



## Networking Basics

This document intends to provide the basic information required to network a Hikvision NVR or DVR with a single LAN port (some recorders have dual LAN ports available and will not be covered here). Note that this is not official company documentation and should be used strictly as a guide.

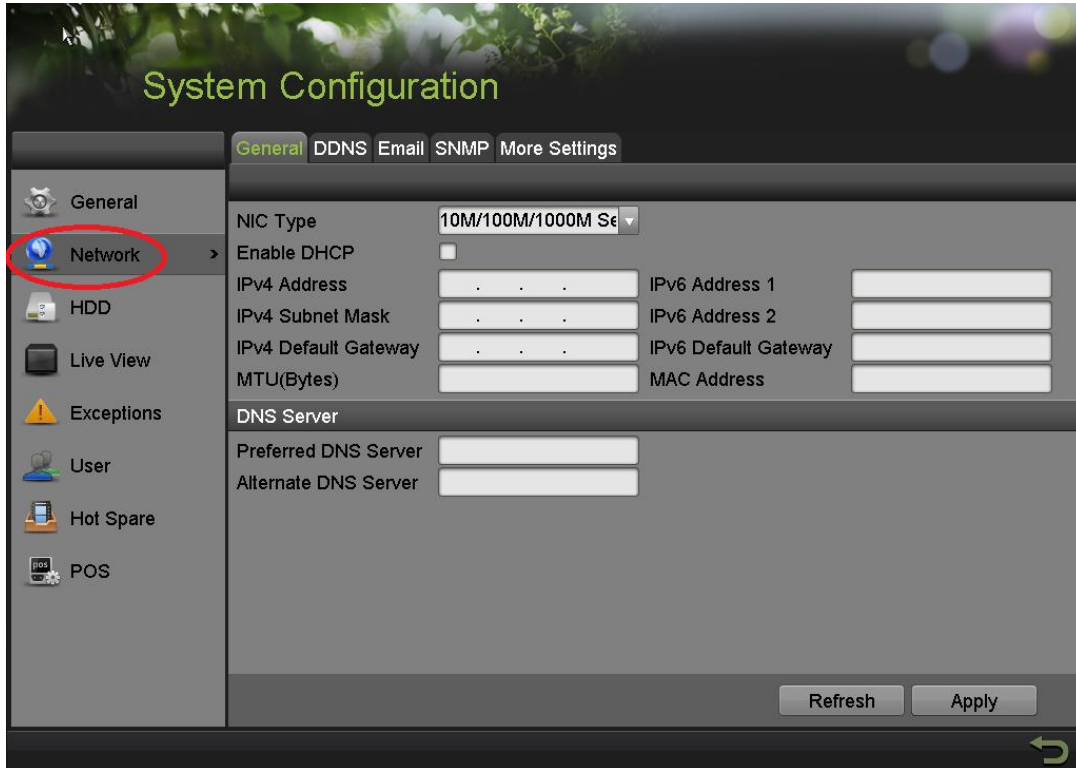
### **STEP 1** – Connecting the Recorder to the Network

Using a tested and verified Cat-5E cable or better, connect the LAN interface on the back of the recorder to an available LAN port customer's router or switch.



