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GSM Gate Control Pro 20
GSM Gate Control Pro 1000

Reference guide to the ONVIF camera support function

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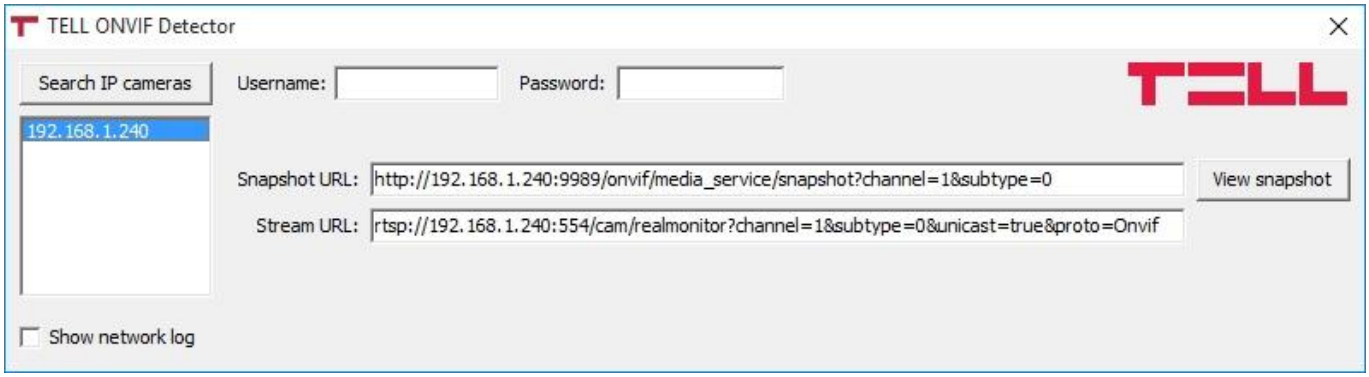
1 Camera URLs

You can add to the ***Gate Control Pro*** system the availabilities (URL) of at most 2 IP cameras which support the ONVIF standard. The system makes available the images of the configured IP cameras in the smartphone application. Permission for viewing the images can be configured in the editing window of the users, for each user separately and per camera.

This function works only with cameras that support the ONVIF standard! The manufacturer does not guarantee that the *Gate Control Pro* can be used with any IP camera, therefore, still before purchasing the ***Gate Control Pro*** device, the ***Gate Control*** smartphone application assures possibility to test the camera in advance and make sure that your camera works properly with the ***Gate Control*** smartphone application (further details are available in the user's guide of the smartphone application). The list of ONVIF cameras tested by the manufacturer is available at www.tell.hu at the ***Gate Control Pro*** product's downloads.

There are multiple methods to obtain the camera URLs. You can use the "***ONVIF Detector***" software made by the manufacturer (available on the manufacturer's website: www.tell.hu), the "***ONVIF Device Manager***" software (http://sourceforge.net/projects/onvifdm), or the camera's technical manual.
Usage of the "***ONVIF Detector***" software made by the manufacturer:

- if the camera requests a username and password for accessing the picture, enter this username and password in the "Username" and "Password" fields
- click on "**Search IP cameras**"
- the program shows the found camera IP addresses in the field below the button
- click on the desired camera IP
- the program shows the snapshot (picture) and the stream URLs in the corresponding URL fields
- by clicking on "**View snapshot**", the program opens the still picture of the camera in your Internet browser, which helps identifying the camera and checking if the URL works.



If the camera URLs are not shown after clicking on the camera IP, please check the camera settings if there is a profile configured (for snapshot /still picture/ and stream /video/).

The smartphone application includes an RTSP player, therefore the system works with RTSP stream only.

The ONVIF URL detector programs show the local IP addresses of the cameras. For accessing the camera pictures from outside your local network it is necessary to replace the local IP address and port in the URL obtained using the ONVIF URL detector program with the external (WAN) IP address of your router and the external port, and after this enter the modified URL in the Gate Control Pro programming software and write this into the module settings.

Example for modification of the stream URL, if using only one camera:
Original URL:
rtsp://192.168.1.240:554/cam/realmonitor?channel=1&subtype=0&unicast=true&proto=Onvif

Modified URL in case of using static IP address:
rtsp://***WAN IP***:554/cam/realmonitor?channel=1&subtype=0&unicast=true&proto=Onvif

Modified URL in case of using static IP address and username/password:
rtsp://***username:password@WAN IP***:554/cam/realmonitor?channel=1&subtype….

Modified URL in case of using domain name:
rtsp://***domain name***:554/cam/realmonitor?channel=1&subtype=0&unicast=true&proto=Onvif

Modified URL in case of using domain name and username/password:
rtsp://***username:password@domain name***:554/cam/realmonitor?channel=1&subtype….

2 Port forwarding

In order to access the camera pictures on your smart device from outside the local network (from the mobile Internet or other external WiFi network), it is necessary to configure the port forwarding for the camera's IP address in the router of your local network (forwarding the camera's local IP address and port to the router's external /public/ IP address and a desired port), that is, you have to open a way for the camera from your closed local network towards the outside world. The video stream and still picture ports of cameras are different, therefore, depending on which service of the camera you would like to access from external or public network (video stream, still picture or both), the port used by the given service should be forwarded.

The default rtsp (video stream) port through which the camera provides the video stream is generally 554, but it might happen that a camera uses a different port for this. The default port used to provide the still picture is generally 80, which should also be forwarded. In case of the still picture port it may also happen, that a camera uses a custom port, and not the default one.

The ports used by the camera are usually specified in the camera's technical manual, but you can also check using the "***ONVIF Detector***" software available at www.tell.hu , or using the "***ONVIF Device Manager***" software available at http://sourceforge.net/projects/onvifdm . These programs show the camera's URLs, in which you can find the port number right after the colon (**:**) mark placed after the IP address.

Depending on the router, some routers are only capable for "mirrored" port forwarding, which means that the public port can only be the same as the local port (e.g. if port 554 is forwarded, that will be still 554 toward the Internet). In case of routers that provide wider configuration options, the public and the local port to be forwarded can be different from each other (e.g. local port 80 can be forwarded to public port 81). This has special importance when it is needed to forward the still picture service port of the camera, that is port 80 where appropriate, or if it is needed to solve remote access for multiple cameras. It is highly recommended to forward this to a public port other than 80, since main targets of attacks over the Internet are usually the known default ports, as well as in this case if anywhere in the world someone would enter your router's public IP address into an Internet browser without a port number, and the camera is configured to skip the login, the given person would be freely able to see the still picture of the camera. Therefore, in case of having a router capable for "mirrored" port forwarding only, it is recommended to change the still picture service port in the camera settings to other than 80. The risk of unauthorized viewing exists in case of port 554 as well, since this is also a widely used default port, therefore it is recommended to use authentication (login with username and password) for viewing the camera, as well as configuring a different port number towards the public Internet.

In case of using multiple cameras, the pictures of particular cameras can only be accessed selectively from outside the local network (from mobile Internet or other external WiFi network) through different public ports, since the IP address of the cameras will be the same (WAN IP address) from the direction of external networks, so the custom public port will be the one through which the picture of a specific camera can be accessed. In order to achieve that, at port forwarding the local ports may remain the original ones used by the cameras, and the public ports should be chosen at will, but different from each other. If the router is capable for “mirrored” port forwarding only, then the original ports should also be changed in the settings of the cameras, since in this case at port forwarding the public port will be the same as the local port.

Example: if you have 2 cameras e.g. with the following local IP addresses:

192.168.1.127
192.168.1.128

and both of them use port 554 for video stream service, then for one of them choose e.g. port 555 as public port. Thereby if the router’s external (WAN) IP address is e.g. 119.55.216.42, the video stream of the cameras can be accessed in the local network at the following availabilities:

192.168.1.127**:554**	while from external networks:	119.55.216.42**:554**
192.168.1.128**:554**		119.55.216.42**:555**

If the router is capable for “mirrored” port forwarding only, it is necessary to change the port number in the settings of one of the cameras to e.g. 555. In this case the availabilities in the local network will be the following:

192.168.1.127**:554**	while from external networks:	119.55.216.42**:554**
192.168.1.128**:555**		119.55.216.42**:555**

If the router and the camera too supports UPnP automatic port forwarding and this service is enabled in the router, then it is not necessary to configure the port forwarding since in this case the camera will open the required ports automatically.

3 DynDNS

If the router’s external (WAN) IP address is dynamic (i.e. it changes from time to time), then it is necessary to use dyndns service as well, which you can use by registering at one of the dyndns service providers (e.g.: no-ip.com) and configuring the dyndns service in your router. By this you receive a permanent domain name through which you can reach your camera even if your router’s external IP changes, since the router notifies the dyndns service provider when the IP address changes, who automatically updates the availability assigned to the domain name.

