

## Installation User Manual

[www.beward.eu](http://www.beward.eu)

### IP CAMERA N6603



**IR LEDs built in**  
IP66 rated housing  
Recording to network attached storage

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## Chapter 1. Safety Warnings

### Before using this product

This camera complies with all safety rules. However, improper use of this camera may cause fire resulting in body injury and property damage as well. Before you start to use this camera, please read and thoroughly understand the instructions in this user manual.

#### **IMPORTANT!**

Use only accessories recommended by the manufacturer. The use of improper accessories may cause hazards.

### Follow the operating instructions

Do not use and store this camera in dangerous environments:

- Do not expose to extremely low or high temperatures (camera's operating temperature is -65 to +50°C)
- Do not expose to direct sunlight and do not install near any heat resources
- Do not install near water sources
- Avoid electromagnetic interference
- Do not expose to vibration

#### **IMPORTANT!**

If you experience problems with this camera, please contact your local dealer for assistance.

### In case if:

- You notice a strange smell or smoke
- Any liquid has been spilled or objects have fallen into this camera
- This camera has been dropped or damaged

### Do the following:

- Unplug the power cord and disconnect all cords from the camera
- Contact our Service Center. You can find contact information on our website: <http://www.beward.eu/>.

### Transportation

If you need to transport this camera, carefully repack it using the original box and attach protective materials.

**Ventilation**

Keep good ventilation in the area where the camera is installed to prevent its overheating.

**Cleaning**

To clean external components, use a soft, dry cloth. To remove persistent dirt, use some detergent and a soft cloth.

Do not use volatile cleaners, alcohol, benzene or other harsh solvents.

## Chapter 2. Overview

BEWARD N6603 is designed for both indoor and outdoor usage. The camera's housing surely protects it against harsh weather conditions and is IP66 rated, so that the camera can be used in any environmental conditions.

The N6603 features a progressive scan CMOS sensor and a mechanical IR cut filter, which ensures clear pictures under low-light conditions. Besides, the camera has built-in IR LEDs, which provide twenty-four-hour surveillance.



Pic. 2.1

### 2.1. Features

- IP66 rated housing
- Motorized IR cut filter
- 15 meter IR distance
- Optimal solution concerning price/quality
- Recording to network attached storage (NAS)
- Professional surveillance software included (16 channels)
- Simultaneous streaming: MPEG-4/MJPEG
- Two-way audio, support for connecting an external microphone

- Viewing camera images on a mobile phone (including iPhone)
- Built-in multi-zone motion detection
- Sending of images and video via e-mail and to FTP
- PoE IEEE 802.3af Class 0 support

## 2.2. Specifications

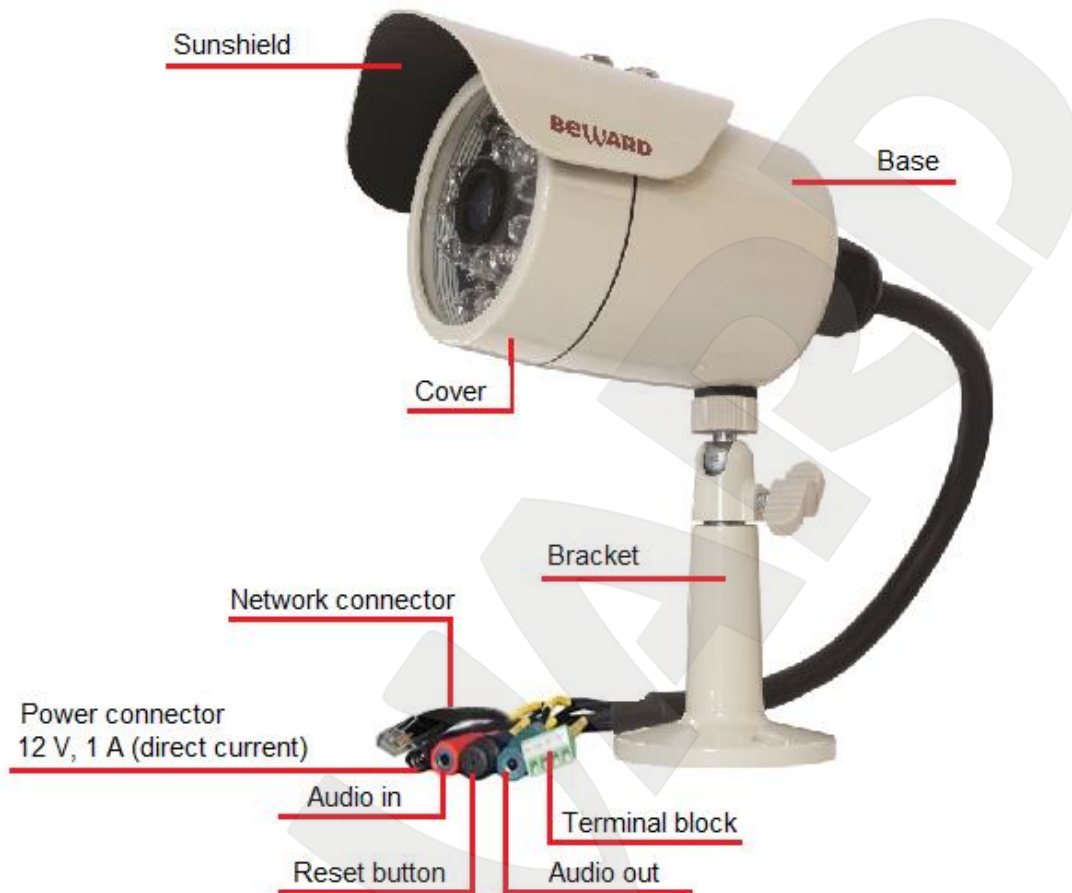
- Compact size (80 x Ø102 mm (with sunshield: 116/145 mm), weight is 635 g)
- Sensor: 1/4" progressive scan CMOS
- Built-in lens: M12, f4.0 mm, F1.5 (angle of view: 65° diagonal, 53° horizontal, 40° vertical)
- Motorized IR cut filter
- Sensitivity: 0.5 lux @ F2.0 (0 lux if IR LED is on)
- Shutter time: 1/7.5 ~ 1/120 sec
- Illumination: IR LED (850 nm), 21 pcs, 8 mm diameter, up to 10-15 meters
- S/N ratio: 50 dB
- Resolution: 640x480, 320x240, 160x120
- Simultaneous streaming: Motion JPEG, MPEG-4 part 2 (ISO/IEC 14496-2) Profile: SP, 3GPP
- Frame rate: MPEG-4: up to 30 frames per second at all resolutions; Motion JPEG: up to 15 frames per second at all resolutions; 3GPP: up to 10 frames per second at 320x240, 160x120
- Digital zoom: 10x
- Two-way audio, 3.5 mm jack, output for connection of an external microphone and speakers
- Built-in multi-zone motion detection, sensitivity and threshold control
- Up to 5 simultaneous connections
- Continuous, scheduled and motion detection triggered sending of images and video via e-mail and to FTP
- Power: 12 V DC, 1 A (DC), 12 W maximum, PoE IEEE 802.3af Class 0
- Operating temperature: -65 to +50°C
- Supported protocols: Bonjour, TCP/IP, DHCP, PPPoE, ARP, ICMP, FTP, SMTP, NTP, UPnP, RTSP, RTP, HTTP, TCP, UDP, 3GPP/ISMA RTSP
- Support for ONVIF v1.02

### **2.3. Package Contents**

- IP camera N6603 (lens M12, 4.0 mm, F1.5 pre-installed)
- Sunshield
- RJ-45 adapter
- Quick installation guide
- CD with user manuals and software
- Bracket
- Power supply 12 V 1 A DC

## Chapter 3. Physical Description

### 3.1. Side Panel



Pic. 3.1

Camera's housing consists of a base and a cover.

**Base:** this part of housing contains hardware components of the camera. The sunshield and the bracket are attached to the base.

**Cover:** this part of housing protects the camera lens and IR LEDs against physical and environment influence. The cover is screwed onto the base using a threaded connection.

#### NOTE:

The transparent part of the cover is a part of the camera's optical system. To prevent scratching, please do not touch the transparent part.

#### IMPORTANT!

The cover is screwed onto the base by the manufacturer under special conditions that provide for housing tightness. If unscrewing the cover, you should take notice of the tightness and humidity. The camera must be assembled in a dry atmosphere in humidity conditions that are lower than 20 – 30%. Otherwise it may cause condensation on the camera front cover glass.



**Sunshield:** protects the camera lens against direct sunlight.

**Bracket:** allows mounting the camera on a surface (e.g. a ceiling, a wall, etc).

**Connecting cable:** one end of this cable is plugged into the camera, the other end of this cable contains the following connectors:

**IMPORTANT!**

Unscrewing of the connecting cable from the base is PROHIBITED! Non-compliance with this requirement will void your warranty.

**Network connector:** use this port to connect to an Ethernet LAN using an RJ45 connection (for user's convenience, an RJ-45 adapter is included with the N6603). Besides, this camera can be supplied with power over a twisted pair cable (PoE technology) with the use of special equipment (such as a PoE injector).

**Power connector:** connects the camera to 12 V DC 1 A power.

**IMPORTANT!**

Simultaneous power supply over PoE and power connector is prohibited!

**Audio in:** a line in for an external microphone.

**Reset button:** when the camera is on, press this button to reboot the camera. Press and hold this button for at least 10 seconds to reset the camera to factory settings. If a user holds this button during less than 10 seconds, the camera will reboot without reset to factory settings.


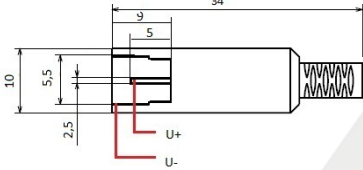

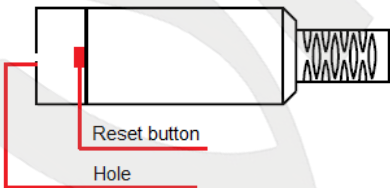
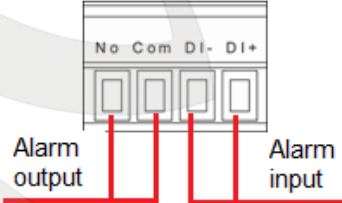
**NOTE:**

The reset button is covered with a special cap with a hole to protect the button against accidental use. Slightly push it for activation.

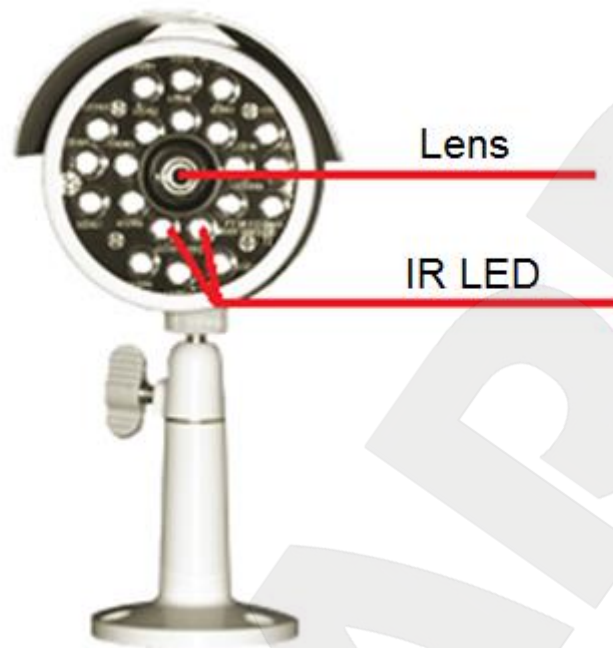
**Audio out:** a line out for external speakers (e.g. earphones or speakers with a built-in amplifier).

**Terminal block:** an alarm input and output.

The table below provides a description and specifications of the connectors.

Connector	Picture	Description
Network connector		<p>RJ-45 connector. RJ-45 adapter is included.</p>
Power connector		<p>Power connector (socket). Provides for the connection of a 12 V 1 A power adapter.</p>
Audio in / Audio out	<p>Soldering of the connector for audio in/audio out</p> 	<p>TRS connector (socket) 3.5 mm mini jack. 1 – left channel 2 – right channel 3 – general purpose</p>
Reset button		<p>Slightly push this button to reset the camera to factory defaults or to reboot it. Never use sharp objects to press it.</p>
Terminal block		<p><b>No:</b> output contact (external alarm device) <b>Com:</b> output contact – 12 V <b>DI-:</b> input contact – GND <b>DI+:</b> input contact – 12 V For information about how to connect the terminal block, refer to <a href="#">paragraph 4.5</a>.</p>

### 3.2. Front Panel



Pic. 3.2

**Lens:** built-in lens: M12, f4.0 mm, F1.5 (angle of view: 65° diagonal, 53° horizontal, 40° vertical).

**IR LED:** 850 nm, 21 pcs, 8 mm diameter. 15 meter IR distance. Besides, IR illumination is invisible to the human eye.

**NOTE:**

The LEDs are red when the IR illumination is on.

## Chapter 4. Installing the Camera and Connecting a Cable

### 4.1. Overview of Connecting the N6603 to a Network

BEWARD N6603 IP camera can be powered over a twisted pair cable thanks to support for PoE technology. Therefore, it provides two ways to deliver power to the camera:

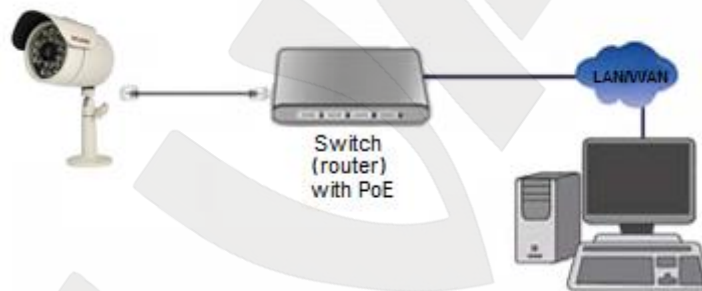
- Over a twisted pair cable using PoE technology.
- Through the camera's power cord socket using the supplied power adapter.

#### IMPORTANT!

Simultaneous power supply over PoE and the camera's power cord socket is prohibited!

#### 4.1.1. Connecting the Camera Using PoE Technology

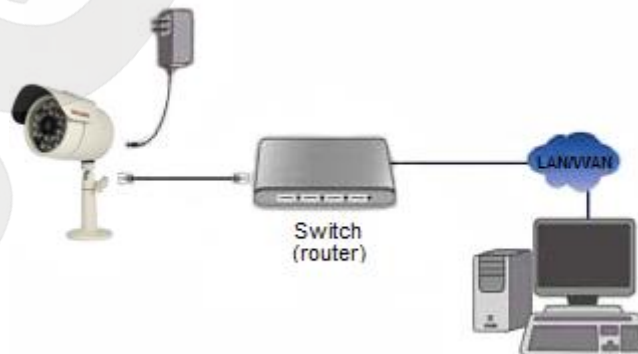
This camera can be connected to a network using a PoE injector. The *Picture 4.1* shows a switch with PoE support. Such a switch may have standard data outputs as well as several PoE outputs, which can be used both for data transfer and power supply.



*Pic. 4.1*

#### 4.1.2. Connecting the Camera via Power Connector

Connect the N6603 to an Ethernet network. Power is delivered through the power supply that is included with this camera or similar, compatible with it.



*Pic. 4.2*

**IMPORTANT!**

Use only the power supply that is included with the N6603 camera or a compatible power supply that meets the following requirements: DC voltage of 12 V, current strength of 1 A.

**4.2. Installation Recommendations**

This section provides recommendations that should be observed when mounting and installing the N6603.

**Tips on camera placement:**

- This camera is designed for both indoor and outdoor surveillance. The operating temperature is down to -65 and up to +50°C.
- It is recommended to put the connectors inside a junction box (not supplied) to protect them against environmental hazards.
- Do not expose this camera to direct sunlight for a long period of time. Do not install it near any heat resources.
- Incorrect installation may cause undesirable “blind spots” that are not visible to the security operator.
- Do not install this camera near water sources.
- Avoid electromagnetic interference.
- When installing the camera, take notice of possibility of laying connecting cables.
- Avoid unstable installation, which may cause vibration. This, in turn, may reduce motion detection performance and image crispness.
- Surveillance cameras should be installed so that they are inaccessible to unauthorized persons and protected enough against damage and changing of viewing direction.
- When installing the camera, you should clearly determine the viewing direction.

**Tips on twisted pair cable installation:**

- In corridors, electric and feeble-current cables should be installed in different conduits that are disposed on different walls.
- Twisted pair and electric cables can be installed in the same conduit using different sections of the cable that have solid longitudinal partitions with at least 0.25 h of fire resistance, which are made of non-combustible material and should be positioned in work areas at distance of 15 meters maximum if the electrical power does not exceed 5 kW.
- Electric and feeble-current cables should be placed in parallel to each other at distance of at least 50 mm in different conduits or different sections of conduit. If the electric field

strength from the electric cables exceeds 3 V/m, you should increase the distance between the electric and feeble-current cables or reduce the electromagnetic noise.

- Twisted pair and electric cables should cross each other at right angles.
- Unshielded twisted pair cables should be located at distance of at least 125 mm from fluorescent gas-discharge lamps or from other high-voltage discharge devices.
- Unshielded twisted pair cables should be located at distance of at least 1.5 meters from electromagnetic interference sources that produce electric field strength exceeding 3 V/m.
- Switchboards with pinned unshielded twisted pair cables should be located at distance of at least 3 meters from electromagnetic interference sources that produce electric field strength exceeding 3 V/m.
- Entire twisted pair cables should be arranged between the points of connection so the cable run is as short as possible.
- Minimum cable bending radius is four times the cable diameter (or 1 inch=2.5 cm) or it is also acceptable to install the cable so the cable bending radius is 2 inches (5 cm).
- Maximum length of the entire segment is 100 meters.

### 4.3. Installing the Camera

#### 4.3.1. Attaching the Sunshield

If necessary, you can attach the sunshield to the camera. It is fastened with two screws, which are included with this camera.

**Step 1:** fasten the sunshield with two screws. To prevent damaging of the sunshield, insert the supplied plastic washers between the sunshield and the screw head. Adjust the sunshield so it can easily slide in forward and backward direction.

**Step 2:** slide the sunshield to the desired position (*Pic. 4.3*).



*Pic. 4.3*

**Step 3:** secure the sunshield with the screws.

#### 4.3.2. Mounting the Camera

The bracket is attached to the surface using 3 self-tapping screws (25x6) (*Pic. 4.4*).

**Step 1:** mark the location of the holes that you are going to drill to attach the bracket.

**Step 2:** drill three holes of 25 mm depth into the surface if you use the supplied screws.

**Step 3:** attach the bracket to the surface using the three self-tapping screws.



*Pic. 4.4*

The bracket is attached to the camera by twisting it (using the screw connection in the top part of the bracket) in the special holes located in the top and bottom parts of the base. Tilt the camera to the desired position using the two adjustment handles (*Pic. 4.5*).



*Pic. 4.5*

**NOTE:**

The bracket screw holes are compatible with the sunshield attachment holes. Therefore, you can use the sunshield attachment holes to attach the bracket as well.

**Step 4:** put the connectors inside a junction box. The junction box must be protected enough to prevent water getting inside it.

**IMPORTANT!**

A junction box is not supplied with the N6603 and you need to purchase it separately. Recommended dimensions are 100x100x50.

**4.4. Wired Connection to a Network**

**Step 1:** provide power to the camera using either of the following ways (see [paragraph 4.1](#)):

- Over a twisted pair cable using PoE technology.
- Through the camera’s power cord socket using the supplied power adapter.

**IMPORTANT!**

Simultaneous power supply over PoE and the power connector is prohibited!

**IMPORTANT!**

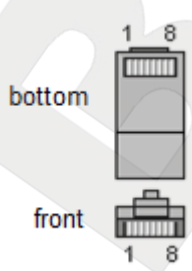
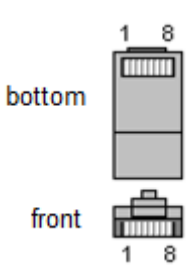
Use only the power supply that is included with the N6603 camera or a compatible power supply that meets the following requirements: DC voltage of 12 V, current strength of 1 A.

**Step 2:** use an RJ45 network cable to connect the camera to a network.

If needed, you can purchase a network cable separately or if you have the materials, tools and skills, you can make a network cable.

**A straight RJ-45 cable (UTP category 5)**

The table below shows an example of a patch cord to connect the camera to a computer or a network switch.

One end		Other end	
	1: White and orange		1: White and orange
	2: Orange		2: Orange
	3: White and green		3: White and green
	4: Blue		4: Blue
	5: White and blue		5: White and blue
	6: Green		6: Green
	7: White and brown		7: White and brown
	8: Brown		8: Brown



To make a network cable, you need the following materials: a UTP category 5 cable, two RJ-45 connectors and an RJ-45 crimping tool.

Assembling the pairs of wires in the correct order (see the table above) ensures data transfer speed of 100 Mbps.

#### 4.5. Connecting the Alarm Contacts

BEWARD N6603 IP camera has an alarm input and an alarm output, which can be used to connect an external alarm device or a sensor.

- **Alarm input:** use it to connect external sensors. An alarm is generated when the input voltage reaches a certain value (specified in the camera parameters).
- **Alarm output:** use it to connect alarm devices (e.g. a signal device). When an alarm event occurs, it changes the output voltage to a certain value (specified in the camera parameters).

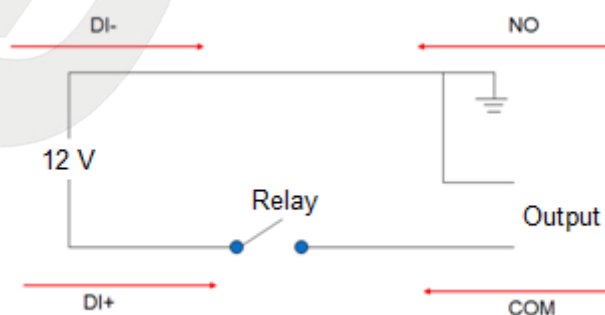
#### NOTE:

If you use external sensors, be aware that the camera has logical I/O and exceeding the rated voltage and current (max 30 W and 12 V) is PROHIBITED!

There are two I/O voltage levels for the N6603 IP camera:

- **High:** voltage level is 12 V.
- **Low:** voltage level is 0 V.

The camera's relay triggers when the output voltage reaches a certain level. Depending on the selected voltage level and when the input voltage reaches this level (DI-, DI+ contacts), the relay triggers (closes or opens) and therefore the output voltage level changes (NO-, COM contacts) providing the high or low output voltage level (specified in the camera parameters). The relay wiring diagram is shown on the *Picture 4.6*.

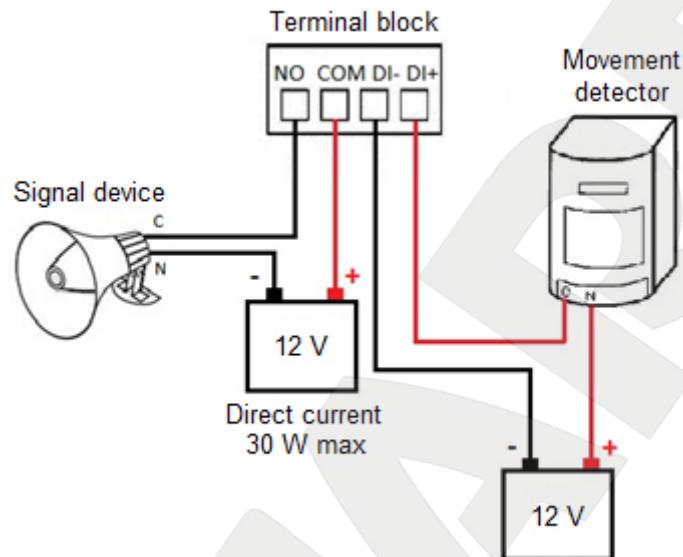


Pic. 4.6

**NOTE:**

To use this feature, you need to enable the alarm input and alarm output option as well as the activation of the alarm output when the alarm input triggers.

The *Picture 4.7* shows the terminal block wiring diagram:



*Pic. 4.7*

Connecting a sensor to the alarm input:

- Connect the power supply (+) terminal to the sensor's output.
- Connect the other sensor's output to the terminal block DI+ output.
- Connect the power supply (-) terminal to the terminal block DI- output.

Connecting a device to the alarm output:

- Connect the power supply (+) terminal to the terminal block COM output.
- Connect the power supply (-) terminal to the device's output.
- Connect the other sensor's output to the terminal block NO output.

**IMPORTANT!**

Unplug the power cord before connecting devices.

**IMPORTANT!**

If use the input alarm contacts together with the output alarm contacts, you need to connect them to separate power sources. If the contacts are connected to the same power source, they may work incorrectly. For example, it may cause false triggering.

## Chapter 5. Setting up the Wired Connection for Windows 7

To make the N6603 IP camera work together with your computer, your laptop and other devices in a local network, you need to connect this camera to the network according to the network parameters. This chapter explains how to define the network parameters.