**STEP 2** – Program Basic IP information

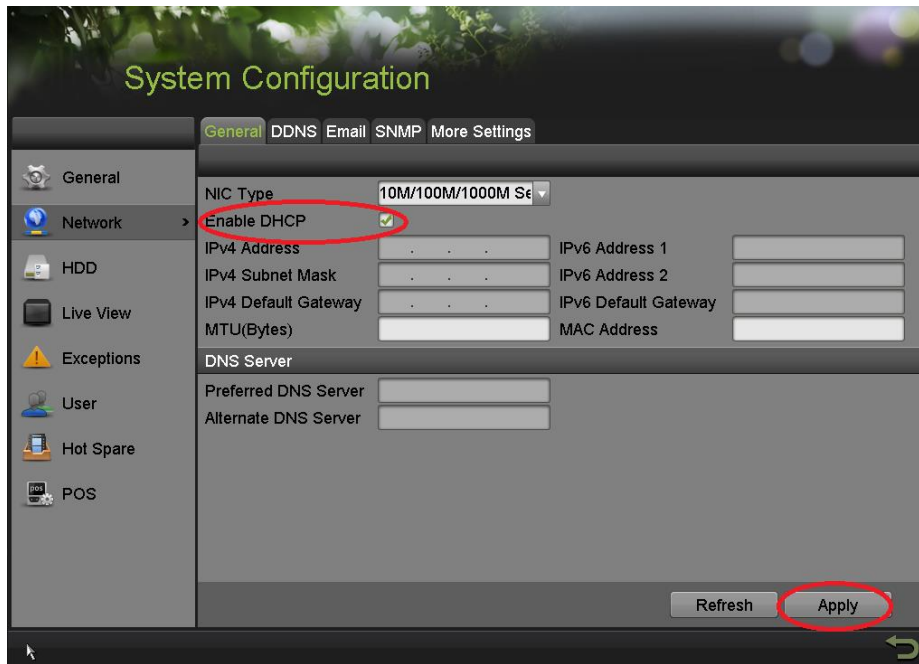
After the recorder has been physically connected to the customer’s network, access the network configuration section of the Hikvision recorder by selecting “System Configuration” from the Main Menu followed by “Network”



*\*Note: Due to slight variations in firmware revisions, the GUI of your recorder may have some minor differences from the image shown above*

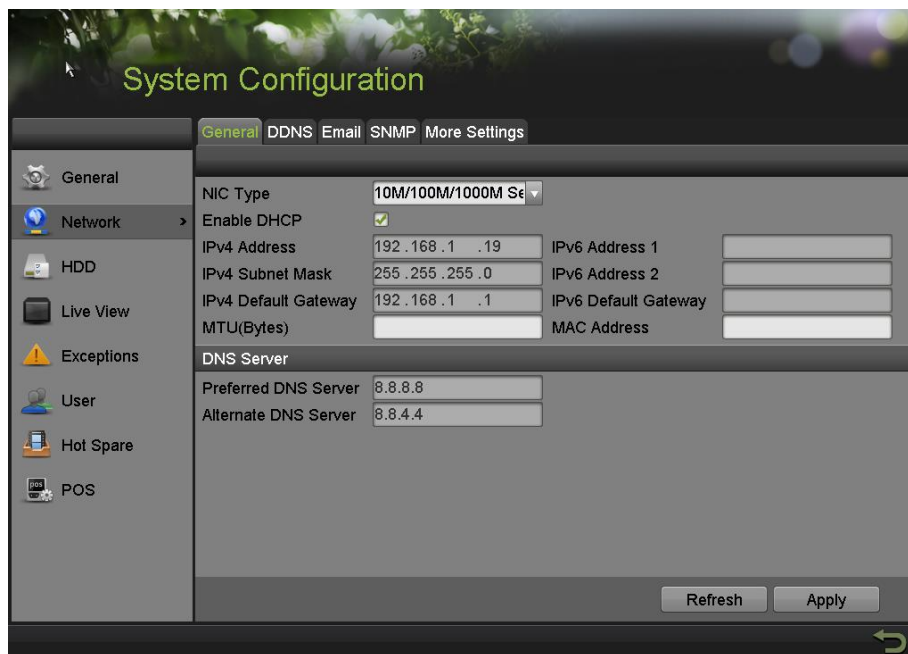
Generally speaking, we can assume that a DHCP server is available at the customer’s site (most routers provide this service). In some instances, it may be necessary to consult with local IT staff in order to obtain a valid IP address for use with the recorder. For the purposes of this document we will use a DHCP server to determine the network address being used by the customer and then we will make some slight modifications.