4 Accessing the router's user interface

To access the router's user interface, you need to enter the router's IP address into an Internet browser on a PC connected to the same local network (LAN) as the router. The router's IP address you can find in the router's technical manual or on the label found on the router's enclosure. If the router's IP address has already been changed, then naturally the actual IP address should be entered in the Internet browser's address bar.

A few examples for the availability of different router brands:

TP-LINK:	http://192.168.1.1
D-link:	http://192.168.0.1
Linksys:	http://192.168.2.1
Asus:	http://192.168.2.1
ZTE	http://192.168.1.254

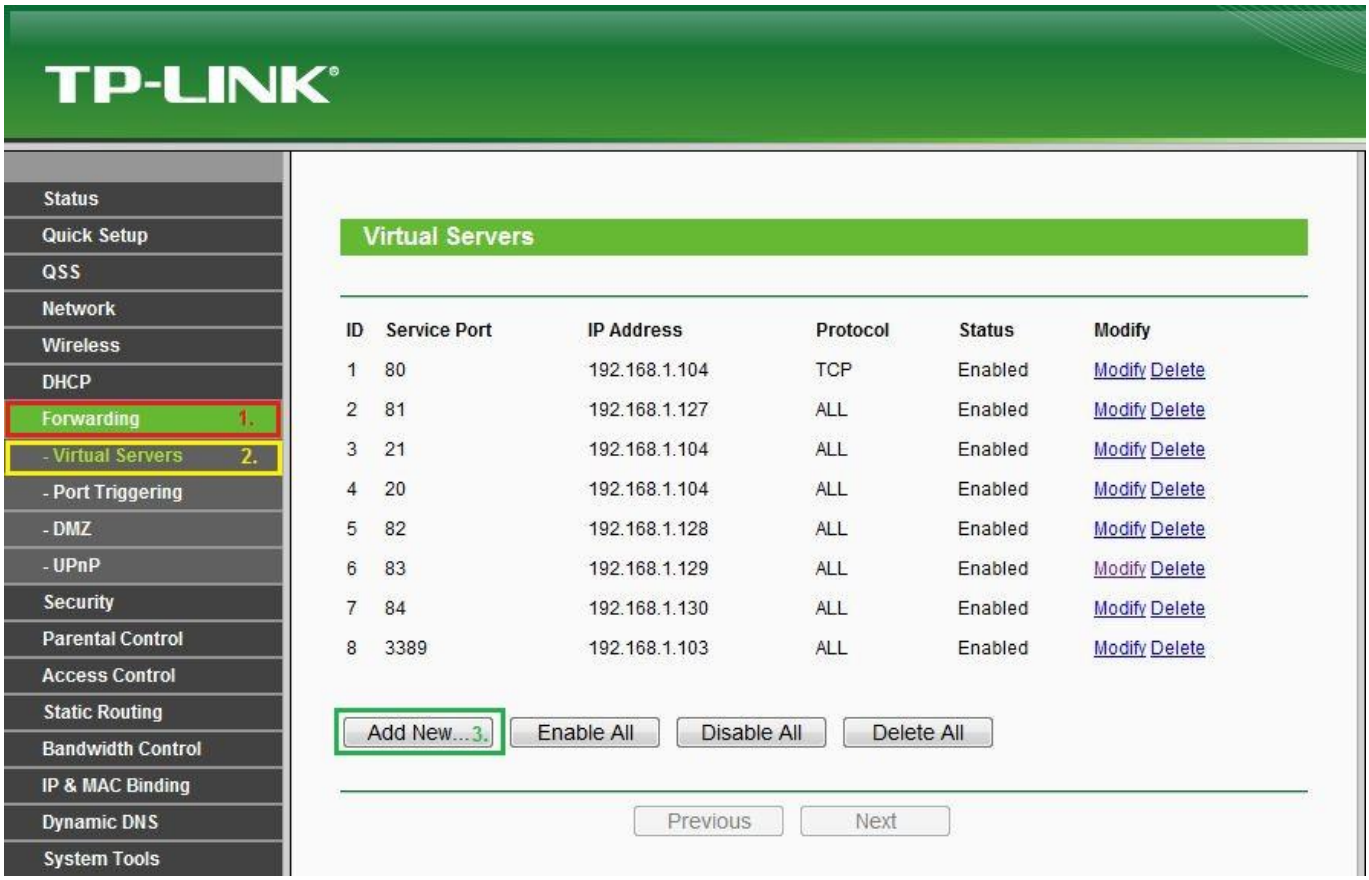
Thereafter the router will prompt for a username and password, which you can also find in the router's technical manual or on the label found on the router's enclosure, if they have not been changed yet.

5 The router's user interface, configuration

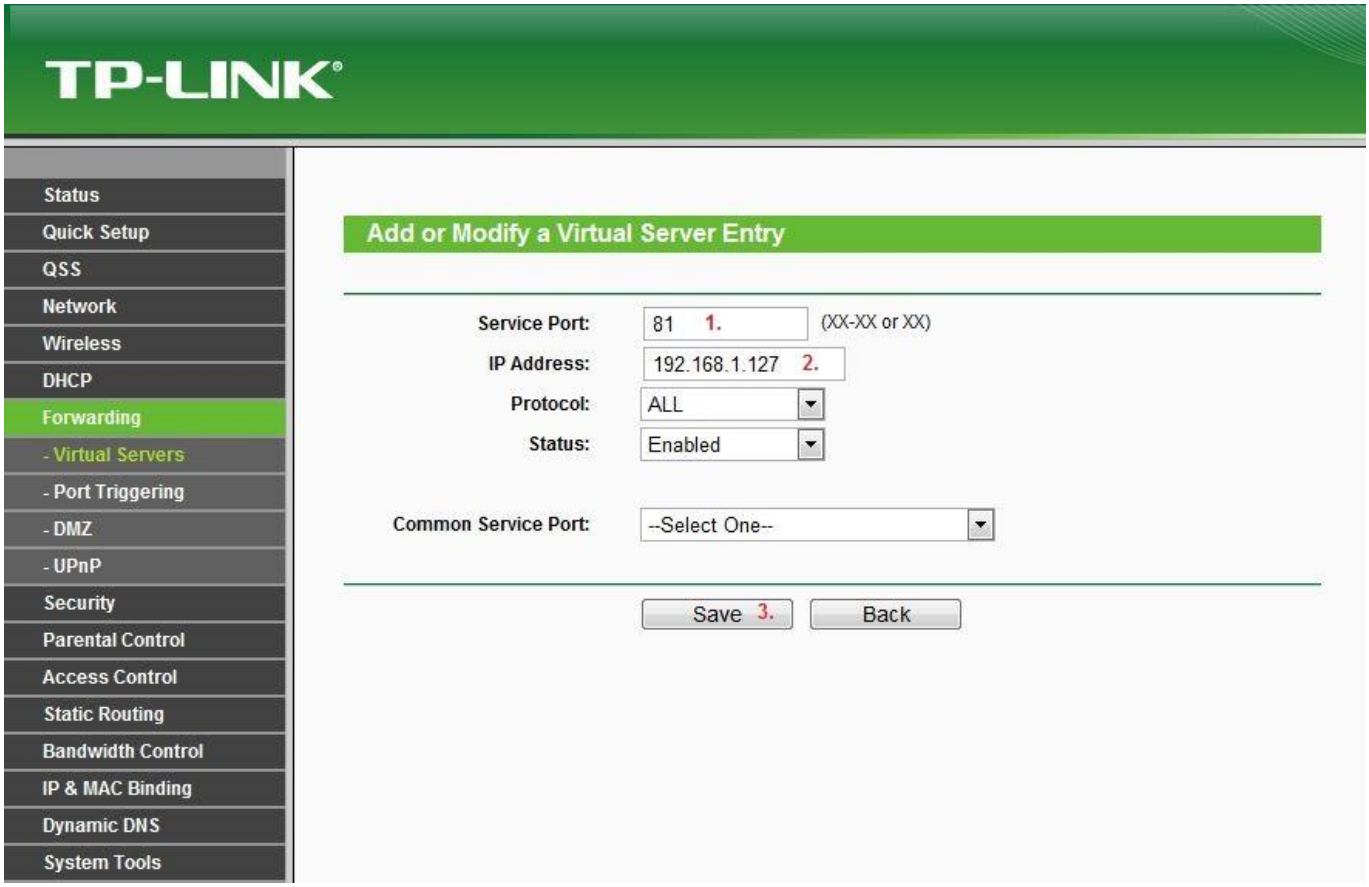
The steps for the settings mentioned above are specified below.
The user interface looks different at different router brands. Below we will show the configuration of some popular routers:

TP-LINK

For port forwarding choose the "**Forwarding**" option in the menu, click on "**Virtual Servers**" option, then click on the "**Add New...**" button:



Fill in the fields similarly as shown in the picture below. The picture shows an example for forwarding port no. 81 of a camera available at IP address 192.168.1.127, instead of which you should of course enter the IP address and port number used by your camera. The router model presented in the example below is capable for mirrored port forwarding only, which means that according to the example, the local port no. 81 will be forwarded still to public port no. 81.