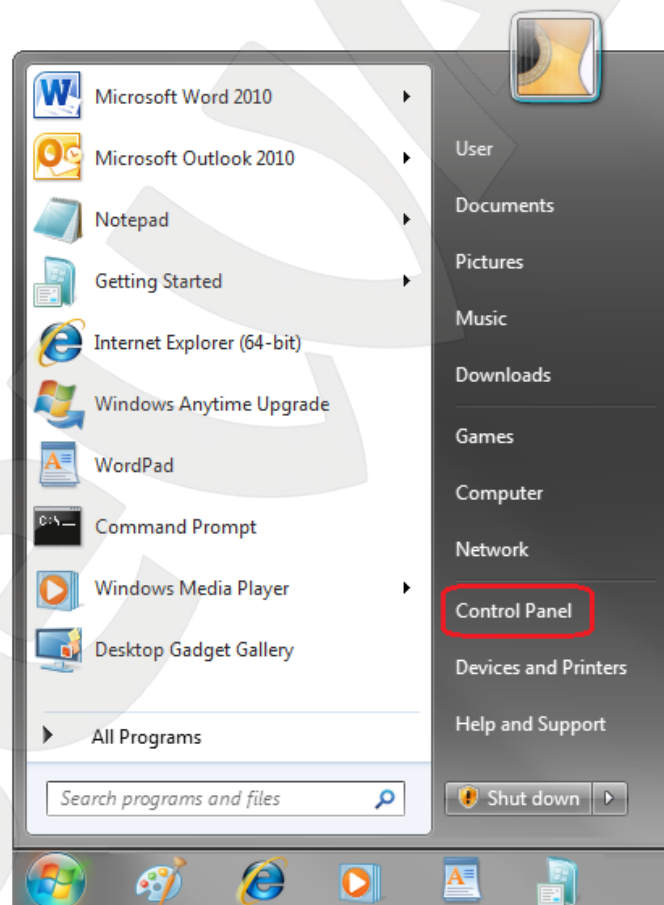
### NOTE:

The connection establishment process is shown for Windows 7 Ultimate. Despite titles of system menus and options may differ from the titles of system menus and options that appear in other versions of Windows, the connection establishment process is universal.

### 5.1. Defining the Local Network Parameters

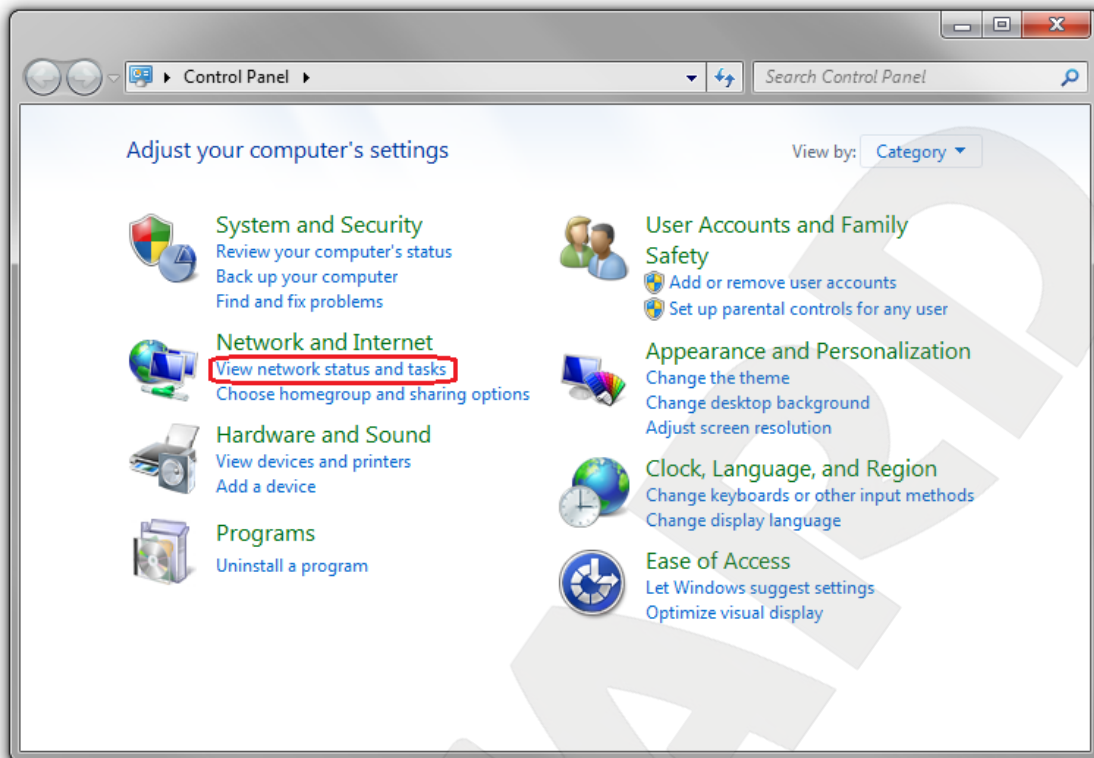
When connecting the camera using an Ethernet cable, you need to define the local network parameters.

To do so, go to **Start – Control Panel** (Pic. 5.1).



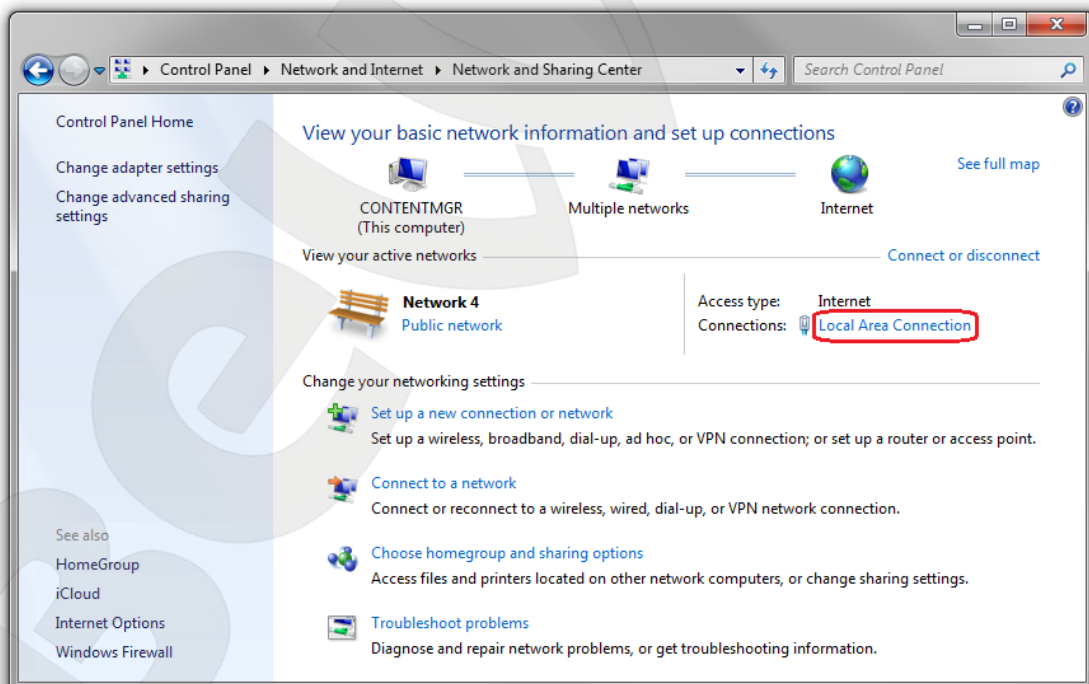
Pic. 5.1

In the opened window, click on the **[View network status and tasks]** in the **[Network and Internet]** section (Pic. 5.2).



Pic. 5.2

In the opened window, click on the **[Local Area Connection]** (Pic. 5.3).

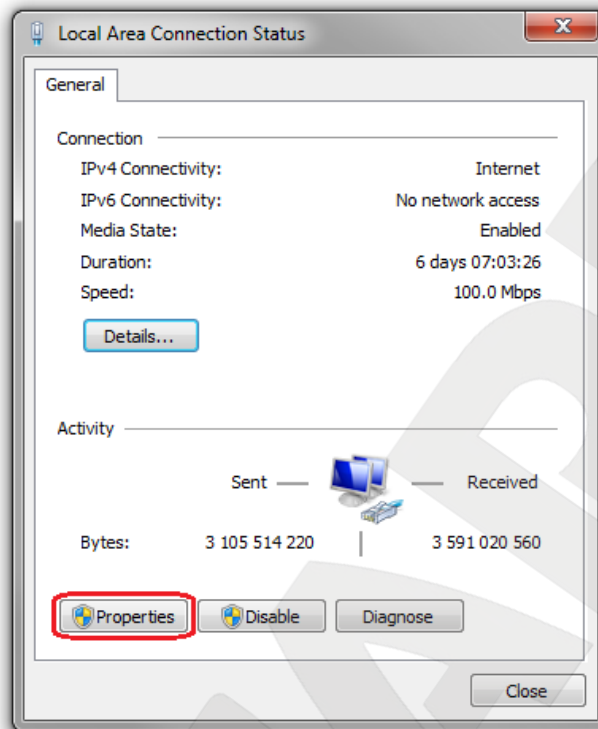


Pic. 5.3

**NOTE:**

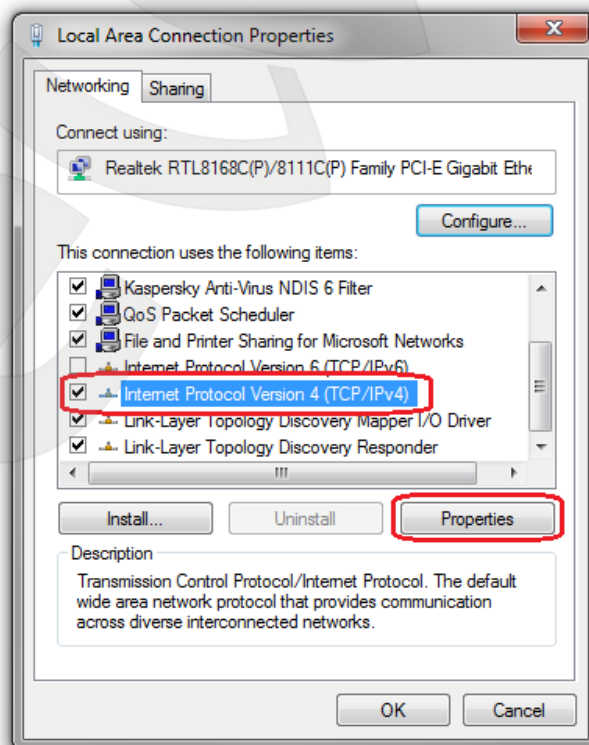
If there are several active networks, choose the one that you are going to connect your camera to.

In the opened window, click the **[Properties]** button (Pic. 5.4).



Pic. 5.4

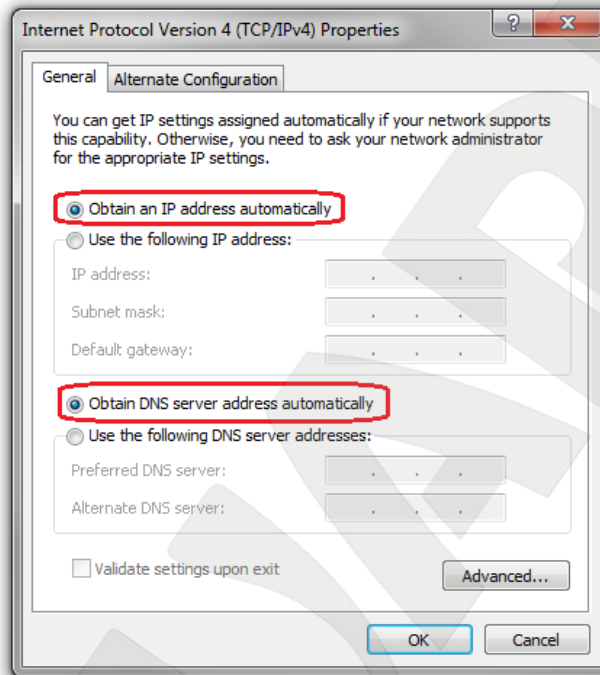
The connection properties window opens, where you should select the **[Internet Protocol Version 4 (TCP/IPv4)]** menu and click the **[Properties]** button (Pic. 5.5).



Pic. 5.5

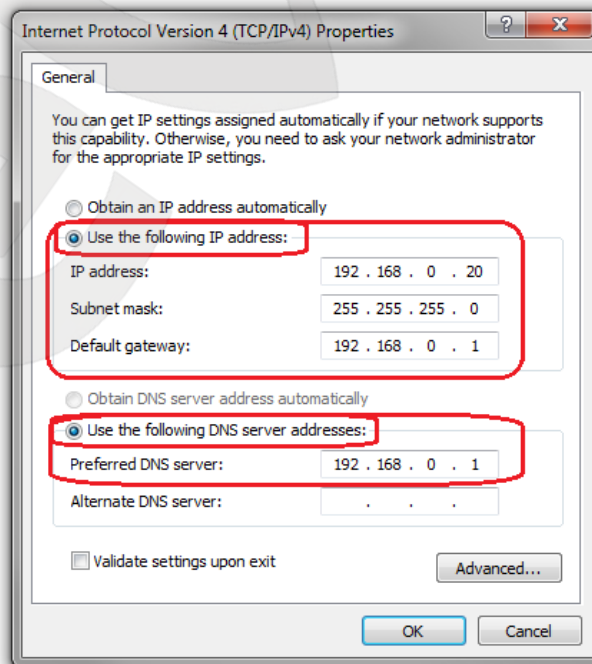
The window opens, displaying information about the network connection settings. There are two ways to configure the IP address:

**Obtain an IP address automatically:** select this option to obtain an IP address automatically from a DHCP server on your network (*Pic. 5.6*). If an IP address is automatically assigned to your computer, go to [paragraph 5.1.1](#) to define the network parameters.



*Pic. 5.6*

**Use the following IP address:** an IP address is manually specified (*Pic. 5.7*).



*Pic. 5.7*

Please make a note of the following parameters: IP address, Subnet mask, Default gateway, DNS server.

**IMPORTANT!**

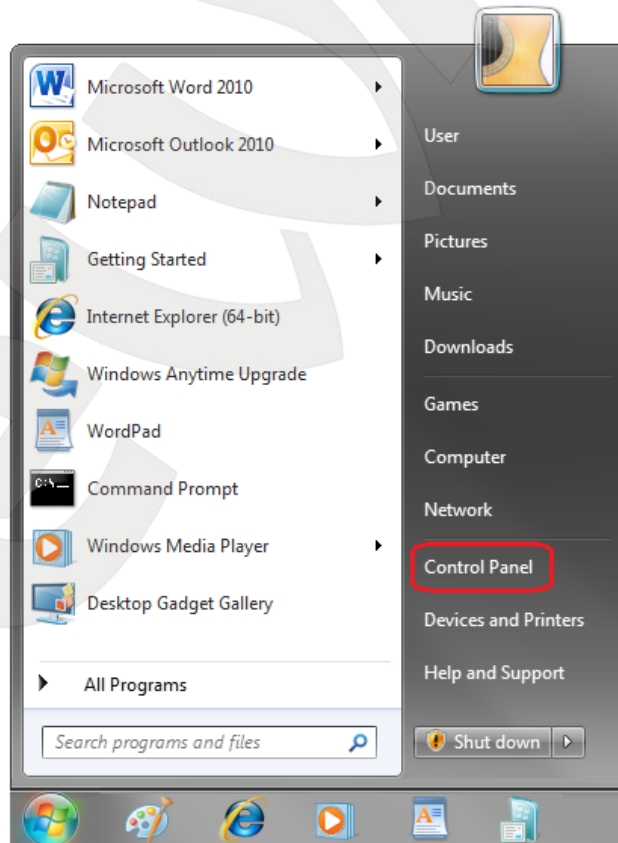
If you do not make a note of the network parameters, you will not be able to return the computer's network settings to their initial state to connect it to a local network or the Internet after configuring the N6603. Therefore, your computer will not have local network and/or Internet access.

**5.1.1. Defining the Local Network Parameters When Using a Dynamic IP Address****NOTE:**

This paragraph explains how to define the local network parameters if an IP address is automatically assigned to your computer via DHCP server.

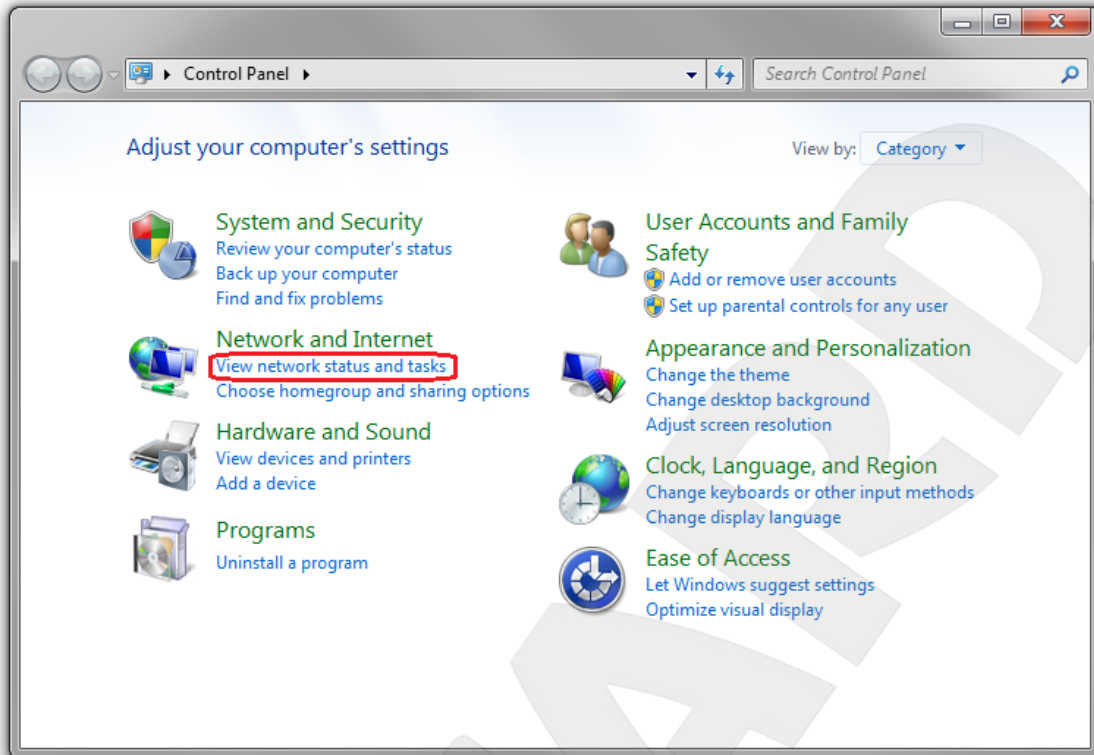
Connect a computer (laptop) to your local network using a network cable and wait until the connection process is complete.

To define the local network settings, go to **Start – Control Panel** (Pic. 5.8).



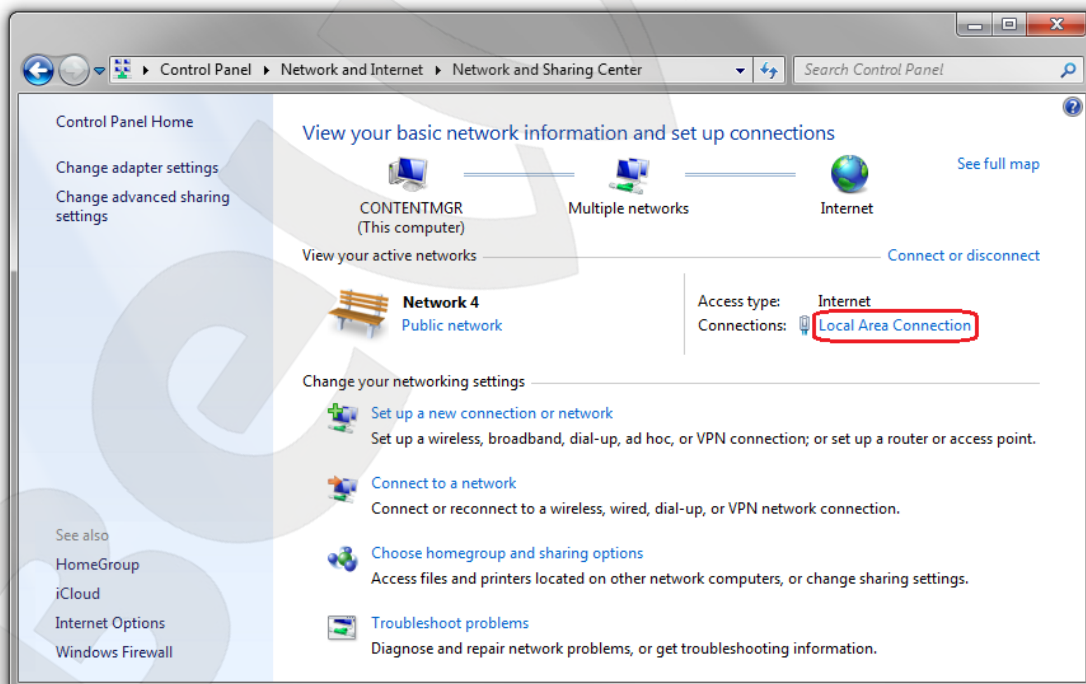
Pic. 5.8

In the opened window, click on the **[View network status and tasks]** in the **[Network and Internet]** section (Pic. 5.9).



Pic. 5.9

In the opened window, click on the **[Local Area Connection]** (Pic. 5.10).



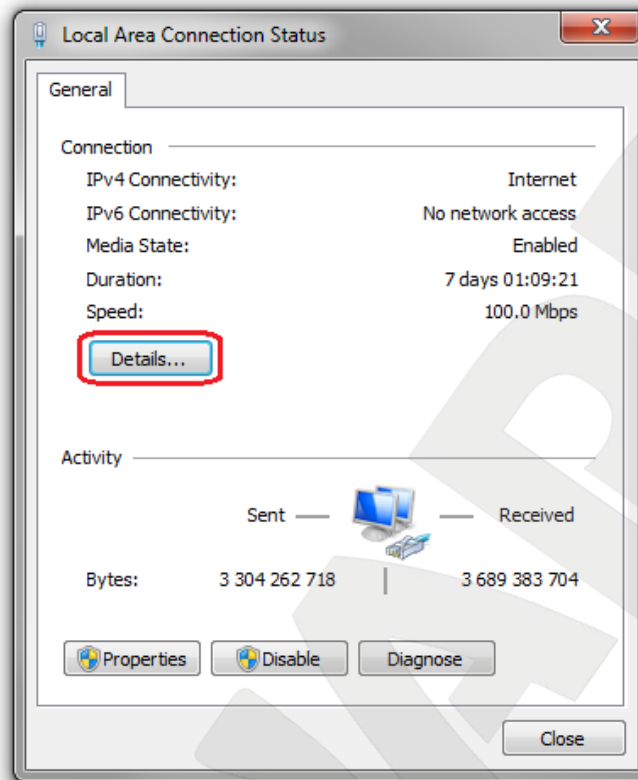
Pic. 5.10

**NOTE:**

If there are several active networks, choose the one that you are going to connect your camera to.

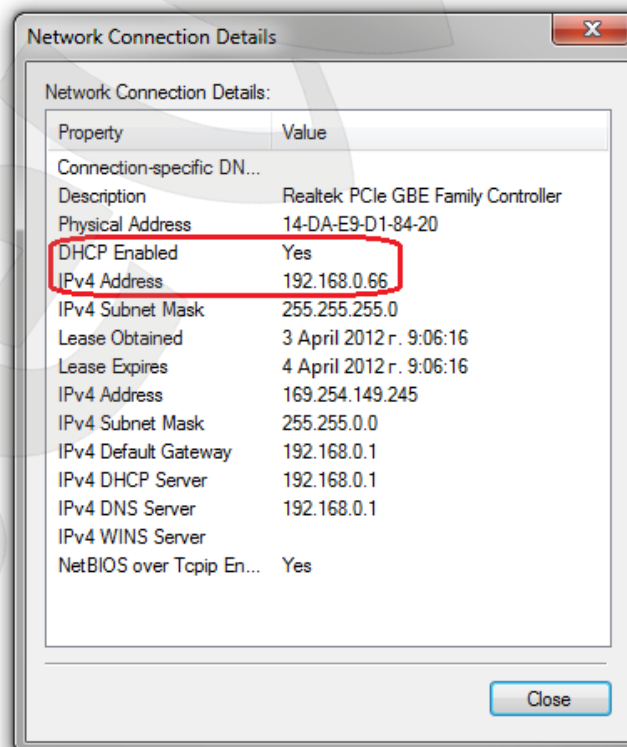


In the opened window, click the **[Details]** button (Pic. 5.11).



Pic. 5.11

In the opened window, you can see the current network connection details (Pic. 5.12).



Pic. 5.12

If you see the following information in the opened window: **[DHCP Enabled]** – Yes, **[IPv4 Address]** – xxx.xxx.xxx.xxx (xxx.xxx.xxx.xxx is an IP address value), it means your computer is assigned an IP address displayed in the **[IPv4 Address]** line, a subnet mask displayed in the **[IPv4 Subnet Mask]** line, a gateway address displayed in the **[IPv4 Default Gateway]** line, a DNS server address displayed in the **[IPv4 DNS Server]** line.

Please make a note of the following parameters: IP address, Subnet mask, Default gateway, DNS server.

**IMPORTANT!**

If you do not make a note of the network parameters, you will not be able to return the computer's network settings to their initial state to connect the computer to a local network or the Internet after configuring the N6603. Therefore, your computer will not have local network and/or Internet access.