First we will start by enabling DHCP:



Check the box next to 'Enable DHCP' and click 'Apply'

After a few seconds, click the button that says "Refresh" and the various IP fields should populate like so:

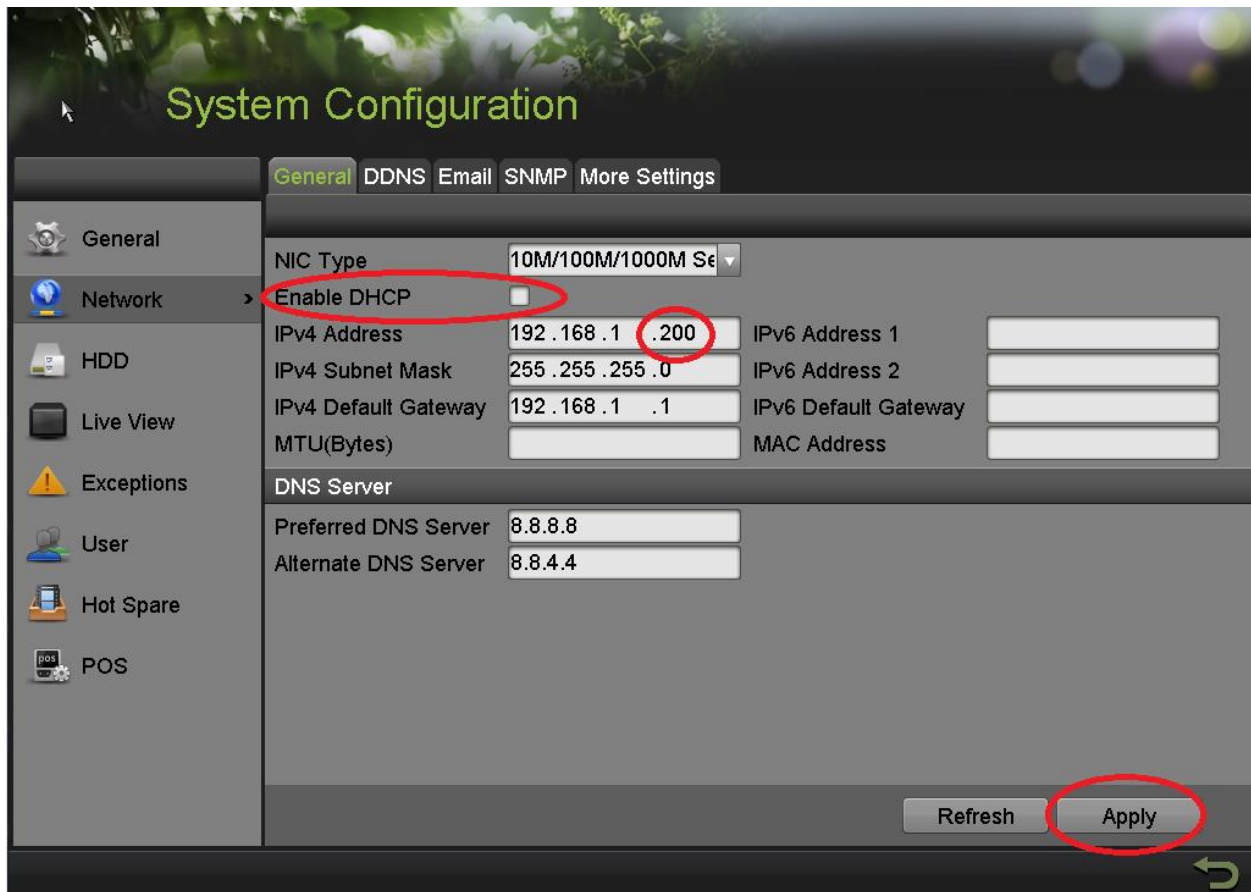


Notice the recorder has obtained the IP address 192.168.1.19 and we can also ascertain that gateway or router's IP address is 192.168.1.1. This may vary from one network to the next.

Now that we know the network being utilized at the site, we can alter the address we obtained from the DHCP server to a static address. It is essential to use a static address, or one that does not change as we will be writing port-forwarding rules in the router that refer to the recorder. If the address were to change, the rule we write would no longer apply.

In this example, we are going to make the assumption that the customer does not have more than 200 devices on their network. We will disable (uncheck) DHCP and modify the LAST number in the IP Address field to "200" thereby creating a static address. Note that some networks may use a different IP scheme, but the same rules apply in changing the last number in the series. Again, some networks are strictly managed and may require assistance from the local IT staff.