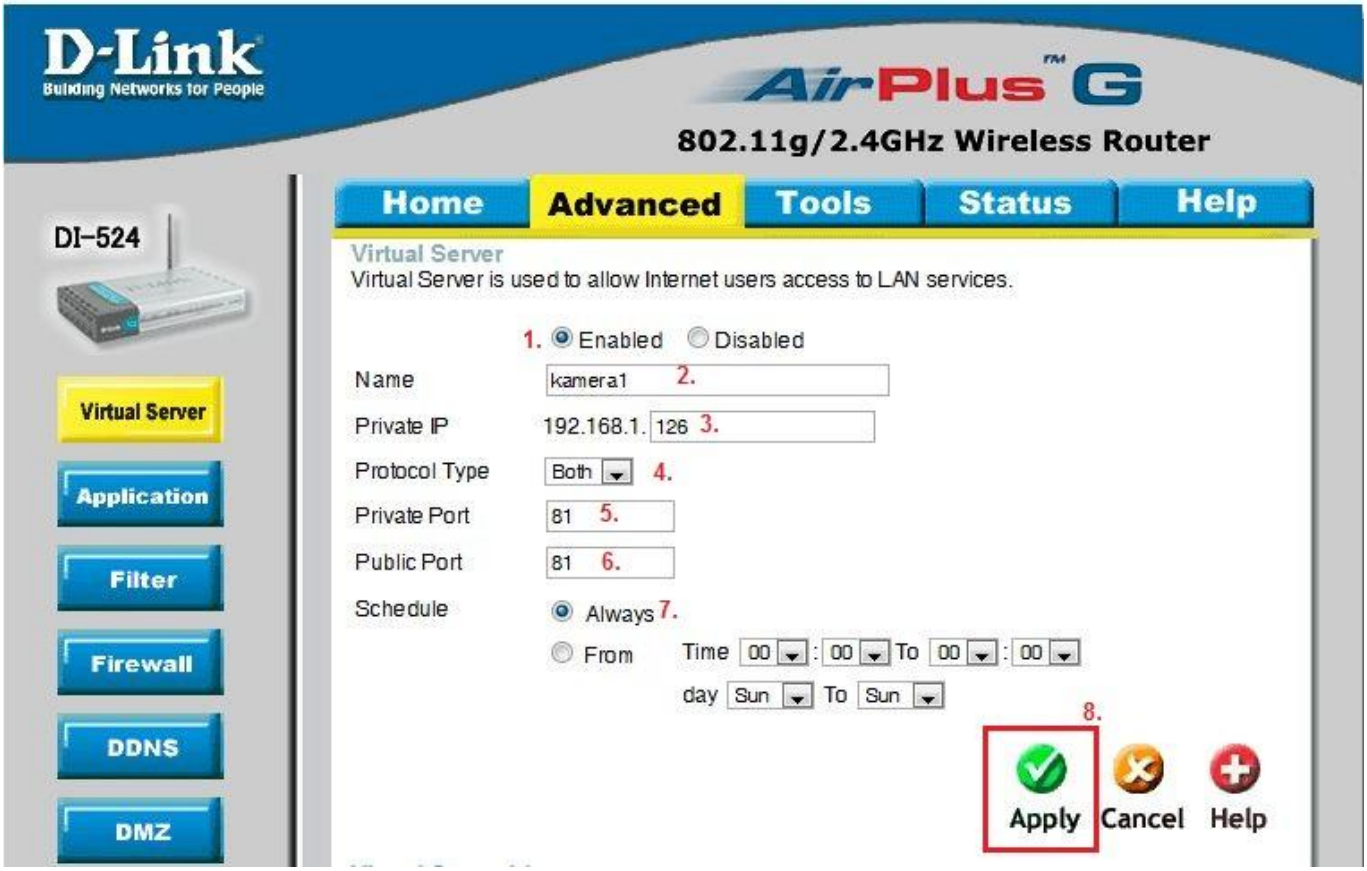
- **Service port**: here you should enter the video stream or still picture service port number used by the camera (only one at a time, configure the other one by adding a new entry -> „**Add New…**")
- **IP Address**: enter here the local IP address of the camera
- **Protocol**: choose "**ALL**" value for this option
- **Status**: choose "**Enabled**" value for this option

Click on "**Save**" button to save the configuration.

D-LINK DI-524

For port forwarding click on “**Advanced**" option in the router’s upper horizontal menu, then choose “**Virtual Server**" option in the left-side menu.

Fill in the fields similarly as shown in the picture below. The picture shows an example for forwarding the local port no. 81 of a camera available at IP address 192.168.1.126 to public port no. 81, instead of which you should of course enter the IP address and port number used by your camera. At the router model presented in the example below both the local and the public port can be configured, i.e. according to the example, the local port no. 81 can also be forwarded to a different public port.



- **Enabled/Disabled** option: choose the “**Enabled**” option
- **Name**: enter a desired name for the port forward entry that is specific for the given camera (serves for identification of the entry only)
- **Private IP**: enter the local IP address of the camera
- **Protocol Type**: choose “**Both**” value for this option
- **Private Port**: here you should enter the video stream or still picture service port number used by the camera (only one at a time, configure the other one by adding a new port forward entry)
- **Public Port**: enter the number of the public port to which you wish to forward the given local port
- **Schedule**: here you can configure the port forward period, choose “**Always**” value for this option

Click “**Apply**” to save the configuration.

D-LINK DIR-300

For port forwarding click on “**ADVANCED**" option in the router’s upper horizontal menu, then choose “**Port Forwarding**" option in the left-side menu.

Fill in the fields similarly as shown in the picture below. The picture shows an example for forwarding the local port no. 81 of a camera available at IP address 192.168.1.126 to public port no. 81, instead of which you should of course enter the IP address and port number used by your camera. At the router model presented in the example below both the local and the public port can be configured, i.e. according to the example, the local port no. 81 can also be forwarded to a different public port.

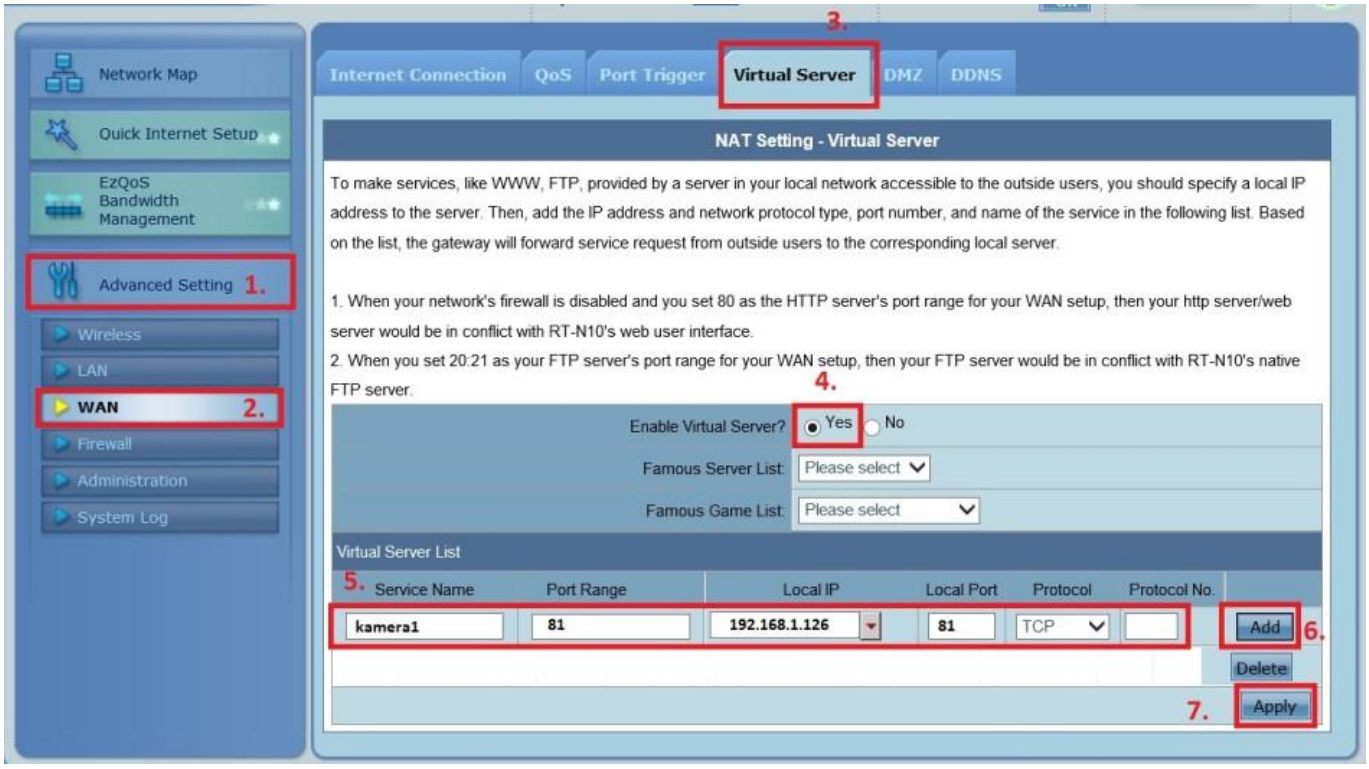
- **1.** (checkbox in the table): you can enable/disable the given port forwarding using the checkbox, therefore set this to enabled state
- **Name**: enter a desired name for the port forward entry that is specific for the given camera (serves for identification of the entry only)
- **IP Address**: enter the local IP address of the camera
- **Public Port**: enter the number of the public port in both fields, to which you wish to forward the given local port
- **Private Port**: here you should enter in both fields the video stream or still picture service port number used by the camera (only one at a time, configure the other one by adding a new port forward entry)
- **Traffic Type**: choose “**Any**” value for this option
- **Schedule**: here you can configure the port forward period, choose “**Always**” value for this option

