



# App Note 124

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## Port Forwarding for PulseWorx Gateway Access

*Before you read this note hopefully you will have already read and followed the instructions in the Gateway User Guide for deploying the Gateway and being able to connect the Android, iOS, or Windows application using the internal network IP address of your Gateway. Port forwarding is only needed when you are attempting to connect to the Gateway from outside your network. Until you have succeeded in connecting to the Gateway on your internal network, it isn't a good use of your time to proceed with attempting access from the outside.*

To make use of the Gateway and to use the mobile phone, tablet, and Windows applications from outside your network you must configure what is known as port forwarding.

When accessing the Gateway on the internal network it is usually assigned an IP address something like 192.168.x.y. Where x is usually 0 or 1 and y is a number from 2 to 250. These are the usual numbers but what is used on your network depends upon how the network was configured.

Outside the firewall instead of that IP address, the connection is made to the IP address of your DSL or cable modem and to a port number. Port forwarding makes it possible for requests to arrive from outside the firewall and be directed to the network device – the Gateway – associated with that port.

If you have multiple routers in your system, you want to configure port forwarding on the one that connects the outside world to your network. For example, you may have a DSL or cable modem that brings internet access to your home and a wireless router as a wireless access point. The DSL or cable modem is where port forwarding must be configured.

Most routers have a firewall component that may also need to be configured. Some routers configure the firewall automatically when you configure port forwarding to allow a port through the firewall while in others you must configure the firewall separately.

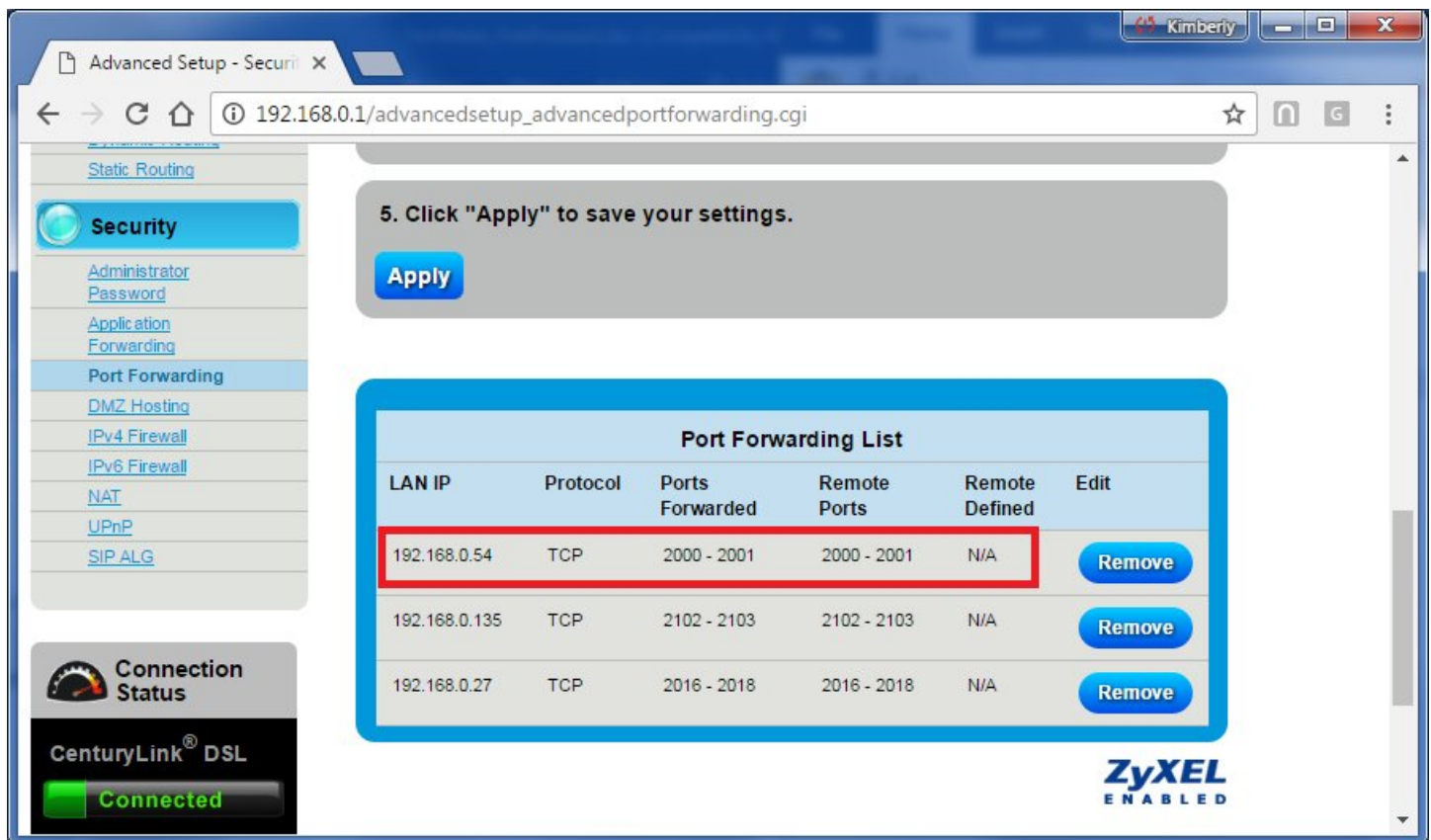
Also, some routers have configuration that will block any “WAN to LAN” (from outside your network to inside your network) unless that is allowed. This may need to be set to allow access.

