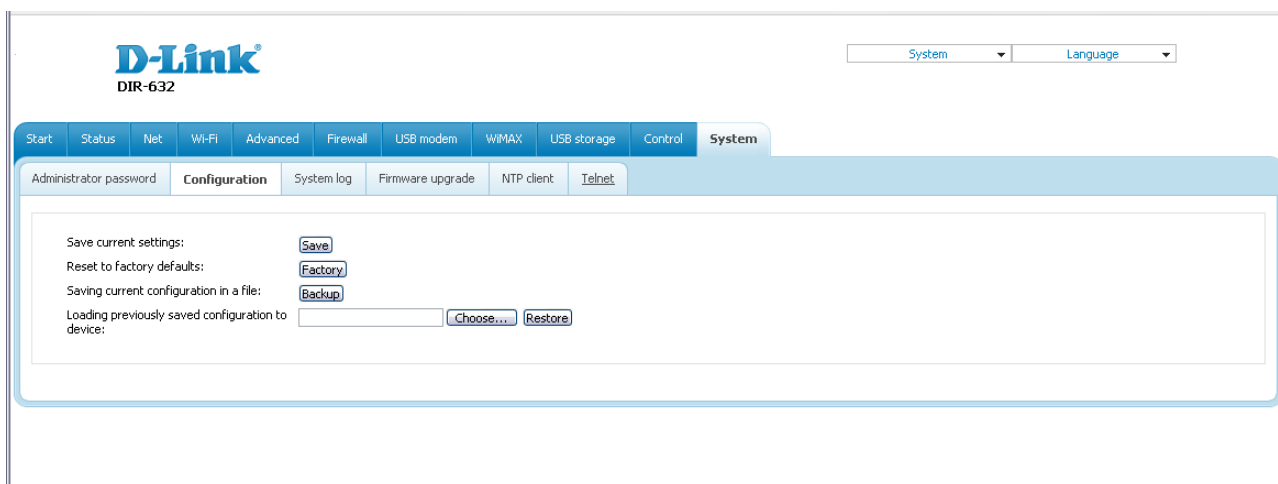


Figure 110. The **System / Configuration** page.

The following buttons are available on the page:

Control	Description
Save	Click the button to save settings to the non-volatile memory. Please, save settings every time you change the router's parameters. Otherwise the changes will be lost upon hardware reboot of the router.
Factory	Click the button to restore the factory default settings. Also you can restore the factory defaults via the hardware Reset button (see the <i>Saving and Restoring Settings</i> section, page 23).
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 ⁶ 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.

⁶ 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.

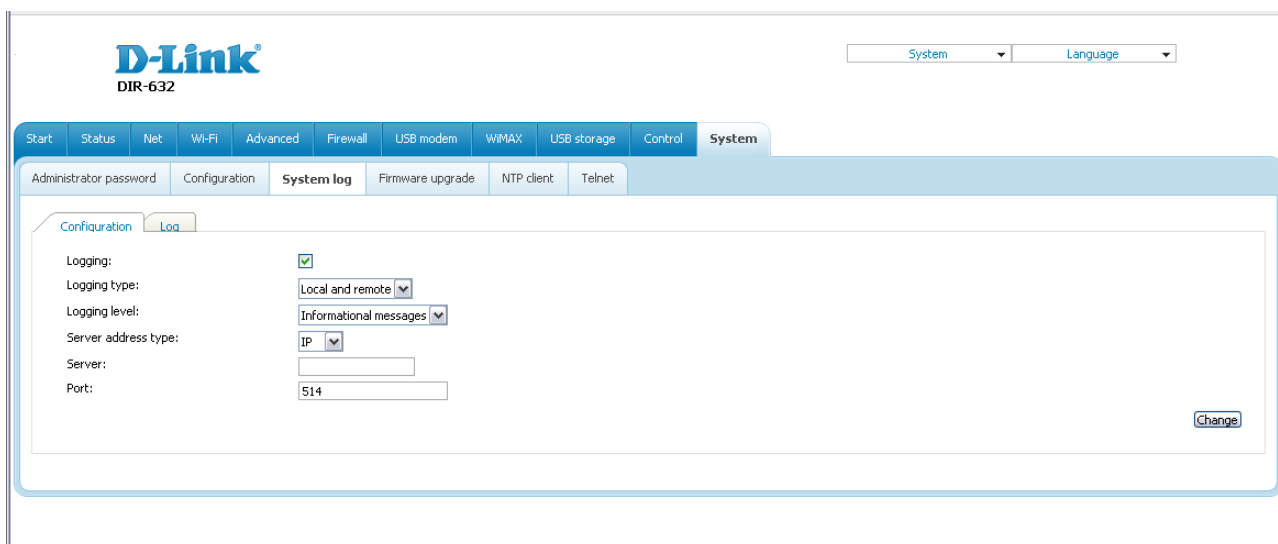


Figure 111. The **System / System log** page. The **Configuration** tab.