Click on “**Save Settings**” button to save the configuration.

ASUS

For port forwarding click on „**Advanced Setting**" option in the left-side menu, then choose "**WAN**" option in the submenu. After this choose "**Virtual Server**" option in the upper horizontal menu.

Fill in the fields similarly as shown in the picture below. The picture shows an example for forwarding the local port no. 81 of a camera available at IP address 192.168.1.126 to public port no. 81, instead of which you should of course enter the IP address and port number used by your camera. At the router model presented in the example below both the local and the public port can be configured, i.e. according to the example, the local port no. 81 can also be forwarded to a different public port.



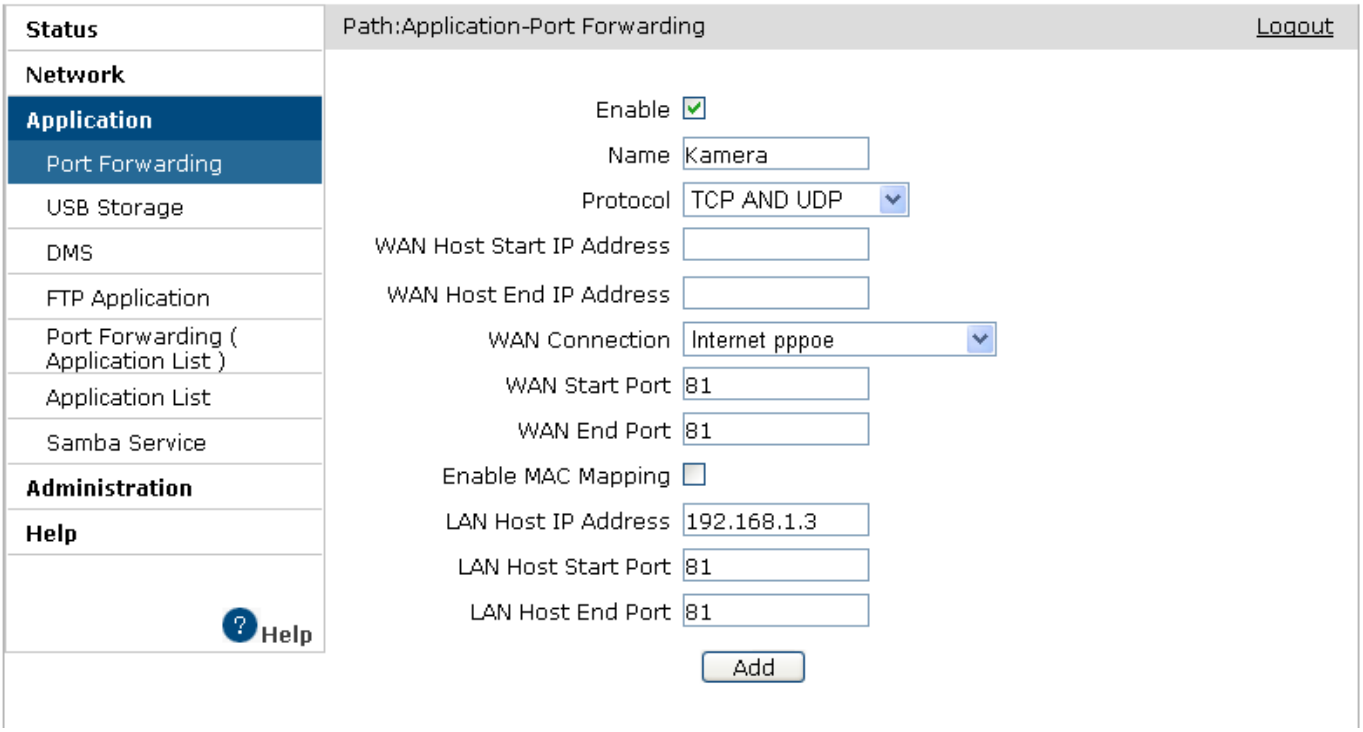
- **Enable Virtual server**: you can enable/disable the given port forwarding using this option, therefore please choose "**Yes**" to enable
- **Service name**: enter a desired name for the port forward entry that is specific for the given camera (serves for identification of the entry only)
- **Port Range**: enter the number of the public port to which you wish to forward the given local port
- **Local IP**: enter the local IP address of the camera
- **Local Port**: here you should enter the video stream or still picture service port number used by the camera (only one at a time, configure the other one by adding a new port forward entry)
- **Protocol**: choose "**Both**" value for this option

After filling in the fields click on "**Add**" button to add the new entry and then on "**Apply**" button to apply the changes.

ZTE

For port forwarding click on ”**Application**" option in the menu, then choose “**Port Forwarding**” option in the submenu.

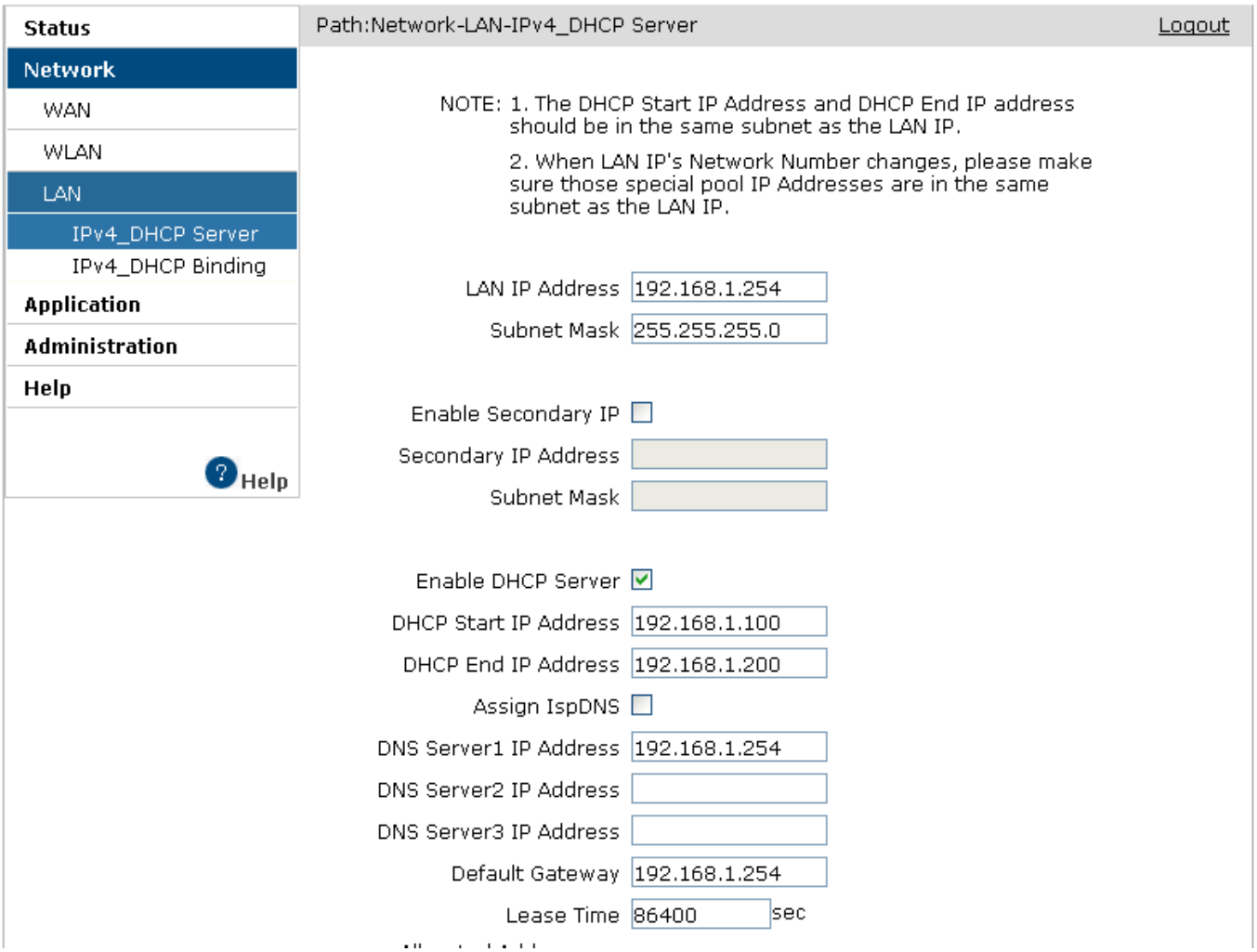
Fill in the fields similarly as shown in the picture below. The picture shows an example for forwarding the local port no. 81 of a camera available at IP address 192.168.1.3 to public port no. 81, instead of which you should of course enter the IP address and port number used by your camera. At the router model presented in the example below both the local and the public port can be configured, i.e. according to the example, the local port no. 81 can also be forwarded to a different public port.



