D-Link ®

DIR-320NRU

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

BEFORE YOU BEGIN

Delivery Package

- Wireless router DIR-320NRU

- Power adapter DC 5V/2A

- Ethernet cable (CAT 5E)

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

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

If any of the items are missing, please contact your reseller.

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

Default Settings

IP address of wireless router	`192.168.0.1`
Username (login)	`admin`
Password	`admin`
Name of wireless network (SSID)	`DIR-320NRU`

System Requirements and Equipment

- A computer with any operating system that supports a web browser.

- A web browser to access the web-based interface of the router: Windows Internet Explorer, Mozilla Firefox, or Opera.

- A NIC (Ethernet or Wi-Fi adapter) to connect to the router.

- An 802.11b, g, or n Wi-Fi adapter to create a wireless network.

- A USB modem to connect to the Internet[1].

  ○ A WiMAX USB modem to connect to the Internet via a WiMAX network.

  ! 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.

  ○ A 3G USB modem to connect to the Internet via a 3G GSM or CDMA network.

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

  ! For CDMA USB modems, it is required to disable the PIN code check on the identification card prior to connecting the USB modem to the router.

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

Supported USB Modems

GSM modems:

- Huawei E1550
- Huawei E160G
- Huawei E169G
- Huawei E171
- Huawei E173
- Huawei E220
- ZTE MF112
- ZTE MF192
- ZTE MF626
- ZTE MF627
- ZTE MF652
- ZTE MF668
- ZTE MF752.

CDMA modems[2]:

- Airplus MCD-650
- Airplus MCD-800
- AnyDATA ADU-300A
- AnyDATA ADU-310A
- Axesstel MV110
- Ubiquam UM-400
- WeTelecom WM-D200.

WiMAX modem:

- Samsung SWC-U200 (firmware version *u200_rev1-2.7.40-CI14*).

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

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2   Performance of CDMA USB modems is not tested for the current firmware version.

CONNECTING TO PC

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 port[3] 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.

Now you should configure your PC to obtain an IP address automatically (as DHCP client).

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3 It is recommended to use a USB extension cable to connect a USB modem to the router.
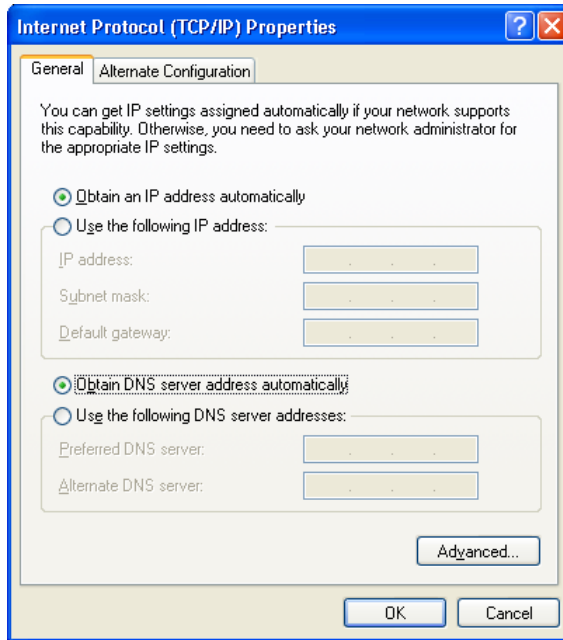
Obtaining IP Address Automatically in OS Windows XP