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.
Logging level	Select a type of messages and alerts/notifications to be logged.
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.

Control	Description
Port	A port of the host specified in the Server field. By default, the value 514 is specified.

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

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

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

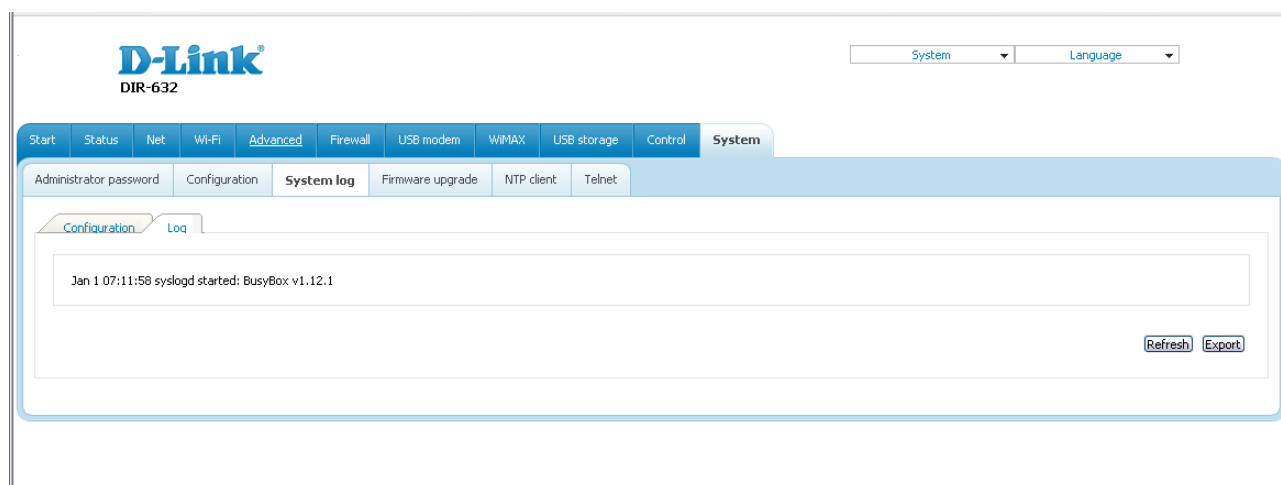


Figure 112. The **System / System log** page. The **Log** tab.

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.

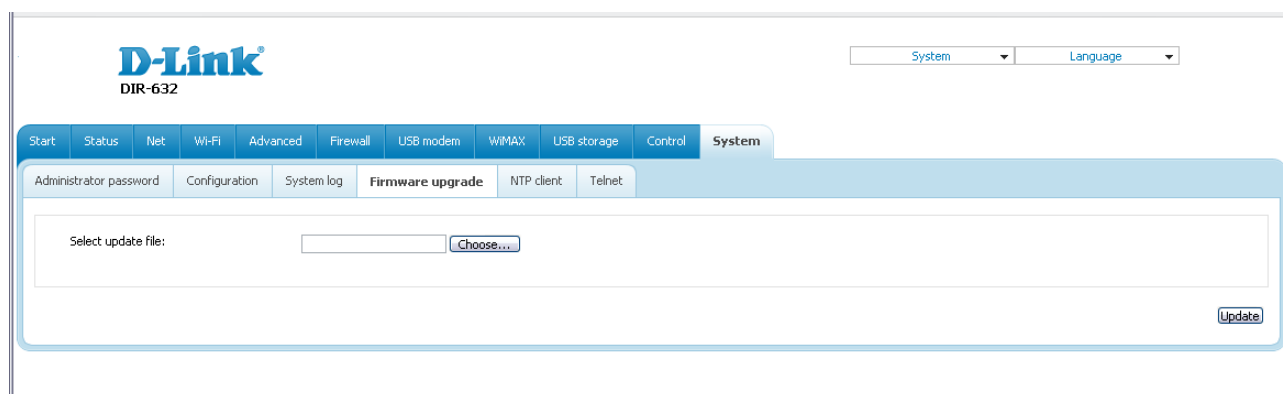


Figure 113. The **System / Firmware upgrade** page.