If the DHCP server did NOT provide DNS servers, use Google's Primary and Alternate DNS servers as shown in the example below:



*Uncheck "Enable DHCP," change the last number to "200" and click "Apply"*

### STEP 3 – Configuring Local Ports

Generally there are three ports that Hikvision uses to communicate with and stream video from our recorders:

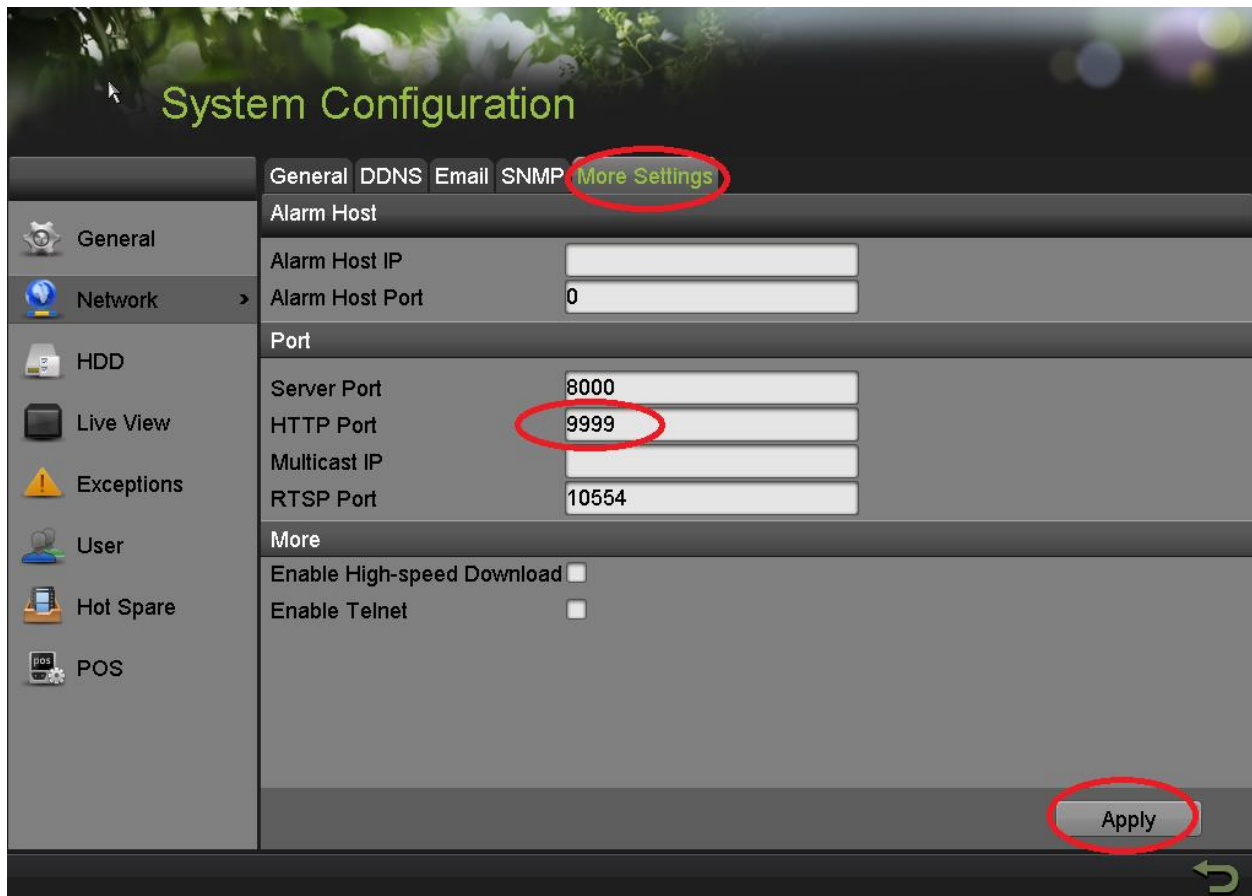
Port **80** – HTTP Port for Web Access

Port **8000** – Hikvision Server Port for communication with iVMS 4200 / 4500

Port **10554** – RTSP or *Real Time Streaming Protocol* for streaming of video

Many popular ISPs (Internet Service Providers) will block access to port 80 by default, so in this example we will change it to '9999' which is well out of the range of commonly used ports.