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

2. In the **Network Connections** window, right-click the relevant **Local Area Connection** icon and select the **Properties** line in the menu displayed.
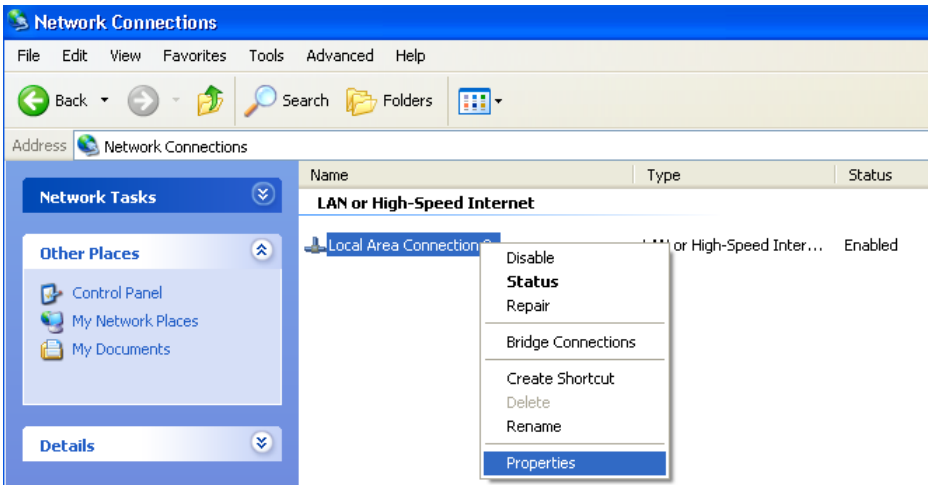
3. In the **Local Area Connection Properties** window, on the **General** tab, select the **Internet Protocol (TCP/IP)** line. Click the **Properties** button.

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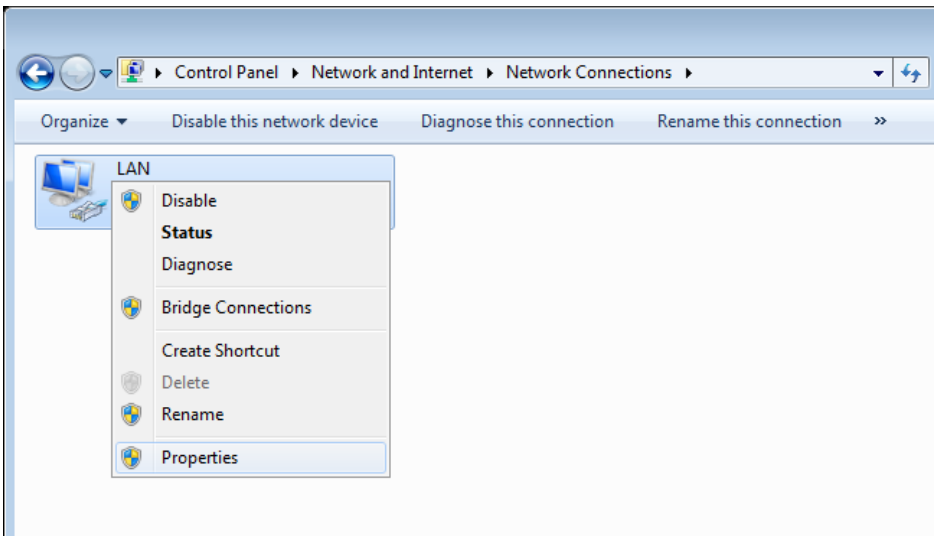

5. Click the **OK** button in the connection properties window.

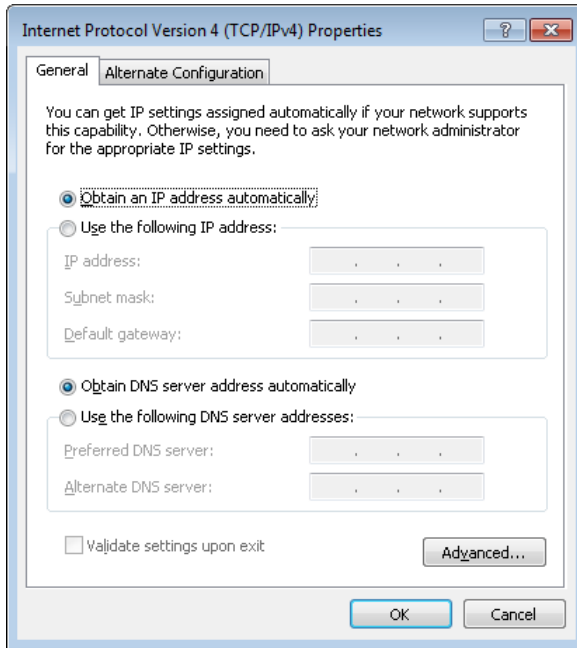Now your computer is configured to obtain an IP address automatically.