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**⁷ 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 (**192.168.0.1**, **admin**, **admin**).

⁷ 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.

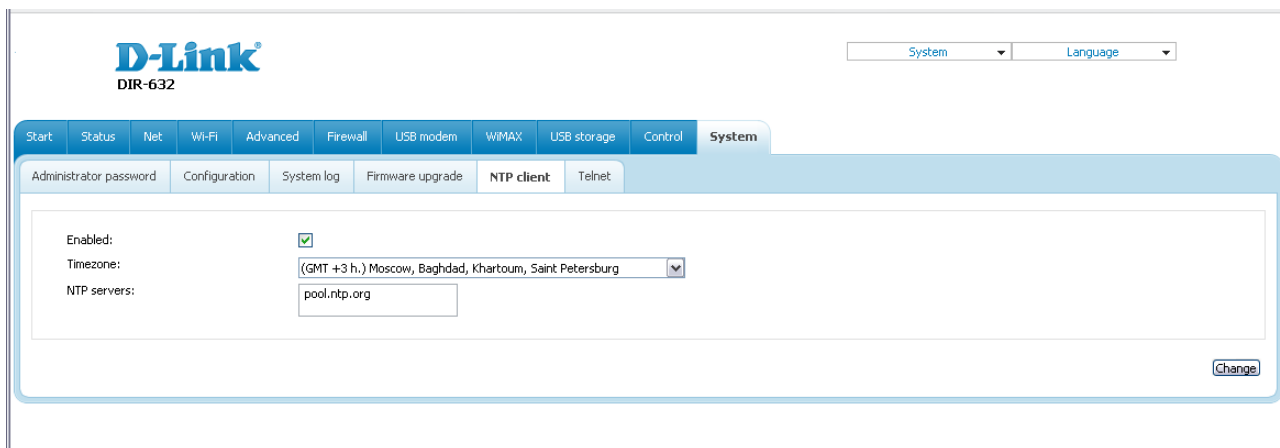


Figure 114. The **System / NTP client** page.

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.

Telnet

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

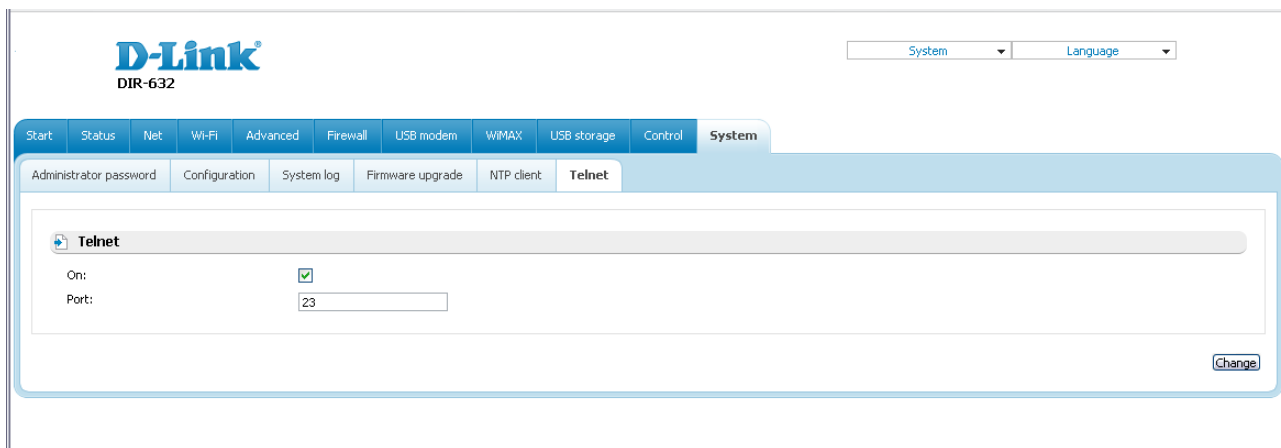


Figure 115. The **System / Telnet** page.

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

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

CHAPTER 5. OPERATION GUIDELINES

Supported USB Modems

GSM modems:

- Huawei E150
- Huawei E1550
- Huawei E160G
- Huawei E169G
- Huawei E173
- Huawei E220
- ZTE MF112
- ZTE MF192
- ZTE MF626
- ZTE MF627
- ZTE MF652.

CDMA modems:

- Anydata ADU-500A
- Celot CT-650.

WiMAX modem:

- Samsung SWC-U200 (firmware version *u200_rev1-2.7.40-C114*).