- **Enable** checkbox: you can enable/disable the given port forwarding using the checkbox, therefore set this to enabled state
- **Name**: enter a desired name for the port forward entry that is specific for the given camera (serves for identification of the entry only)
- **Protocol**: choose “**TCP AND UDP**” value for this option
- **WAN Start Port** and **WAN End Port**: enter the number of the public port in both fields, to which you wish to forward the given local port
- **LAN Host IP Address**: enter the local IP address of the camera
- **LAN Host Start Port** and **LAN Host End Port**: here you should enter in both fields the video stream or still picture service port number used by the camera (only one at a time, configure the other one by adding a new port forward entry)

Click on “**Add**” button to save the configuration.

At this router model it is recommended to change the DHCP settings as well to avoid IP address conflicts:



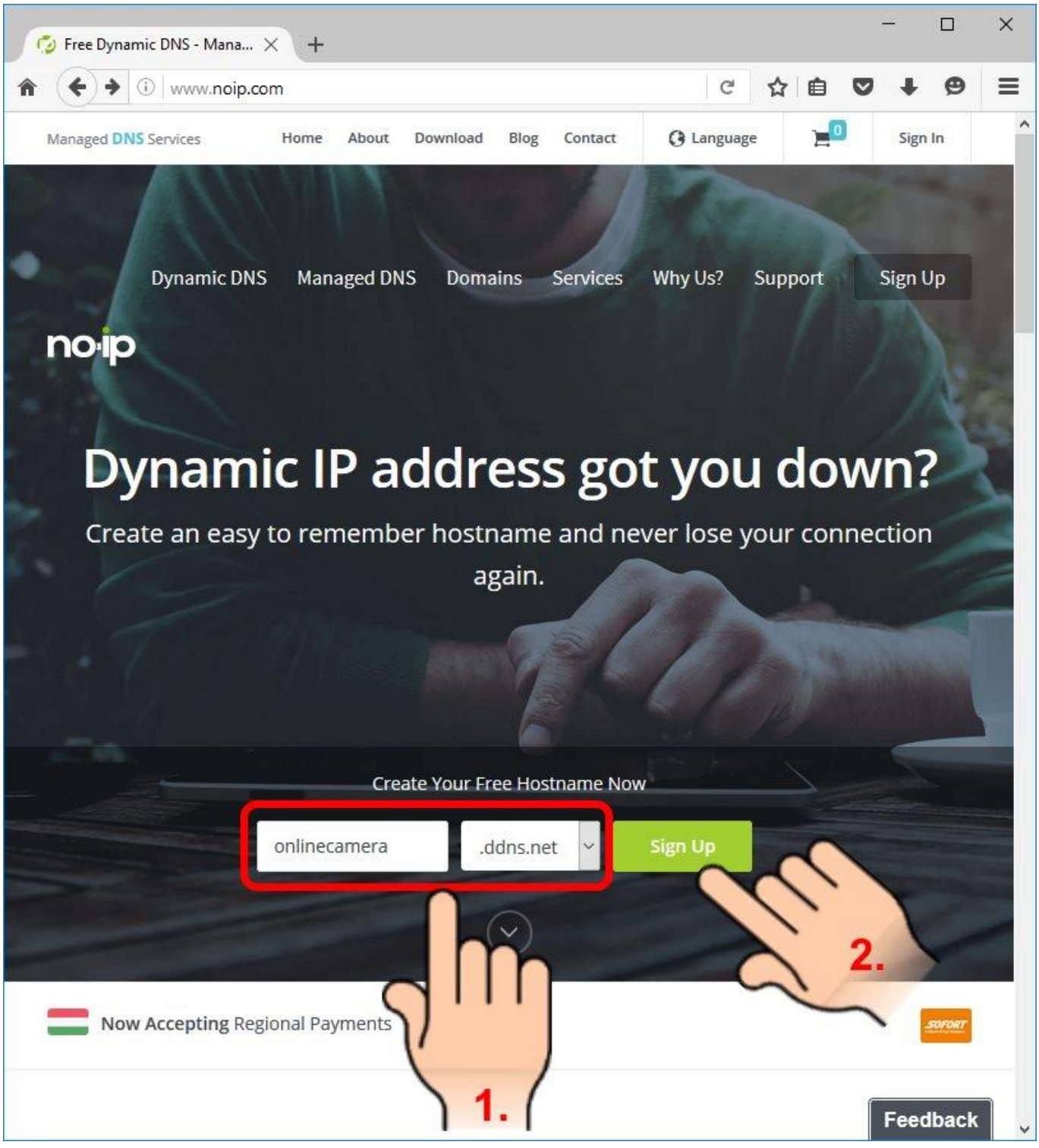
6 Creating a DynDNS account

If you are not subscribed for a static IP address at your Internet service provider, in order to access your camera anytime through the public Internet, you will need to sign up for dyndns service. A free of charge option for this may be the service provided by "**no-ip**".

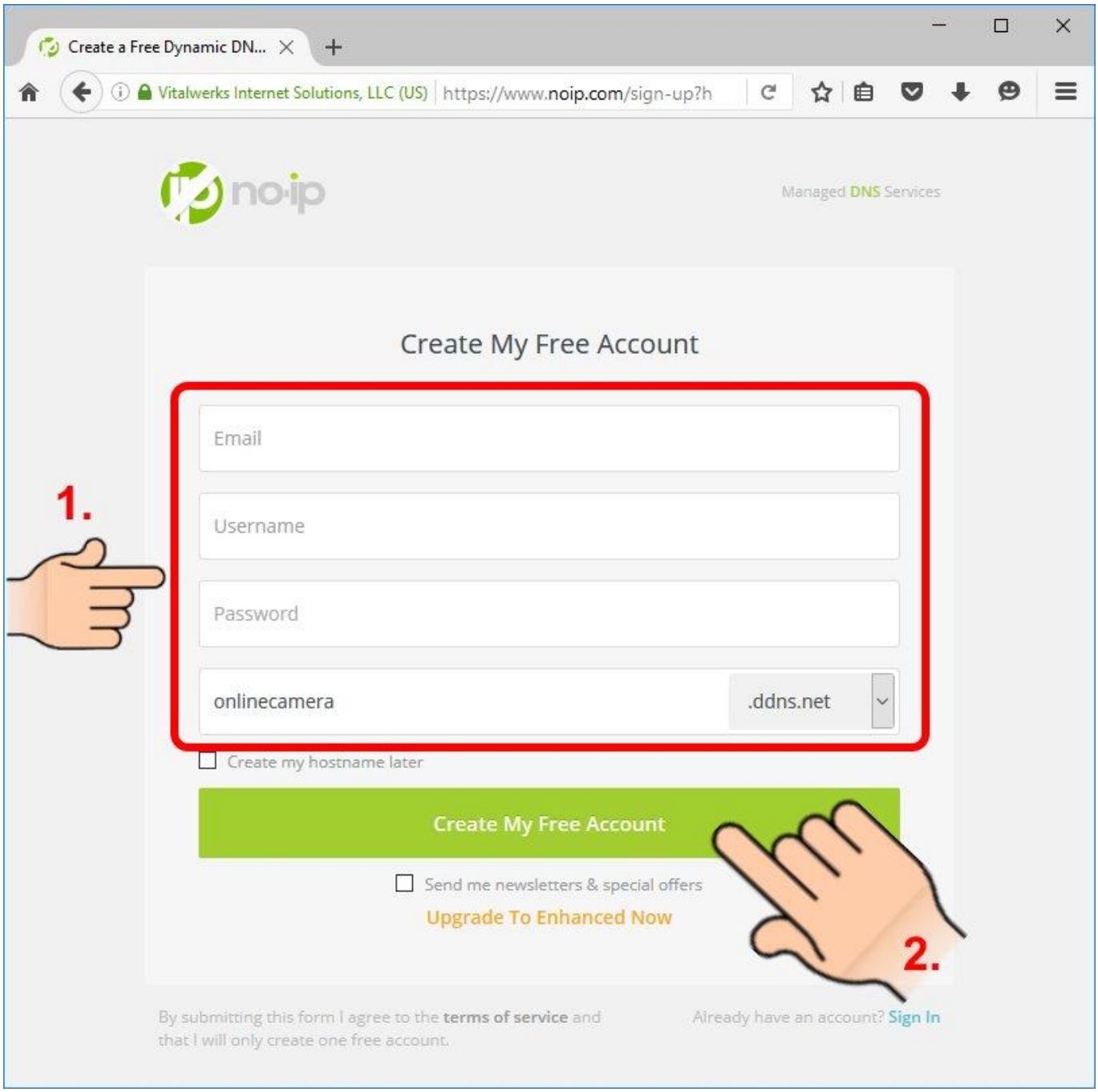
Steps of registration and configuration:

Open the following site with an Internet browser: www.noip.com

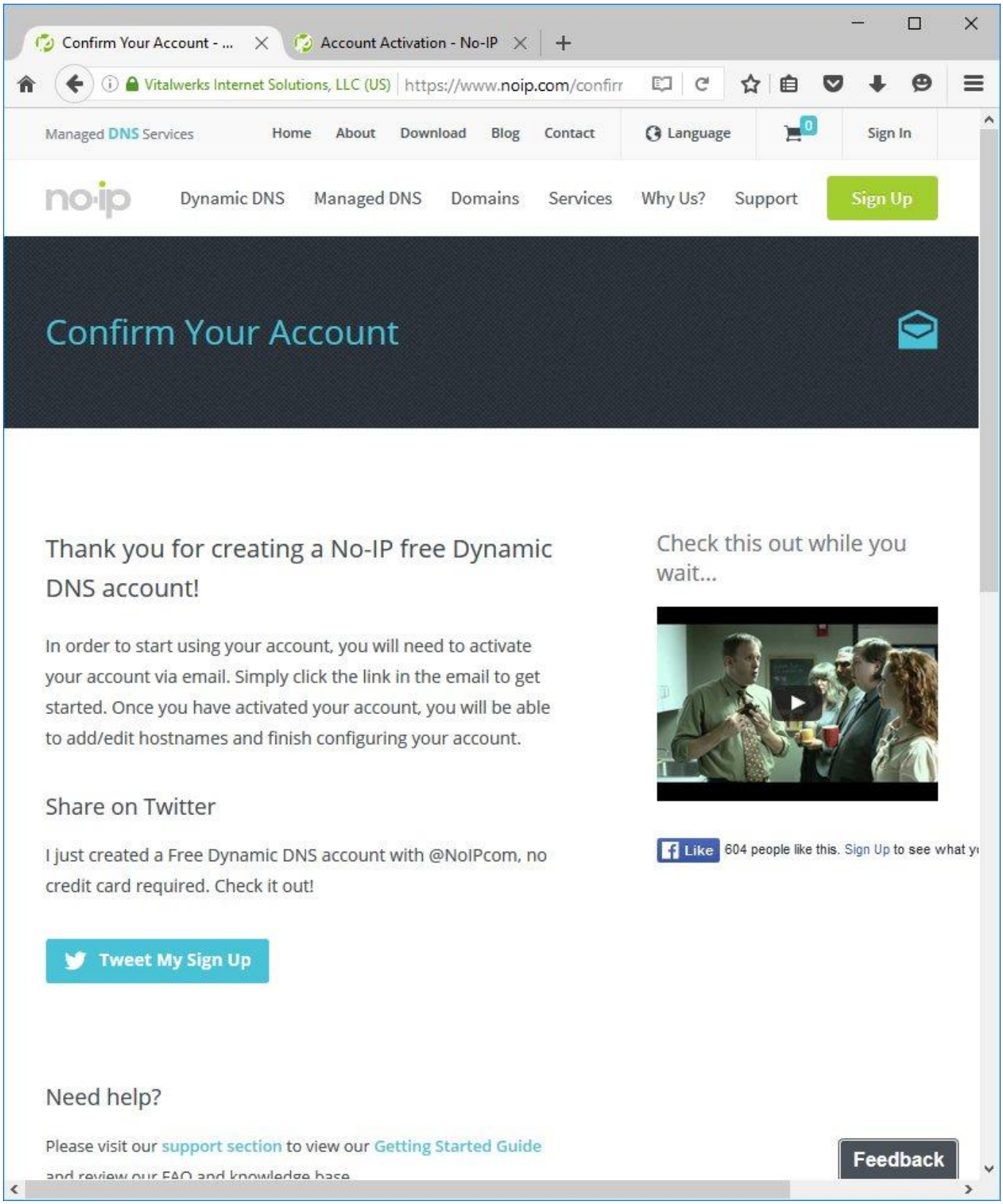
Enter a desired host name in the field below "**Create Your Free Hostname Now**", through which you wish to reach your camera. It might happen that the given host name is already in use, but if so, the site will indicate this while typing the name. In this case try a different host name, then click on "**Sign Up**" button.



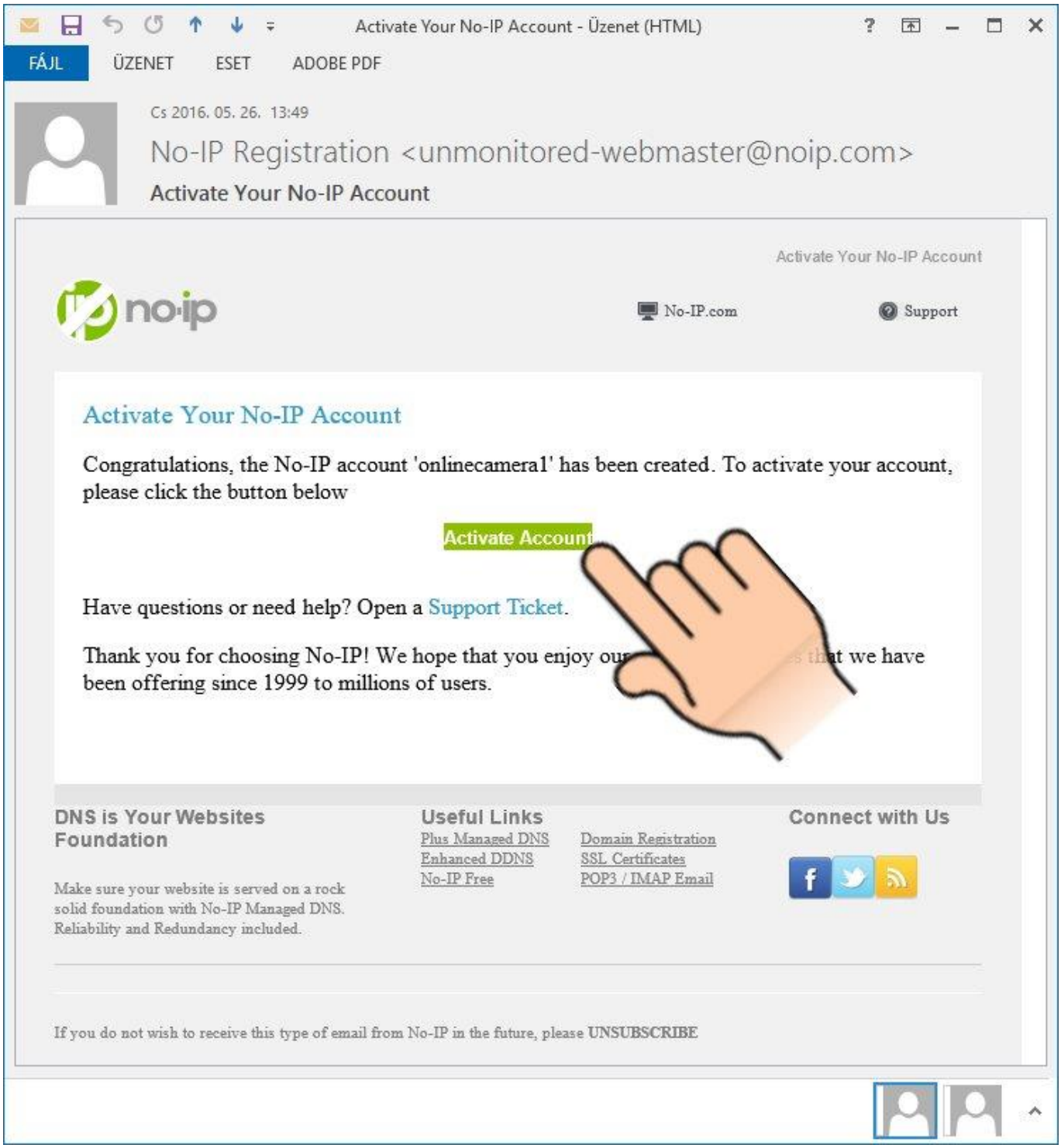
On the next page fill in the form with your personal data required for registration (e-mail address, user name, password), then click on "**Create My Free Account**" button to create your free user account.