Obtaining IP Address Automatically in OS Windows 7

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

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

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

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

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

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

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

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

PC with Wi-Fi Adapter

1. To connect via a WiMAX, 3G GSM or CDMA network: connect your USB modem to the USB port[4] 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.

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.

Now you should configure your Wi-Fi adapter.

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

Configuring Wi-Fi Adapter in OS Windows XP

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

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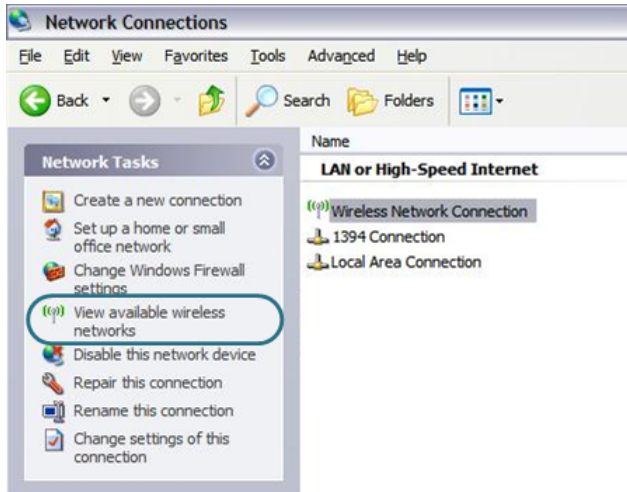
3. Search for available wireless networks.

4. In the opened **Wireless Network Connection** window, select the wireless network **DIR-320NRU** and click the **Connect** button.
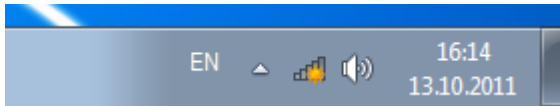
After that the **Wireless Network Connection Status** window appears.
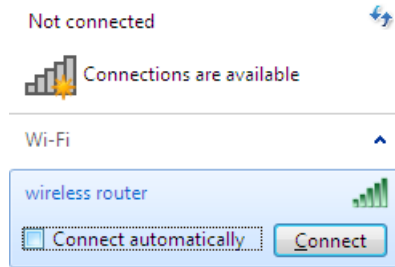
> **!** If you perform initial configuration of the router via Wi-Fi connection, note that immediately after changing the wireless default settings of the router you will need to reconfigure the wireless connection using the newly specified settings.

Configuring Wi-Fi Adapter in OS Windows 7

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

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

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

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

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

6. In the opened window, in the list of available wireless networks, select the wireless network **DIR-320NRU** and click the **Connect** button.

7. Wait for about 20-30 seconds. After the connection is established, the network icon will be displayed as the signal level scale.

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

CONFIGURING ROUTER

Connecting to Web-based Interface

1. Start a web browser.

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.

File   Edit   View   Bookmarks   Widgets   Tools   Help
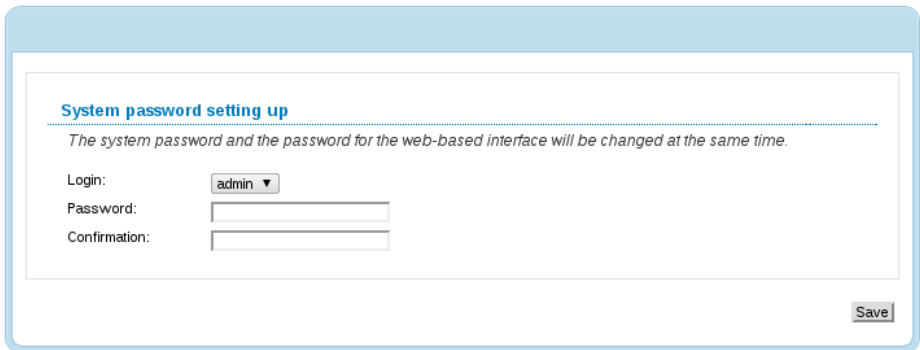
192.168.0.1

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.

