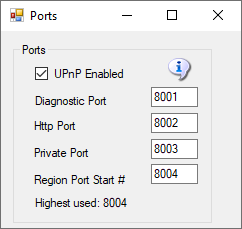
# Port Settings and UPnP

Multiple TCP and UDP Ports are used in Opensim. The defaults are shown below.



The defaults are 8001 (Diagnostic), 8002 (Public) , 8003 (Private) and 8004 (Starting Region). If you have manually added more regions, their region ports also need to be open. Each region that is used takes up one port. They start at 8004 and count up by one.

## Port Forwards:

See the section on **Troubleshooting Ports** on how to manually set the ports.

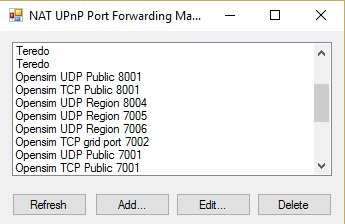
**UPnP Enabled:** The Outworldz program uses Universal Plug and Play (UPnP) to automatically allow data to come from the Internet to your computer. This is called "Port Forwarding". UPnP capability may be disabled in your router, or it may not support it.

You may need to stop the SSDP Service to prevent this service from intercepting these messages.

If UPnP is enabled and your router supports it, DreamGrid will automatically open the correct ports. This can be slow and time-consuming, so you may prefer to disable UPnP and set your ports manually

Do you have Plug and Play (UPnP) issues? The DreamGrid help menu has a useful tool to look at uPnP in your router:

UPnp (Universal Plug and Play) Tool for Windows



You can add, delete, and modify the settings without a password, assuming you have UPnP enabled. This tool is available in Dreamworld and DreamGrid in the Help menu.

## Troubleshooting Ports

A list of routers and instructions is at  http://www.portforward.com which can help you identify your router type.

Step 1) Get your PC LAN IP address by going to a DOS prompt and typing 'ipconfig'.



In the above photo, my IP was 192.168.1.3.   Yours is likely to be in the range 192.160.\*.\*, but it could also be a 10.0.\*.\* number. For my Linksys, it looks like this:



## IceCast/Shoutcast

Ports 8080 and 8081 must be added when you are running the Icecast/Shoutcast server.

**Which ports?** You need to Port-Forward 8001, 8002, and 8004-8010 (or higher, I usually open up to 8050) to have room for expansion. You can also add 8080 and 8081 for Shoutcast/Icecast.  Do not do 8003 for security reasons. These can usually be done in ranges, like 8001-8002 and 8004-8010. The latter ones are for regions - you need one port per region, so this would let you have 7 regions. Add more if you want - nothing wrong with opening up to 8020 or 8030 or so.  In the above photo, I have opened ports 8004 through 8005.

They need to be open for both TCP and UDP. Your router will have a button or a pulldown to select UDP, TCP, or both.  If you do not have a Both or All option, you have to add them twice, once for UDP and once for TCP.

**How do I know this worked?** You can tell if it worked by starting Opensimulator, and then use a web browser to go to [http://www.canyouseeme.org](http://www.canyouseeme.org/), and enter 8002 while Opensimulator is running. Then click the Test Button at CanYouSeeMe. If that works, the ports are fine. If this does not work, try disabling your PC firewall. If this works, you must add exclusions to the firewall and then turn the firewall back on.

See **Firewall Issues** for help with the PC firewall.

Keep working with the router, firewall, antivirus exclusions and IP address until this test passes.

## Loopback:

The second part that must work is loopback - either your router supports it, or not. You can immediately tell if your loopback works after running the above CanYouSeeMe.org tests. You use your web browser to navigate to <http://(YOUR> PUBLIC IP):8002. Mine was <http://24.173.0.66:8002>. Of course, your IP address will be different than shown here, so use whatever CanYouSeeme.org shows you. If the system is working, you get a web page.

If not, you must add a loopback adapter. Go to <https://www.outworldz.com/Outworldz_installer/Loopback.htm> and follow the instructions.

Then go to Hypergrid/DNS Name page and enter your desired Hypergrid name

### Firewall Issues:

Windows will prompt you to allow Opensim to open ports when it first runs. If you say no, you will not be able to log in. I also set all the ports to be open in firewalls when you first click start.

If you are using an Anti-virus with a firewall, such as Zone Alarm, AVG Internet Suite, or anything else, running Start.exe may trigger the 3rd party firewall popup warnings. Opensim.exe needs to be allowed internet access, and Start.exe must be allowed to make changes to the firewall. If not, it will not work, and you will have to take manual action to fix it.