**IMPORTANT!**

If you see the following information in the **[Network Connection Details]** window: **[DHCP Enabled]** – Yes, **[IPv4 Address Autoconfiguration]** – xxx.xxx.xxx.xxx (xxx.xxx.xxx.xxx is an IP address value), it means you could not establish a wired connection and the DHCP server did not assign the computer an IP address. Please check the connection settings or contact your system administrator.

## 5.2. Changing the Local Network Parameters

The default IP address of the N6603 IP camera is 192.168.0.99. To connect to the camera, you need to get your computer and your camera on the same subnet. Take notice that each device must have a unique IP address.

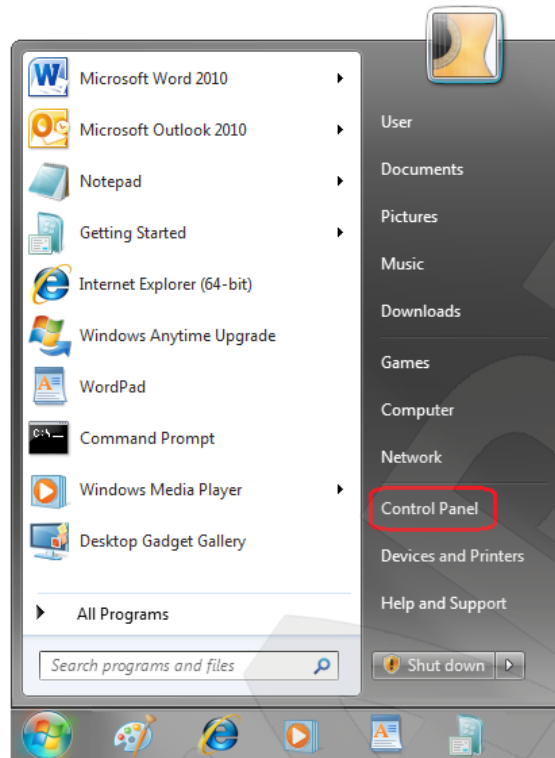
**IMPORTANT!**

The camera's default IP address is **192.168.0.99**. If you use several IP cameras, you need to change their default IP addresses so that each camera will have a unique IP address to prevent an IP address conflict.

**IMPORTANT!**

If you are sure that your computer and your IP camera are on the same subnet, you can skip this paragraph and go to [paragraph 5.3](#).

To change your computer network settings, go to **Start – Control Panel** (Pic. 5.13).



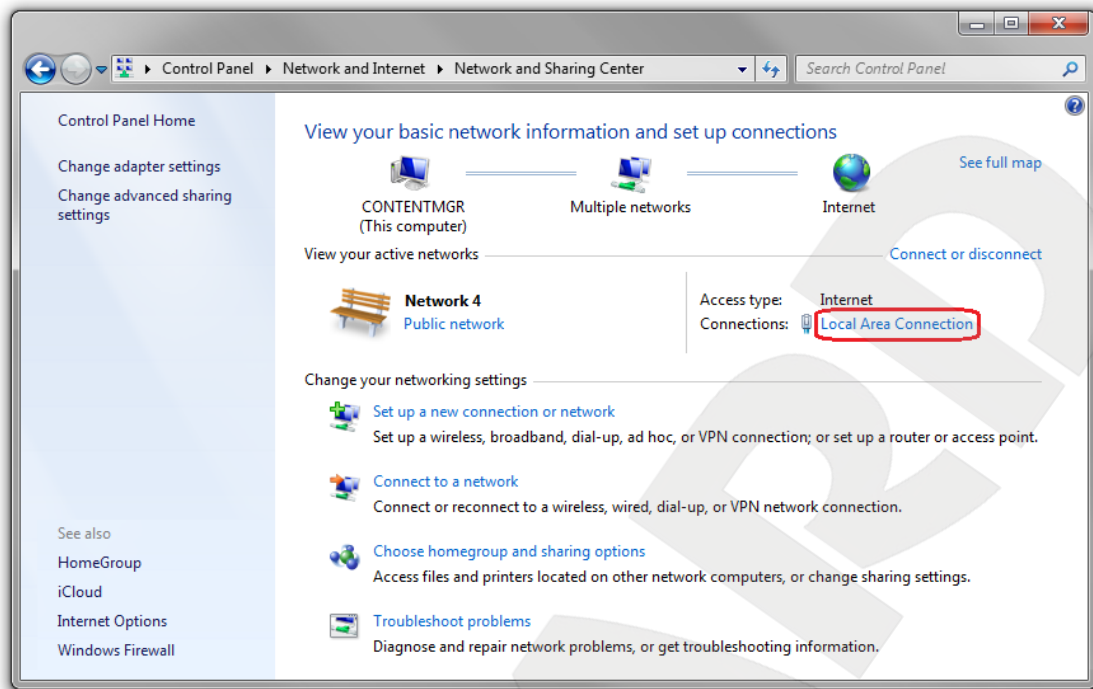
Pic. 5.13

In the opened window, click on the **[View network status and tasks]** in the **[Network and Internet]** section (Pic. 5.14).



Pic. 5.14

In the opened window, click on the **[Local Area Connection]** (Pic. 5.15).

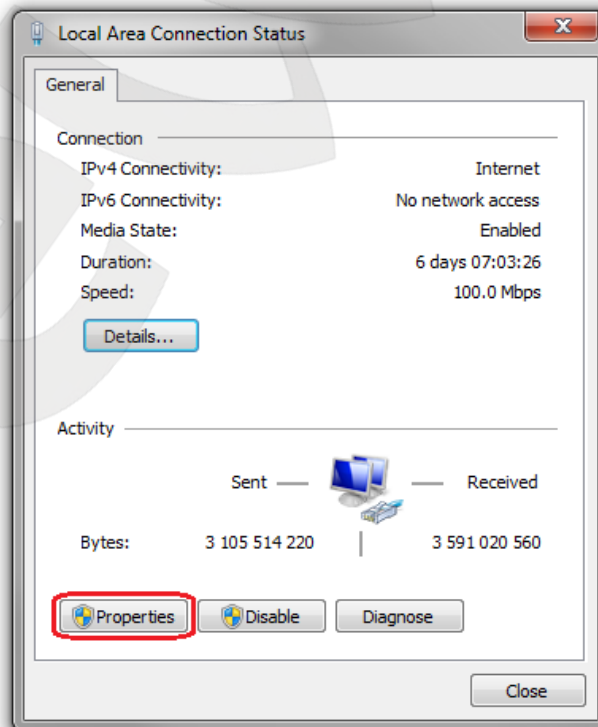


Pic. 5.15

**NOTE:**

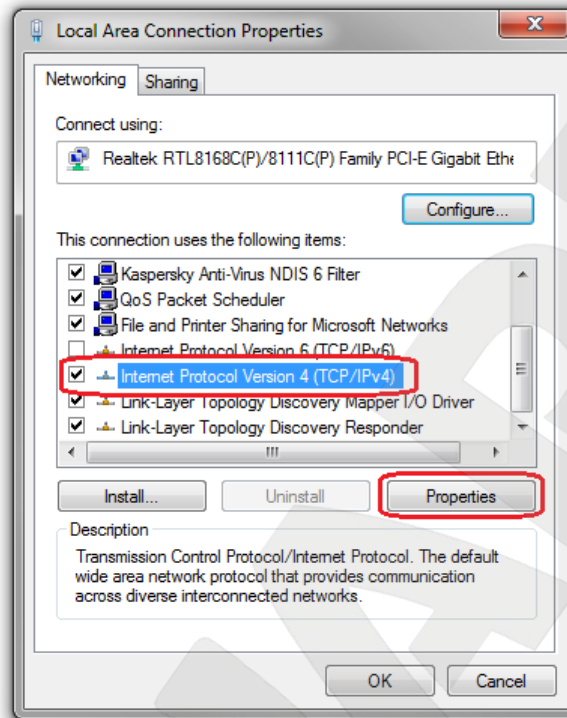
If there are several active networks, choose the one that you are going to connect your camera to.

In the opened window, click the **[Properties]** button (Pic. 5.16).



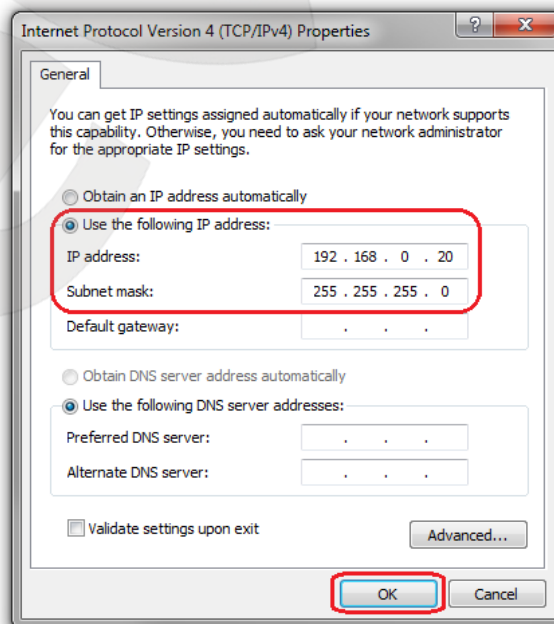
Pic. 5.16

The connection properties window opens, where you should select the **[Internet Protocol Version 4 (TCP/IPv4)]** menu and click the **[Properties]** button (Pic. 5.17).



Pic. 5.17

The window opens, where you need to specify an IP address and a subnet mask. Click the **[Use the following IP address]** and type an unused **[IP address]** from the same subnet as the camera, for example, 192.168.0.20, and 255.255.255.0 in the **[Subnet mask]** field. You can skip the other parameters (Pic. 5.18).



Pic. 5.18

Click the **[OK]** button to save the changes.

### 5.3. Accessing the IP Camera

There are three ways to access this IP camera:

- Using “**BEWARD IP Installer**” software;
- Using the **[Network]** menu in Windows 7;
- Using Internet Explorer browser.

#### IMPORTANT!

When connecting the camera, take notice that the camera’s default IP address is 192.168.0.99.

#### 5.3.1. Installing “BEWARD IP Installer” Software

Insert the supplied CD into your CD-ROM drive. You will see the installation menu (*Pic. 5.19*).

To start the installation, select “**BEWARD IP Installer**” and follow the instructions of the installation wizard until the installation ends.



*Pic. 5.19*

#### 5.3.2. Accessing the IP Camera Using “BEWARD IP Installer” Software

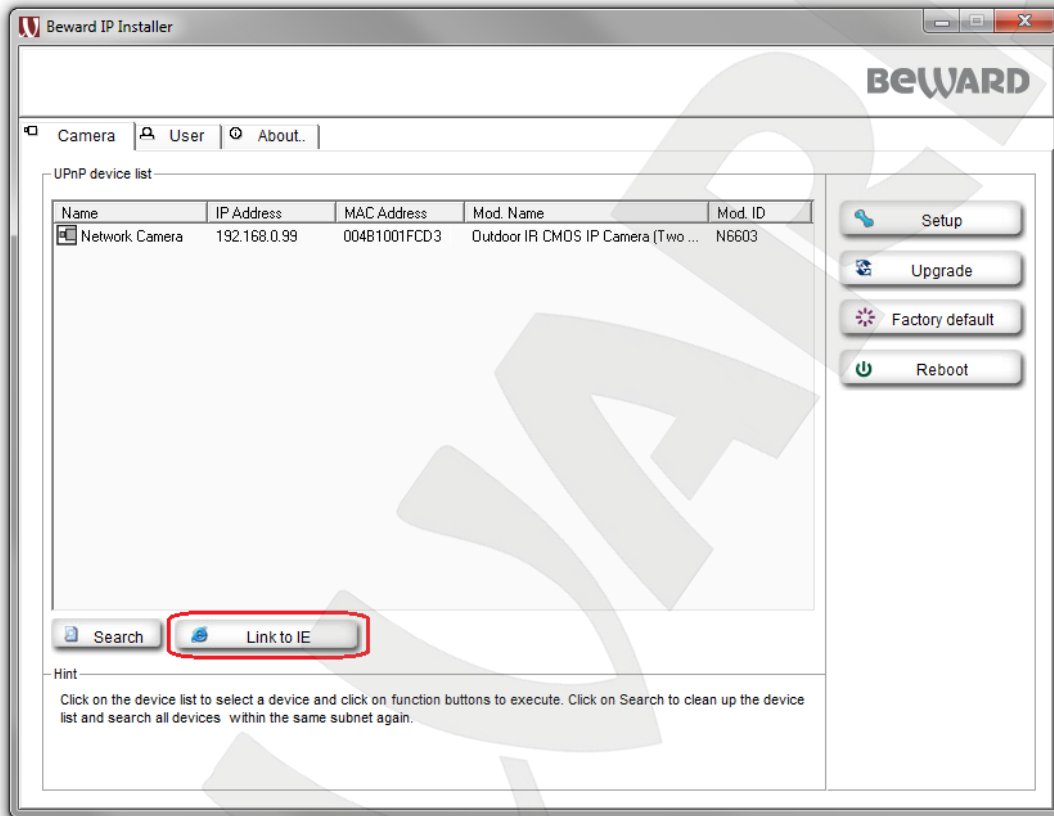
#### IMPORTANT!

To access the IP camera using “**BEWARD IP Installer**” software, you need to enable UPnP for both your computer and the IP camera. UPnP is enabled by default in Windows 7.

**NOTE:**

UPnP is enabled by default in the N6603 IP camera.

To search for IP cameras using “**BEWARD IP Installer**” software, launch it using the shortcut on your desktop. In the opened window you can see a list of available cameras and video servers. Select your IP camera and click the **[Link to IE]** button (*Pic. 5.20*).



*Pic. 5.20*

**IMPORTANT!**

In order to make “**BEWARD IP Installer**” software work properly, add it to the antivirus and the firewall authorized list.

**NOTE:**

You may need to run BEWARD IP Installer as an administrator in order to make it work properly in Windows 7. To do so, right-click the shortcut and select **[Run as administrator]** in the drop-down list.

**NOTE:**

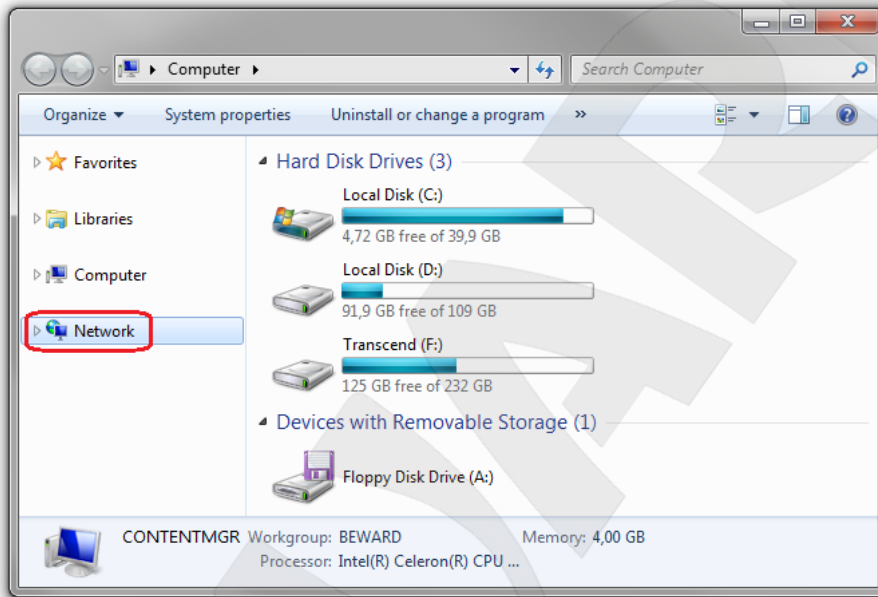
If an IP camera is missed in the UPnP device list, click the **[Search]** button to refresh it.

### 5.3.3. Accessing the IP Camera Using the Network Menu in Windows 7

**NOTE:**

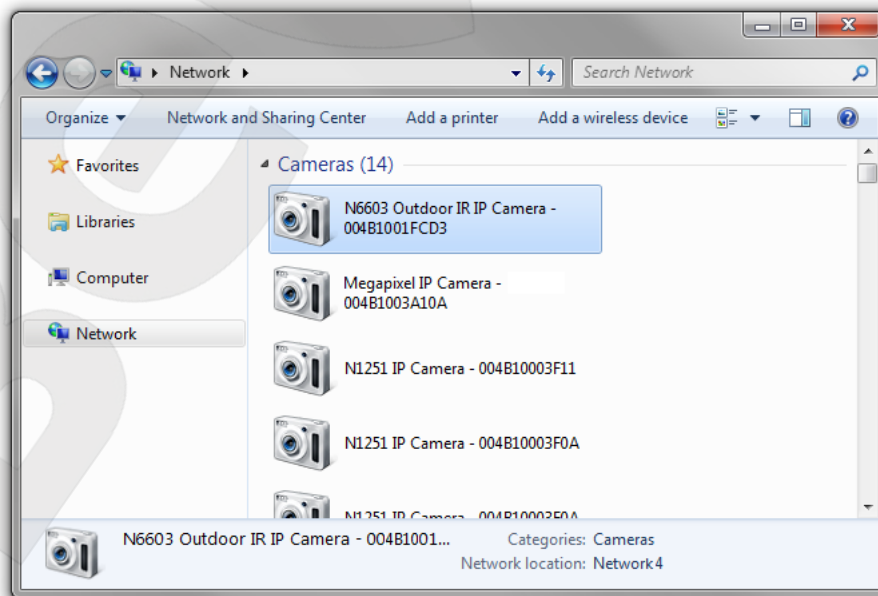
UPnP is enabled by default in the N6603 IP camera.

To search for the N6603 using the **[Network]** menu in Windows 7, go to the **[Computer]** menu and click the **[Network]** (Pic. 5.21).



Pic. 5.21

In the appeared window, find the camera and double-click it with the left mouse button (Pic. 5.22).



Pic. 5.22



This will open the camera in Internet Explorer where you can configure the camera and view the images.

#### 5.3.4. Accessing the IP Camera Using Internet Explorer

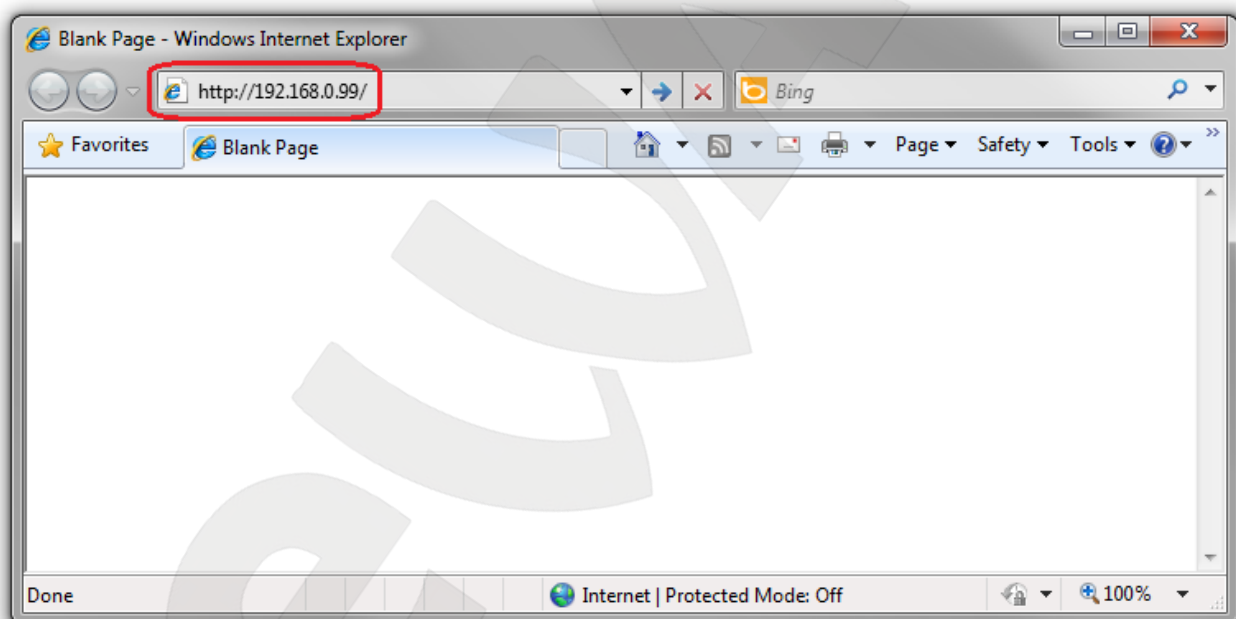
To access this camera through Internet Explorer, launch this browser and enter the following in the address field: `http://<IP>:<port>/`, where <IP> is the IP address of the camera, <port> is the port number that is used for HTTP connection to the camera (*Pic. 5.23*).

#### IMPORTANT!

The default IP address of the BEWARD N6603 is 192.168.0.99.

#### NOTE:

You do not need to enter a port number if you are connecting through the default HTTP port 80.



*Pic. 5.23*

#### 5.4. Accessing the Web Interface

After you accessed the camera using any of the ways described in [paragraphs 5.3.2 – 5.3.4](#), Internet Explorer will be launched and an authorization window will appear.

#### NOTE:

The web interface requires Internet Explorer 8.0 or later to run and display correctly.

Enter the camera's user name and password, then click **[OK]** (*Pic. 5.24*).

**IMPORTANT!**

The default user name is **admin**, the default password is **admin**.

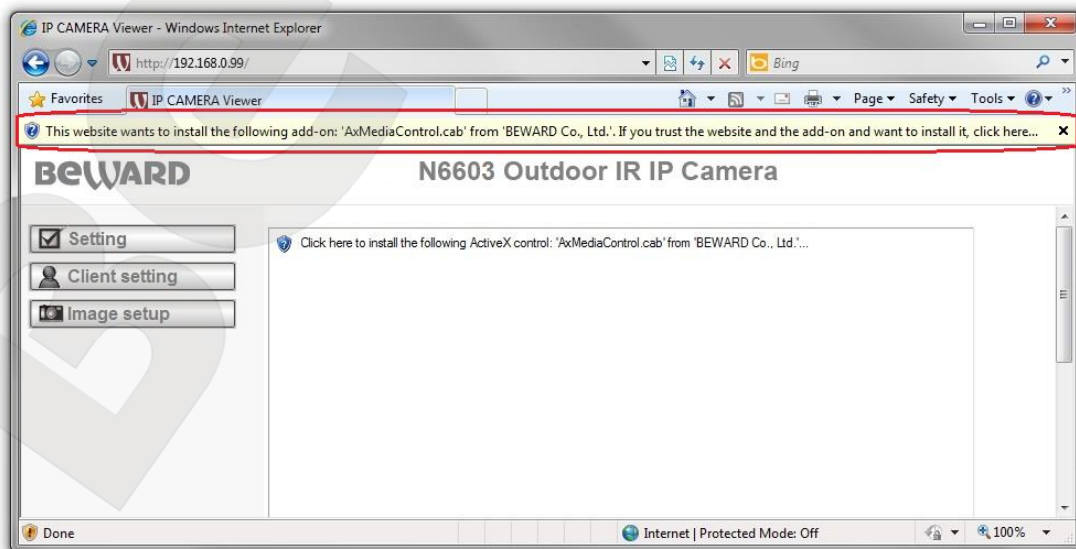


Pic. 5.24

**IMPORTANT!**

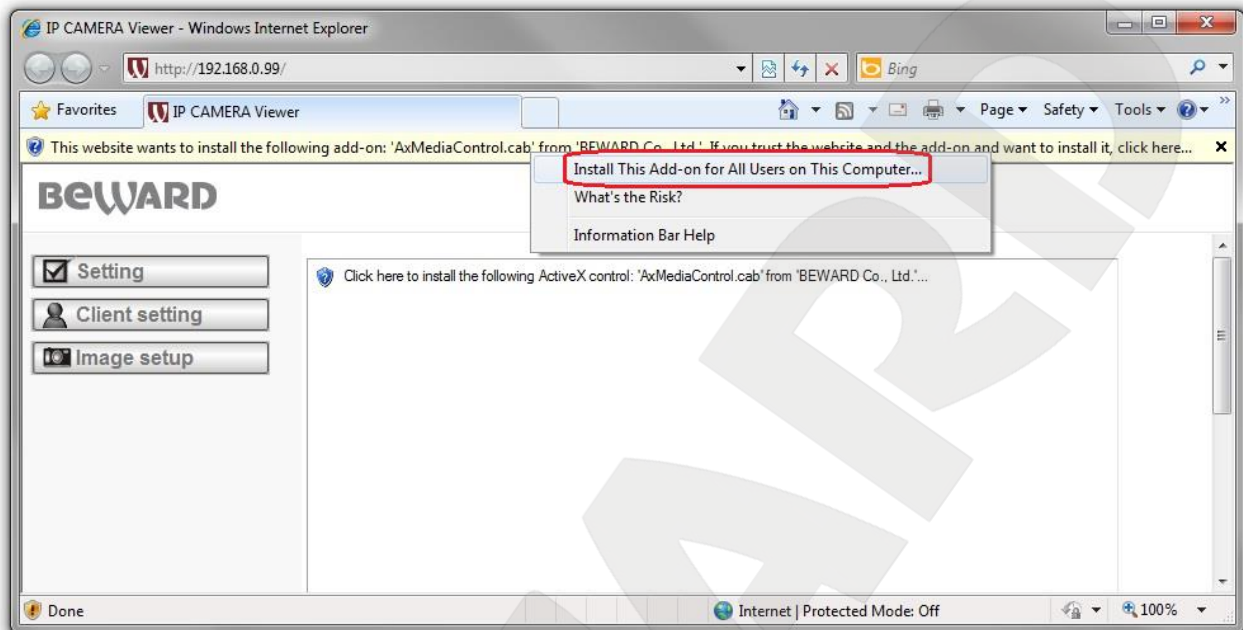
By default, Internet Explorer blocks ActiveX controls. When accessing the camera for the first time, you will see a security warning that ActiveX add-on installation is blocked.