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

Safety Instructions

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

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

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

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

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

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

Wireless Installation Considerations

The DIR-632 device lets you access your network using a wireless connection from virtually anywhere within the operating range of your wireless network. Keep in mind, however, that the number, thickness and location of walls, ceilings, or other objects that the wireless signals must pass through, may limit the range. Typical ranges vary depending on the types of materials and background RF noise in your home or office. To maximize your wireless range, follow the guidelines below.

1. Keep the number of walls and ceilings between the DIR-632 device and other network devices to a minimum – each wall or ceiling can reduce your wireless network range by 3-90 feet (1-30 meters).
2. Be aware of the direct line between network devices. Place your devices so that the signal travels straight through a wall or ceiling (instead of at an angle) for better reception.
3. Building materials make a difference. A solid metal door or aluminum studs may have a negative effect on your wireless range. Try to position your router, access points, and computers so that the signal passes through drywalls or open doorways. Materials and objects such as glass, steel, metal, walls with insulation, water (fish tanks), mirrors, file cabinets, brick, and concrete will degrade your wireless signal.
4. Keep your router away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that generate RF noise.
5. If you are using 2.4 GHz cordless phones or X-10 equipment (wireless devices such as ceiling fans, lights, and home security systems), your wireless connection may degrade dramatically or drop completely. Make sure your 2.4 GHz phone base is as far away from your wireless devices as possible. Note, that the base transmits a signal even if the phone is not in use.

Connecting to Cable or DSL Modem

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

1. Place the router in an open location in the supposed center of your wireless network. Do not plug the power adapter into the router.
2. Turn off your PC.
3. Unplug the Ethernet cable (that connects your PC to your modem) from your computer and place it into the INTERNET port of your router.
4. Plug another Ethernet cable into one of the four LAN ports on the router. Plug the other end into the Ethernet port of your PC.
5. Turn on your modem. Wait until the modem is booted (about 30 seconds).
6. Plug the power adapter to the router and connect to an electrical outlet or power strip. Wait until the router is booted (about 30 seconds).
7. Turn on your PC.
8. Verify the LEDs of the router. The following LEDs should be on: **Power**, **LAN** (of the relevant Ethernet port), and **Internet**. If not, make sure that your computer, modem, and router are powered on and the relevant cables are connected correctly.

CHAPTER 6. ABBREVIATIONS AND ACRONYMS

3G	Third Generation
AC	Access Category
AES	Advanced Encryption Standard
ARP	Address Resolution Protocol
BSSID	Basic Service Set Identifier
CCK	Complementary Code Keying
CDMA	Code Division Multiple Access
CINR	Carrier to Interference + Noise Ratio
CRC	Cyclic Redundancy Check
DDNS	Dynamic Domain Name System
DDoS	Distributed Denial of Service
DHCP	Dynamic Host Configuration Protocol
DMZ	DeMilitarized Zone
DNS	Domain Name System
DTIM	Delivery Traffic Indication Message
GMT	Greenwich Mean Time
GSM	Global System for Mobile Communications
HTMIX	High Throughput Mixed
IGMP	Internet Group Management Protocol
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IPoE	Internet Protocol over Ethernet
ISP	Internet Service Provider
L2TP	Layer 2 Tunneling Protocol
LAN	Local Area Network

LCP	Link Control Protocol
MAC	Media Access Control
MTU	Maximum Transmission Unit
NAT	Network Address Translation
NTP	Network Time Protocol
OFDM	Orthogonal Frequency Division Multiplexing
PBC	Push Button Configuration
PIN	Personal Identification Number
PPPoE	Point-to-point protocol over Ethernet
PPTP	Point-to-point tunneling protocol
PSK	Pre-shared key
PUK	PIN Unlock Key
QoS	Quality of Service
R-UIM	Removable User Identity Module
RADIUS	Remote Authentication in Dial-In User Service
RIP	Routing Information Protocol
RSSI	Received Signal Strength Indicator
RTS	Request To Send
SIM	Subscriber Identification Module
SSID	Service Set Identifier
TKIP	Temporal Key Integrity Protocol
UDP	User Datagram Protocol
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
USB	Universal Serial Bus
WAN	Wide Area Network
WEP	Wired Equivalent Privacy
Wi-Fi	Wireless Fidelity

WiMAX	Worldwide Interoperability for Microwave Access
WLAN	Wireless Local Area Network
WPA	Wi-Fi Protected Access
WPS	Wi-Fi Protected Setup