Access the "More Settings" tab under the "Network" section of "System Configuration" then change the default HTTP port (80) to "9999" and click "Apply":

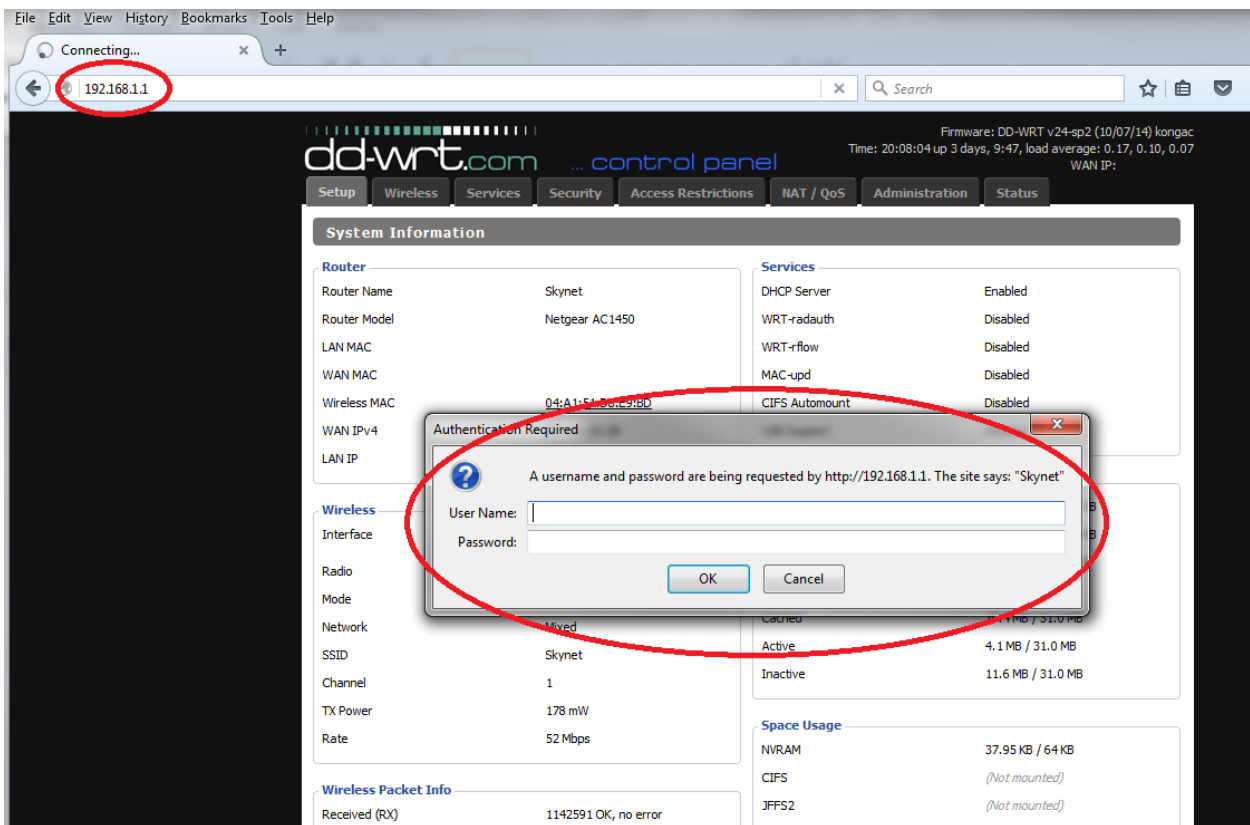


## STEP 4 – Port Forwarding

In simplest terms, port forwarding is similar to a virtual conduit. We need to write “rules” that allow traffic from the Internet to enter the “WAN” (Wide Area Network) side of our router and translate to our recorder on the “LAN” (Local Area Network) side. Consider this like a direct translation from the front door of a house to one of the private internal doors. Port forwarding is similar to sending each visitor to a home to the room of the person they’ve come to see. In terms of the NVR or DVR, we have to send the visitors wishing to view live video and playback to three separate “doors” or ports within our “house” or LAN.