The bottom line is that there may be many steps necessary to get port forwarding correctly configured on your router to allow access to your network.

Unfortunately, this is where the story gets a bit hazy. Each router has a different method of setting up port forwarding and providing instructions for all routers is beyond the scope of these instructions.

**Do not underestimate the challenge of configuring port forwarding if you have not done it before.** The router has a firewall that is designed to prevent exactly what you are trying to do. While it is always possible to configure the firewall and port forwarding to grant access to your network as needed, it can take a lot of effort. If you have not done this before you may need to find help in doing this.

As just one example, here is a screen image from a CenturyLink DSL modem. The Gateway is using port 2000 and its internal IP address is 192.168.0.54.



One challenge in port forwarding is that you will configure the router to have the IP address of Gateway. The Gateway acquires its IP address from the router when it powers on (to be technical, from the DHCP Server which is probably your router). Most up-to-date routers are smart and each time that a device connects to your network when powered on it is assigned the same IP address. This is called *IP Reservations* and hopefully your router has that. Some routers must be configured to enable IP reservation in general or for specific MAC addresses. If your router has IP reservation or you can configure for it then you **do not** need to assign the computer running the Gateway a static IP address.

If your router does not have IP Reservations then you must interact with the Gateway to assign it a static IP address and make sure that that static address isn't one that your router may provide to another device (again

to be technical, an address outside of the DHCP pool). How to assign a static IP address is described in the Gateway User Guide.

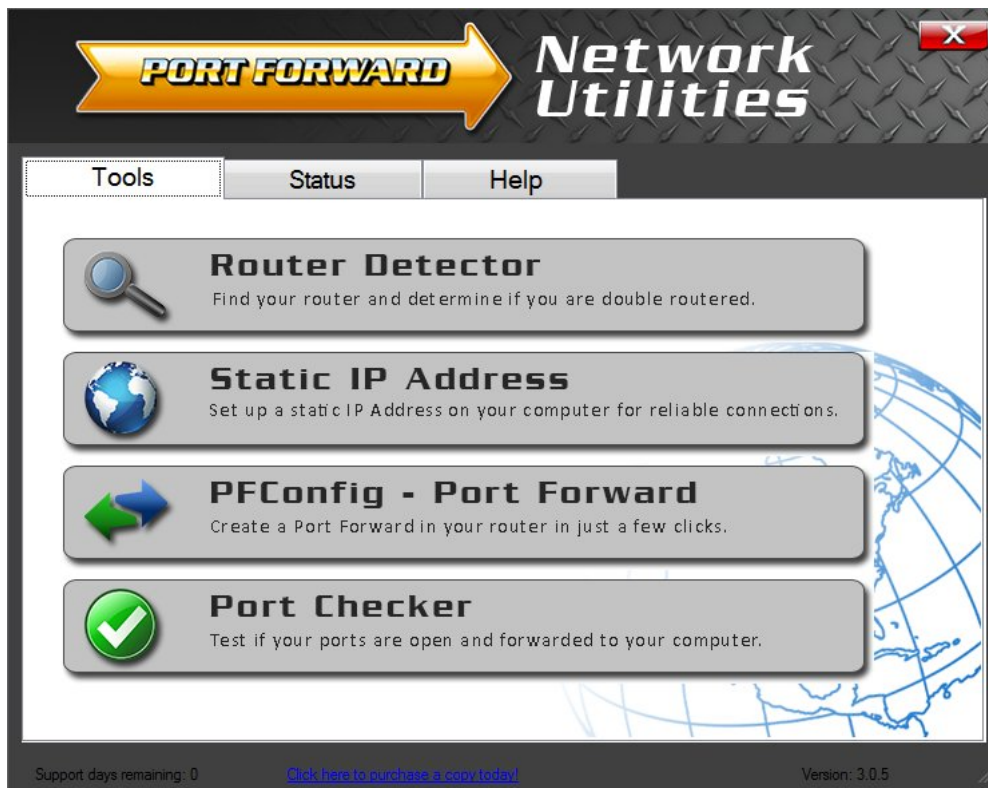
For the best online help site for port forwarding is: <http://portforward.com/>

