Port Forwarding for Warcraft II - Lambchops April 2020

Discord: Lambchops#3843

So I have been meaning to write a better description of port forwarding for years now, and as we are all cowering inside hiding from the virus, I have time to do it, and perhaps people who have had trouble with this in the past now have time to read this and try to set it up.

What does port forwarding do for me?

 - It allows people to join games you host on battle.net or pvpgn servers.

It does not:

 - Improve or help with lag.
 - Help with joining games.
 - Do anything else *at all*.

Ok so what do I do?

All you need to do is this:

Log into your router config page and forward port 6112 UDP traffic to your computers LAN IP address.

Nothing else is required for your port forwarding rules. Anything saying that you should forward 6112-6119 or TCP traffic or anything else is just mis-information that has been getting regurgitated by noobs copying other peoples FAQs for the last 20 years.

The only time you would do anything else is if you have changed your game port. It is 6112 by default, so obviously if you have changed it to a different port number then forward whatever port you have changed it to instead of 6112. From here I will just refer to 6112.

BUT...

As long as incoming UDP packets on port 6112 get sent by the router to your computer you can host. The only potential problem is that the router doesn't actually know what your computer is, it only knows IP addresses.

   Back in the bad old days a LAN IP addresses needed to be manually configured on each computer in a network and on the router, which was a bit of a pain, so to do this automatically a protocol called DHCP was developed. DHCP just automatically assigns an IP address to each device that connects to the router.

SO....

If you disconnect your computer from the router then reconnect it (or reboot) then the DHCP could assign you a different IP address, but your router will still have a rule sending the 6112 packets to the old IP address, which will break your port forwarding.

This is why you want to give your computer a static LAN IP address. This just means that every time your computer connects to the router it always gets the same address, so your port forwarding rule is always valid.

Can my router do this?

Yes. Except possibly no. Yes every router can do this. Sending packets to and from various IP addresses taking port numbers into account is literally the description of what a router does. If it can't do that then it isn't a router.

Except... Many routers these days, particularly ISP supplied routers (the router that the company gives you when you get your internet put on) have many features deliberately disabled or overly aggressive firewalls rules built in that can not be bypassed. So these routers will not allow you to forward ports simply because of the firmware that they have running.

I have even seen one router that had a complete port forwarding config page but also a mandatory firewall that automatically rejected all unsolicited inbound traffic – which means that the port forwarding will never work anyway.

So. If you have bought any decent router from a computer store then it will probably be able to be correctly configured. If your router has been branded by your internet company, then maybe it will be ok, or possibly the ISP will have gymped it so you can't do much with it.

But I paid extra for a static IP address when I got my internet put on. What gives?

Sorry, that's the wrong IP address. That's your WAN address not your LAN address. Unless you are running a server you will never need a static WAN address, and if you have a properly configured DNS account you don't even need one then.

LAN vs. WAN

These acronyms stand for "Local Area Network" and "Wide Area Network". The LAN is everything on your (home) side of your router and the WAN is everything on the other (internet) side of your router.

If you want, you can type "my ip" into an internet search engine you will get lots of pages that will tell you your WAN address. It will look like 11.222.3.44 or something. This is how traffic from the internet goes to your router. Once that traffic arrives, it is your router's job to send it on to the correct device that is connected to it.

To do this your router creates its own little network, the local network "LAN" and assigns all the connected devices their own individual local IP addresses so it knows where to send data that arrives from the internet.

LAN Address Assignment

It's actually pretty simple, it just gives each device that connects a number. Turn on your router and switch on your phone's wifi and your phone connects, The router says, "you are number 1". Switch on your smart TV and it connects, then the router says, "you are number 2". Boot up your computer and it connects then your router says, "you are number 3".

BUT, if you then switch off your phone and reboot your computer, when your computer connects to the router it will see that address "1" is not being used any more (because your phone has gone) and say to your computer, "you are number 1"... so your LAN address has changed from "3" to "1".

The easiest way to assign a static IP address is just to tell your computer to ASK for it. So when it boots up and connects to the router it says to the router, "I am number 50". As long as no other device is using "50" the router will just say, "Ok then, you are number 50". So unless you have 49 friends over with their phones all using your wifi and then you reboot your computer this will never be a problem. If you have 49 friends over, go socialize don't play WC2 you total nerd.