After successful authorization, you will be prompted to install an ActiveX add-on. You will see a system notification under the address bar: **“This website wants to install the following add-on: “AxMediaControl.cab” from “BEWARD Co., Ltd.”. If you trust the website and the add-on and want to install it, click here...”** (Pic. 5.25).



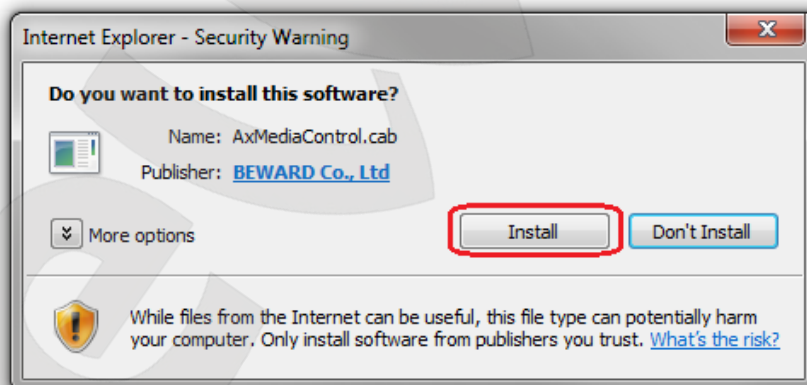
Pic. 5.25

Click right mouse button on this notification. In the drop-down menu select **“Install This Add-on for All Users on This Computer...”** or click on the area **“Click here to install the following ActiveX control: “AxMediaControl.cab” from “BEWARD Co., Ltd.”...”** (Pic. 5.26)



Pic. 5.26

By default, Internet Explorer prevents ActiveX add-ons from installation; click **[Install]** to continue (Pic. 5.27).

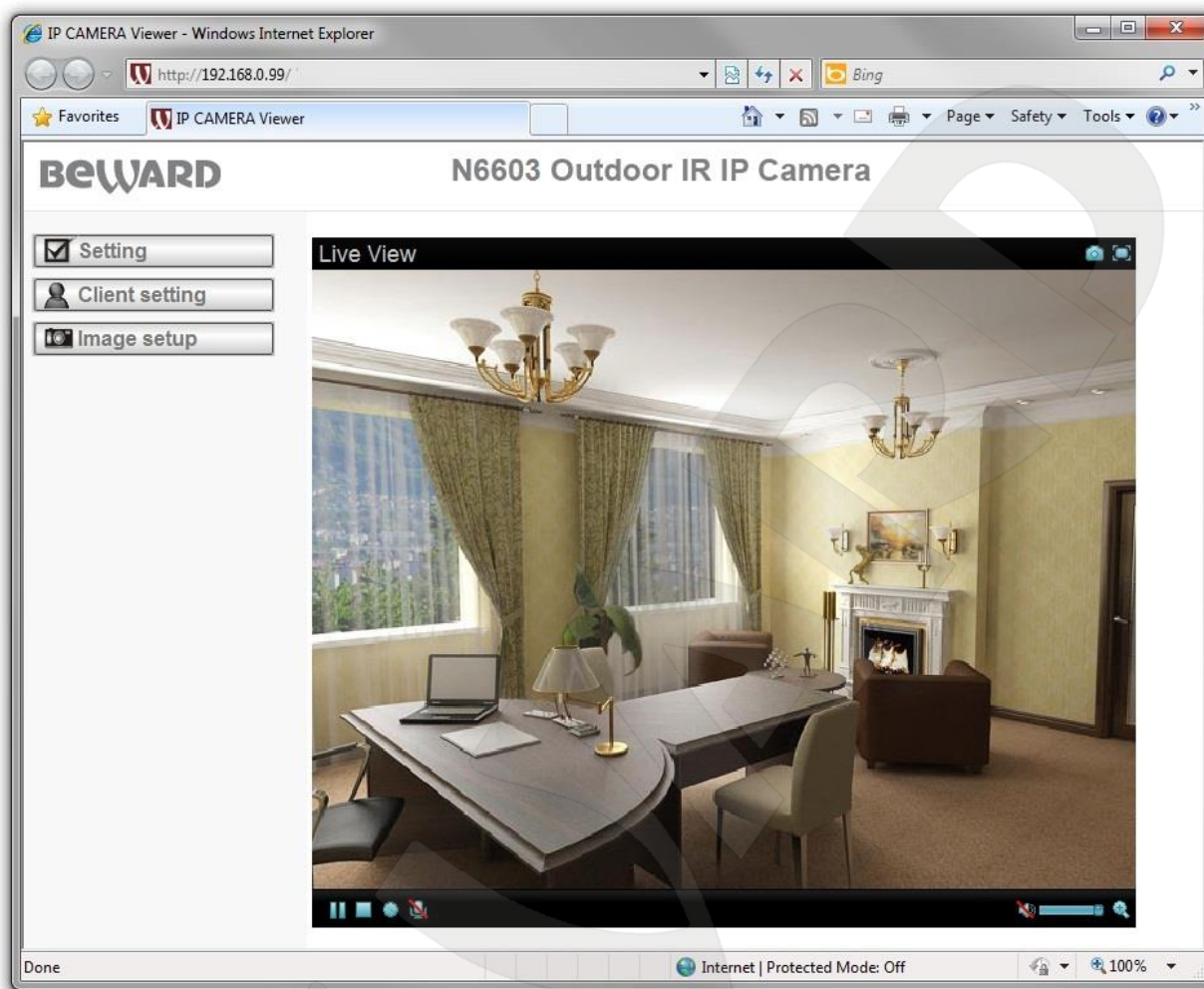


Pic. 5.27

**NOTE:**

When installing ActiveX controls for Windows 7 with enabled User Account Control (UAC), it prevents them from installation and generates a warning message. Click yes in the appeared window.

If everything was done correctly, you should get the camera images via browser. The settings bar is on the left side, the camera images are on the right side (Pic. 5.28).



Pic. 5.28

### 5.5. Configuring the Camera's Network Settings through the Web Interface

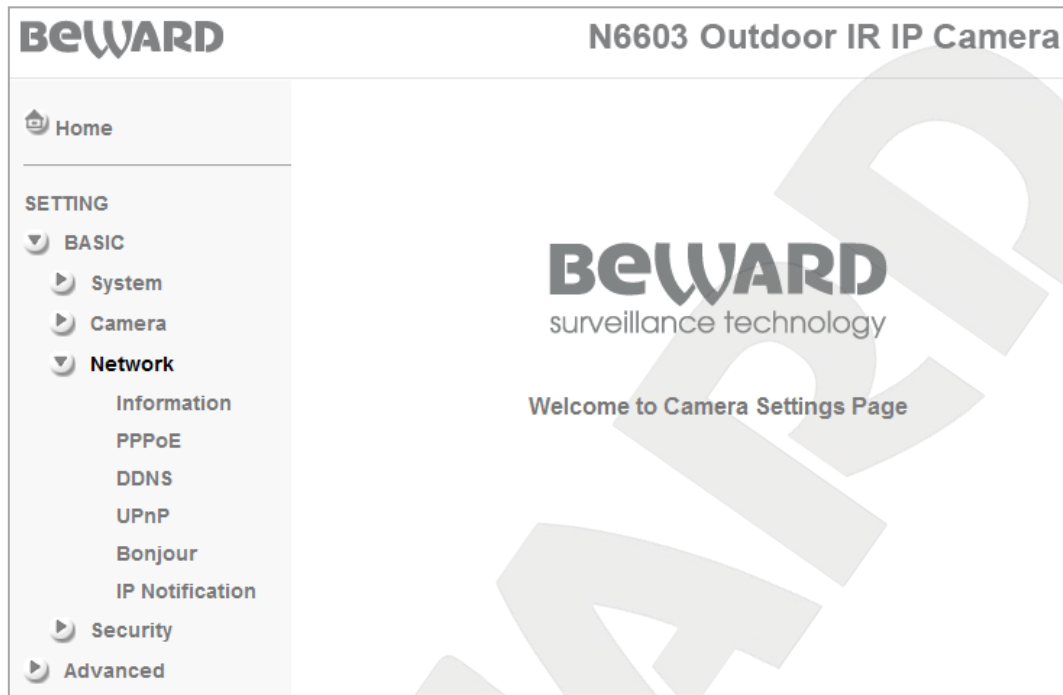
After connecting to the N6603, you need to change its network parameters to get it and your other devices (e.g. your computer) to the same subnet.

#### **IMPORTANT!**

To make your camera and your computer work together, the first three parts of their IP addresses must be the same but the fourth must be different.

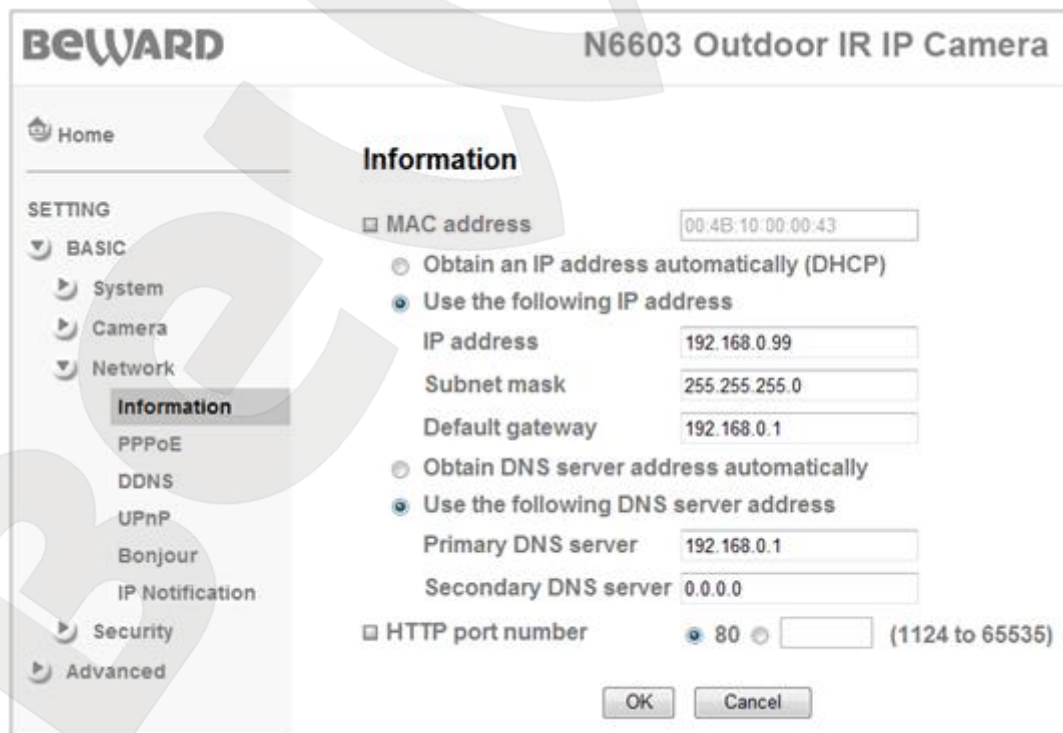
For example, the IP address of your computer is 192.168.50.40. An IP address consists of four octets separated by dots. In the provided example, the 1st octet is 192, the 2nd octet is 168, the 3rd octet is 50, and the 4th octet is 40. You need to change the IP address of your camera so that the first three octets of its IP address are the same as your computer's IP address. Therefore, the IP address of your camera must be of the form 192.168.50.XX. You only need to change the fourth octet to a number different from the IP address of your computer and other network devices.

To configure the network settings through the web interface, go to **SETTING – Basic – Network**. The **[Network]** section is divided into several subsections (*Pic. 5.29*).



*Pic. 5.29*

The **[Information]** subsection provides options for configuring the general network settings (*Pic. 5.30*).

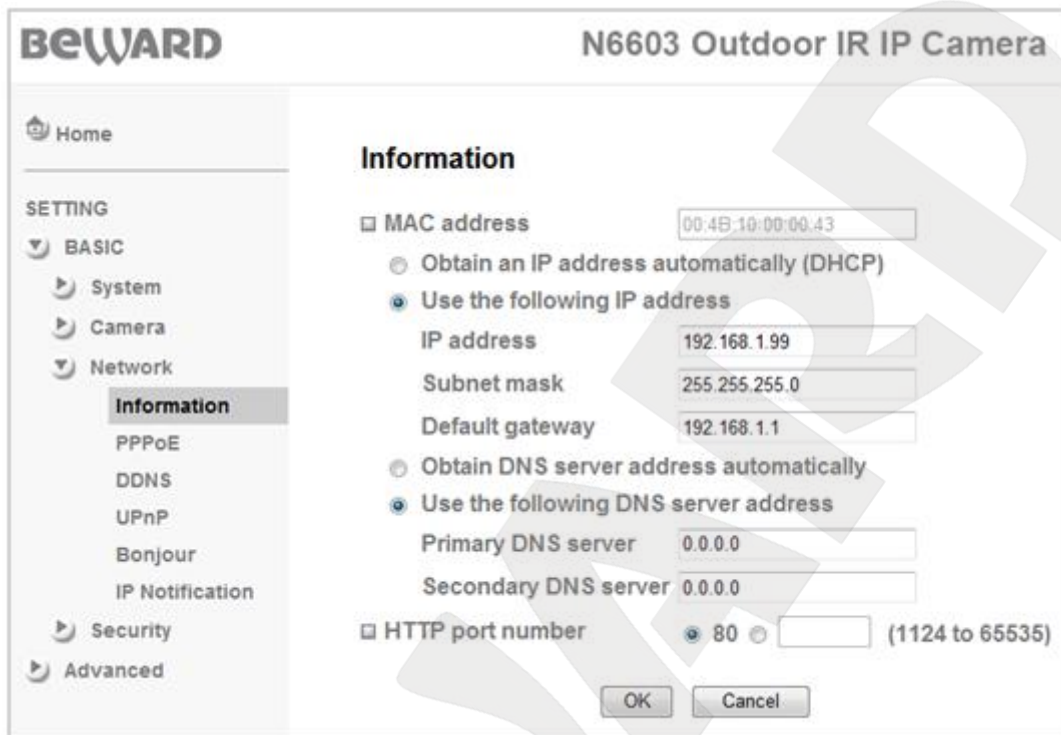


*Pic. 5.30*

You must specify the IP address and the other network parameters of the camera so it is on the same subnet as the other network devices (*Pic. 5.31*).

**NOTE:**

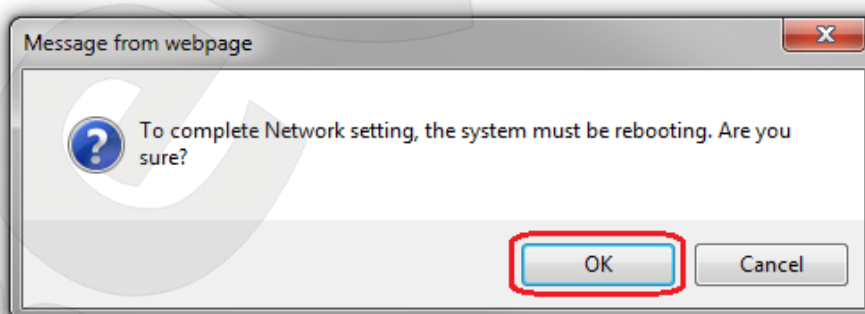
Contact your system administrator if you need assistance.



Pic. 5.31

Click **[OK]** to save the changes.

If the message from webpage appears, click **[OK]** (Pic. 5.32).

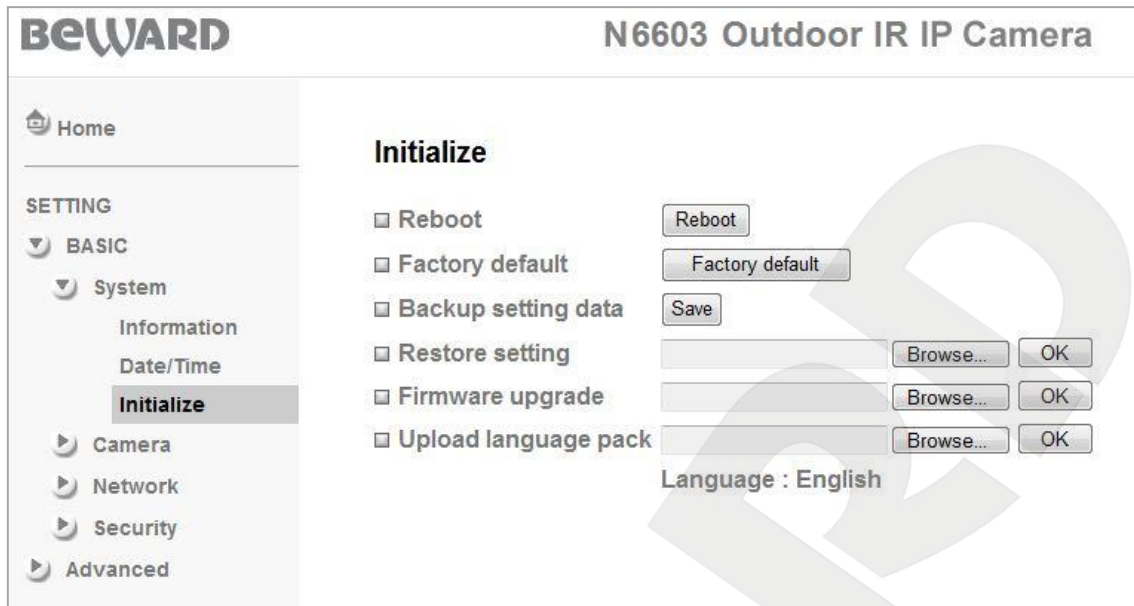


Pic. 5.32

**IMPORTANT!**

After you configure the network settings, you must reboot the camera.

To reboot your camera, go to **SETTING – Basic – System – Initialize** (Pic. 5.33).



Pic. 5.33

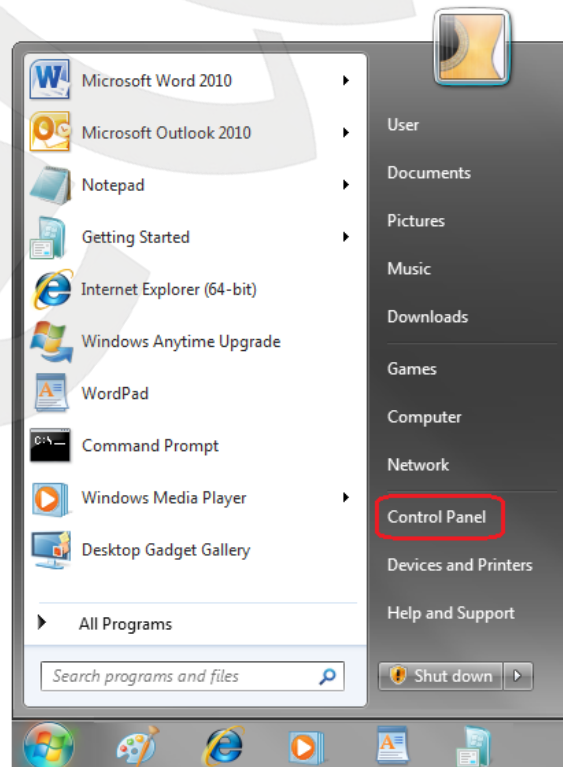
The camera takes 2-3 minutes to reboot. This completes the setting up of the wired connection.

Now you must restore the network settings of your computer to their previous values.

## 5.6. Restoring the Network Settings of the Computer to Their Previous Values

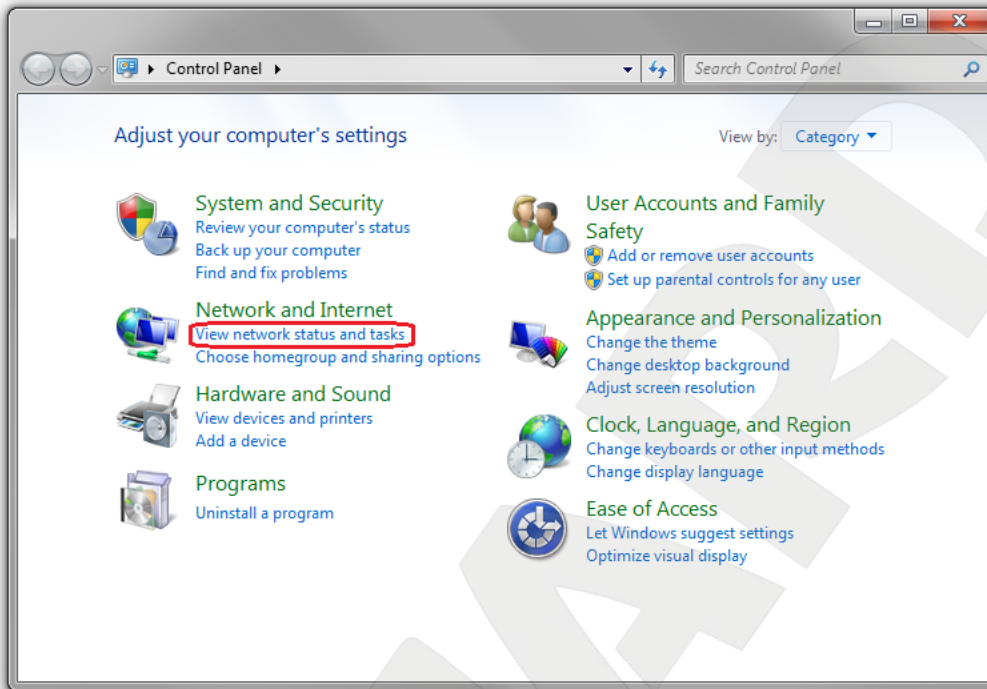
To restore the wired connection settings to their previous values, follow the steps below.

Go to **Start – Control Panel** (Pic. 5.34).



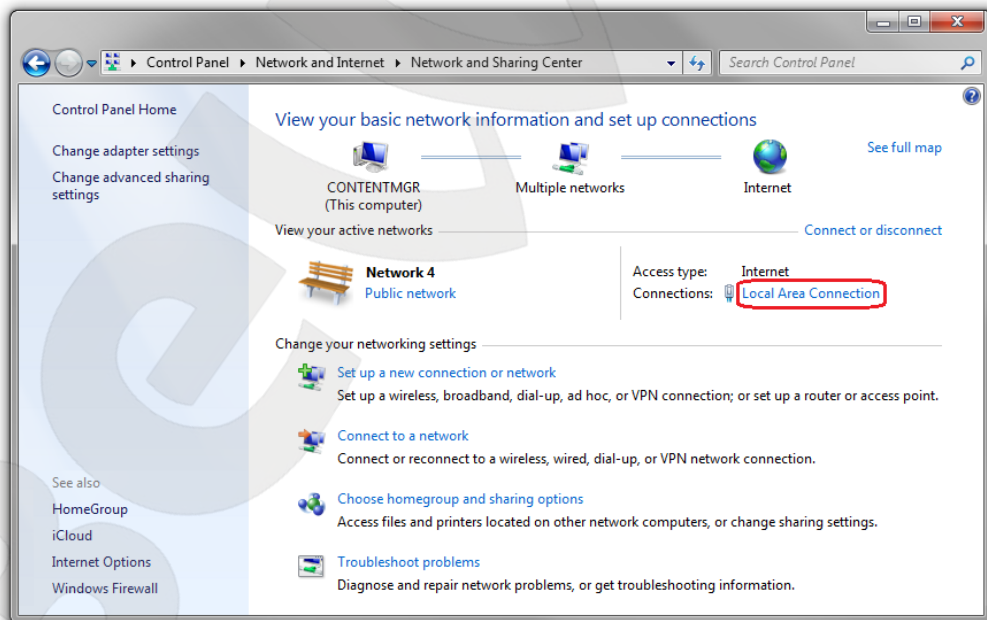
Pic. 5.34

In the opened window, click on the **[View network status and tasks]** in the **[Network and Internet]** section (Pic. 5.35).



Pic. 5.35

In the opened window, click on the **[Local Area Connection]** (Pic. 5.36).



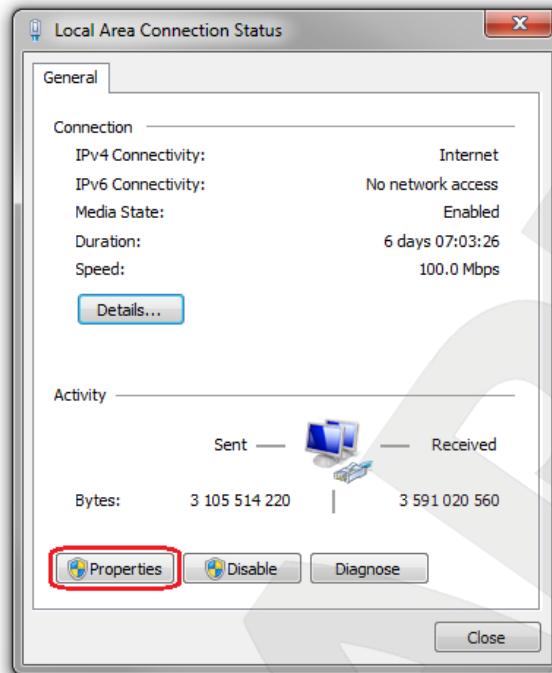
Pic. 5.36

**NOTE:**

If there are several active networks, choose the one that you are going to connect your camera to.