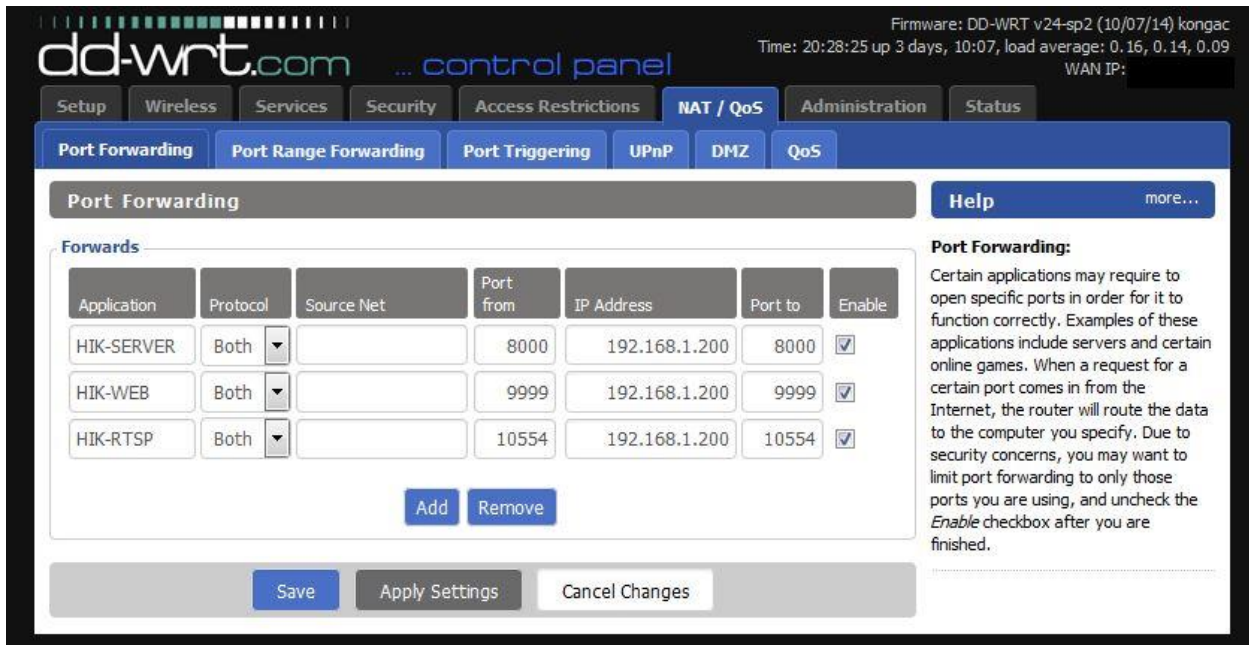
The first step in performing this task is to gain access to the customer’s router. Typically there is a login and password involved that the customer must provide you with. It may make sense to request this information from the customer prior to arriving on site. Occasionally the information required will be available from a sticker on the router itself.

Remember on Page 3, we made it a point to note the “gateway” address, which is synonymous with “router.” Our next step once we have the proper login information is to connect to the customer’s LAN using a laptop, or other computer that the customer has provided. In the example we’ve used throughout this documentation, the router’s address is 192.168.1.1 – this will vary from one install to the next, but 192.168.1.1 is likely the most common address used in non-commercial installations. In our next step, we will open a web browser (Firefox, Internet Explorer, Safari, etc.) and access the router:



#### STEP 4 – Port Forwarding (continued)

It's important to note that each and every router encountered may have a slightly different GUI interface, so most of the following instruction is based on theory rather than a direct step-by-step translation. Luckily, most routers use the same verbiage to refer to "Port Forwarding." The challenge is to locate exactly which section of the menu system is associated with the programming information we will be entering. With the router used in the example, the Port Forwarding rules referring back to the recorder that we statically addressed as "192.168.1.200" look as follows:



The screenshot shows the dd-wrt.com control panel for a DD-WRT v24-sp2 (10/07/14) kongac router. The interface is in the "NAT / QoS" section, specifically the "Port Forwarding" tab. The "Forwards" table lists three rules:

Application	Protocol	Source Net	Port from	IP Address	Port to	Enable
HIK-SERVER	Both		8000	192.168.1.200	8000	<input checked="" type="checkbox"/>
HIK-WEB	Both		9999	192.168.1.200	9999	<input checked="" type="checkbox"/>
HIK-RTSP	Both		10554	192.168.1.200	10554	<input checked="" type="checkbox"/>

Below the table are "Add" and "Remove" buttons. At the bottom of the panel are "Save", "Apply Settings", and "Cancel Changes" buttons. A "Help" section on the right provides information about port forwarding.