You can also get some routers to assign a static LAN IP address by reserving a specific address for a specific MAC which is an id number in your network hardware, but the method varies between different routers and it is harder to set up and harder to describe than just assigning a static address on your computer.

DHCP

The rules covering how addresses are requested and assigned is something called the "Dynamic Host Configuration Protocol" or "DHCP". It works pretty much exactly like I have described above. There are a few other things that can be configured on your router – like maybe you want the first address to be 20 and count up from there or something, but usually they just start at 1. Your computer and your router both understand DHCP and will talk to each other using this protocol when a connection is first made.

LAN IP Addresses (Really)

Ok so everything I described in the previous couple of paragraphs is correct except of course an IP address is not just a single number like "3", they are groups of 4 numbers like "192.168.1.3".

In all likelihood your LAN address is very similar to that address because LAN addresses are restricted to a set range of IP addresses that are reserved for local addresses mostly "192.168.xxx.xxx" or "10.1.xxx.xxx".

It is very common for the LAN address of a router itself to be 192.168.1.1 and the addresses of the connected devices to be 192.168.1.2 and 192.168.1.3 ... etc.

So it works like this:

When you host a game, your client (the WC2 program) tells the server "I'm hosting a game". The server looks at your **W**AN IP address (the big outside internet one) and your game port (almost always 6112) then puts your game name on the list along with that information.

When someone selects your game and tries to join then their client sends packets saying "I want to join" to you at that IP address on that port. The magic of the internet means that these packets arrive at your router. <u>This always happens.</u> The only issue is getting your router to send them to your computer. If you have your port forwarding rule set up your router will look at the packets and say "Oooh, that's port 6112, I know to send that to 192.168.1.12" .... or whatever your LAN address is, so it sends them to your computer.

Enough nerd talk Lamb, just tell me what to do already.

Kk lol. Fine then, just do this:

PART I – Collecting information

1) Hit [WINDOWS KEY] + [R]
This will open the "Run" dialog.

2) Type "cmd" in the box and hit [ENTER]
This will open a command prompt window

3) At the command prompt type "**ipconfig /all**" [ENTER]
This will give you a list of all the network adapters and their current configuration.

It will probably look like a whole pile of stupid confusing jargon and numbers, but don't worry you are only looking for a little bit of information.

4) Scroll up and find the network connection that you are using to connect to your router. If you are using a network cable it will probably be labeled as "Ethernet Adapter" or similar. If it is a wifi connection it will say "Wireless" or something.

5) Find the line that says "IPv4 Address", note down the address and put a big (A) next to it. This is your current LAN IP address, but we will change it soon.

6) Find the line that says "Default Gateway", note down the address and put a big (R) next to it. This is your router's address. It will be the same as your LAN address but with a different number on the end (probably 0 or 1).

*At this point you should probably skip to step **20)** and just make sure that **(a)** you can log into your router, and **(b)** your router is capable of port forwarding, otherwise there is no real point in continuing. If you are satisfied that you can complete the process then return here and continue.*