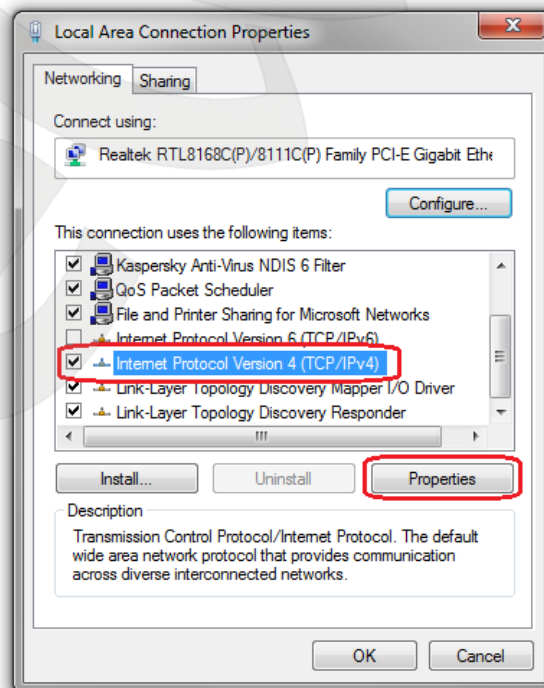
In the opened window, click the **[Properties]** button (Pic. 5.37).



Pic. 5.37

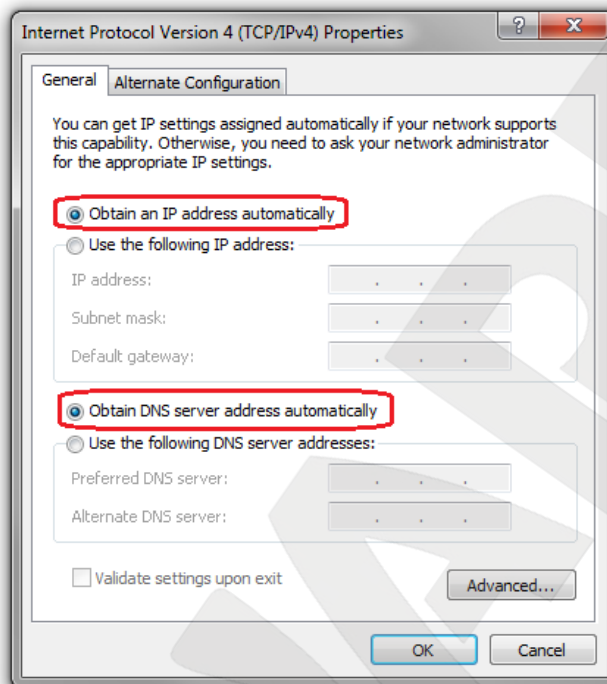
The connection properties window opens, where you need to specify your initial network settings (see [paragraph 5.1](#), [5.1.1](#)).

Select the **[Internet Protocol Version 4 (TCP/IPv4)]** menu and click the **[Properties]** button (Pic. 5.38).



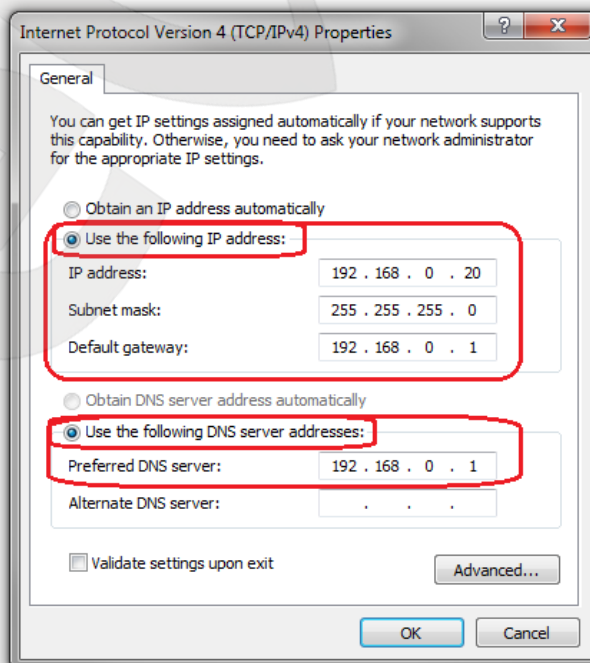
Pic. 5.38

If the IP settings were assigned automatically, use the **[Obtain an IP address automatically]** and the **[Obtain DNS server address automatically]** options (Pic. 5.39), then click **[OK]**.



Pic. 5.39

If the IP settings were specified manually, use the **[Use the following IP address]** and the **[Use the following DNS server addresses]** options and complete the required fields (see [paragraph 5.1](#)), then click **[OK]** (Pic. 5.40).



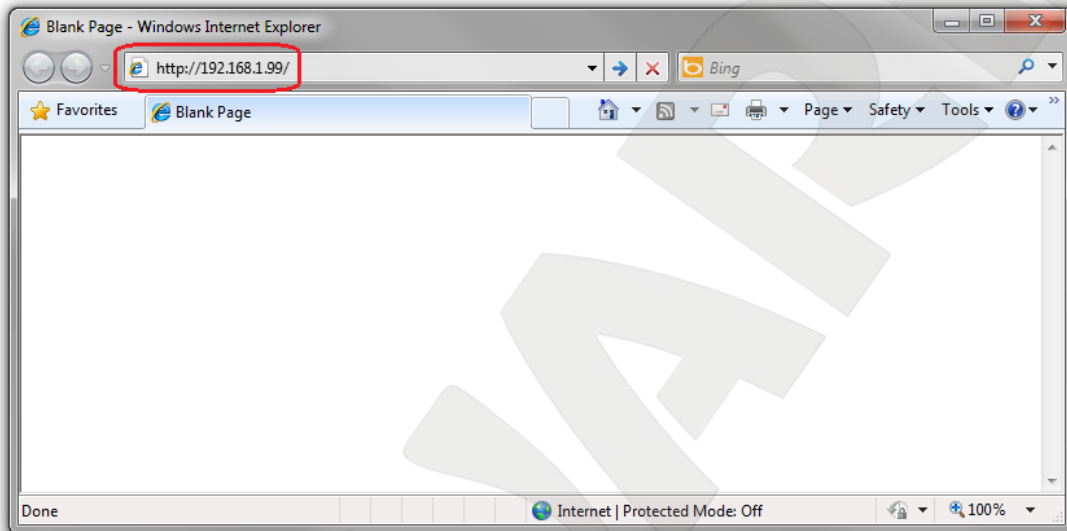
Pic. 5.40

## 5.7. Verifying the Connection Settings

To verify the network settings of your camera and your computer, you must access the camera through Internet Explorer.

Launch Internet Explorer. To do so, go to **Start – All Programs** and click **[Internet Explorer]**.

Enter the IP address of your camera in the address field (e.g. `http://192.168.1.99`) (Pic. 5.41).



Pic. 5.41

If the settings are correct, an authorization window will appear. Enter the camera's user name and password, then click **[OK]** (Pic. 5.42).

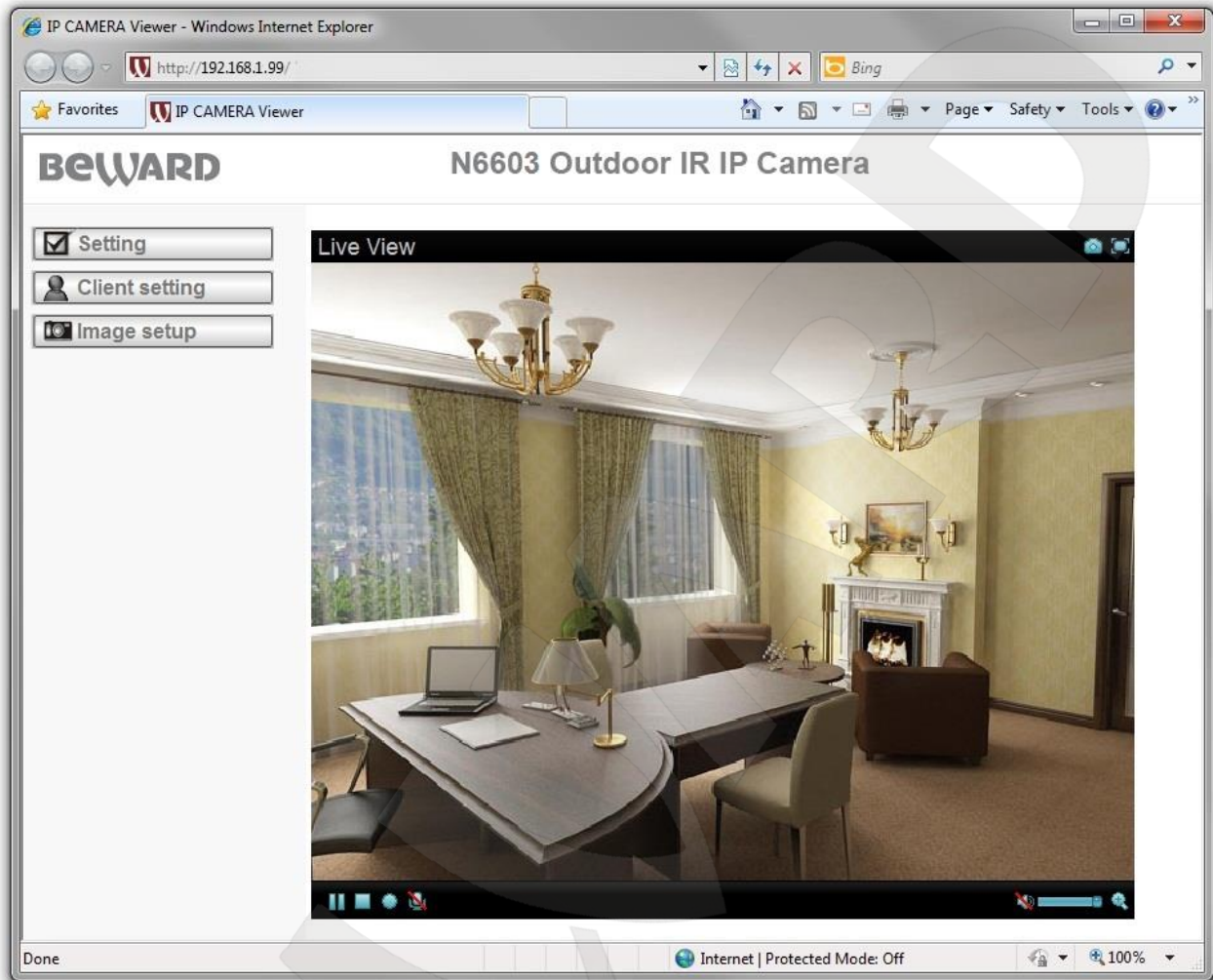
### IMPORTANT!

The default user name is **admin**, the default password is **admin**.



Pic. 5.42

If everything was done correctly, you should get the camera images via browser. The settings bar is on the left side, the camera images are on the right side (*Pic. 5.43*).



*Pic. 5.43*

This completes the setting up of the wired connection.

## Chapter 6. Accessing the Camera over the Internet

### 6.1. Overview of Internet Access to the Camera

When installing an IP camera in apartments, a cottage, or an office, most users want to be able to access the camera and view the images over a local network in the apartments, a cottage, or an office as well as over the Internet.

This requires a router to make your camera, your computer and other network devices work together on the same network.

There are three ways to connect this IP camera to the Internet:

- There is an external static IP address or PPPoE connection. Such an IP address (or PPPoE connection) can be used to connect only one camera to view the images over the Internet. This type of networking does not allow sharing a single IP address among several devices.
- There is an external static IP address that is used to connect a LAN to the Internet and assigned to one or several cameras to view the images over the Internet. This type of networking requires the use of a router. Therefore, the number of connected cameras depends on how many ports are on the router.
- There is a dynamic IP address, which is a temporary address and can change during a session. This type of networking allows connecting multiple cameras to view the images over the Internet regardless of the IP address they are assigned and requires the use of dynamic DNS services.

The possible ways of accessing the camera over the Internet are covered later in this manual.

### 6.2. Using an External Static IP Address or PPPoE Connection

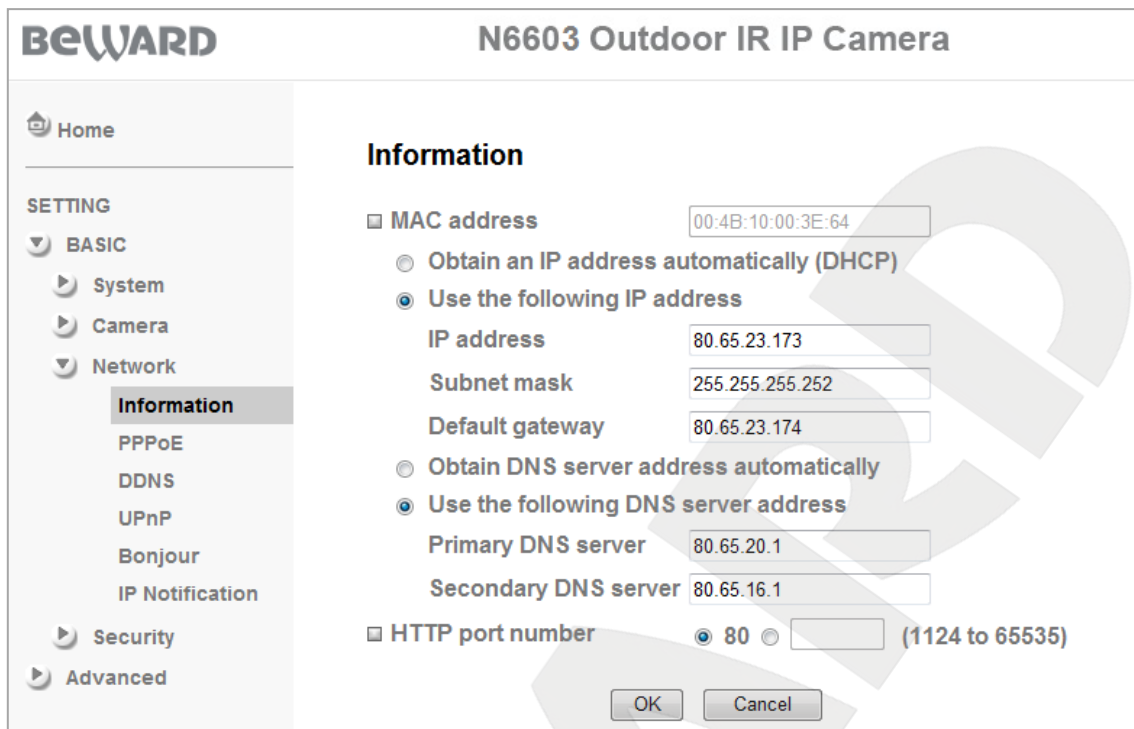
#### 6.2.1. Using an External Static IP Address

When connecting to the Internet, you must change the network settings of the IP camera according to the settings provided by your ISP. Most ISP's provide the following: an IP address, a subnet mask, a network gateway, and a DNS server address.

To access the IP camera over the Internet using a static IP address, follow the steps below:

**Step 1:** connect the IP camera to your computer directly.

**Step 2:** change the network settings of the IP camera (see [paragraph 5.5](#)) according to the settings provided by your ISP (*Pic. 6.1*).



Pic. 6.1

**Step 3:** connect the IP camera to the Ethernet network.

If everything is configured properly, the camera should be available over the Internet.

In the provided example, the following settings were used:

**IP address:** 80.65.23.173

**Subnet mask:** 255.255.255.252

**Default gateway:** 80.65.23.174

**Primary DNS server:** 80.65.20.1

**Secondary DNS server:** 80.65.16.1

To connect to the camera over the Internet, enter the following in the address field of your browser: `http://<IP>:<port>/`, where `<IP>` is the IP address of the camera, `<port>` is the port number that is used for HTTP connection to the camera (the default value is 80). In the provided example, the following should be entered in the address field: `http://80.65.23.173`.

**NOTE:**

You do not need to enter a port number if you are connecting through the default HTTP port 80.

### 6.2.2. Using a PPPoE Connection

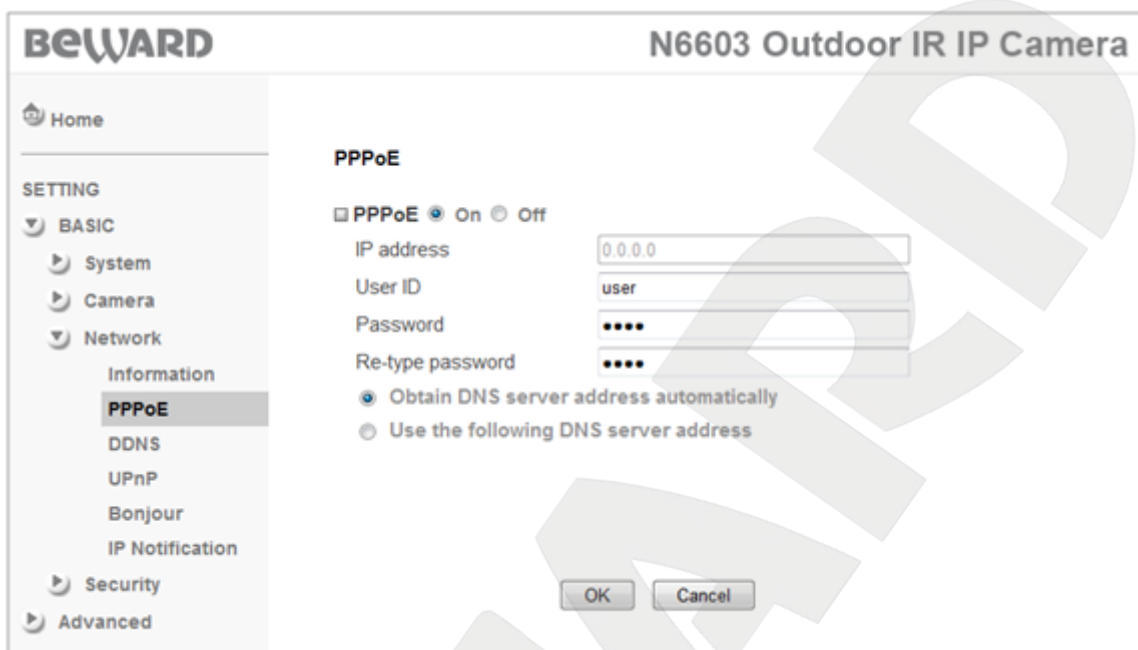
If your ISP cannot provide a static IP address, you can use a PPPoE connection to access the camera over the Internet. To access the camera over a PPPoE connection, your ISP should provide the following information: a username and a password.

The N6603 supports PPPoE connection; follow the steps below to establish the connection:

**Step 1:** connect the IP camera to your computer directly.

**Step 2:** go to **SETTING – Basic – Network – PPPoE**.

**Step 3:** enter the network settings provided by your ISP (Pic. 6.2).



Pic. 6.2

**Step 4:** click [OK] to save the changes.

**IMPORTANT!**

After you configure the network settings, you must reboot the camera.

**Step 5:** connect the IP camera to the Ethernet network.

**IMPORTANT!**

After being connected to the Ethernet, the camera is available at the IP address assigned by your ISP. To access the camera, you can use DynDNS service, which allows accessing the camera over the Internet when using a PPPoE connection (see N6603 Operations User Manual).

To connect to the camera over the Internet, enter the following in the address field of your browser: `http://<IP>:<port>/`, where <IP> is the IP address of the camera that is used for PPPoE connection to the camera, <port> is the port number that is used for HTTP connection to the camera (the default value is 80).

**NOTE:**

You do not need to enter a port number if you are connecting through the default HTTP port 80.

### 6.3. Internet Access to the Camera on a Local Network

When a leased line or ADSL is used for Internet access, a router is necessary to establish a local network.

#### IMPORTANT!

This type of connection requires a static public IP address. Usually ISPs provide a dynamic internal IP address, which can be used only inside the LAN. Contact your ISP to determine your IP address.

To access the camera over the Internet, use the IP address provided by your ISP (IP address of the router's WAN port) and a certain port number.

#### IMPORTANT!

When accessing over the Internet, you should note that all cameras inside the local network have the same public IP address. To access the cameras through the same IP address, you must specify a unique HTTP port number for each camera.

In this case, you should do the following:

- Configure the network settings of the IP cameras to match the LAN settings (see [paragraph 5.5](#)).
- Allow external connections. This can be done by configuring the “**Virtual server**”, which allows directing any data that reach a predefined WAN port from the Internet so that the data are forwarded to the camera's IP address on the local network. Most modern routers have the “**Virtual server**” option.

To provide Internet access to your camera(s) through a router, you need to configure the port mapping using one of the following methods:

- Using UPnP in your camera and your router.
- Manually configuring a routing table.

#### 6.3.1. Using the UPnP Option

Before using UPnP, make sure your router supports forwarding between LAN and WAN networks. If so, follow the steps below to set up the Internet access to your camera:

- Enable UPnP on your router and configure it.

#### IMPORTANT!

Some routers do not support UPnP forwarding between LAN and WAN networks. Before configuring, make sure your router supports this option. If not, your router requires additional configuration.



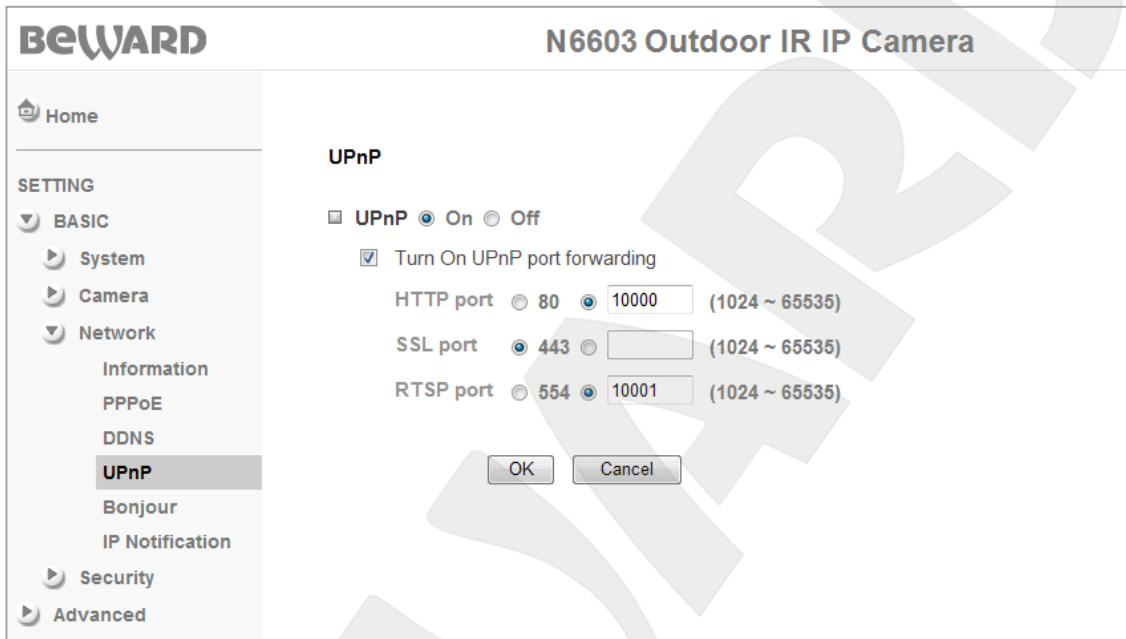
- Enable UPnP on your camera and configure it.

See your router's user manual for details on how to enable and configure the UPnP.

To enable and configure UPnP on your camera, follow the steps below:

**Step 1:** enable UPnP on your camera. To do so, go to: **SETTING – Basic – Network – UPnP**.

**Step 2:** check the [Turn On UPnP port forwarding] (Pic. 6.3).



Pic. 6.3

**Step 3:** in the [HTTP port] field, enter the HTTP port number that you want to use to access the camera over the Internet. For example, the value of the port you assigned is 10000. In this case, port 80 is used to access the camera over a local network and port 10000 is used to access the camera over the Internet. The default value is 80.

**Step 4:** in the [RTSP port] field, enter the RTSP port number that you want to use to access the camera over the Internet.

**Step 5:** click [OK] to save the changes.

**IMPORTANT:**

You must reboot the camera for the changes to take effect.

**IMPORTANT:**

To use port forwarding, the port number values of the camera must match the router port numbers.

To access the camera over the Internet, use the IP address provided by your ISP (IP address of the router's WAN port) and a certain port number.

For instance, the WAN IP address is 77.108.73.169 and the HTTP port number is 10000. In this case, you need to enter the following in the address field of your browser: `http://77.108.73.169:10000/`.

To use several cameras, you need to specify a unique port number for each camera and configure the forwarding.

### 6.3.2. Manual Port Forwarding

If your router does not support UPnP, you must manually configure your router to forward the ports. For this example, we use Planet XRT-412 router (almost identical to D-Link DI-604) to connect the IP camera.

For example, consider a scenario where you want to set up one camera to view the images over the Internet. You need to configure your router and your IP camera so that it can be accessed over the Internet as well as over your LAN.