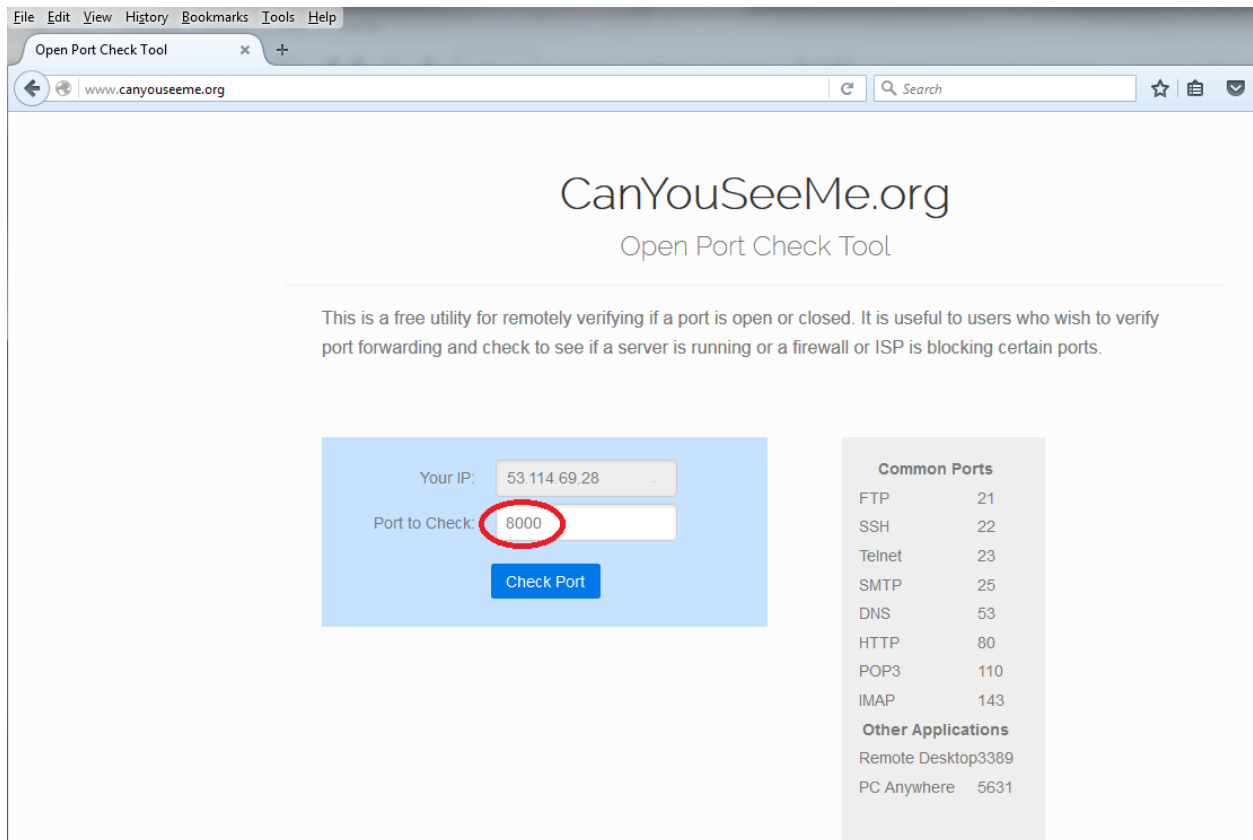
With these rules as written above, we are allowing all "incoming" internet traffic on ports 8000, 9999, and 10554 to be routed to the NVR's internal "LAN" address of 192.168.1.200.



