Port Forwarding for CCTV

How to See Video Offsite
Does Customer have Broadband

- Is Broadband Cable or DSL
  - If Cable it is likely that ISP provides a router most often it is a wireless router. It is likely that the router authenticates with ISP based upon its MAC address so changing router may cause customer to lose ability to connect to internet.
  - Make sure customer has username and password information to log into router. Often found on a sticker on side of device.
KNOW BEFORE YOU GO (2)

– If DSL does customer know PPoE authentication information. (From ISP and cannot be guessed)
– DSL often provides a Modem/Router where device only has a single RJ-45 port.
– If Customer has login information for Modem/Router user can add a switch.
– IF ISP does not allow user configuration of device than device must be put into “Bridge” mode and a second router must be added so configuration can take place.
• In case of DSL and Cable there must be an open port for NVR/DVR/Camera to connect.
• YOU MUST have a PC with you to configure router. This CANNOT be done via the DVR/NVR.
• You must have enough Ethernet cables to connect Devices simultaneously.
• Know in advance how many ports need to be forwarded.
  – Some Devices only require one port such as the http port. Other devices require http and media port. Others can require http, media/rtsp and server ports.
  – Know if ports can be changed on CCTV device or if they are fixed.
  – Know if Router supports External/Public ports to be different from Internal/Private ports.
Understand Basics Of Computer Addressing and Subnets

• TCP/IPv4 are still most common used.
  – All address have been allocated but because of heavy use of private subnets most ISPs are still providing a v4 address.
• TCP/IPv6 provides enough address for every star in the universe to have 100 address.
• Understand difference between a Public and Private address.
Understand Basics Of Computer Addressing and Subnets (2)

- Private address such as 192.xxx.xxx.xxx or 10.xxx.xxx.xxx can only be seen by devices who are part of the same network. Address of this type can only be seen when user is part of INTRANet or LAN.

- Public address such as 68.88.xxx.xxx can be seen from anywhere in the World (thus the term World Wide Web) and are part of INTERNet or WAN.
Understand Basics Of Computer Addressing and Subnets (3)

• If Your IP camera has the IP address of 192.0.0.64 and you computer has the address of 192.168.1.101 you are not going to be able to view a live image.

• Likewise if your DVR is plugged into the router and has the address of 192.168.1.50 and your laptop is connected via a wireless connection and has the address of 192.168.2.100 you cannot see the images from the DVR. It is not uncommon for the wireless subnet to be different than the wired.
DETERMINE IP ADDRESS OF COMPUTER

• Fastest way is by using “Command Prompt”
  – Windows XP go to START, click “run” type cmd or command and press enter
  – Windows 7/8 type “Command Prompt” into search window
• With Command Box open type command “IPCONFIG” which stands for IP configuration.
• Note that it shows that the wired Ethernet connection shows “Media Disconnect”
  – If you are using a wired connection and this message is displayed check cable
  – This message may also result if you are plugged into a switch and no router is available
  – If possible always use a wired Ethernet connection as wireless can add variables (like a different IP subnet than the wired connections) that must be accounted for when troubleshooting
• Wireless connection shows TCP/IPv4 address of: 192.169.1.102 with a default gateway of 192.168.1.1

• Subnet mask will be 255.255.255.0 in 99% of the cases when IP address is 192.xxx.xxx.xxx as it is standard subnet mask for this subnet (Class C type)

• The Gateway address is the address of the router where the port forwarding must take place.
Warning!

- For port forward to work you must be using router that is connected to the World Wide Web.
- Look for the WAN/Internet/Public address of router and make sure it is not an 192.xxx.xxx.xxx or 10.xxx.xxx.xxx address. If it has one of these private address for its Internet address there is another device on site doing the routing. You may therefore need to forward the desired ports in one router to the IP address of the second router to which the CCTV device is connected and then again in that router to the CCTV device.
Warning! (2)

This tells you if customer has a static IP address or if in this case they get a Dynamic public address.

This is the External address of this router. It is a Public address (not 192/10.xxx.xxx.xxx) so creating port forwards in this router will work.
Configure Router

- Open Browser (ie works more times than not though you can use Google/Firefox etc.)
- In URL bar type http:// and the gateway address. (in example it is 192.168.1.1)
Most of the time a “challenge screen” will appear requiring you to enter user name and password. Some AT&T routers do not ask for username and password until an attempt is made to make a change.
Configure Router (3)

- Where you go next can vary greatly. Some routers put port forwarding under “Applications and Gaming”. Others under Advanced Options/Pin Holes or Advanced Options/Port Forwarding. Refer to Router user Manual.
Configure Router (4)

- This shows using external (Public) ports that are different than the Internal (Private) Port. User on local network does not need to put :8008 at end of IP address in previous slide.
Some Routers have security features which will prevent viewing of video from outside network. Linksys/Cisco for instance require this change within Security Settings.

![Linksys/Cisco Router Configuration](image-url)
The CCTV device to which you are forwarding needs to have a static address. You cannot have DHCP enabled on device.

DHCP (Dynamic Host Communications Protocol) means the device is “set to obtain IP address automatically (computers are set this way by default).