#### **IMPORTANT!**

This type of connection requires a static public IP address. Usually ISP's provide a dynamic internal IP address, which can be used only inside the LAN. Contact your ISP to determine your IP address.

For example, consider Internet and LAN connections are configured on your router. The router is assigned a static public IP address provided by the ISP: 77.108.73.169.

The IP address range used on the local network is 192.168.0.1 – 192.168.0.255 and the router's IP address is 192.168.0.1. For this example, we use a computer connected to this local network.

It is necessary to configure the network settings of the camera (the camera's IP address is 192.168.0.99). To access the camera over the Internet, you need to configure its ports. On the local network, we use the camera's IP address to access it. To access the camera settings and view the images, the following default port numbers are used: HTTP port – 80, RTSP port – 554.

#### **IMPORTANT!**

When accessing over the Internet, you should note that all cameras inside the local network have the same public IP address. To access the cameras through the same IP address, you must specify a unique HTTP port number for each camera.

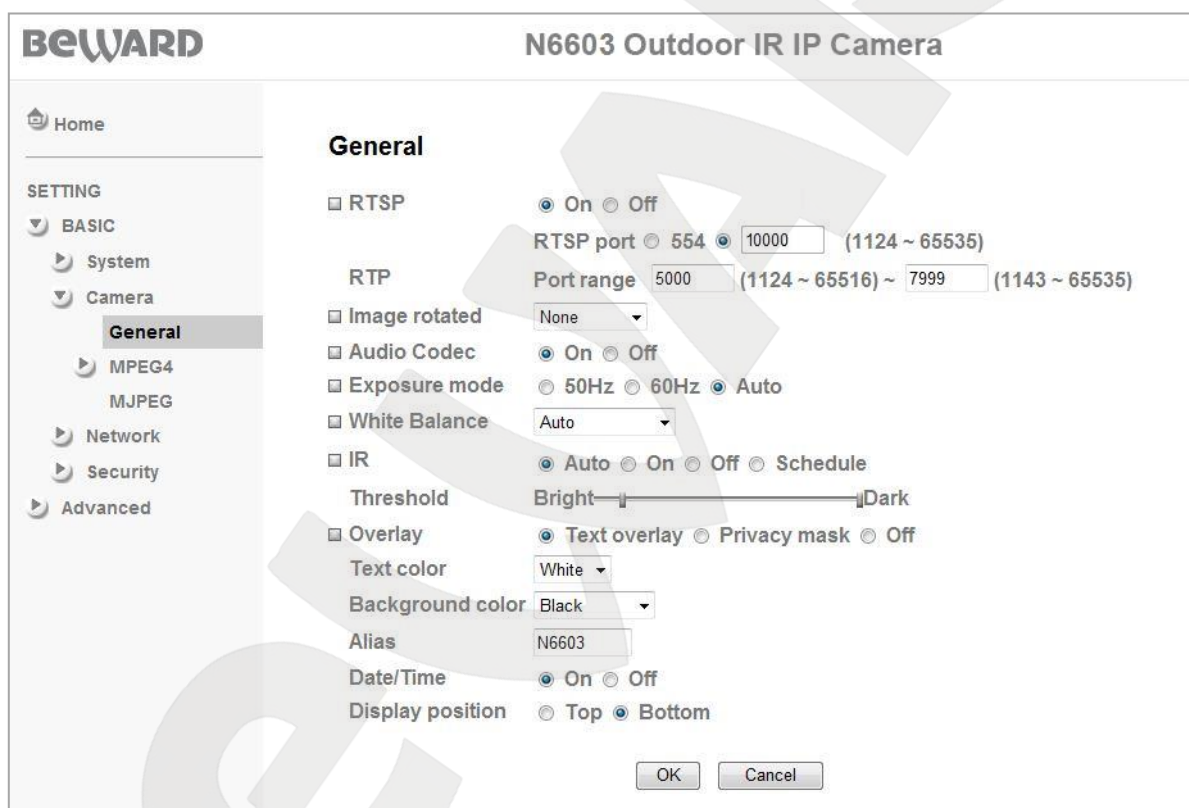
To change the ports of the camera, follow these steps:

### IMPORTANT!

You can share the same HTTP port between your IP cameras using port forwarding on the virtual server; however, you must specify a unique RTSP port number for each camera in order to access them over the Internet.

**Step 1:** connect to your camera's web interface and go to **SETTING – Basic – Camera – General**.

**Step 2:** in the [RTSP port] field, enter the RTSP port number that is different than the default port number. For this example, we use the RTSP port 10000 (Pic. 6.4).



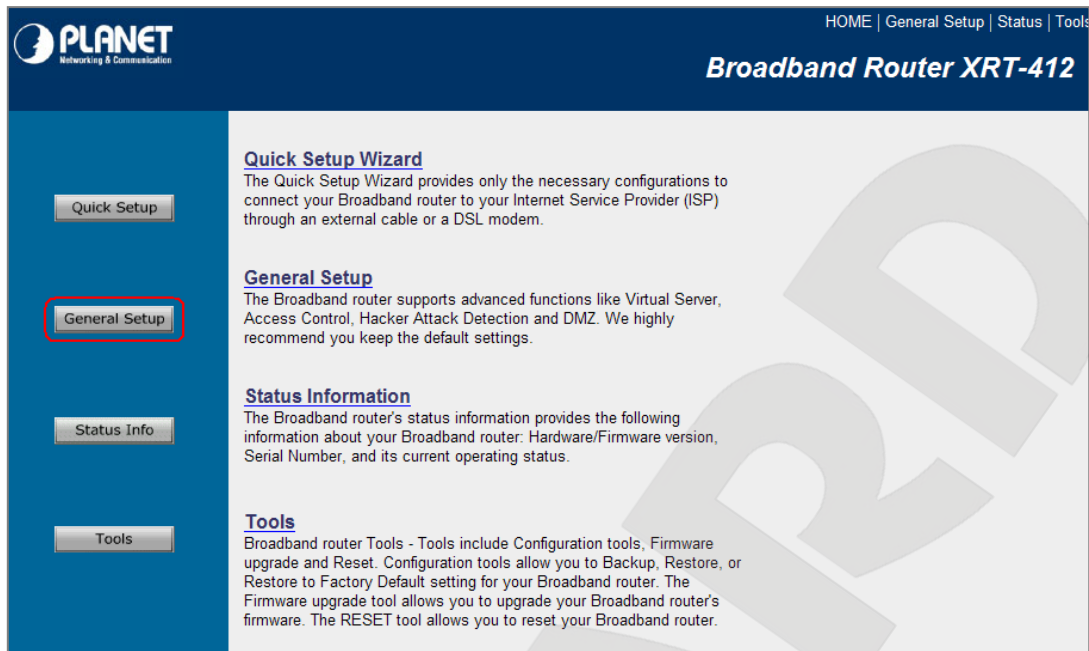
Pic. 6.4

**Step 3:** click [OK] to save the changes.

If there is another camera on the network, you can configure it as follows: HTTP port 80, RTSP port 10001.

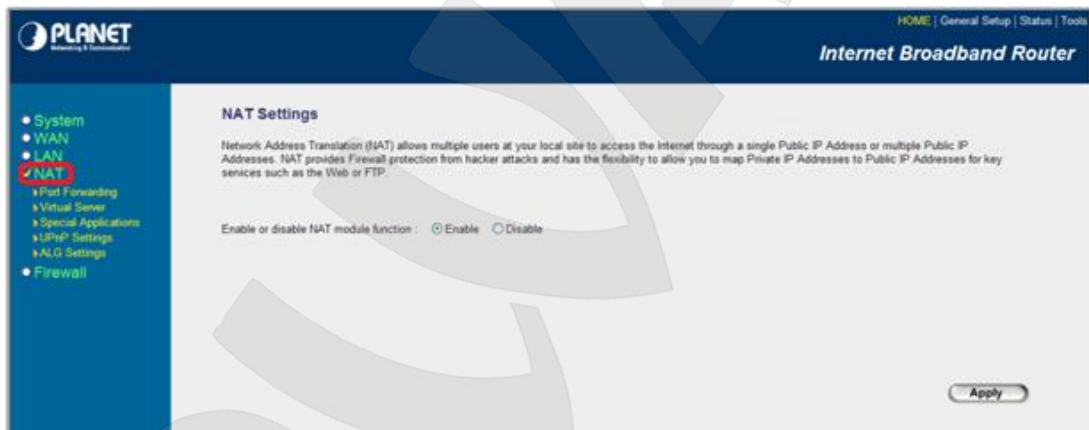
The camera configuration is complete. Now you need to configure your router to make the camera accessible over the Internet. To do so, follow the steps below:

**Step 1:** enter the IP address of your router in the browser address field (in the provided example, the address is 192.168.0.1). In the appeared window, enter your username and your password. After successful authorization, the router settings page appears (Pic. 6.5).



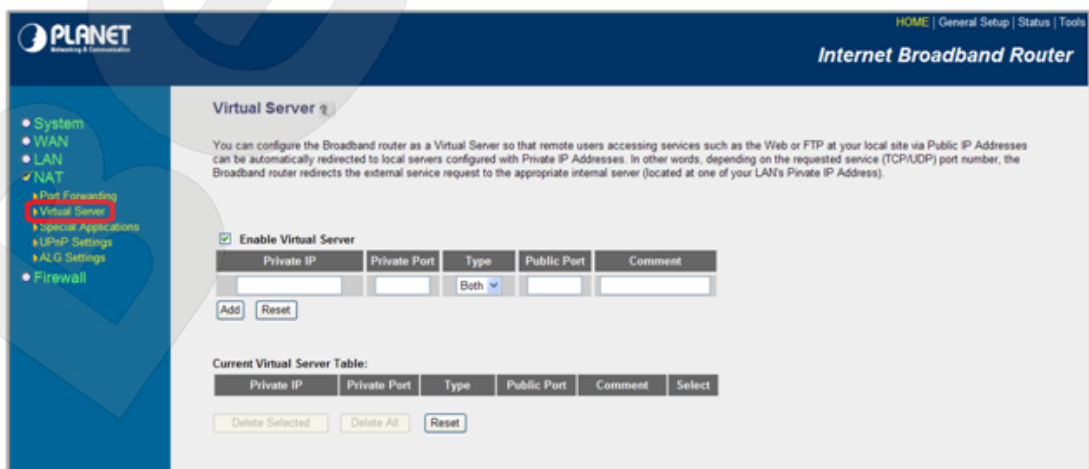
Pic. 6.5

**Step 2:** click the **[General Setup]**. Click the **[NAT]** in the opened menu (Pic. 6.6).



Pic. 6.6

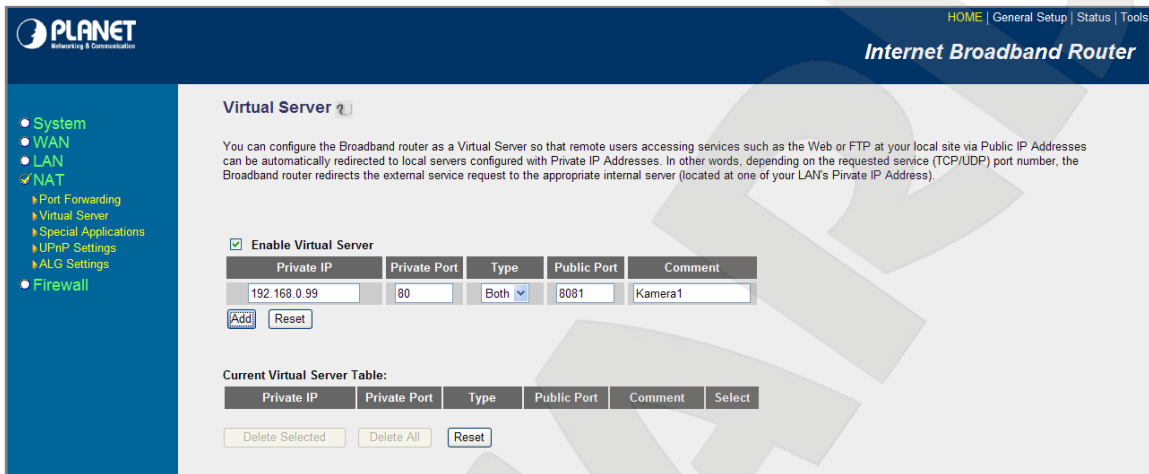
**Step 3:** in the opened menu, select the **[Virtual server]** (Pic. 6.7).



Pic. 6.7

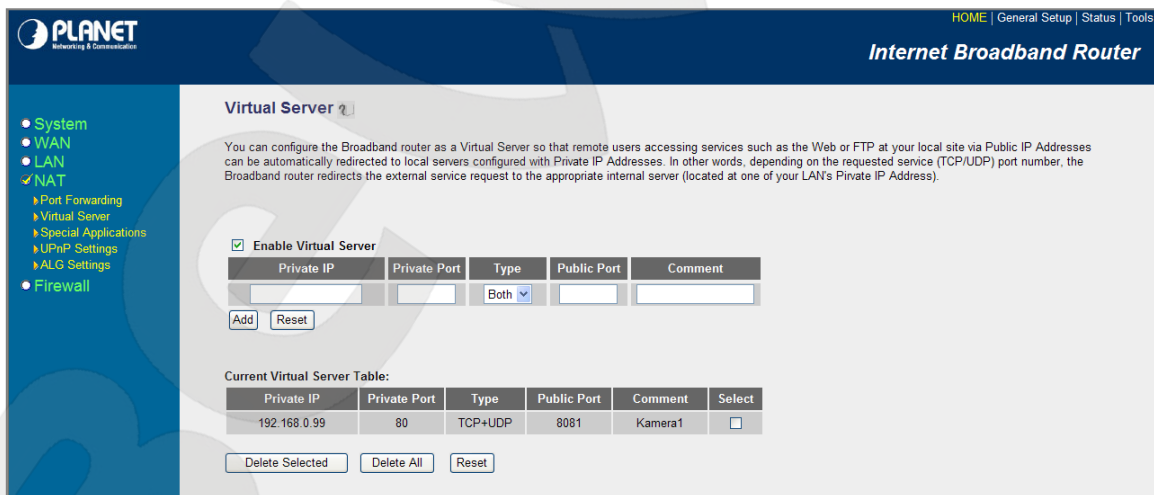
**Step 4:** turn on the virtual server. To do so, select the **[Enable Virtual Server]**.

**Step 5:** create the network address translation rules (Pic. 6.8). Enter the camera IP address and the HTTP port 80. Set the traffic type to **“Both”**, which allows both UDP and TCP translation. Enter a port number to access the camera over the Internet (for the provided example, the port is 8081). You can also make a comment (optional).



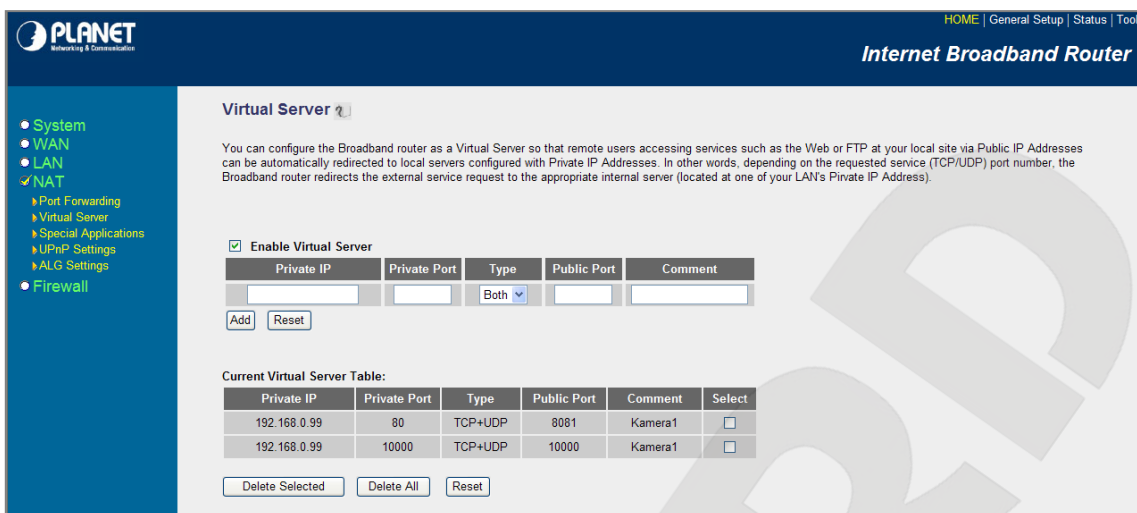
Pic. 6.8

**Step 6:** click the **[Add]** button (this adds the created rule to the routing table). The rule is added (Pic. 6.9).



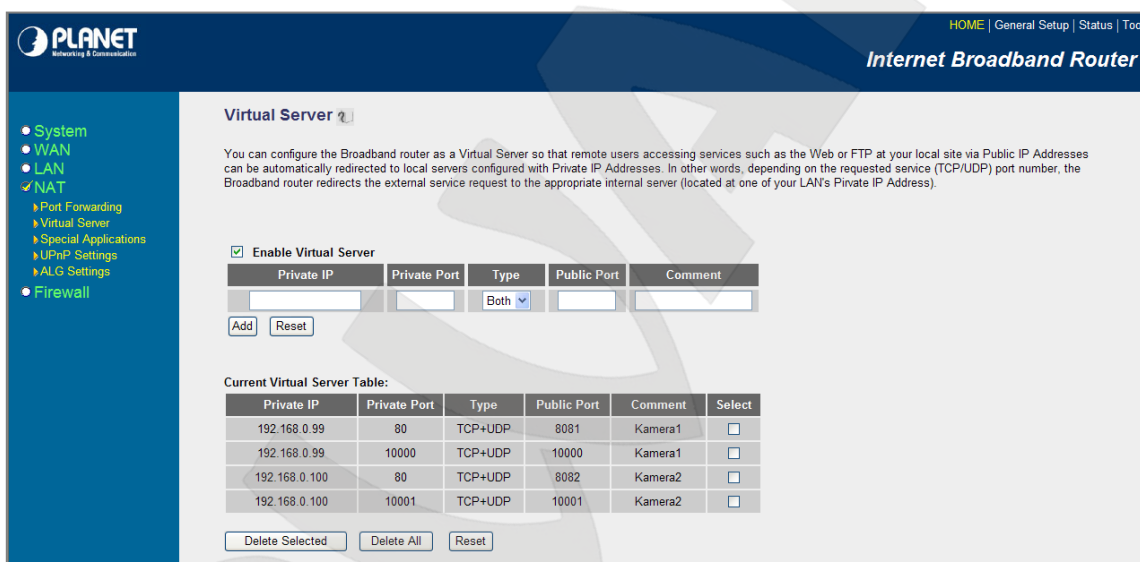
Pic. 6.9

**Step 7:** repeat to create a forwarding rule for RTSP (Pic. 6.10).



Pic. 6.10

**Step 8:** repeat to create a forwarding rule for other cameras (Pic. 6.11).



Pic. 6.11

The router configuration is complete.

### IMPORTANT!

You can use the virtual server to map the HTTP ports (for example, the port 80 of the camera 1 is translated to 8080; the port 80 of the camera 2 is translated to 8081). However, you must specify a unique RTSP port number for each camera, which can be mapped to the same port (for example, the port 10000 of the camera 1 is translated to 10000; the port 10001 of the camera 2 is translated to 10001).

To access the camera over the Internet, use the IP address provided by your ISP (IP address of the router's WAN port) and a certain HTTP port number.

For instance, the WAN IP address is 77.108.73.169 and the HTTP port number is 8081. In this case, you need to enter the following in the address field of your browser:  
<http://77.108.73.169:8081/>.

To use several cameras, you need to specify a unique port number for each camera and configure the forwarding.

## 6.4. Accessing the Camera over the Internet Using DynDNS service

### 6.4.1. Overview of Internet Access to Cameras Using DynDNS service

If a computer is assigned a temporary IP address changing from one session to the next, it means the computer is assigned a dynamic IP address. Many ISPs use this type of addressing. However, in order to access a device over the Internet any time, you need to contact your ISP and ask them to assign a static IP address, or use a Dynamic DNS (DDNS) service.

The Dynamic DNS service allows you to make your cameras accessible over the Internet even though they are assigned a dynamic IP address, which changes from time to time. All external users can always access the camera using its domain name.

The Dynamic DNS service allows you to access your camera over the Internet using its domain name, which might be similar to [www.camera1.dvrdns.org](http://www.camera1.dvrdns.org), instead of an IP address.

To do so, create an account at the DDNS server website such as [www.dyndns.org](http://www.dyndns.org), enter your camera's current IP address and choose a domain name that will be used to access your camera.

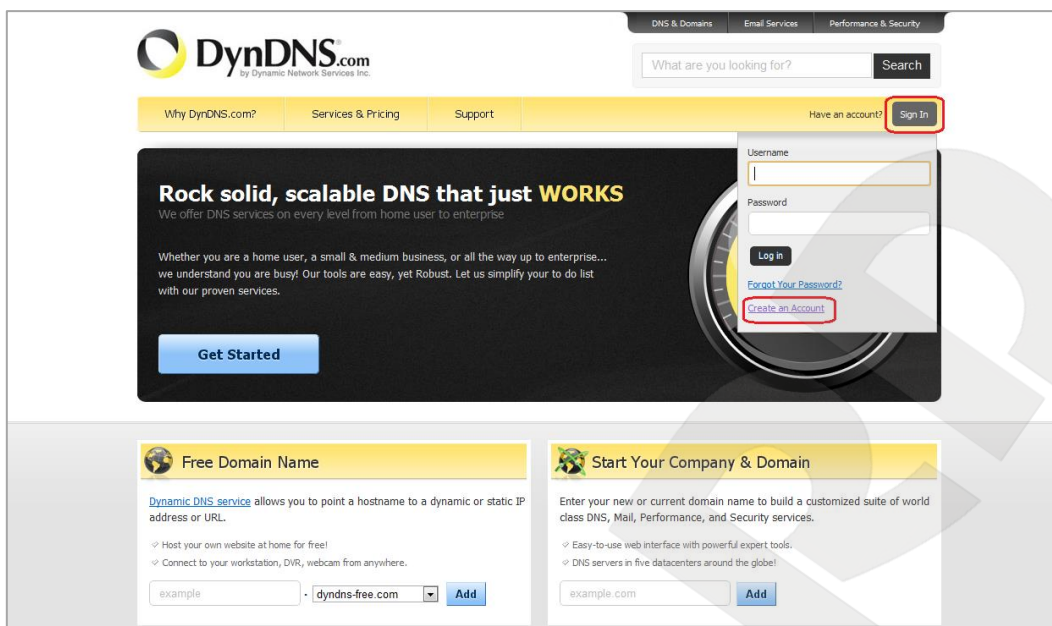
When either the IP address is changed or a new connection is established, the ISP assigns your camera a new IP address. Then it is processed by the software built into the camera and sent to the DDNS server. The DDNS provider ties the domain name you chose to the dynamic IP address.

For this example, we use the following DDNS provider: [www.dyndns.com](http://www.dyndns.com). To tie a domain name to the IP address of your camera, follow the steps below:

- Create an account at [www.dyndns.com](http://www.dyndns.com) – **[Account]**.
- Choose a domain name for your camera – **[Hostname]**. You can use any domain name that is not already being used. For this example, we use camera184 and thus have the following domain name: [www.camera184.dvrdns.org](http://www.camera184.dvrdns.org).
- Set up your equipment.

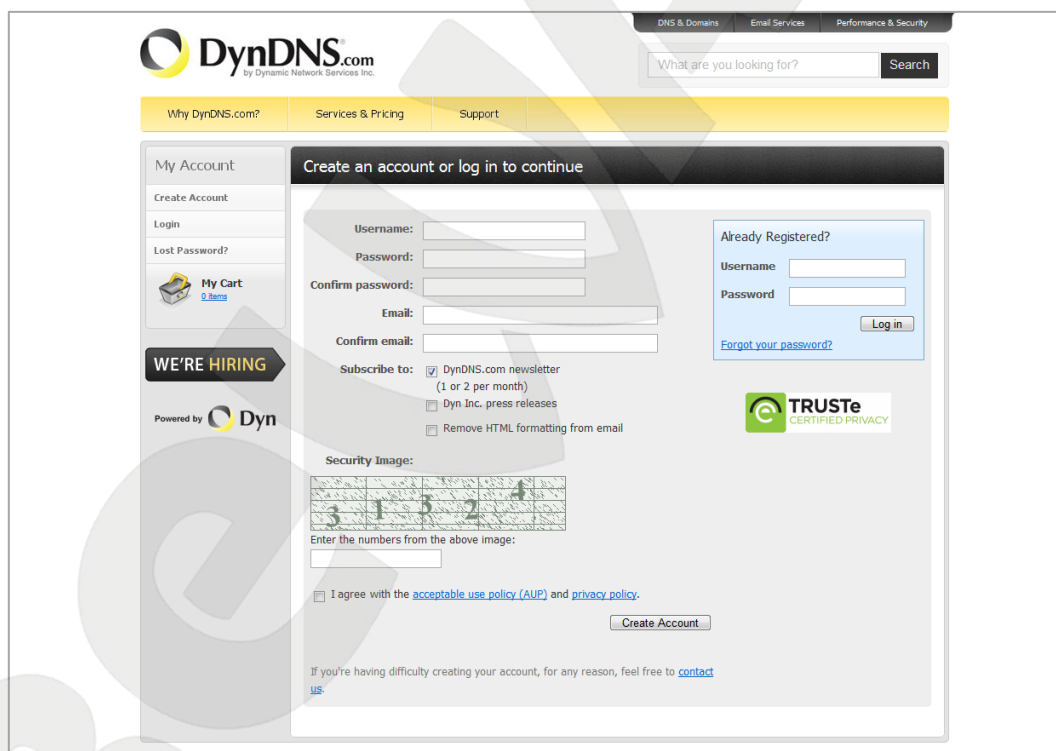
### 6.4.2. Creating an Account at DynDNS Service

**Step 1:** open your browser and go to [www.dyndns.com](http://www.dyndns.com), click the **[Sign In]** in the upper right corner and select the **[Create an Account]** in the drop-down menu (*Pic. 6.12*).