D-Link
DIR-320NRU

Language

Login:
admin

Password:
•••••

Enter Clear

! 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.

System password setting up

The system password and the password for the web-based interface will be changed at the same time.

Login: admin ▼

Password:

Confirmation:

Save

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.
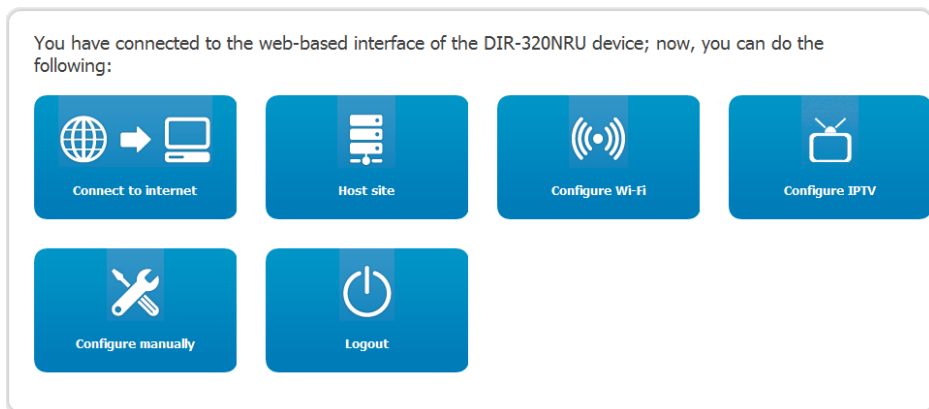
On the page, you can proceed to the Wizards (use the **Connect to internet**, **Host site**, **Configure Wi-Fi**, and **Configure IPTV** buttons) or switch to the standard web-based interface of the router by clicking the **Configure manually** button.

To get back to the quick settings page from any Wizard or web-based interface menu section, left-click the D-Link logo in the top left corner of the page.

After clicking the **Configure manually** button, the system statistics page opens. The page displays general information on the router and its software.

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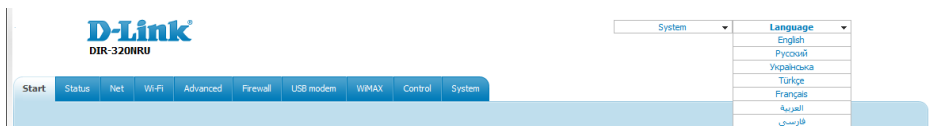
After selecting the language, the notification on unsaved changes will be displayed. Click the **Save** button to save the current language of the web-based interface as the default language.

Configuring Connection to the Internet

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

WiMAX WAN Connection

1. If your operator specified an identifier for the WiMAX network, proceed to the **WiMAX / Information** page, enter the required value in the **SSID** field and click the **Connect** button.

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

3. In the **General settings** section, in the **Provider** drop-down list, leave the **Manually** value.

4. From the **Connection Type** drop-down list, select the needed value.

5. From the **Port** drop-down list, select the **USB-WIMAX** value.

6. Specify a name for your connection (any name for easier identification) in the **Name** field.

7. *For connection of PPPoE type*: in the **PPP** section, enter authorization data provided by your ISP (the username (login) in the **Username** field and the password in the **Password** and **Password confirmation** fields), or select the **Without authorization** checkbox if authorization is not required.

PPP

Username:	
Without authorization:	☐
Password:	
Password confirmation:	

8. *For connection of Static IP type*: in the **IP** section, fill in the **IP Address**, **Netmask**, **Gateway IP address**, and **Primary DNS server** fields.

IP

IP Address:	
Netmask:	
Gateway IP address:	
Primary DNS server:	
Secondary DNS server:	

9. *For connection of Dynamic IP type*: if your ISP has provided the address of the DNS server, in the **IP** section, deselect the **Obtain DNS server addresses automatically** checkbox and fill in the **Primary DNS server** field.