This is a good site but they try a bit too hard to sell their software and services. Using the free tools and information found there can help a lot without needing to purchase anything. We strongly urge you to use this site and the application you can download from it. It provides you a way to check your configuration of port forwarding and the router firewall without using the Gateway mobile apps. It's like getting a "second opinion".

Follow this link and near the bottom of the page is a button labeled "Free Trial".

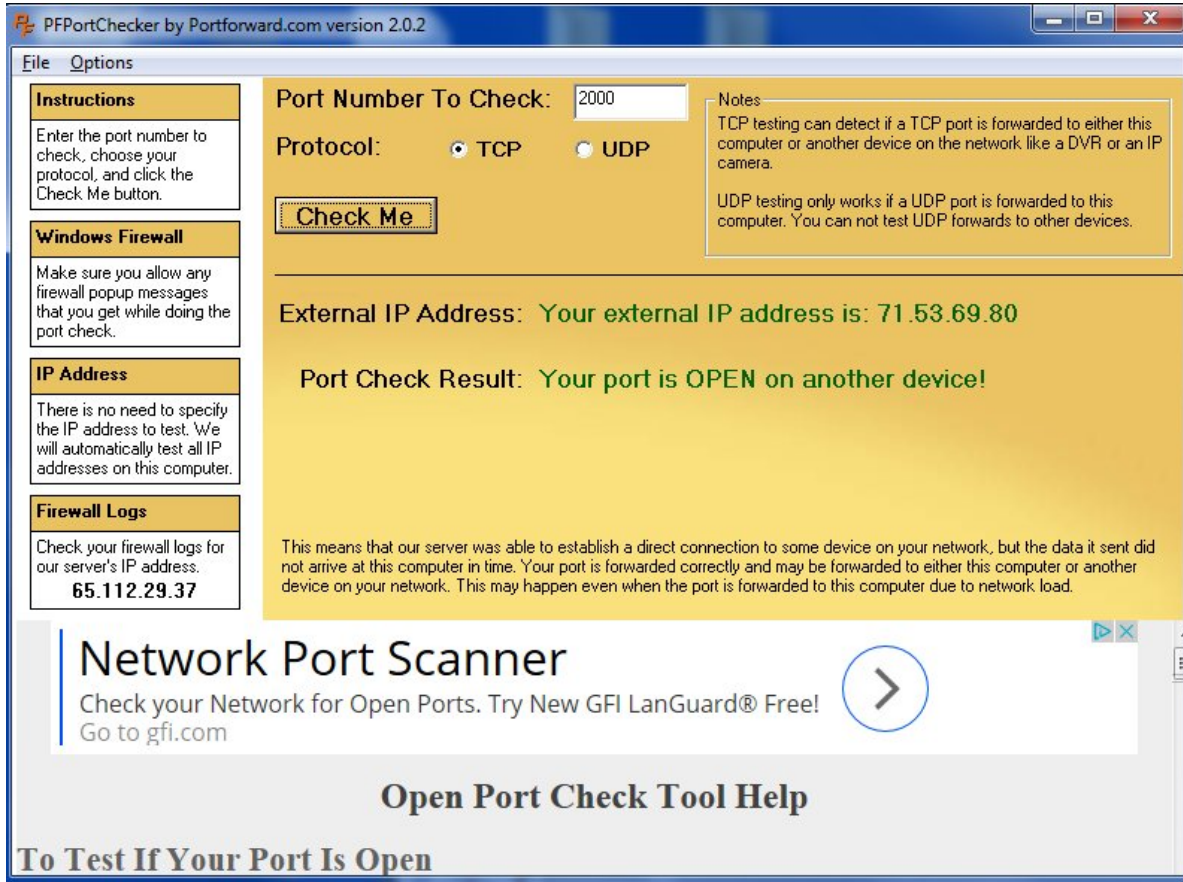
<https://portforward.com/store/pfconfig.cgi>