Thereafter the site will indicate that you need to confirm your new account in order to be created. For this, you will receive an email from **no-ip** to the email address you have provided at registration.

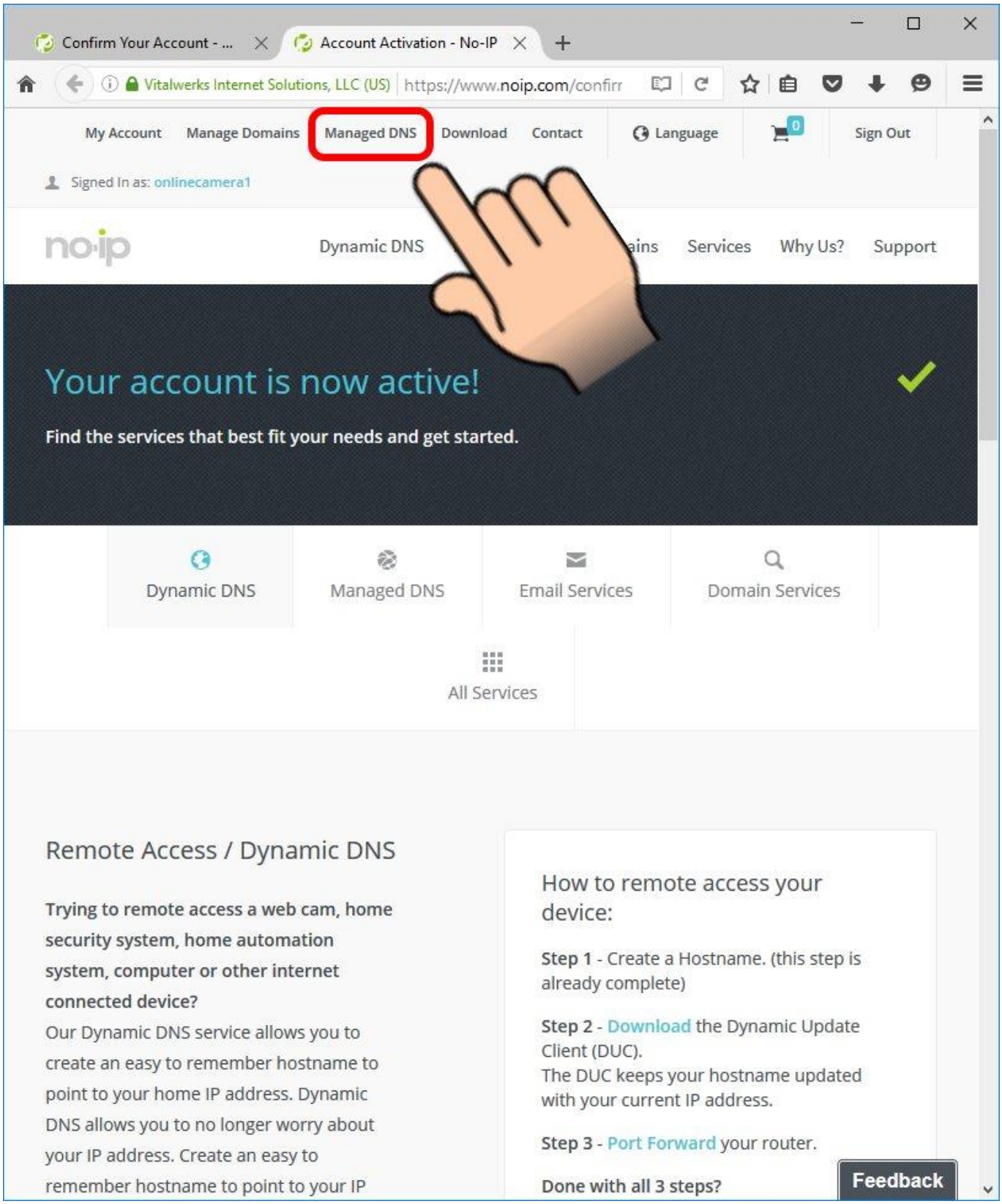


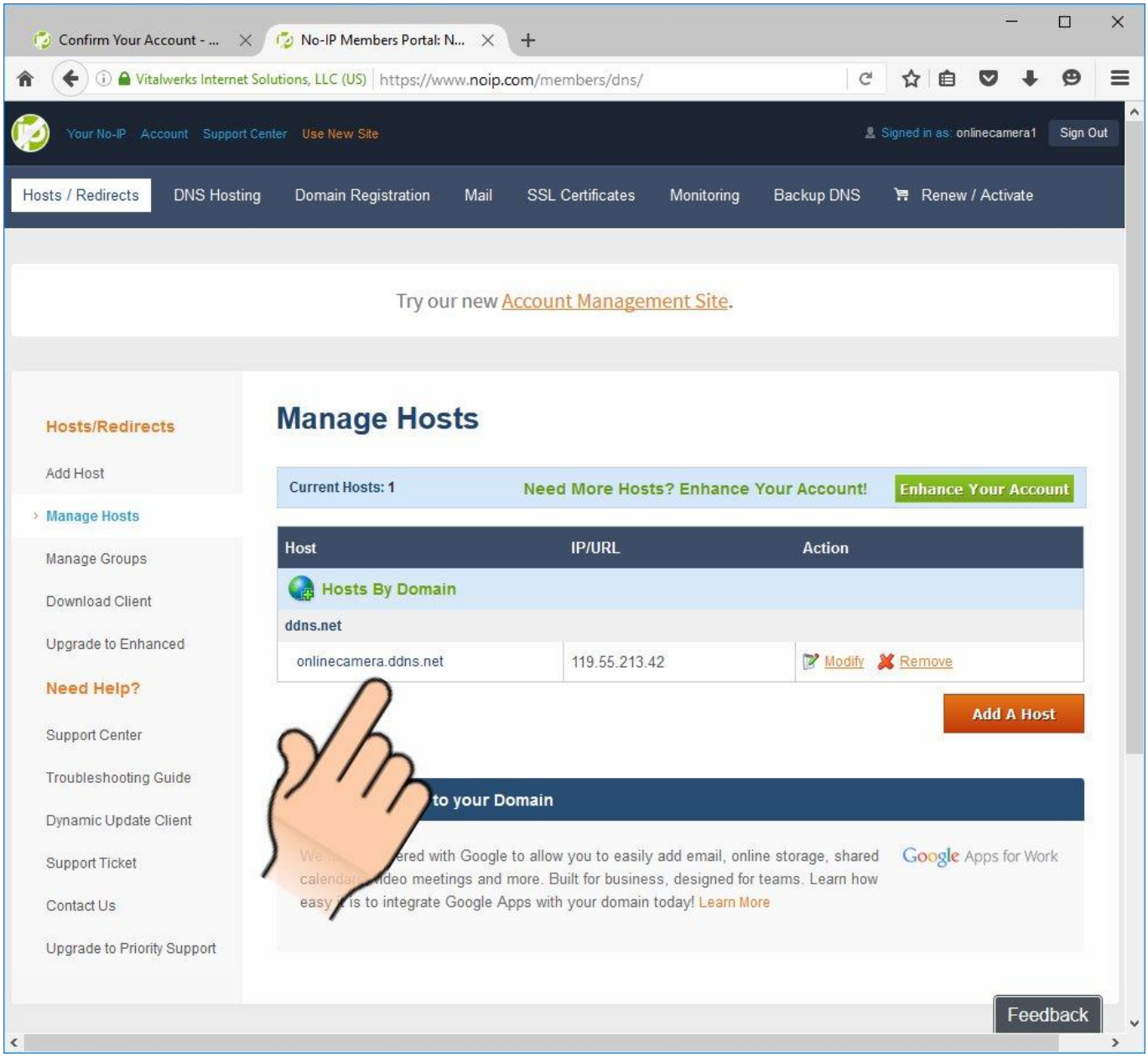
Click on “**Activate Account**” button in the email you have received. If the button does not appear in the message, allow your mail client to download the pictures in the given email window (the mail client program will offer the option for picture download).