IP

Obtain DNS server addresses automatically:	☐
Primary DNS server:	
Secondary DNS server:	
Vendor ID:	

10. ***For connection of PPTP + Static IP or L2TP + Static IP type***: in the **IP** section, fill in the **IP Address**, **Netmask**, **Gateway IP address**, and **Primary DNS server** fields. Then in the **VPN** section, enter authorization data provided by your ISP (the username (login) in the **Username** field and the password in the **Password** and **Password confirmation** fields), or select the **Without authorization** checkbox if authorization is not required. In the **VPN server address** field, enter the IP or URL address of the PPTP or L2TP authentication server. If your ISP applies encryption, select a needed value from the **Encryption** drop-down list.

IP

IP Address:	
Netmask:	
Gateway IP address:	
Primary DNS server:	
Secondary DNS server:	

VPN

Connect automatically:	☑
Username:	
Without authorization:	☐
Password:	
Password confirmation:	
VPN server address:	
Encryption:	No encrypt ▾

11. ***For connection of PPTP + Dynamic IP or L2TP + Dynamic IP type***: if
your ISP has provided the address of the DNS server, in the **IP** section,
deselect the **Obtain DNS server addresses automatically**
checkbox and fill in the **Primary DNS server** field. Then in the **VPN**
section, enter authorization data provided by your ISP (the username
(login) in the **Username** field and the password in the **Password** and
Password confirmation fields), or select the **Without authorization**
checkbox if authorization is not required. In the **VPN server address**
field, enter the IP or URL address of the PPTP or L2TP authentication
server. If your ISP applies encryption, select a needed value from the
Encryption drop-down list.

IP

Obtain DNS server addresses automatically:	☐
Primary DNS server:	
Secondary DNS server:	
Vendor ID:	

VPN

Connect automatically:	☑
Username:	
Without authorization:	☐
Password:	
Password confirmation:	
VPN server address:	
Encryption:	No encrypt ▼

12. Click the **Save** button.

13. On the **Net / WAN** page, select the choice of the **Default gateway** radio
button corresponding to the new WiMAX WAN connection.

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[5].

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

2. In the **General settings** section, from the **Provider** drop-down list, select your country and operator to automatically specify all settings required to connect to the Internet. To specify all settings independently, leave the **Manually** value.

3. From the **Connection Type** drop-down list, select the **3G** value.

4. Make sure that the **USB** value is selected from the **Port** drop-down list.

5. Specify a name for your connection (any name for easier identification) in the **Name** field.

General settings

Provider:	Manually ▼
Connection Type:	3G ▼
Port:	USB ▼
Name:	
Enable:	✓
Direction:	*WAN*

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5 For GSM USB modems only. For CDMA USB modems, it is required to disable the PIN code check on the identification card prior to connecting the USB modem to the router.

6. If you need to specify other settings, in the **PPP** section, enter authorization data provided by your operator (the username (login) in the **Username** field and the password in the **Password** and **Password confirmation** fields), or select the **Without authorization** checkbox if authorization is not required. In the **APN** field, enter the access point name (for GSM USB modems only), and in the **Dial number** field, enter the number dialed to connect to the authorization server of the operator.

PPP

Username:	
Without authorization:	☐
Password:	
Password confirmation:	
APN:	
Dial number:	

7. Click the **Save** button.

8. On the **Net / WAN** page, select the choice of the **Default gateway** radio button corresponding to the new 3G WAN connection.

Wired WAN Connection

1. Go to the **Net / WAN** page, select the **WAN** connection and click the **Delete** button.

2. Click the **Add** button.

3. In the **General settings** section, in the **Provider** drop-down list, leave the **Manually** value.

4. From the **Connection Type** drop-down list, select the needed value.

5. From the **Port** drop-down list, select the **Ports:5** value.

6. Specify a name for your connection (any name for easier identification) in the **Name** field.

7. If your ISP uses MAC address binding, in the **Ethernet** section, in the **MAC** field, enter the MAC address registered by your ISP upon concluding the agreement. To set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface, click the **Clone MAC** button. To set the address of 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.