PART II – Assigning a static LAN IP address
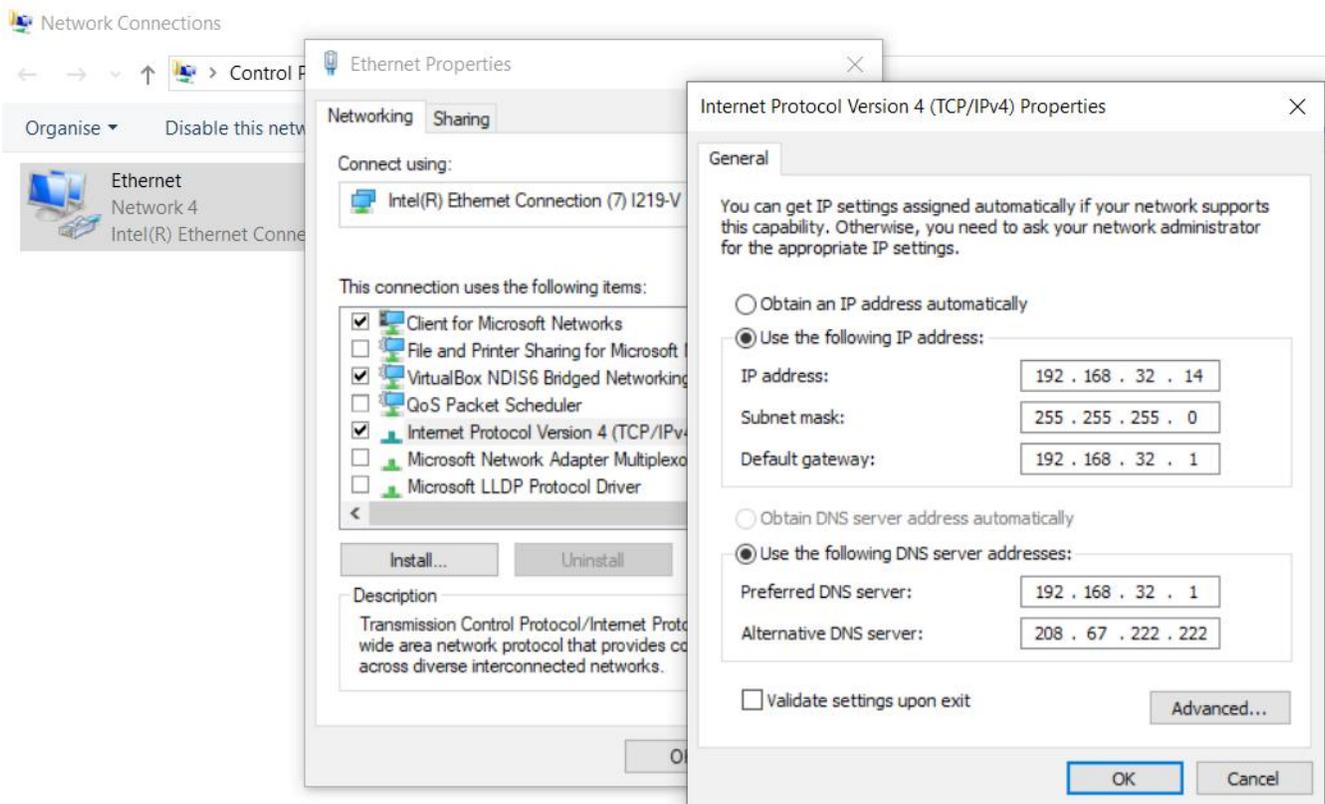
7) Hit [WINDOWS KEY] + [R] and type in "`Control Panel`" then hit [ENTER]
This will open the windows control panel.

8) Find your internet connection.
This will vary depending on what version of windows you are using.
On WinXP it is: Control Panel -> Network Connections -> (connection name)
On Win10 it is: Control Panel -> Network and Internet -> View Network Status and Tasks -> Change Adapter Settings -> (connection name)

On other versions of windows it will be something similar, but eventually you will end up at an icon with your connection name on it.

9) Right click on the icon and select "Properties"

10) The properties dialog for the connection will have a box with the title "This connection uses the following items", the box will have a heap of (mostly useless and unnecessary) stuff that windows has installed. Scroll down to the one that is mis-labeled as "Internet Protocol (TCP/IP)" or "Internet Protocol Version 4 (TCP/IPv4)" and double click on that to bring up the properties.

11) On the "General" tab change it from "Obtain an IP address automatically" to "Use the following IP address".

12) In the box for "IP address" enter the address you wrote down earlier and put an (A) next to EXCEPT **add 10 to the last number.** So if you wrote down "(A) 192.168.1.4" then put "192.168.1.**14**" in the box.   *Note: If the last number of your address is quite high, like 199 or something it is possible (but not common) that you router's DHCP is assigning addresses top-down starting with the highest address. If you have trouble and suspect this you can try subtracting 10 from the (A) address later, but don't do this unless it doesn't work. Some routers will start at a higher address like 100 but mostly they all still proceed up from there.*

13) In the box for "Subnet mask" enter "255.255.255.0".

14) In the box for "Default gateway" enter the router address (R) you noted earlier.

15) For the DNS server addresses put your router address (R) in the top one and "208.67.222.222" in the bottom one.

16) Click [OK] on the IP properties dialog and then the connection properties dialog to save the new settings then reboot your computer.