After you install and start their application, a dialog appears for registration. You can skip that by pressing the "Trial" button. The main interface appears as:



Press the "Port Checker" button and enter the port number the Gateway is using (2101 unless you changed it) and then press the "Check Me" button. (These pictures show the port number as 2000 and that's just how this

Gateway was setup. Yours is probably using port 2101)



The screenshot shows the PFPortChecker application window, version 2.0.2, by Portforward.com. The interface includes a sidebar with instructions, firewall settings, IP address information, and firewall logs. The main area displays the port number to check (2000), the protocol (TCP), and a 'Check Me' button. The results show the external IP address as 71.53.69.80 and the port check result as 'Your port is OPEN on another device!'. A note explains that this means a direct connection was established to a device on the network, but the data did not arrive at the computer in time. At the bottom, there is a banner for 'Network Port Scanner' and a link to 'Go to gfi.com'.

PFPortChecker by Portforward.com version 2.0.2

File Options

**Instructions**  
Enter the port number to check, choose your protocol, and click the Check Me button.

**Windows Firewall**  
Make sure you allow any firewall popup messages that you get while doing the port check.

**IP Address**  
There is no need to specify the IP address to test. We will automatically test all IP addresses on this computer.

**Firewall Logs**  
Check your firewall logs for our server's IP address.  
65.112.29.37

Port Number To Check: 2000

Protocol: ☒ TCP ☐ UDP

**Check Me**

Notes  
TCP testing can detect if a TCP port is forwarded to either this computer or another device on the network like a DVR or an IP camera.  
  
UDP testing only works if a UDP port is forwarded to this computer. You can not test UDP forwards to other devices.

External IP Address: Your external IP address is: 71.53.69.80

Port Check Result: Your port is OPEN on another device!

This means that our server was able to establish a direct connection to some device on your network, but the data it sent did not arrive at this computer in time. Your port is forwarded correctly and may be forwarded to either this computer or another device on your network. This may happen even when the port is forwarded to this computer due to network load.