Ethernet

MTU:	1500
MAC:	5C:D9:98:63:F5:11 <Select address> ▼
	Clone MAC

8. *For connection of PPPoE type*: in the **PPP** section, enter authorization data provided by your ISP (the username (login) in the **Username** field and the password in the **Password** and **Password confirmation** fields), or select the **Without authorization** checkbox if authorization is not required.

PPP

Username:	
Without authorization:	☐
Password:	
Password confirmation:	

9. *For connection of Static IP type*: in the **IP** section, fill in the **IP Address**, **Netmask**, **Gateway IP address**, and **Primary DNS server** fields.

IP

IP Address:	
Netmask:	
Gateway IP address:	
Primary DNS server:	
Secondary DNS server:	

10. *For connection of Dynamic IP type*: if your ISP has provided the address of the DNS server, in the **IP** section, deselect the **Obtain DNS server addresses automatically** checkbox and fill in the **Primary DNS server** field.

IP

Obtain DNS server addresses automatically:	☐
Primary DNS server:	
Secondary DNS server:	
Vendor ID:	

11. ***For connection of PPTP + Static IP or L2TP + Static IP type***: in the **IP** section, fill in the **IP Address**, **Netmask**, **Gateway IP address**, and **Primary DNS server** fields. Then in the **VPN** section, enter authorization data provided by your ISP (the username (login) in the **Username** field and the password in the **Password** and **Password confirmation** fields), or select the **Without authorization** checkbox if authorization is not required. In the **VPN server address** field, enter the IP or URL address of the PPTP or L2TP authentication server. If your ISP applies encryption, select a needed value from the **Encryption** drop-down list.

IP

IP Address:

Netmask:

Gateway IP address:

Primary DNS server:

Secondary DNS server:

VPN

Connect automatically: ☑

Username:

Without authorization: ☐

Password:

Password confirmation:

VPN server address:

Encryption: No encrypt   ▾

12. *For connection of PPTP + Dynamic IP or L2TP + Dynamic IP type*: if your ISP has provided the address of the DNS server, in the **IP** section, deselect the **Obtain DNS server addresses automatically** checkbox and fill in the **Primary DNS server** field. Then in the **VPN** section, enter authorization data provided by your ISP (the username (login) in the **Username** field and the password in the **Password** and **Password confirmation** fields), or select the **Without authorization** checkbox if authorization is not required. In the **VPN server address** field, enter the IP or URL address of the PPTP or L2TP authentication server. If your ISP applies encryption, select a needed value from the **Encryption** drop-down list.

IP

Obtain DNS server addresses automatically:	☐
Primary DNS server:	
Secondary DNS server:	
Vendor ID:	

VPN

Connect automatically:	☑
Username:	
Without authorization:	☐
Password:	
Password confirmation:	
VPN server address:	
Encryption:	No encrypt ▾

13. Click the **Save** button.

Example of Connection via VLANs

If your ISP provides:

- access to the Internet via the VLAN with the tag (VLAN ID) **2**, the **PPPoE** connection type, the login **user**, and the password **user_password**,

- access to IPTV service via the VLAN with the tag (VLAN ID) **10**,

- access to IP telephony via the VLAN with the tag (VLAN ID) **20**,

and your set-top box is connected to the LAN port 3, your VoIP phone is connected to the LAN port 4 of the router, then follow the next steps to configure the router.

1. Go to the **Net / WAN** page, select the **WAN** connection and click the **Delete** button on the opened page.

2. Go to the **Advanced / VLAN** page.

3. Select the **lan** group.

4. Select the line **port3** in the table at the bottom of the page and click the **Delete port** button.

5. Select the line **port4** and click the **Delete port** button.

6. Click the **Save changes** button.

7. Select the **wan** group.

8. In the **Name** filed, enter a name for the group (`INTERNET`).

9. From the **Type** drop-down list, select the **NAT** value.

10. From the **Port** drop-down list, select the value **port5** (corresponds to the INTERNET port of the router).

11. From the **Tag** drop-down list, select the **tagged** value.

12. In the **VLAN ID** field, enter `2`.

13. Click the **Save changes** button.

You have created the group of ports for connection to the Internet.

