

Install Ubuntu with a fixed IP in the external network on WSL2

Install WSL and Ubuntu distribution

First ensure that you have WSL2 installed, and install it if this is not the case

<https://learn.microsoft.com/fr-fr/windows/wsl/install>

WSL documentation:

<https://learn.microsoft.com/en-us/windows/wsl/>

It is key to have Ubuntu installed for WSL2, as the KDE installation is not compatible with WSL1.

```
ws1 --install Ubuntu-20.04
```

It is important to have a recent version of WSL (1.0 as of this writing), as it allows you to use systemd.

Configure networking

By default, WSL installs with NAT and a dynamic IP which changes each time WSL is restarted.

There are also very limited options to access network services brought by WSL, as only TCP ports can be proxied with netsh, not UDP ports. This causes all sorts of issues with X, as it is using UDP ports, and I have been totally unable to make X windows desktops work, despite HOWTOs online claiming success.

If you need additional tool, now is the time to install them, as you are going to lose network connectivity for some time.

```
apt install net-tools
```

Change from internal to external network (Hyper-V manager)

You need to open Hyper-V manager and go to the virtual switch management. There is a WSL switch which by default is configured as “Internal network”. You need to change it to “External network”.

You also need to select which physical adapter you are going to connect to, Ethernet or Wifi.

At this point and until you finish network configuration, you no longer have any network connectivity.

Your virtual network card is now connected to the external network, but it is not configured, which we are going to do now by means of systemd.

Configure your virtual network card

From within WSL, edit file `/etc/wsl.conf` so that it contains:

```
[network]
generateResolvConf = false
```

```
[boot]
systemd=true
```

Create a file named `/etc/systemd/network/26-fixed-ip.network` containing (example):

```
[Match]
Name=eth0

[Network]
Address=192.168.1.60/24
Gateway=192.168.1.1
DNS=192.168.1.30
```

Select a fixed IP address in your external network range, and adapt the above parameters according to your case.

Configure DNS resolution

We have already instructed WSL not to generate `resolv.conf` each time it is started, as seen above.

It is now time to configure `/etc/resolv.conf` to contain:

```
nameserver 192.168.1.30
nameserver 192.168.1.5
domain famille-simonnet.net
```

Check connectivity

Stop and start wsl (from a Windows cmd prompt):

```
wsl --shutdown
wsl
```

Once up, become root

```
sudo -i
```

When wsl is restarted, it gets the fixed IP address, instead of a random one. You may ping any IP address and it works. You may also ping your ip address from another host on your LAN:

```
ping 192.168.1.60
```

Additional step: verify physical network configuration

It is possible that switching the WSL virtual switch from internal to external network wipes out the initial network configuration. This is not immediately visible, as the network stack continues to operate properly until the active network connection is disconnected, and the host PC needs to ask for a new IP address.

I conjecture that this is quite systematic, and the result of doing the change in the Hyper-V WSL virtual switch configuration.

Go to the network configuration of your physical network interface (Ethernet or Wifi) and re-enable IPV4 and Microsoft client ant printing.

Once done, you may check that the change holds by rebooting your PC and checking that your Windows and WSL network operates properly.