Which address is assign to which device is dependent which device boots faster. It is very likely that device will a different address causing ports to be forwarded to wrong device.
Trouble Shooting

• If you can connect to the DVR/NVR/IP Camera across the network but do not get video than one of the ports may not be forwarded correctly.

• It may be necessary to reboot the device in order for network changes (like changing the RTSP port) to take affect
Trouble Shooting (2)

• If device can be seen locally but not remotely, port may be blocked by ISP or Cellular provider. AT&T for instance frequently blocks ports below 1000 and in some areas below 2000. Making the RTSP port and HTTP port higher than 2000 may resolve the problem.

• Forwarding a port does not “open” that port for remote viewing if ISP or Cellular company blocks it on their side.
Verify Success

• To see if the port forward is successful attempt to use the public address to see the CCTV device.
  – Sites such as www.canyouseeme.org
  – www.whatismyip.com
  – www.speedtest.net
  – www.portforward.com

display the public address being broadcast.
Verify Success (2)

- Sites like Can You See me Can also help test if port is visible to outside world.

CanYouSeeMe.org - Open Port Check Tool

This page will serve as a free utility for remotely verifying a port is open or closed on your router. It will be useful for users who wish to check to see if a server is running or a firewall or ISP is blocking certain ports or verify network security. If you want to do website hosting on your own or run your own IP camera behind your router it will also helpful.

Analyze your Network

Monitor network performance. Quick & easy setup. Download now!

Your IP: 76.184.50.123
What Port? 80

Public Address
Port Check Tool

Common Ports
- FTP: 21
- SSH: 22
- Telnet: 23
- SMTP: 25
CONGRATULATIONS YOU HAVE DONE IT!!

• Remember if you are using WiFi at the site you need to use the LAN or local address.
• If your phone is on 3/4G you can view using the Public address.
• Call someone away from the site and have them attempt to log in.
• Set up two log ins on customers phone one for local and one for away.
• Remember that if http port other than 80 is forwarded it must be tacked onto the end of the public address: 76.11.151.30:8000.
• Do not waste time setting up a port forward it should take 10 minutes or less if all information is known.

• Consider paying an IT specialist if you are unsure of situation.

• Consider using a third party port forwarding configuration software. (Portforward.com has some manufactures integrated and for $30 they will do it for you. HikVision is integrated).

• When in doubt, Reach out!
• DDNS stands for Dynamic Domain Name Service.
  
  – For 99% of home owners and 80+% of businesses the Public IP address they have is Dynamic, not static, and changes on a regular basis. How long you keep an Public address is know as the “lease period” The length of the lease can usually be obtained from the ISP. Some leases can be a few hours long and others may last until such time as the equipment is powered cycled even if that is months.
Many routers support services that will allow a user to create a name that will be associated with a changing Public IP address. Most (D-Link has their own server) use third part servers such as No-IP.com or DYNDNS.org which require users to go to those sites and create user accounts which are then added to the router configuration.
This router supports DynDNS.org which is free and TZO.com which cost ~$30/year. Free is nice but since no one is making money uptime is not guaranteed.
Many CCTV manufactures have their own DDNS servers. Large companies like HikVision usually have better uptime records than those that rely upon others.
ADDITIONAL INFORMATION
DDNS (4)

• Create an account that is easy to remember
• Know correct path to find the server you created like Hik-online.com/mydvr
• The username and password is information used to create DDNS account is not the same user name used to log into DVR Menu.
• Each IP camera can have a separate DDNS account.
PORTFORWARD.com contains guides to hundreds and hundreds of routers.
PORTFORWARD.com (2)

How To Get an Open NAT

Open NAT and NAT Type Open both mean having a Forwarded Port. If you need an open NAT, you’re on the right path.

Start by selecting your router manufacturer from the list below.

A

 Allied Data

 Allied Telesyn

 AllNet

 Alpha

 Ambit

 Amped Wireless

 Ansel

 Aolynk

 AOpen

 AP Router

 Apple

 Arris

 Articonet

 Artnet

 Asante

 Asmax

Click on first letter of router to jump to that section of alphabetical list
Port forwarding the Westell Westell2100Wirespeed router.

You're almost there!

This is our guide list for the Westell Westell2100Wirespeed. Please select the program you are forwarding ports for from the list below.

If you do not feel like figuring out how to forward ports manually, we have a simple software solution called PFConfig that can forward your ports for you automatically. We offer complete support for our product and will help you get your ports forwarded.

If you do not see the program you are forwarding ports for, you can try checking out our Default Guide for this router, which is a generic guide that should help you get through the basics of getting an open port on your Westell2100Wirespeed.

Once Router Model is found click on Default Guide and follow instructions. You will need to close the commercial that appears between this screen and the information.
PORTFORWARD.com (4)

Some Devices have been submitted for inclusion in list of items supported by PortForward.com. For a price the website guarantees that they can do the port forwarding for you. Usually around $30. If you want to do it yourself they will tell you the ports that this device commonly needs to function and how to forward these ports on the selected router.