14. Click the **Add** button.

15. In the **Name** field, enter a name for the new group (`IPTV`).

16. From the **Type** drop-down list, select the **Transparent** value.

17. From the **Port** drop-down list, select the value **port3**.

18. From the **Tag** drop-down list, select the **untagged** value.

19. From the **Port** drop-down list, select the value **port5.**

20. From the **Tag** drop-down list, select the **tagged** value.

21. In the **VLAN ID** field, enter `10`.

22. Click the **Save changes** button.

You have created the group of ports for IPTV service.

23. Click the **Add** button.

24. In the **Name** field, enter a name for the new group (`VOIP`).

25. From the **Type** drop-down list, select the **Transparent** value.

26. From the **Port** drop-down list, select the value **port4**.

27. From the **Tag** drop-down list, select the **untagged** value.

28. From the **Port** drop-down list, select the value **port5.**

29. From the **Tag** drop-down list, select the **tagged** value.

30. In the **VLAN ID** field, enter `20`.

31. Click the **Save changes** button.

You have created the group of ports for access to IP telephony.

VLAN settings

Creating and editing VLANs

Name	Type	Ports	VLAN ID	Enable
lan	Local	port1 (U) port2 (U) wifi1 (U)		Yes
INTERNET	NAT	port5 (T)	2	Yes
IPTV	Transparent	port5 (T) port3 (U)	10	Yes
VOIP	Transparent	port5 (T) port4 (U)	20	Yes

32. Click the **Save&Reboot** line in the top-page menu displayed when the mouse pointer is over the **System** caption.

33. Log into the web-based interface and go to the **Net / WAN** tab.

34. Click the **Add** button.

35. On the opened page, select the **PPPoE** value from the **Connection Type** drop-down list.

36. From the **Port** drop-down list, select the value **Ports:5.2**.

37. In the **Username** filed, enter `user`.

38. Deselect the **Without authorization** checkbox.

39. In the **Password** and **Password confirmation** fields, enter `user_password`.

40. Click the **Save** button.

Configuring Local Area Network

1. Go to the **Net / LAN** page. If needed, change the IP address of the router's LAN interface and the mask of the local subnet in the **IP Address** and **Netmask** fields. Then click the **Save** button.

IP Address: 192.168.0.1
Netmask: 255.255.255.0

2. By default, the DHCP server of the router is enabled. In the **DHCP server** section, you can change the parameters of the DHCP server. If you want to manually assign IP addresses to devices of your LAN, disable the DHCP server (select the **Disable** value from the **Mode** drop-down list).

DHCP server

Mode: Enable
Start IP: 192.168.0.2
End IP: 192.168.0.254
Lease time (min):   86400

3. After specifying the DHCP server settings, click the **Save** button.

Configuring Wireless Network

By default, the wireless network of the router is open (it requires no password to access it). To avoid unauthorized access to your wireless local area network, change the default settings of the router.

Example of Wireless Settings

1. Go to the **Wi-Fi / Security settings** page.

2. Select the **WPA2-PSK** value from the **Network Authentication** drop-down list.

3. Enter a key (a password that will be used to access your wireless network) in the **Encryption Key PSK** field. Use digits and Latin characters.

4. Select the **AES** value from the **WPA Encryption** drop-down list.

5. Click the **Change** button.

> **!** 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.

Saving Settings to Non-volatile Memory

In order to avoid losing the new settings upon hardware reboot (accidental or intentional power-off of the device), it is recommended to save the settings to the non-volatile memory of the router.

Click the **Save&Reboot** line in the top-page menu displayed when the mouse pointer is over the **System** caption.

Wait until the router is rebooted. Now you can use it to access the Internet or access the web-based interface of the router to configure additional parameters (for detailed description of every page of the web-based interface, see the "*User Manual*" document).

TECHNICAL SUPPORT

You can find software updates and user documentation on our website.

D-Link provides its customers with free support within the product's warranty period.

Customers can contact the technical support group by phone or by e-mail/Internet.

FOR TELEPHONE NUMBERS AND ADDRESSES OF D-LINK OFFICES WORLDWIDE VISIT

http://www.dlink.com/corporate/worldwideoffices/