17) When your computer has rebooted check your internet connectivity. Can you load a web page? If not change your connection back to automatic, reboot your computer and go sit on the newb chair facing the wall.

18) Repeat steps **1)** to **5)** and check that your IP address has indeed changed to the (A) + 10 address you specified in the IP properties dialog.

19) Cross out the old (A) address and write this down as your new LAN IP address (A). This address should now be static as your computer will request this address every time it connects to the router.

PART III – Forwarding your game port

20) Open your web browser and type in your router's address (R) in the browser address box. You may have to preface it with "http://" or "https://" if it doesn't work with just the IP address. i.e. If you have (R) = 192.168.1.1 then type in "http://192.168.1.1" and hit [ENTER] or click the "GO" button or whatever.

21) Enter your router's login username/password. (See "Router Login" below).

22) Locate your port forwarding config page in the routers web UI. **This is unfortunately different on every different version of router firmware so you will have to have a look around and use your intuition.** Sometimes it is labeled as "Virtual Server" or something else entirely. On DD-WRT it is located on the NAT/QoS page. Wherever it is it should have boxes that you can input a port number into, an IP address to forward it to, and a protocol to forward. *If you look through all of your router config and still can't find the port forwarding, the chances are it isn't there. As a last resort you could check portforward.com, It's an old website that has individual instructions and screenshots for many router models, it may help you identify the page you are looking for, but you should ignore any other instructions you find there.*

23) Put 6112 (or your game port if you have changed it) into any boxes asking for a port number. Select "UDP" as the protocol, and put your computer's new static IP address (A) into the IP address box.

24) Save the configuration and reboot your router if it asks you to.

You should now be able to host games. If you can't, then check for firewall settings in your router. Any decent firewall should not be interfering as you have explicitly defined a rule that it should honor, however as I have mentioned some routers take a nanny state approach and still want to mess with things. Try adjusting those settings. If you still have no joy then I recommend buying a decent router.

Appendix A: Router Login

To log into your router's configuration interface you will need a username and password.

The username is commonly "admin" and many older routers used to have the default password set to either "admin" or "password". The end user was expected to log in and change the password when they first installed the router, however many people didn't do this. The default username and password for older routers can usually be found by simply doing an internet search for the router's model number and "default login" or something like that.

Newer routers are usually produced with an individual username and password flashed into them. This can be found on a label physically attached to the router where you would find the model number and serial number.

It is possible (in fact advisable) that your router's password has been changed from its original factory setting. If this has happened you will have to talk to whoever changed the password and hope they can still remember it.

If your password has been changed and you can not find it, the only way to get access to your router is to reset it to factory defaults. Routers usually have a recessed reset switch on the back that you need to push in with a pen or a paper-clip and hold for 30 seconds to reset the router. **NOTE: This will reset <u>all</u> of your router's settings to their default values and depending on the router and your ISP this could stop your internet connection from working until your router is properly configured.** So make sure you are aware of this before you reset it.

Appendix B: DNS

DNS means "Domain Name Server". These servers are just there to look up the actual address of a domain name. For example "War2USA.com" is a domain name. Your browser can't actually load anything from that name, instead it contacts a DNS and says, "What's the address for War2USA.com?", then the DNS replies with "34.222.147.159" or whatever the current address is, so then the browser uses that IP address to continue loading the site. DNS lookups are tiny network conversations that happen before the main transfer starts - kind of like looking up a page number in the index of a book before you go to that page and start reading.

It is usual for your router to be configured with DNS settings from your ISP, so your computer will use your router for DNS requests, which will then forward them to your ISP's actual servers.

The backup DNS address of 208.67.222.222 is there just in case your router's DNS settings are not properly configured. This is the address for the main OpenDNS.com server. Their secondary server is 208.67.220.220

Incidentally if your ISP is DNS blocking some sites due to legal requirements you can usually get around this simply by using those two DNS addresses only and not the ISP supplied ones in your router. To use our book simile again DNS blocking does not actually stop you reading the chapter it just means they have written the wrong page number in the index so you go to a page that has some dumb warning message instead. Using a 3ʳᵈ party DNS means you get a correct copy of the index.

... or if you want you can let Google datamine everything and use their DNS 8.8.8.8 (bleah) - your choice. All Android wifi connections are configured to use Google's DNS by default.

Those guys sure do love your metadata   ;)