

Zerotier Layer 2 Bridge for Flex Radio Remote Operation

This setup is based on my network 192.168.22.0/24 with my bridge using IP 192.168.22.2. The Flex radio IP 192.168.22.63. My DNS and Gateway are typical for a /24 using 192.168.22.1 for both.

Log into zerotier.com, create a network and record the Network ID (16 digits).

Edit the network, Settings → Basics – set “Access Control” to Private.

Then “Settings → Advanced” – setup a managed route for 192.168.22.0/24 and add the bridge IP as the gateway for the bridge, 192.168.22.2 in my example. Adjust as needed for your network.

Bridge Setup

Using a Linux PC/Raspberry Pi running Ubuntu 24/Bookworm, connect to it via ssh and...

these are notes/comments and do not need to be run
commands to be executed in the shell are in this font

Switch to the root user

sudo su -

update your system

apt update && apt -y full-upgrade && reboot

Log back into the PC/Pi.

install zerotier-one

curl -s https://install.zerotier.com | sudo bash

join this machine to your Zerotier network (substitute your Network ID)

zerotier-cli join zzzzexamplezzzz

Go back to zerotier.com, view your network and **Authorize** the new client ID that just joined (the PC/Pi which will be the bridge).

Now, back to the shell...

Get your LAN NIC name. It could be eth* or en* or some other longer name but it should be attached to the IP address you are connected to via ssh, and get your Zerotier NIC name from the list.

list network interfaces

ifconfig

setup environment variables

substitute the ID below for your Network ID (16 digits)

NETWORK_ID=fazzzzzzzzzzzz1a

substitute the IP address below for your bridge

BR_ADDR=192.168.22.2/24

substitute the IP address below for your gateway

GW_ADDR=192.168.22.1

substitute the IP address below for your DNS resolver

DNS=192.168.22.1

```
# substitute the name below for your local LAN NIC name
LAN=enX1
```

```
# substitute the Zerotier Interface name below for your Zerotier Interface name
ZT_IF=ztxxxxxxxxx
```

```
# set a bridge name (arbitrary but br0 is typical)
BR_IF="br0"
```

The following commands rely on the above environment variables to be set in order to work.

```
# set the connection to unmanaged
zerotier-cli set $NETWORK_ID allowManaged=0
```

```
# run the following steps individually
```

```
# setup the bridge network
```

```
cat << EOF | sudo tee /etc/systemd/network/25-bridge-br0.network
[Match]
Name=$BR_IF
```

```
[Network]
Address=$BR_ADDR
Gateway=$GW_ADDR
DNS=$DNS
EOF
```

```
# setup the bridge device
```

```
cat << EOF | sudo tee /etc/systemd/network/br0.netdev
[NetDev]
Name=$BR_IF
Kind=bridge
EOF
```

```
# setup Zerotier interface as a member of the bridge
```

```
cat << EOF | sudo tee /etc/systemd/network/25-bridge-br0-zt.network
[Match]
Name=$ZT_IF
```

```
[Network]
Bridge=$BR_IF
EOF
```

```
# setup the Ethernet NIC as a member of the bridge
```

```
cat << EOF | sudo tee /etc/systemd/network/25-bridge-br0-en.network
[Match]
Name=$LAN
```

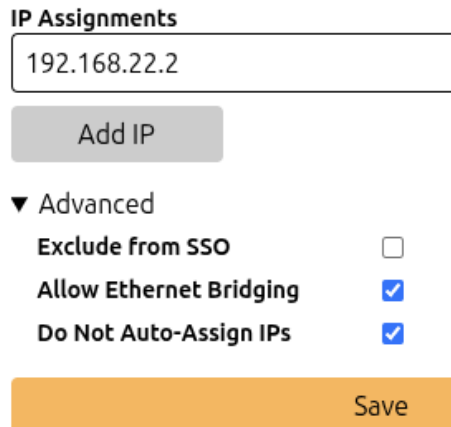
```
[Network]
Bridge=$BR_IF
EOF
```

```
# reboot to apply changes
reboot
```

After rebooting, you should be able to ssh back into your PC/Pi. If not, get into the console with a keyboard to see what is not correct. This may require some networking knowledge, check the files mentioned above for missing/incorrect values.

If all is good at this point go back to zerotier.com and edit the bridge member you just added.

Click the Advanced button and set the IP address to 192.168.22.2 (yours likely different), set both “Allow Ethernet Bridging” and “Do Not Auto-Assign IPs” ON.



The screenshot shows the ZeroTier web interface. At the top, there's a section titled "IP Assignments" with a text input field containing "192.168.22.2" and a button labeled "Add IP". Below this is a section titled "Advanced" with a dropdown arrow. Under "Advanced", there are three settings: "Exclude from SSO" with an unchecked checkbox, "Allow Ethernet Bridging" with a checked checkbox, and "Do Not Auto-Assign IPs" with a checked checkbox. At the bottom of the "Advanced" section is a large orange button labeled "Save".

The bridge to your LAN is complete.

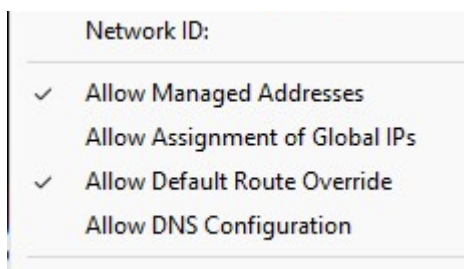
Windows Client setup (remote SmartSDR operation).

Download the ZeroTier One application from <https://www.zerotier.com/download/> and install it.

Run the application from the Start Menu and then, in the system tray, right click and then click “Join New Network”. Enter 16 digit Network ID to become a member.

Go to the ZeroTier.com Web UI and Authorize the new client. Edit the new client and assign another IP address like in my case 192.168.22.3.

Now right click on the ZeroTier Windows tray icon again, select the network to set “Allow Managed Addresses” and “Allow Default Route Override” to ON.



The screenshot shows the context menu for the ZeroTier Windows tray icon. It has a title bar "Network ID:". Below the title bar, there are four items, each with a checkmark icon to its left: "Allow Managed Addresses", "Allow Assignment of Global IPs", "Allow Default Route Override", and "Allow DNS Configuration".

Install SmartSDR and have fun.

Notes:

I am running this on a Ubuntu 24.04 LTS virtual machine but it should work as well on a Raspberry Pi or physical PC.

This HOWTO is based on a setup with an existing ZeroTier network using the “Legacy Central” Web UI. New accounts at zerotier.com may be forced to use the “New Central” Web UI which appears differently but the concepts are the same.

If somebody can do this complete with the “New Central” Web UI and update the images and instructions I would be grateful.

Danny

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