Port Forwarding Tutorial

This port forwarding tutorial is provided to help you understand what port forwarding is, why it is required, and the basics on setting up port forwarding in your router to allow remote access to webcams on your local area network (LAN).

What is Port Forwarding?

Port forwarding is a method or service enabled in your router to make computers and other devices on your local area network (LAN) reachable by computers and devices on the public Internet. It is used quite often to enable remote access (Access when not on or connected to your LAN) to webcams for the purpose of remotely monitoring, controlling and streaming live video.

What are Ports?

Ports are essentially endpoints to logical connections between computers and devices on the internet. Programs and services running on your computer or webcam use specific ports for specific services. When your computer talks to a website, it talks to the server holding the website data over port 80 which is a common port for HTTP or HTML internet traffic. When you access your webcam using a web browser, you typically connect to the webcam over port 80.

What is NAT?

Network Address Translation (NAT) is a technology enabled in your router that allows each device on your local area network to have its own IP address. While each device on your LAN has its own IP address, from the Internet (outside of your network), every request coming from computers on your LAN appears to be coming from the single publicly visible IP address assigned to you by your Internet Service Provider.
If you want to browse the web from a computer on your LAN, the request does not go straight to the web server on the Internet. The request over port 80 is made from the private IP address on your LAN to the private LAN address on your router. The router makes a note of which internal device (your computer) is requesting the data from the web server, then forwards that request out to the webserver on the Internet. When the web server on the internet responds back to your router, your router knows exactly which computer on your LAN requested data and forwards that information along.

NAT works exactly the same in reverse! When a computer on the Internet requests a web page from your IP address, your router needs to figure out which internal device is a web server so the request can be filled. In the case of our use, NAT can handle such requests forwarding the request to the webcam on your LAN allowing us to remotely access the web interface on the camera. To allow this, we must setup port forwarding within the router.

DHCP and Static IP Addresses?

Devices connected to your LAN each have a unique private IP address (an IP address not known or understood by the public internet). The devices can either be assigned an IP address which doesn't change or assigned an IP address automatically via a service in your router called DHCP. If the network settings in your webcam are configured for DHCP (sometimes described as "automatic"), your router will assign an IP address to the camera automatically when the webcam is powered up and connected to your network. We suggest assigning a static IP address to your camera which is not used by other devices on your LAN.

Setting up Port Forwarding?

Once your webcam has an IP Address from your network, verify that you can access the webcam. From a computer connected to the same LAN, put the IP address of your webcam into a web browser and hit enter. The HTML interface for your camera should appear and will typically ask you for username and password information. If you get this far, you have successful setup your webcam on your LAN.

The next step is configuring your router to forward internet requests to your webcam (port forwarding). For the purpose of webcam streaming, HDOnTap requires access to HTTP (web) and RTSP (streaming) ports which are typically 80 for HTTP and 554 for RTSP. Some webcams are configured differently by default and others allow you to change the HTTP port and/or the RTSP port used by the webcam. For the purpose of this tutorial, we are going to assume that your webcam uses port 80 and port 554 for HTTP and RTSP respectively.

There are thousands of router models on the market. Unfortunately, it is not possible provide specific instructions on configuring each router model. Instead, you should consult the user manual for your router. You can typically find the user manual on the internet by searching on google.com using "<router model number> user manual".

Depending on how your network is currently configured, you might have another device setup on your network accepting HTTP requests on port 80.   For this reason, we suggest using external port 10080 for HTTP requests.   In this case, you are essentially configuring your router to forward requests made to port 10080 of the public IP address of your router to port 80 of the private IP address of your webcam.

To configure port forwarding within your router, put the router IP address into a web browser of a computer on your network and hit enter. When asked, enter the username and password to login to the web interface of the router.   The fort forwarding setup menu is typically found under the advanced menu within the router. Once you have found the port forwarding menu, configure the HTTP and RTSP port forwarding rules. Assign external port 10080 to internal port 80 of the private IP address for your camera for remote HTTP web access to your camera and apply the settings. Next, assign external port 10554 to port 554 of the private IP address of your webcam and apply the settings.

To verify that your settings were applied and working, try accessing your webcam from a computer outside of your network using the following URL format.

http://<Public IP_Address_Of_Your_Router>:10080 and hit enter.

If port forwarding is setup properly, you should see the web interface to your webcam.