Pic. 6.12

Next you will see the Create an account page (Pic. 6.13).



Pic. 6.13

**Step 2:** enter a username that is not already being used (the **[Username]** field) and a password (the **[Password]** and **[Confirm password]** fields).

**NOTE:**

You need to confirm the password to ensure that there are no typing mistakes. You must enter the same password in both fields.



In the **[Email]** and **[Confirm email]** fields, enter your e-mail address. You will receive a confirmation e-mail to the specified address. An e-mail address can only be associated with one domain name.

**NOTE:**

A fee is required to associate one e-mail address with multiple domain names.

**NOTE:**

You need to confirm the e-mail address to ensure that there are no typing mistakes. You must enter the same e-mail address in both fields.

Check the **[DynDNS.com newsletter]** box to get newsletters from DynDNS or uncheck this box if you wish to cancel newsletters.

Enter the numbers from the image and check the **[I agree with the acceptable use policy (AUP) and privacy policy]** box, which means that you agree with AUP and privacy policy to create one free account.

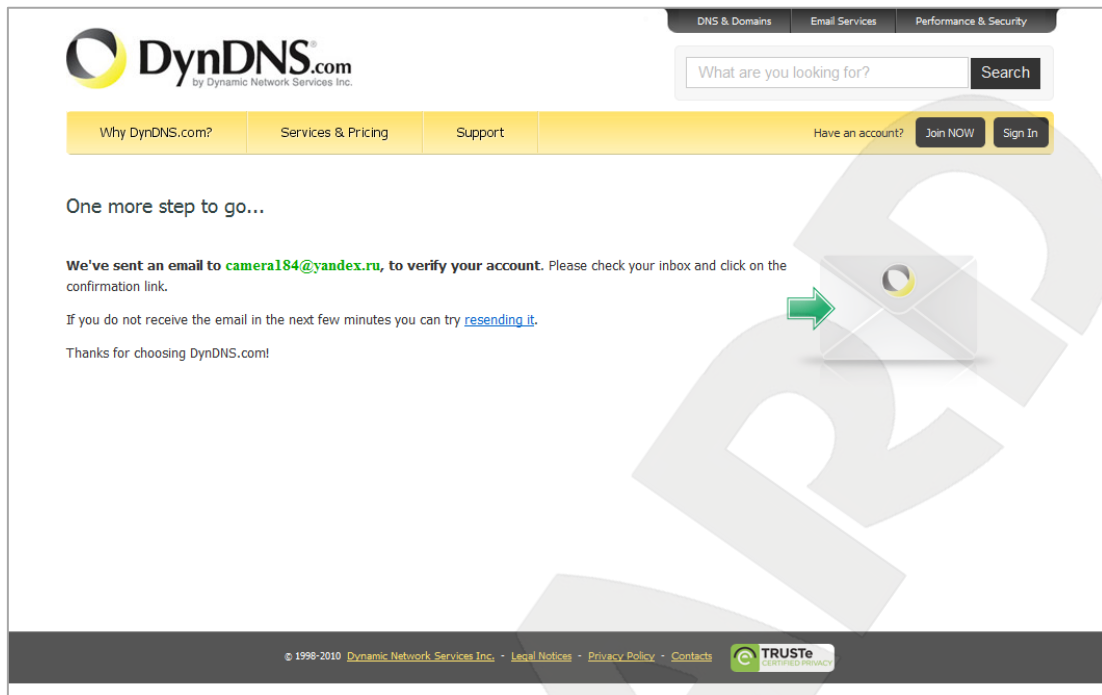
For this example, we use **[Username]** – camera184, **[Email]** - camera184@yandex.ru.

Click the **[Create Account]** button to complete the registration process (*Pic. 6.14*).

The screenshot displays the DynDNS.com registration interface. At the top, there is a search bar and navigation tabs for 'DNS & Domains', 'Email Services', and 'Performance & Security'. Below this is a yellow navigation bar with links for 'Why DynDNS.com?', 'Services & Pricing', and 'Support'. The main content area is titled 'Create an account or log in to continue'. On the left, there is a 'My Account' sidebar with links for 'Create Account', 'Login', 'Lost Password?', and 'My Cart'. The registration form itself contains the following elements: Username (camera184), Password (masked), Confirm password (masked), Email (camera184@yandex.ru), and Confirm email (camera184@yandex.ru). There are three subscription checkboxes: 'DynDNS.com newsletter (1 or 2 per month)', 'Dyn Inc. press releases', and 'Remove HTML formatting from email'. A security image with the numbers 3, 1, 5, 2, 4 is shown, and the user has entered 31324. A checkbox for 'I agree with the acceptable use policy (AUP) and privacy policy' is checked. A 'Create Account' button is located at the bottom right of the form. The page also features a 'TRUSTe CERTIFIED PRIVACY' logo.

Pic. 6.14

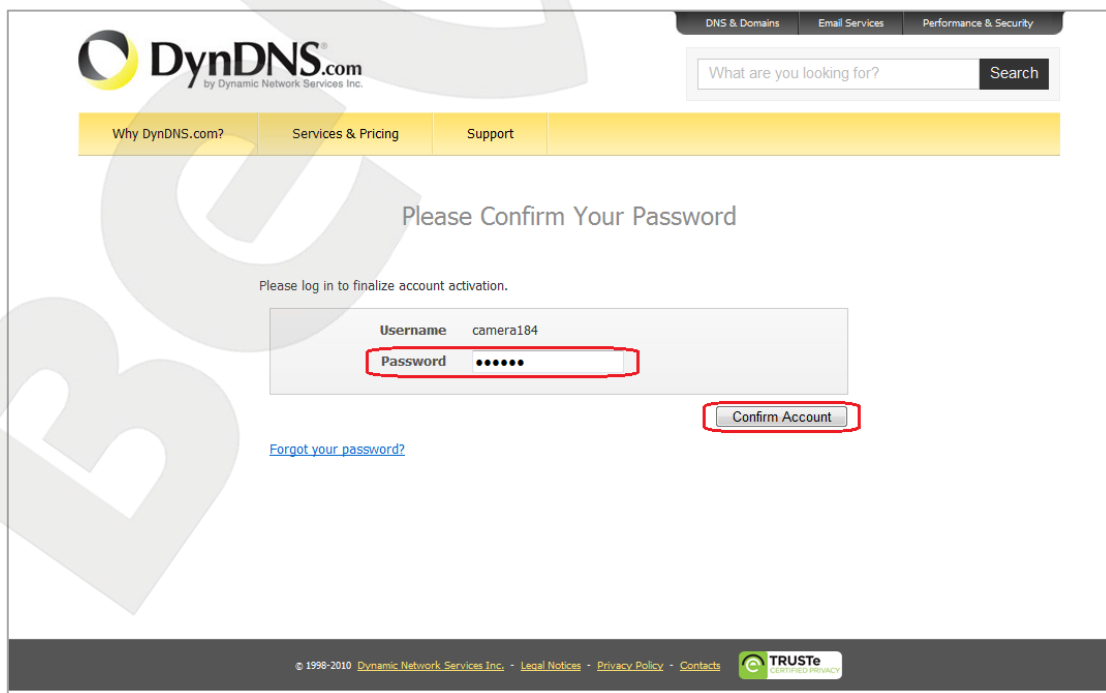
**Step 3:** if everything is correct, you will see the **[One more step to go...]** page (Pic. 6.15).



Pic. 6.15

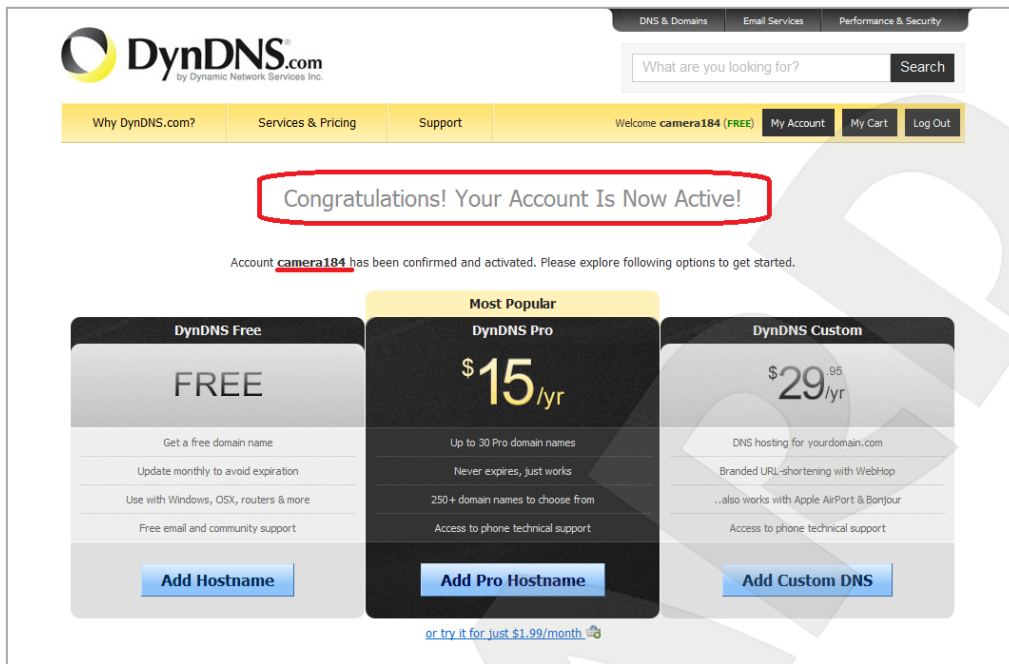
**Step 4:** you will receive an email confirmation message from «DynDNS Support» (the e-mail address is support@dyndns.com) to the email address you specified in your registration form. Click the link to confirm the registration and to activate your account.

After clicking the link from the e-mail, you will be sent to the confirmation page to activate your account. Enter your username and your password to log in and click the **[Confirm Account]** button (Pic. 6.16).



Pic. 6.16

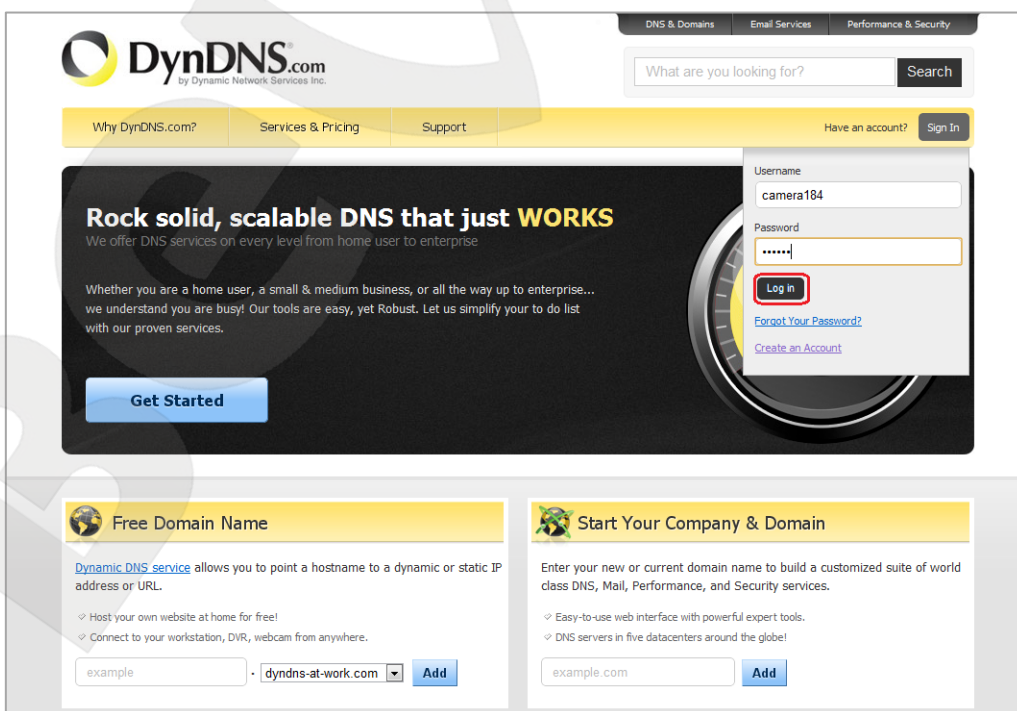
**Step 5:** your DynDNS account is created (Pic. 6.17).



Pic. 6.17

### 6.4.3. Creating a Domain Name at DynDNS

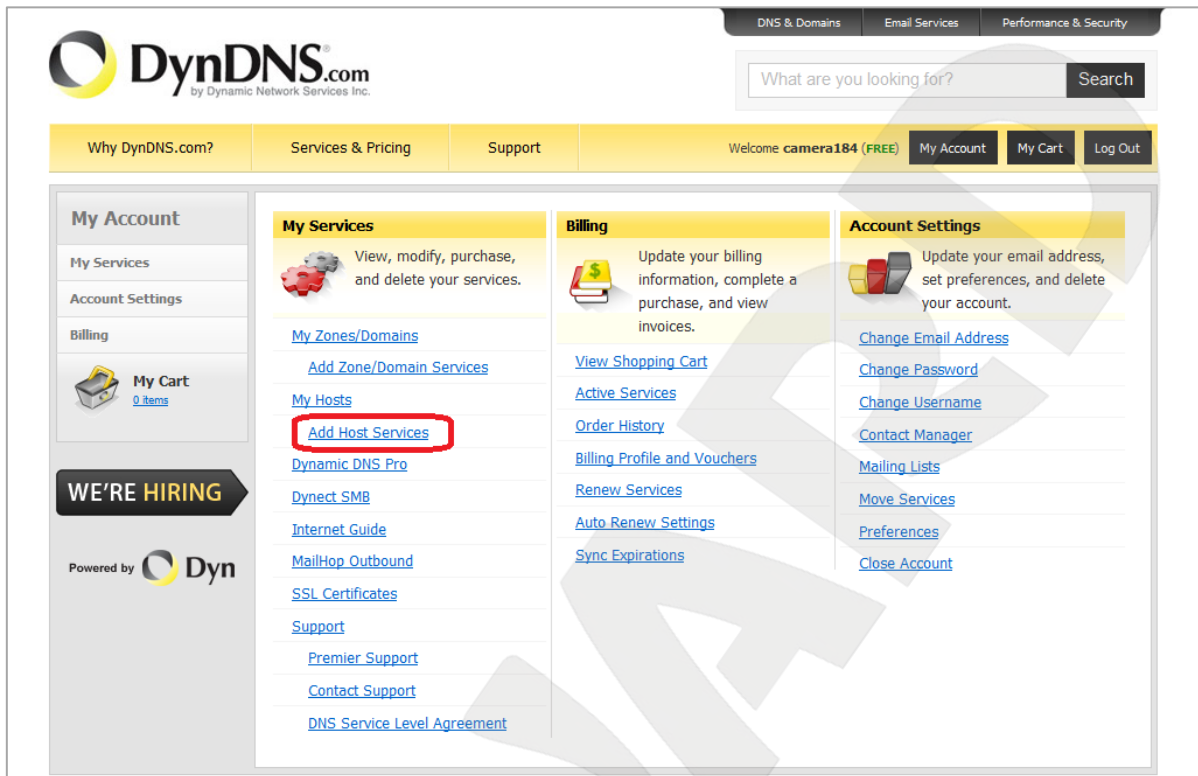
**Step 1:** open your browser, go to [www.dyndns.com](http://www.dyndns.com) and log in with your username and your password. To do so, click the **[Sign In]** button in the upper right corner and enter your username in the **[Username]** field and your password in the **[Password]** field, then click the **[Log In]** button (Pic. 6.18).



Pic. 6.18

**Step 2:** if the username and password are correct, you will see your account settings page.

To continue, click the **[Add Host Services]** (Pic. 6.19).



Pic. 6.19

**Step 3:** in the opened page, configure the connection settings. Select a domain. For this example, we use dyndns.org.

In the **[Hostname]** field, enter a domain name for you camera (e.g. camera184). If the domain name is available, the camera will be accessible at camera184.dyndns.org (Pic. 6.20).

The screenshot shows the DynDNS.com 'Add New Hostname' page. The page has a navigation bar with 'DNS & Domains', 'Email Services', and 'Performance & Security'. Below the navigation bar, there are links for 'Why DynDNS.com?', 'Services & Pricing', 'Support', and a welcome message for 'camera184 (rss)'. The main content area is titled 'Add New Hostname' and includes a search bar and a 'Host Services' link. The page contains several sections: 'My Account' with links to 'My Services', 'Account Settings', and 'Billing'; 'Add New Hostname' with a 'Host Services' link; a message stating 'You don't currently have a Dynamic DNS Pro service in your account.'; a form for adding a new hostname with fields for 'Hostname', 'Wildcard', 'Service Type', 'IP Address', and 'Mail Routing'; and a section for selecting services and devices to use with the hostname. The 'IP Address' field is highlighted with a red box, and the 'Add To Cart' button is also highlighted with a red box.

Pic. 6.20

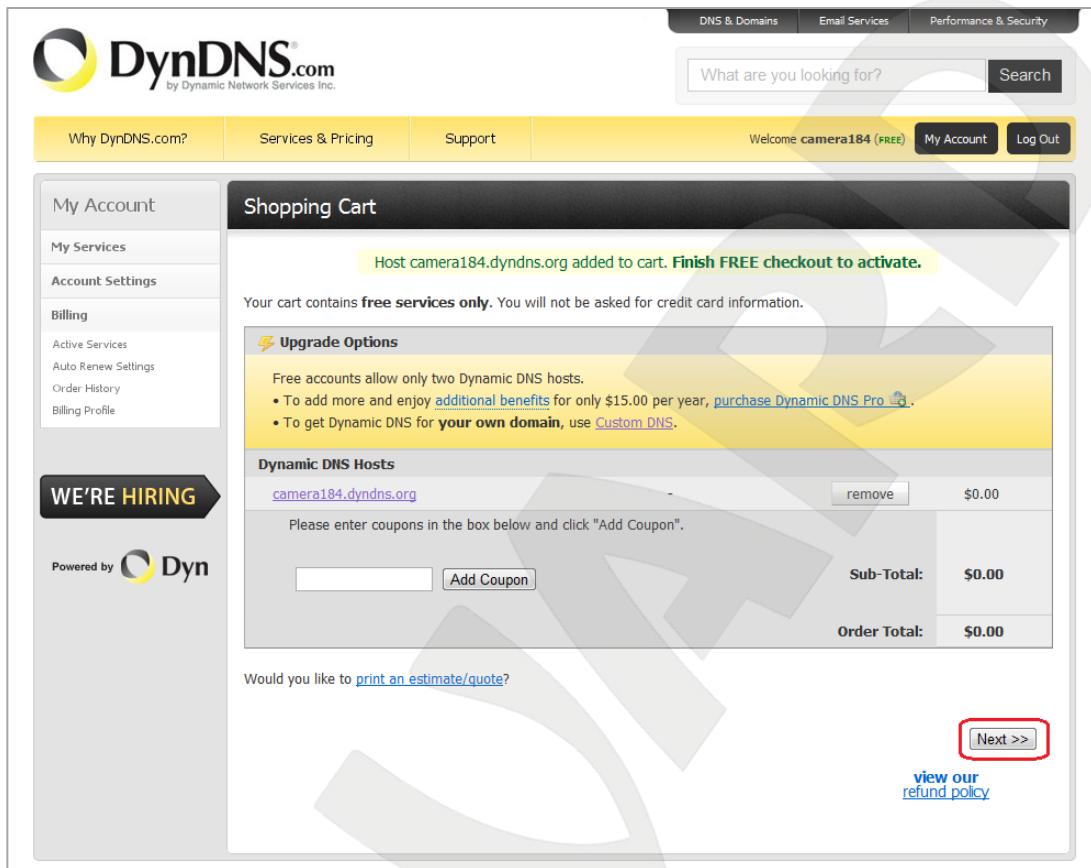
To tie the current IP address of your camera to the specified domain name, please enter its IP address in the **[IP address field]**. By default, DynDNS service determines the IP address from which you are connecting to the service (Pic. 6.21).

The close-up screenshot shows the 'IP Address' field in the DynDNS.com form. The field is empty, and the text below it reads 'Your current location's IP address is 89.105.128.207' and 'TTL value is 60 seconds. Edit TTL...'.

Pic. 6.21

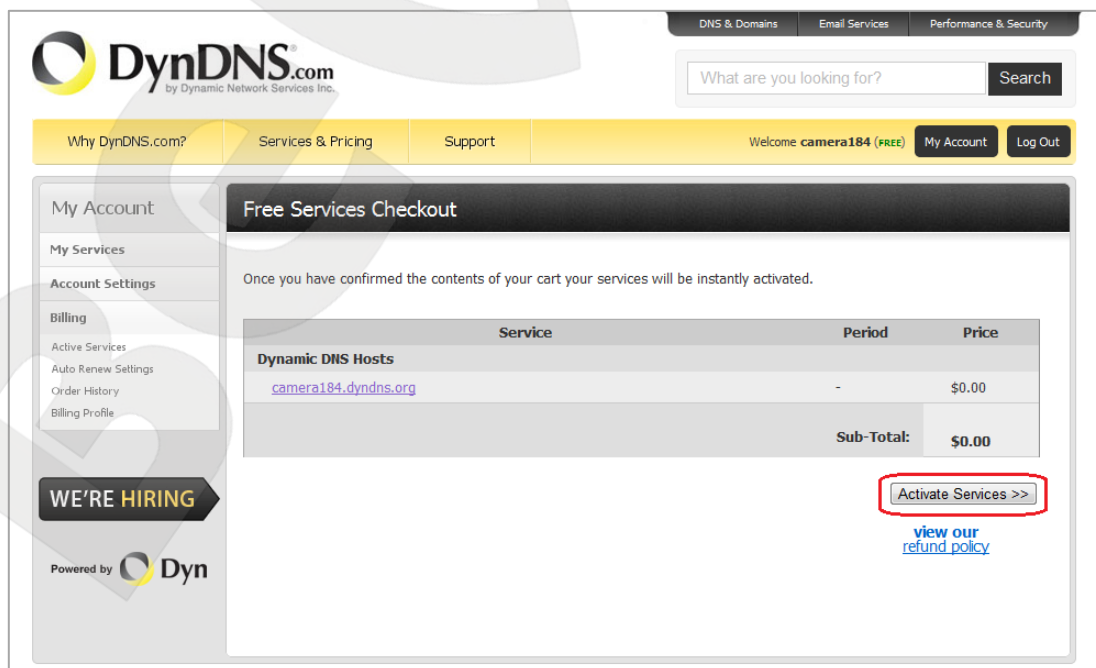
Enter the IP address assigned by your ISP and click the **[Add To Cart]** button.

**Step 4:** if the domain name is created successfully, you will see the confirmation page. In the provided example, camera184.dyndns.org domain name is created. To activate your domain name, click **[Next]** (Pic. 6.22).



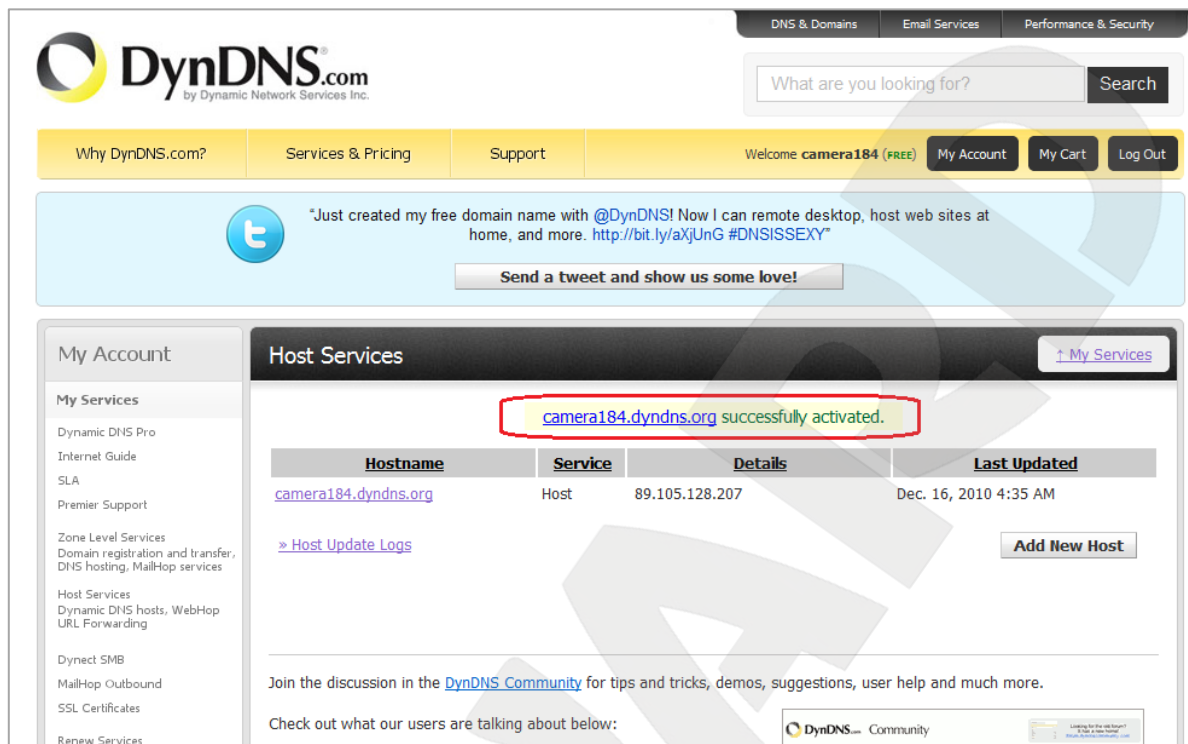
Pic. 6.22

In the opened page, click the **[Activate Service]** button (Pic. 6.23).