**Network Port Scanner**  
Check your Network for Open Ports. Try New GFI LanGuard® Free!  
Go to gfi.com

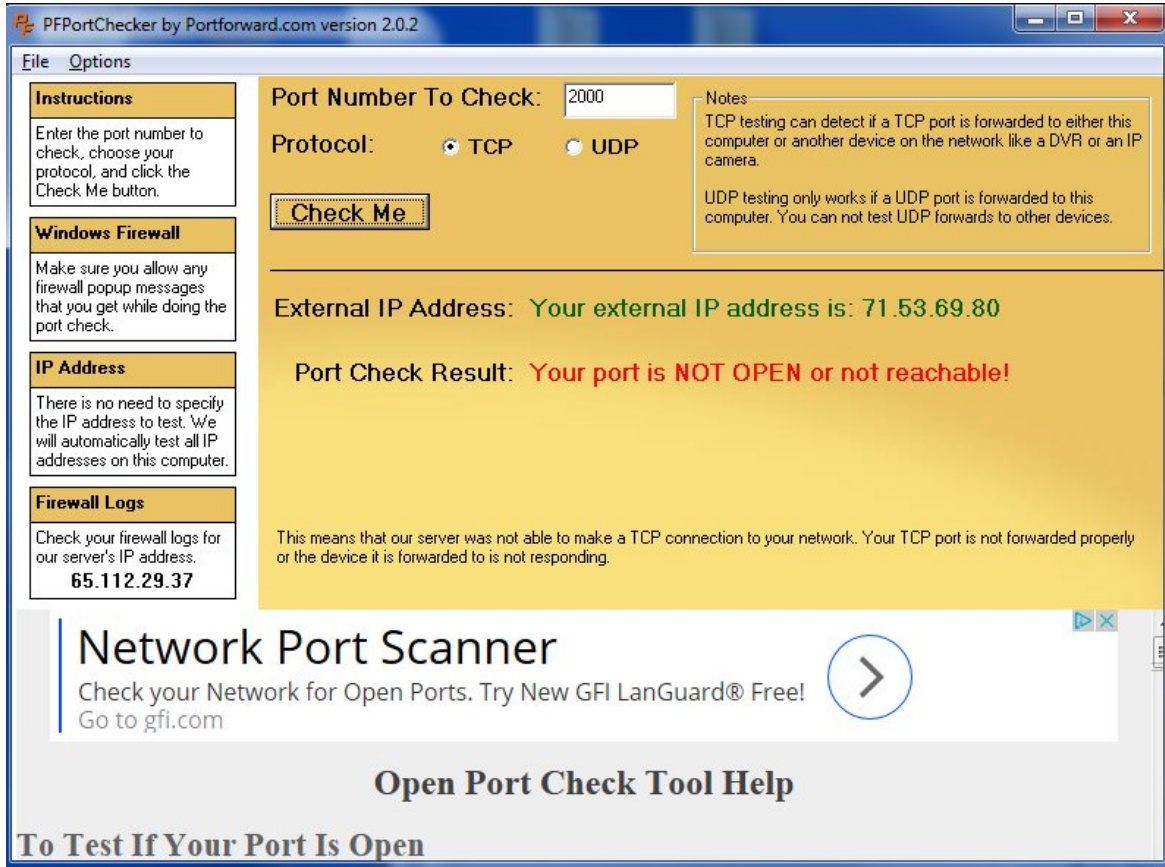
**Open Port Check Tool Help**

**To Test If Your Port Is Open**

If you have configured everything correctly and if the Gateway is running you should get a response like the one above saying that the port is open. If so, good job!



A response that shows that something is blocking access to the Gateway looks like this:



PFPortChecker by Portforward.com version 2.0.2

File Options

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**Windows Firewall**  
Make sure you allow any firewall popup messages that you get while doing the port check.

**IP Address**  
There is no need to specify the IP address to test. We will automatically test all IP addresses on this computer.

**Firewall Logs**  
Check your firewall logs for our server's IP address.  
**65.112.29.37**

Port Number To Check:

Protocol: ☒ TCP ☐ UDP

**Check Me**

Notes:  
TCP testing can detect if a TCP port is forwarded to either this computer or another device on the network like a DVR or an IP camera.  
UDP testing only works if a UDP port is forwarded to this computer. You can not test UDP forwards to other devices.

External IP Address: **Your external IP address is: 71.53.69.80**

**Port Check Result: Your port is NOT OPEN or not reachable!**

This means that our server was not able to make a TCP connection to your network. Your TCP port is not forwarded properly or the device it is forwarded to is not responding.

**Network Port Scanner**  
Check your Network for Open Ports. Try New GFI LanGuard® Free!  
Go to [gfi.com](http://gfi.com)

**Open Port Check Tool Help**

**To Test If Your Port Is Open**

If it fails, these are areas to check:

- The correct Gateway port. Make sure that the Port is set to 2101 or whatever you are using
- Port forwarding has been correctly configured in your router to the IP address of the Gateway. Check that you configured the router with that IP address. UPStart can show you that internal IP address as that is what it uses for its connection.
- Any firewall in the router has been properly configured. Some automatically configure it when you configure port forwarding. For others, you may need to do it separately.
- Your router is configured to allow port access in general. Some routers have an overall enable / disable of WAN (the outside world) to LAN (internal network) access so look for that.



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- Some routers have a schedule that can be set that only allows access during some times of the day. Check that such a feature, if your router has one, isn't blocking access.

Again, this is the hardest part of setting up access to the Gateway. It can be frustrating we know and it isn't easy for us either as we know that there is only limited support we can provide.

##end##