By clicking in the email on the button mentioned above, the **no-ip** website will open in a browser and logs you in automatically to your user account, where, if everything went fine, you will see a message about the successful activation of your user account.

You can check your registered host name after clicking on "**Managed DNS**" option in the main menu.



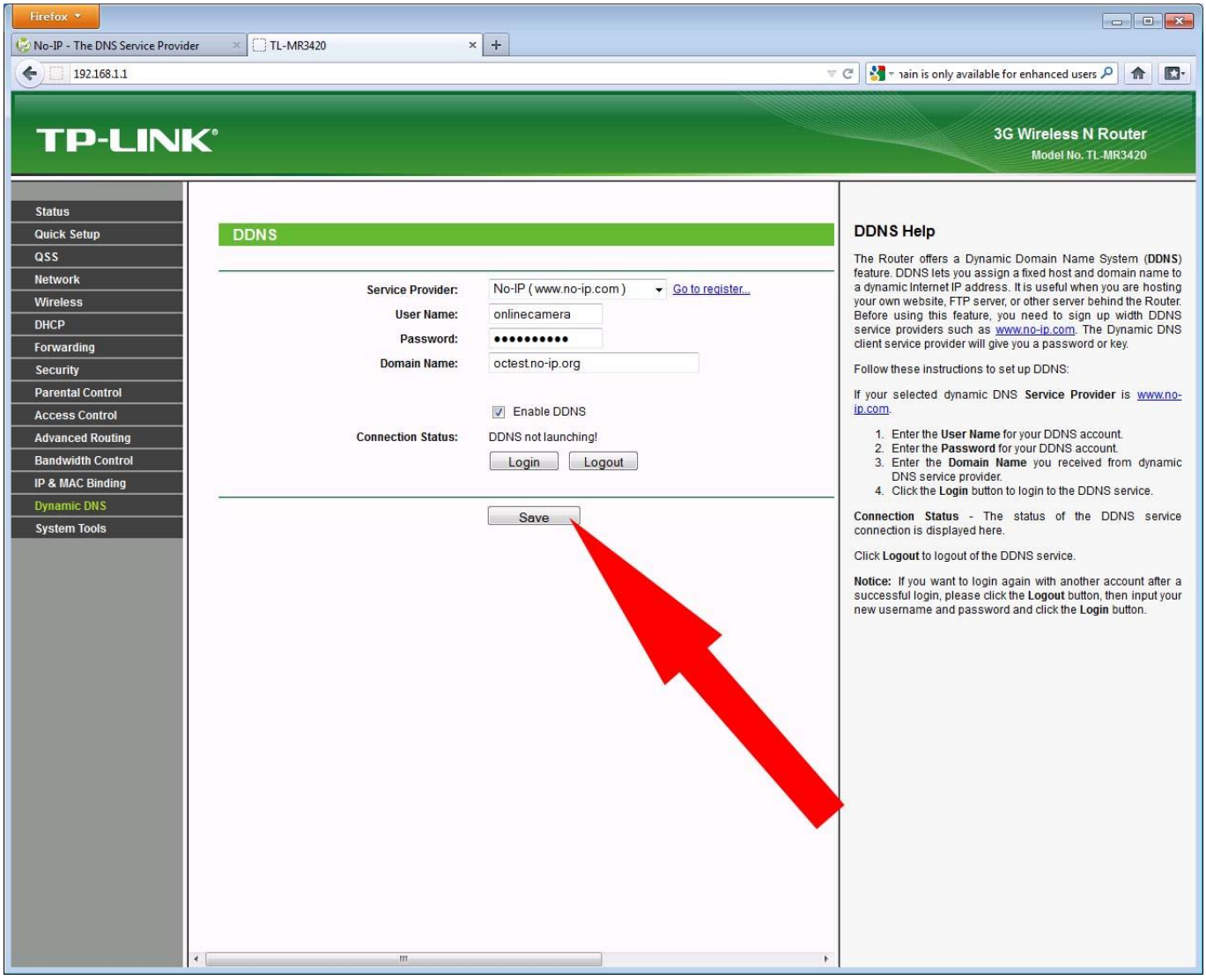


With this the host name has been created, but its usage is not solved yet.

7 Configuring the DynDNS service

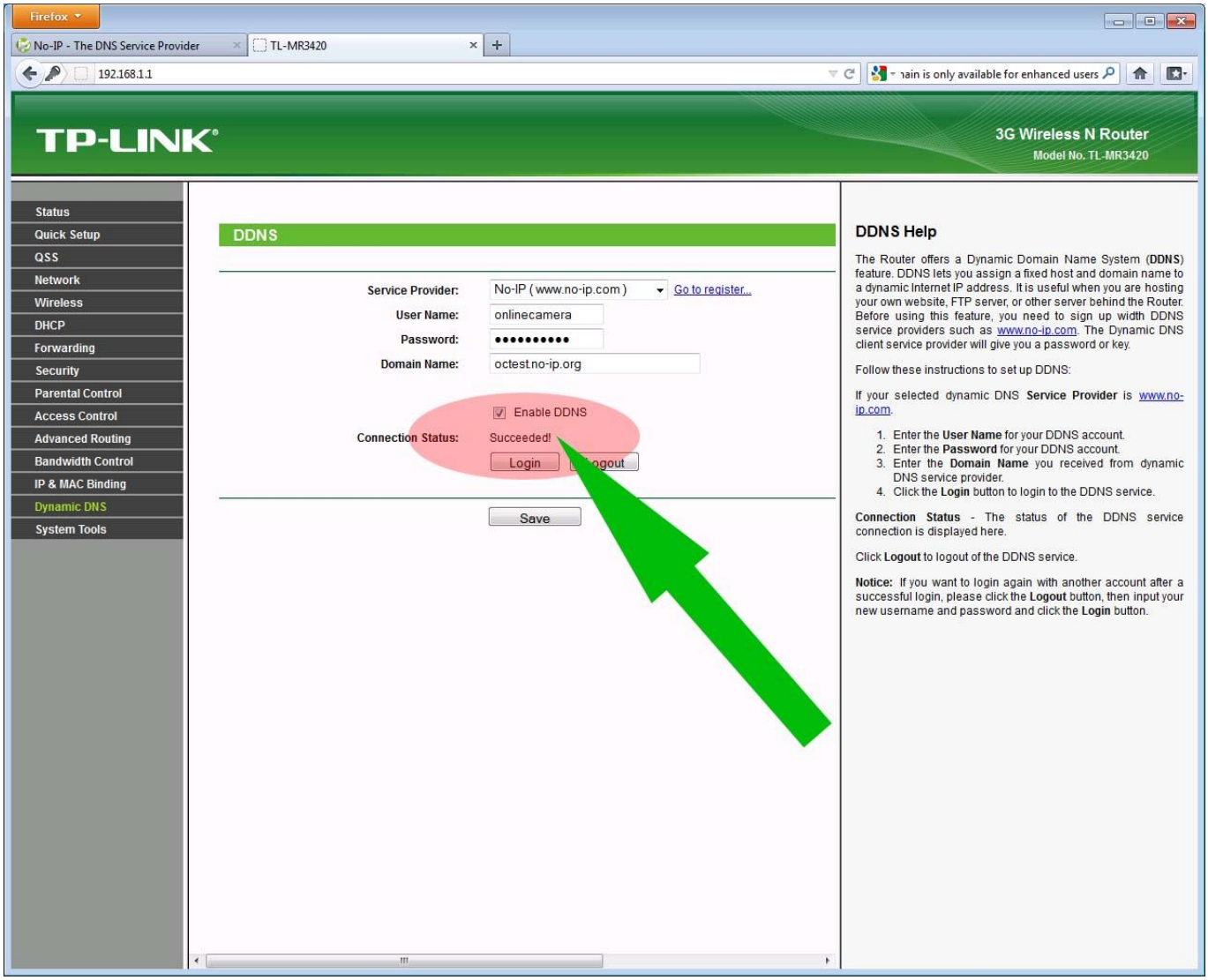
Log in to your router and search for **Dynamic DNS**, **DDNS** menu option or one that has quite similar name. Unfortunately every router manufacturer gives a different name to this setting but the principle is similar. The example below shows the dyndns configuration of a TP-LINK router.

Service Provider: select the dyndns service provider, where you have signed up (according to our example: **No-IP**)
User Name: enter the user name provided at dyndns registration
Password: enter the password provided at dyndns registration
Domain Name: enter the host name provided at dyndns registration
Enable DDNS: using this checkbox you can enable/disable the usage of dyndns service, therefore set this to enabled state



Save the configuration by clicking on "**Save**" button. Thereafter the router will log in to the **no-ip** server.

If everything was done correctly, the router will show “**Succeeded**” status at the “**Connection Status**”, indicating that connecting to the dyndns server was successful.



If all these are done, you should already be able to access your camera’s pictures remotely through the registered host name and forwarded port(s).