Pic. 6.23

**Step 5:** if your domain name is activated successfully, you will see the confirmation page (Pic. 6.24).



Pic. 6.24

**Step 6:** your domain name is created.

#### 6.4.4. Setting up the Equipment to Work with DynDNS

After the previous steps are completed, you need to set up your camera according to your registration details at DynDNS service (see [paragraph 6.4.2](#), [6.4.3](#)).

The IP camera and a router (in case if you camera is connected to the Internet through a router) can both update the IP address at DynDNS server.

To set up your camera to work with DynDNS service, please follow the steps below:

#### IMPORTANT!

Your camera must be connected to the Internet directly.

**Step 1:** enable the [DDNS] option at **SETTING – Basic – Network – DDNS**.

**Step 2:** select a DDNS provider in the [Server name].

**Step 3:** enter the username that you chose at registration in the [User ID].

**Step 4:** enter the password that you chose at registration in the [Password].

**Step 5:** re-type the password in the [Re-type password].

**Step 6:** enter the domain name that you chose at registration in the [Host name].

**IMPORTANT!**

For detailed information on how to configure the camera through the web interface, please refer to the Operations user manual.

According to the registration details that were specified at DynDNS server (see [paragraph 6.4.2](#), [6.4.3](#)), select “www.dyndns.org” in the **[Server name]** field. Enter “camera184” in the **[User ID]** and “123456” in the **[Password]**. Enter “camera184.dyndns.org” in the **[Host name]** (Pic. 6.25).

**Step 7:** click **[OK]** to save the changes.

The screenshot shows a web interface for configuring DDNS. On the left is a sidebar with a 'Home' icon and a 'SETTING' menu. Under 'SETTING', 'BASIC' is expanded, and 'Network' is also expanded, showing options like Information, PPPoE, **DDNS**, UPnP, Bonjour, and IP Notification. Below these are Security and Advanced. The main content area is titled 'DDNS'. It has a checkbox for 'DDNS' which is checked, followed by radio buttons for 'On' (selected) and 'Off'. Below are several input fields: 'Server name' with a dropdown menu showing 'http://www.dyndns.org', 'User ID' with the text 'camera184', 'Password' and 'Re-type password' both masked with dots, and 'Host name' with the text 'camera184.dyndns.org'. There are also radio buttons for 'Periodical Update', with 'Auto' selected and 'Periodical' set to '5 min'. At the bottom right are 'OK' and 'Cancel' buttons.

Pic. 6.25

**IMPORTANT!**

After you configure the network settings, you must reboot the camera.

**IMPORTANT!**

If a host is not updated within 35 days, it will be removed from the system.

**Step 8:** the camera configuration is completed.

Let's consider an example of setting up DDNS on a router by configuring Planet XRT-401D. Routers of other manufacturers are configured identically; please refer to the router's manual for



more information on how to configure DDNS. The router is configured to work with DynDNS as follows:

**IMPORTANT!**

Make sure your router supports DDNS, is connected to the Internet and configured properly.

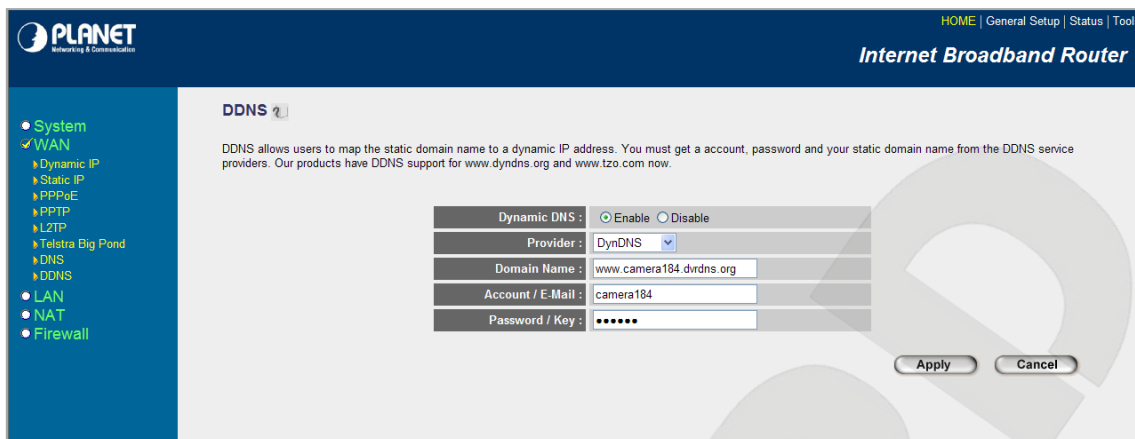
**Step 1:** enter the IP address of your router in the browser address field. In the appeared window, enter your username and your password. After successful authorization, the router settings page appears. Click the **[General Setup]** (Pic. 6.26).



Pic. 6.26

**Step 2:** click the **[DDNS]** in the opened menu. Click the **[Enable]** to enable the DDNS option.

**Step 3:** according to the registration details that were specified at DynDNS server (see [paragraph 6.4.2](#), [6.4.3](#)), select “www.dyndns.org” in the **[Provider]** field. Enter “camera184.dyndns.org” in the **[Domain Name]**, enter “camera184” in the **[Account / E-Mail]** and “123456” in the **[Password / Key]** field (Pic. 6.27).



Pic. 6.27

**IMPORTANT!**

Make sure you have entered the valid data; otherwise, your router will not be able to connect to the DDNS server.

**Step 4:** click the **[Apply]** to save the changes.

**Step 5:** the router configuration is completed.

If everything is configured correctly, your camera will be available from anywhere in the world and accessible under the unique name that is easy to remember. From now on, you need to enter <http://camera184.dydns.org> in your browser address field to access your camera and if everything was done correctly, you should see the camera main window.

## Appendix

## Appendix A. Port Values

Port	Default Value	Range of Values
HTTP	80	1124..65535
HTTP forwarding over UPnP	80	1024..65535
HTTPS forwarding over UPnP	443	1024..65535
RTSP	554	1124..65535
RTSP forwarding over UPnP	554	1024..65535
RTP start port	5000	1124..65516
RTP end port	7999	1143..65535
Multicast video port	-	1124..65534
Multicast audio port	-	1124..65534
SMTP	25	1..65535
System log remote server port	514	1..65535
Event server port	80	1..65535
Proxy port	-	1..65535
Motion detection	1999	-
MPEG4 (HTTP) stream	80	1024..65535
MJPEG (HTTP) stream	80	1024..65535
MPEG4 (HTTP SSL) stream	8091	1024..65535
MJPEG (HTTP SSL) stream	8071	1024..65535

**Appendix B. Factory Defaults**

This table provides camera factory defaults

<b>Parameter</b>	<b>Value</b>
IP address	<b>192.168.0.99</b>
Subnet mask	<b>255.255.255.0</b>
Gateway	<b>192.168.0.1</b>
Username (administrator)	<b>admin</b>
Password (administrator)	<b>admin</b>
HTTP port	<b>80</b>
RTSP port	<b>554</b>
SMTP port	<b>25</b>

## Appendix C. Glossary

**3GP** (3GPP file format) is a multimedia container format defined by the Third Generation Partnership Project (3GPP) for 3G UMTS multimedia services. It is used on 3G mobile phones but can also be played on some 2G and 4G phones.

**ActiveX** is a standard that enables software components to interact with one another in a networked environment, regardless of the language(s) used to create them. Web browsers may come into contact with ActiveX controls, ActiveX documents, and ActiveX scripts. ActiveX controls are often downloaded and installed automatically as required.

**Asymmetric Digital Subscriber Line (ADSL)** is an obsolete type of Digital Subscriber Line technology, a data communications technology that enables faster data transmission over copper telephone lines than a conventional voiceband modem can provide.

**Angle** is the field of view, relative to a standard lens in a 35mm still camera, expressed in degrees, e.g. 30°. For practical purposes, this is the area that a lens can cover, where the angle of view is determined by the focal length of the lens. A wide-angle lens has a short focal length and covers a wider angle of view than standard or telephoto lenses, which have longer focal lengths.

**ARP (Address Resolution Protocol)** is used to associate an IP address to a hardware MAC address. A request is broadcast on the local network to discover the MAC address for an IP address.

**Aspect ratio** is a ratio of width to height in images. A common aspect ratio used for television screens and computer monitors is 4:3. High-definition television (HDTV) uses an aspect ratio of 16:9.

**Authentication** is the process of identifying an individual, usually based on a username and password. In security systems, authentication is distinct from authorization, which is the process of giving individuals access to system objects based on their identity. Authentication merely ensures that the individual is who he or she claims to be, but says nothing about the access rights of the individual.

**Autoiris (or DC-Iris).** This special type of iris is electrically controlled by the camera, to automatically regulate the amount of light allowed to enter.

**Bit rate:** (in kbit/s or Mbit/s) is often referred to as speed, but actually defines the number of bits/time unit and not distance/time unit.

**Backlight Compensation** compensates for strong backlighting, so that subjects appear clearly instead of as silhouettes.

**Bonjour**, also known as zero-configuration networking, Bonjour enables automatic discovery of computers, devices, and services on IP networks. Bonjour allows devices to automatically discover each other without the need to enter IP addresses or configure DNS servers. Bonjour is developed by Apple Computer Inc.

**CCD (Charged Coupled Device).** This light-sensitive image device used in many digital cameras is a large integrated circuit that contains hundreds of thousands of photo-sites (pixels) that convert light energy into electronic signals. Its size is measured diagonally and can be 1/4", 1/3", 1/2" or 2/3".

**CGI (Common Gateway Interface)** is a specification for communication between a web server and other (CGI) programs. For example, a HTML page that contains a form might use a CGI program to process the form data once it is submitted.

**Classless Inter Domain Routing (CIDR)** is a method for assigning IP addresses without using the standard IP address classes like Class A, Class B or Class C. In CIDR notation, an IP address is represented as A.B.C.D /n, where "/n" is called the IP prefix or network prefix. The IP prefix identifies the number of significant bits used to identify a network. For example, 192.9.205.22 /18 means, the first 18 bits are used to represent the network and the remaining 14 bits are used to identify hosts. Common prefixes are 8, 16, 24, and 32.

**Complementary metal–oxide–semiconductor (CMOS)** is a technology for constructing integrated circuits. CMOS technology is used in microprocessors, microcontrollers, static RAM, and other digital logic circuits. CMOS technology is also used for several analog circuits such as image sensors (CMOS sensor), data converters, and highly integrated transceivers for many types of communication.

**Dynamic DNS** is a method/protocol/network service that provides the capability for a networked device, such as a router or computer system using the Internet Protocol Suite, to notify a Domain Name System (DNS) name server to change, in real time, the active DNS configuration of its configured hostnames, addresses or other information.

**DHCP (Dynamic Host Configuration Protocol)** is a protocol that lets network administrators automate and centrally manage the assignment of Internet Protocol (IP) addresses to network devices in a network. DHCP uses the concept of a "lease" or amount of time that a given IP address will be valid for a computer. The lease time can vary, depending on how long a user is likely to require the network connection at a particular location. DHCP also supports static addresses for e.g. computers running web servers, which need a permanent IP address.

**Digital zoom** is a method of decreasing (narrowing) the apparent angle of view of a digital photographic or video image. Digital zoom is accomplished by cropping an image down to a centered area with the same aspect ratio as the original, and usually also interpolating the result back up to the pixel dimensions of the original. It is accomplished electronically, with no adjustment of the camera's optics, and no optical resolution is gained in the process.

**Domain server** can also be used by organizations that wish to centralize the management of their (Windows) computers. Each user within a domain has an account that usually allows them to log in to and use any computer in the domain, although restrictions may also apply. The domain server is the server that authenticates the users on the network.

**Ethernet** is the most widely installed local area network technology. An Ethernet LAN typically uses special grades of twisted pair wires. The most commonly installed Ethernet systems are 10BASE-T and 100BASE-T10, which provide transmission speeds up to 10 Mbps and 100 Mbps respectively.

**Factory default settings** are the settings that originally applied for a device when it was first delivered from the factory. If it should become necessary to reset a device to its factory default settings, this will, for many devices, completely reset any settings that were changed by the user.

**Firewall** works as a barrier between networks, e.g. between a Local Area Network and the Internet. The firewall ensures that only authorized users are allowed to access the one network from the other. A firewall can be software running on a computer, or it can be a standalone hardware device.

**Focal length** is measured in millimeters; the focal length of a camera lens determines the width of the horizontal field of view, which in turn is measured in degrees.

**FPS (frames per second)** a measure of how much information is used to store and display motion video. The term applies equally to film video and digital video. Each frame is a still image; displaying frames in quick succession creates the illusion of motion. The more frames per second (fps), the smoother the motion appears.

**Frame** is a complete video image. In the 2:1 interlaced scanning format of the RS-170 and CCIR formats, a frame is made up of two separate fields of 262.5 or 312.5 lines interlaced at 60 or 50 Hz to form a complete frame, which appears at 30 or 25 Hz. In video cameras with a progressive scan, each frame is scanned line-by-line and not interlaced; most are also displayed at 30 and 25 Hz.

**FTP (File Transfer Protocol)** is an application protocol that uses the TCP/IP protocols, used to exchange files between computers/devices on networks.

**Full-duplex** means transmission of data in two directions simultaneously. In an audio system this would describe e.g. a telephone system. Half-duplex also provides bi-directional communication, but only in one direction at a time, as in a walkie-talkie system.

**G.711** is the default pulse code modulation (PCM) standard for Internet Protocol (IP) private branch exchange (PBX) vendors, as well as for the public switched telephone network (PSTN). G.711 digitizes analog voice signals producing output at 64 kilobits per second (Kbps).

**Gain** is the amplification factor and the extent to which an analog amplifier boosts the strength of a signal. Amplification factors are usually expressed in terms of power. The decibel (dB) is the most common way of quantifying the gain of an amplifier.

**Gateway** is a point in a network that acts as an entry point to another network. In a corporate network for example, a computer server acting as a gateway often also acts as a proxy server and a firewall server. A gateway is often associated with both a router, which knows where

to direct a given packet of data that arrives at the gateway, and a switch, which furnishes the actual path in and out of the gateway for a given packet.

**HTTP (Hypertext Transfer Protocol)** is the set of rules for exchanging files (text, graphic images, sound, video, and other multimedia files) on the web. The HTTP protocol runs on top of the TCP/IP suite of protocols.

**HTTPS (Hypertext Transfer Protocol over SSL)** is a web protocol used by browsers and web servers to encrypt and decrypt user page requests and the pages returned by the server. The encrypted exchange of information is governed by the use of an HTTPS certificate (issued by a Certificate Authority), which guarantees the authenticity of the server.

**Hub** is used to connect multiple devices to the network. The hub transmits all data to all devices connected to it, whereas a switch will only transmit the data to the device it is specifically intended for.

**ICMP** is a network protocol useful in Internet Protocol (IP) network management and administration. ICMP is a required element of IP implementations. ICMP is a control protocol, meaning that it does not carry application data, but rather information about the status of the network itself.

**IEEE 802.11** is a family of standards for wireless LANs. The 802.11 standard supports 1 or 2 Mbit/s transmission on the 2.4 GHz band. IEEE 802.11b supports data rates up to 11 Mbit/s on the 2.4 GHz band, while 802.11g allows up to 54 Mbit/s on the 5 GHz band.

**Interlacing.** Interlaced video is video captured at 50 pictures (known as fields) per second, of which every 2 consecutive fields (at half height) are then combined into 1 frame. Interlacing was developed many years ago for the analog TV world and is still used widely today. It provides good results when viewing motion in standard TV pictures, although there is always some degree of distortion in the image.

**Internet Explorer** (formerly Microsoft Internet Explorer, commonly abbreviated IE or MSIE) is a series of graphical web browsers developed by Microsoft and included as part of the Microsoft Windows line of operating systems, starting in 1995.

**IP66** is a two digit number developed by the international electrical Commission, and is used to provide Ingress Protection (IP) rating to a piece of electronic equipment or to an enclosure for electronic equipment. The Ingress protection code indicates the level and amount of protection. The first digit means no ingress of dust; complete protection against contact. The second digit means water projected in powerful jets (12.5mm nozzle) against the enclosure from any direction shall have no harmful effects.

**IP camera.** The terms IP camera, network camera and Internet camera all refer to the same thing - a camera and computer combined in one unit. It operates as stand-alone unit and only requires a connection to the network.



**JPEG (Joint Photographic Experts Group).** Together with the GIF file format, JPEG is an image file type commonly used on the web. A JPEG image is a bitmap, and usually has the file extension '.jpg' or ".jpeg." When creating a JPEG image, it is possible to configure the level of compression to use. As the lowest compression (i.e. the highest quality) results in the largest file, there is a trade-off between image quality and file size.

**kbit/s (kilobits per second)** is a measure of the bit rate, i.e. the rate at which bits are passing a given point. See also Bit rate.

**LAN (Local Area Network)** is a group of computers and associated devices that typically share common resources within a limited geographical area.

**Lux** is a standard unit of illumination measurement.

**MAC address (Media Access Control address)** is a unique identifier associated with a piece of networking equipment, or more specifically, its interface with the network. For example, the network card in a computer has its own MAC address.

**Mbit/s (Megabits per second)** is a measure of the bit rate, i.e. the rate at which bits are passing a given point. Commonly used to give the "speed" of a network. A LAN might run at 10 or 100 Mbit/s.

**Motion JPEG** is a simple compression/decompression technique for network video. Latency is low and image quality is guaranteed, regardless of movement or complexity of the image. Image quality is controlled by adjusting the compression level, which in turn provides control over the file size, and thereby the bit rate.

**MPEG-4** is a group of audio and video coding standards and related technology. The primary uses for the MPEG-4 standard are web (streaming media) and CD distribution, conversational (videophone), and broadcast television. Most of the features included in MPEG-4 are left to individual developers to decide whether to implement them or not. This means that there are probably no complete implementations of the entire MPEG-4 set of standards. To deal with this, the standard includes the concept of "profiles" and "levels", allowing a specific set of capabilities to be defined in a manner appropriate for a subset of applications.

**Multicast** is a bandwidth-conserving technology that reduces bandwidth usage by simultaneously delivering a single stream of information to multiple network recipients.

**Network Time Protocol (NTP)** is a protocol for synchronizing the clocks of computer systems over packet-switched, variable-latency data networks. It is designed particularly to resist the effects of variable latency by using a jitter buffer.

**NTSC (National Television System Committee)** is an analog color encoding system used in television systems in Japan, the United States and other parts of the Americas. NTSC defines the video signal using 525 TV lines per frame, at a refresh rate equal to 30 frames per second. See also PAL.

**ONVIF (Open Network Video Interface Forum)** is a global and open industry forum with the goal to facilitate the development and use of a global open standard for the interface of physical IP-based security products. Or in other words, to create a standard for how IP products within video surveillance and other physical security areas can communicate with each other. ONVIF is an organization started in 2008 by Axis Communications, Bosch Security Systems and Sony.

**PAL (Phase Alternating Line)** is an analog color encoding system used in television systems in Europe and in many other parts of the world. PAL defines the video signal using 625 TV lines per frame, at a refresh rate equal to 25 frames per second.

**Power over Ethernet or PoE** provides power to a network device via the same cable as used for the network connection. This is very useful for IP-Surveillance and remote monitoring applications in places where it may be too impractical or expensive to power the device from a power outlet.

**PPP (Point-to-Point Protocol)** is a protocol that uses a serial interface for communication between two network devices. For example, a PC connected by a phone line to a server.

**Point-to-Point Protocol over Ethernet (PPPoE)** is a network protocol for encapsulating Point-to-Point Protocol (PPP) frames inside Ethernet frames. It is used mainly with DSL services where individual users connect to the DSL modem over Ethernet and in plain Metro Ethernet networks.

**Progressive scan**, as opposed to interlaced video, scans the entire picture, line by line every sixteenth of a second. In other words, captured images are not split into separate fields as in interlaced scanning.

**Jack-45** is an eight-wire connector used to connect computers onto a local-area networks (LAN), especially Ethernets. RJ-45 connectors look similar to the RJ-11 connectors used for connecting telephone equipment, but they are a bit wider.

**Router** is a device that determines the next network point to which a packet should be forwarded on its way to its final destination. A router creates and/or maintains a special routing table that stores information on how best to reach certain destinations. A router is sometimes included as part of a network switch.

**RTP** is an Internet protocol for the transport of real-time data, e.g. audio and video. It can be used for media-on-demand as well as interactive services such as Internet telephony.

**RTSP (Real Time Streaming Protocol)** is a control protocol, and a starting point for negotiating transports such as RTP, multicast and Unicast, and for negotiating codecs.

RTSP can be considered a “remote control” for controlling the media stream delivered by a media server. RTSP servers typically use RTP as the protocol for the actual transport of audio/video data.

**Shutter** is the device on the camera that opens and closes to control how long the focal plane is exposed to light.

**SMTP** is used for sending and receiving e-mail. However, as it is “simple,” it is limited in its ability to queue messages at the receiving end, and is usually used with one of two other protocols, POP3 or IMAP. These other protocols allow the user to save messages in a server mailbox and download them periodically from the server.

SMTP authentication is an extension of SMTP, whereby the client is required to log into the mail server before or during the sending of email. It can be used to allow legitimate users to send email while denying the service to unauthorized users, such as spammers.

**SSL/TLS (Secure Socket Layer/Transport Layer Security)**. These two protocols (SSL is succeeded by TLS) are cryptographic protocols that provide secure communication on a network. SSL is commonly used over HTTP to form HTTPS, as used e.g. on the Internet for electronic financial transactions. SSL uses public key certificates to verify the identity of the server.

**Subnet & subnet mask** is an identifiably separate part of an organization's network. Typically, a subnet may represent all the machines at one geographic location, in one building, or on the same local area network (LAN). Having an organization's network divided into subnets allows it to be connected to the Internet with a single shared network address. The subnet mask is the part of the IP address that tells a network router how to find the subnet that the data packet should be delivered to. Using a subnet mask saves the router having to handle the entire 32-bit IP address; it simply looks at the bits selected by the mask.

**Switch** is a network device that connects network segments together, and which selects a path for sending a unit of data to its next destination. In general, a switch is a simpler and faster mechanism than a router, which requires knowledge about the network and how to determine the route. Some switches include the router function.

**TCP** is used along with the Internet Protocol (IP) to transmit data as packets between computers over the network. While IP takes care of the actual packet delivery, TCP keeps track of the individual packets that the communication (e.g. requested a web page file) is divided into, and, when all packets have arrived at their destination, it reassembles them to re-form the complete file.

TCP is a connection-oriented protocol, which means that a connection is established between the two end-points and is maintained until the data has been successfully exchanged between the communicating applications.

**Time to live (TTL)** is mechanism that limits the lifespan of data in a computer or network. TTL may be implemented as a counter or timestamp attached to or embedded in the data. Once the prescribed event count or timespan has elapsed, data is discarded. In computer networking, TTL prevents a data packet from circulating indefinitely. In computing applications, TTL is used to improve performance of caching or improve privacy.

**UDP** is a communications protocol that offers limited service for exchanging data in a network that uses the Internet Protocol (IP). UDP is an alternative to the Transmission Control Protocol (TCP). The advantage of UDP is that it is not required to deliver all data and may drop network packets when there is e.g. network congestion. This is suitable for live video, as there is no point in re-transmitting old information that will not be displayed anyway.

**Universal Plug and Play (UPnP)** is a set of networking protocols for primarily residential networks without enterprise class devices that permits networked devices, such as personal computers, printers, Internet gateways, Wi-Fi access points and mobile devices to seamlessly discover each other's presence on the network and establish functional network services for data sharing, communications, and entertainment.

**Uniform Resource Locator or Unified Resource Locator (URL)** is a character string that specifies where a known resource is available on the Internet and the mechanism for retrieving it.

**Wireless Application Protocol (WAP)** is a technical standard for accessing information over a mobile wireless network. A WAP browser is a web browser for mobile devices such as mobile phones (called "cellular phones" in some countries) that uses the protocol.

**Web server** is a program, which allows Web browsers to retrieve files from computers connected to the Internet. The Web server listens for requests from Web browsers and upon receiving a request for a file sends it back to the browser.

The primary function of a Web server is to serve pages to other remote computers; consequently, it needs to be installed on a computer that is permanently connected to the Internet. It also controls access to the server whilst monitoring and logging server access statistics.

**Wireless LAN** is a wireless local area network that uses radio waves as its carrier: where the network connections for end-users are wireless. The main network structure usually uses cables.