This code is safe and is digitally signed by me, Fred Beckhusen of Outworldz.com, and is open source and available for inspection at  <https://www.github.com/Outworldz>.

You may have to manually add firewall rules to allow incoming traffic on the ports.

1. On the client operating system, go to Start>Run and type firewall.cpl. The Windows Firewall window opens.  
2. Click on the “Advanced Settings” link on the left pane. The Windows Firewall with Advanced security window opens.  
3. Click on the “Inbound Rules” option.  
4. On the left pane, click on “New rule”.  
5. Under “Rule Type” select the option “Port” and click next.  
6. Select “TCP” and “specific local ports” options.  
7. Key in the port number, the port is 8001-8010 (or higher for more regions)  
8. Click Next.  
9. Select the option “Allow the connection”.  
10. Click Next, do not change any option here and click Next again.  
11. Specify a name for this rule.  
12. Click Finish.  
14. Repeat the above but using UDP from step 6

## More information about Opensim Ports

Here is more detail about ports and the way the interact with the outside world such as [www.canyouseeme.org](http://www.canyouiseeme.org/) and to my diagnostics tests.

Put simply, only port 8001 and 8002 can report back to those tools as to being open and can do so only when Opensim is running.

### Port 8001:

8001 is a TCP/HTTP port that is open for help->Network diagnostics. It is unique to Dreamworld and not to Opensim. It is used for a "port forward" test, just like Canyouseeme.org does, and for a loopback test. It collects data on sim's going up and down to change the icons and collects Partner information if two people click the partner prim.

### Port 8002:

Opensim has a web server that web browsers understand, using the same protocol (TCP/HTTP) that tools like [www.canyouseeme.org](file:///C:\Users\Debbie\Dropbox\Dreamworld\Manuals\www.canyouseeme.org) support. Put simply, Opensim is the only thing that listens to port 8002 and answers to http:// GET and POST requests on 8002. Port 8002 is like port 80, the default port for web pages. You can actually set Dreamworld's 8002 port to 80, and it will still work. You can then drop the need to type :8002 at the end of your hyperlink. <http://hg.Osgrid.org> does this. There would be no need to type the :80, as literally http:// means "add a :80 to the end of it".

8002 works with web based ‘GET’ probe tools. If you do switch it to 80, then you forfeit using an additional web server on your home machine as only one program can listen to a port.

If Opensim is not running and your ports are open, it is as if you tried to connect to [www.google.com's](file:///C:\Users\Debbie\Dropbox\Dreamworld\Manuals\www.google.com's) web server, but their web server is down. Nothing will happen, though your packets can get through the Google firewall because it is still open to traffic and is steering it to a dead server. You will get no answer. Similarly, if Opensim is not running, there is no web server to answer the request.

### Port 8003:

This port is used by Opensim to listen to region traffic. Regions chat to the server database for login, presence, and other services use it to talk to the region so people can teleport from one region to another. In Dream World, regions must be on the same machine. In DreamGrid, just like OsGrid or any other remotely attachable grid, the regions can run on any machine anywhere in the world.

If you opened port 8003 to anyone on the web, you expose the internal database protocol to the web. Anyone with the right knowledge could attach a region to your sim. If you run a DreamGrid and host regions outside your LAN, it is recommended you use firewall rules to only allow access from known IP addresses running approved regions.

### Port 8004 and upwards:

The region ports (8004-upward) run both TCP and UDP.   UDP is used for the viewer. UDP cuts the load on the server dramatically as there is no need to automatically always ACK every packet. As one example, no one cares if an audio stream gets briefly interrupted as you cannot hear it anyway, and it is too late to use it if it comes later in a retry. It just gets discarded.

For multiple regions in a single DOS box, all regions listen for TCP traffic on the last port used in that DOS box. As one example, if one region is in a DOS box by itself, and it is the first region, then it listens on both TCP and UDP on 8004.

If you had two regions in one DOS box, and they start at 8004, then the regions listen to UDP on 8004 and 8005, and both regions listen to 8005 for TCP traffic. You can check that the region is reachable on the Hypergrid only by using port 8005. 8004 will not respond, as it only listens to 8004 on UDP.

As a result, you can test regions with tools like Canyouseeme.org or a web browser

## Links:

Port Testing: [http://www.canyouseeme.org](http://www.canyouseeme.org/)