## STEP 5 – Check Your Work

Once we've applied our Port Forwarding rules on the router, we need to make sure they are working correctly. Using a web browser on the same computer we used to write our rules, reference the web page <http://www.canyouseeme.org>

From this page we will check to ensure that all of our ports are "listening" as programmed. Do this for each of the ports (8000, 9999, & 10554) and verify that they are open to incoming traffic:



This is a free utility for remotely verifying if a port is open or closed. It is useful to users who wish to verify port forwarding and check to see if a server is running or a firewall or ISP is blocking certain ports.

Common Ports	
FTP	21
SSH	22
Telnet	23
SMTP	25
DNS	53
HTTP	80
POP3	110
IMAP	143

Other Applications	
Remote Desktop	3389
PC Anywhere	5631

Should you receive an error message from the site, check your work and try again.

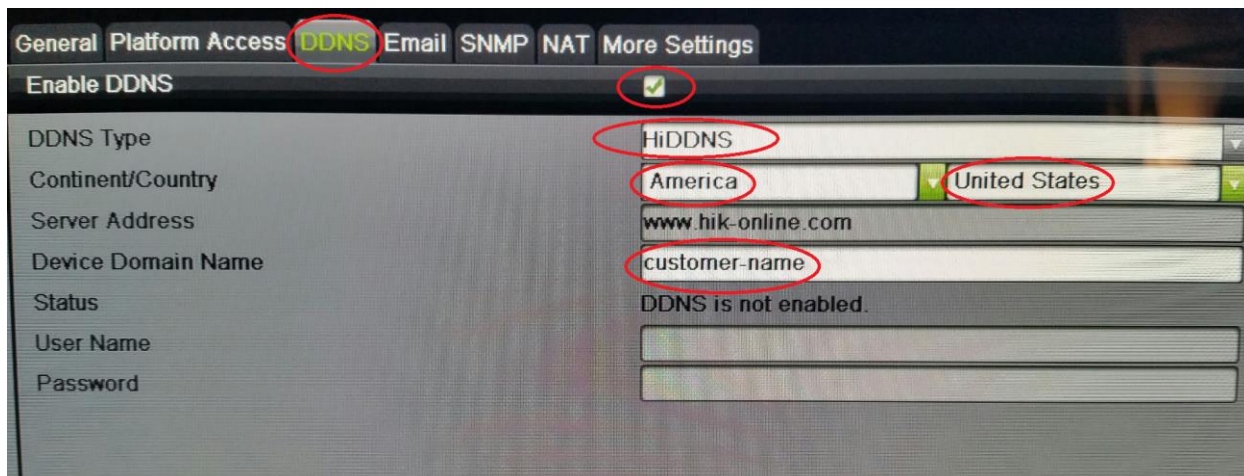


## STEP 7 – Configure DDNS

Since most customers do not have a “static” internet address, we compensate for this using a service called “Dynamic DNS.” This allows us to refer to the customer’s recorder using a customized name that will stay synchronized with the customers NVR or DVR using Hikvision’s free service. To utilize this service, simply access the DDNS tab from the “Network” section of “System Configuration” and perform the following steps:

1. Check the box next to the ‘Enable DDNS’ option
2. Select “HiDDNS” as the DDNS Type
3. Select “America” and “United States” as Continent/Country
4. Provide a unique name under ‘Device Domain Name’
5. Click ‘Apply’ in the lower right

Assuming you picked a unique name, you should receive a message stating that the DDNS name has been registered successfully.



The NVR / DVR can now be accessed the following ways:

1. Through the web, using the address: <http://www.hik-online.com/customer-name> where customer-name refers to the name you’ve provided during DDNS registration
2. Through the iVMS 4500 mobile application
3. Through iVMS 4200 software for PC and Mac-based platforms

This concludes the basic network configuration of your Hikvision NVR or DVR. Should you have questions or problems performing these tasks, please contact Technical Support, or your local Hikvision Sales Engineer for additional assistance.

# Thank you for choosing

The logo for Hikvision, featuring the word "HIK" in red and "VISION" in grey, both in a bold, italicized sans-serif font, with a registered trademark symbol (®) to the upper right of "VISION".

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