

Step 1. Install a fresh image of Debian Stretch.

This will guide you through performing a Netinstall of Debian Stretch onto an Intel 64bit platform. My installation was onto an Intel NUC E3815, utilising the onboard 4Gb eMMC, so no disk drive is installed.

Although I haven't tried, it should work just the same for other platforms. A Netinstall uses an installer package to download and install the Debian Stretch OS over the internet.

I have assumed that the target computer for the Debian installation is able to be booted from a USB device.

Firstly, I recommend that you read through this as a general background to the installation process;

<http://d-i.debian.org/manual/en.i386/apa.html>

and there's more information here;

<https://www.debian.org/releases/stable/amd64/>

Let's get started...

Navigate to this web page;

<https://www.debian.org/devel/debian-installer/>

This is where we will obtain the installer package. Part way down the page is a section 'Official release'. Under the subsection 'CD', click on 'amd64'. This will take you to another page where the download files can be found (at the bottom of the page). Click on the link 'debian-stretch-DI-alpha4-amd64-netinst.iso' and save the file to your computer.

Note: in my experience these downloads are quite slow and occasionally fail. Be patient and be prepared to start over.

In the same list as the downloads are the checksum files that enable you to confirm that the download is correct and hasn't been tampered with (a good idea from a security perspective). If you want to check your download read the section 'How can I verify my download is correct and exactly what has been created by Debian?' I use a package called 'winMd5Sum' (Google it) to verify downloads with an Md5 checksum.

Once you have the installer package safely on you PC and verified you need to turn it into an image that your target PC can boot from. For this I use a package called 'Win32DiskImager'. The package will take your downloaded file and process it onto a suitable USB stick after which it will be used to boot your target PC. Insert the USB stick and open Win32DiskImager (allow it to make changes). Make sure the USB stick is selected under the device pulldown then, under the image file section, browse to the file you downloaded previously. When you're setup click 'Write'. When it's done, close Win32DiskImager and remove the USB stick.

Note: Win32DiskImager will overwrite anything on the USB stick so best to make sure that it's nothing important.

We're now ready to work on the target computer.

Set the BIOS of the target computer so that it will boot from a USB stick. Insert the USB stick and reboot the computer. It should boot from the USB stick and you should see the Debian graphical installer page, if so, follow these instructions;

<http://d-i.debian.org/manual/en.i386/apas03.html>

I recommend taking default/recommended options when they're offered. Make sure you are able to recall the passwords you set, otherwise you'll be doing this again. When asked about what modules you want to install, if you plan to only use the target computer for NAA duties, choose to only install the core components as you won't need a GUI etc.

When the dust has settled you should have a target computer running Debian Stretch; it wasn't that difficult was it. We're not done yet though.

Step 2. Enabling Remote Access

Log into the target computer and run the command;

```
sudo apt-get install ssh
```

this will install secure shell on the computer, enabling remote login.

Note: when you prefix a command with 'sudo' you are essentially saying 'run this as Root' (i.e. as the system administrator) and you will be prompted for the root password before the command will execute.

If you plan to use the target computer just for NAA duties you'll probably want to run it headless (no monitor, keyboard or mouse), in which case you'll need to be able to access it remotely. On your normal PC, download and install a package called 'PuTTY'.

Find the IP address of your target computer (it'll be shown in the connected device list on your network router and will likely be something like 192.168.1.nnn). Start PuTTY check the 'SSH' radio button, enter the IP address and click 'Open'. You should see a command console for the target PC with a login prompt (can you recall the username/password you set up during the install?). If you can log in.

Assuming all is well you can now dispense with the monitor/keyboard and mouse on the target computer. It should boot if you press the on button and shutdown if you press it again.

Now we're ready to install the packages needed to run the target computer as an HQPlayer NAA

Step 3. Install HQPlayer NAA

Use PuTTY to access and login to the target computer.

'su' to root, enter the root password and then run the following commands to install networkaudiod;

```
wget http://ftp.uk.debian.org/debian/pool/main/g/gcc-5/gcc-5-base_5.3.1-4_amd64.deb
dpkg -i gcc-5-base_5.3.1-4_amd64.deb
wget http://ftp.uk.debian.org/debian/pool/main/g/gcc-5/libstdc++6_5.3.1-4_amd64.deb
dpkg -i libstdc++6_5.3.1-4_amd64.deb
wget http://ftp.uk.debian.org/debian/pool/main/a/alsa-lib/libasound2-data_1.0.29-1_all.deb
dpkg -i libasound2-data_1.0.29-1_all.deb
wget http://ftp.uk.debian.org/debian/pool/main/a/alsa-lib/libasound2_1.0.29-1_amd64.deb
dpkg -i libasound2_1.0.29-1_amd64.deb
wget https://www.signalyst.eu/bins/naa/v3/stretch/networkaudiod_3.1.1-26_amd64.deb
dpkg -i networkaudiod_3.1.1-26_amd64.deb
```

Note #1: in the above commands I have used the address of the UK debian mirror site, whilst this should work you may prefer to use a mirror site in your own locality.

Note #2: the root account has elevated privileges so be careful when using it as you can do damage to your installation. Only use the root account when necessary.

When you're done run the command

```
sudo shutdown -r now
```

This will restart the computer (it will disconnect your PuTTY session so will need to open another one when the reboot has finished).

HQPlayer NAA (networkaudiod) should automatically startup when the target computer boots, however, there is a known issue when sometimes it fails to do so. To check if it is running run the command;

```
systemctl
```

peruse the list of processes looking for 'networkaudiod' and check its status. If the status is shown as failed run this command;

```
systemctl start networkaudiod
```

The target computer should now be running as an NAA, but only until the computer is next rebooted as it is likely that networkaudiod will fail again.

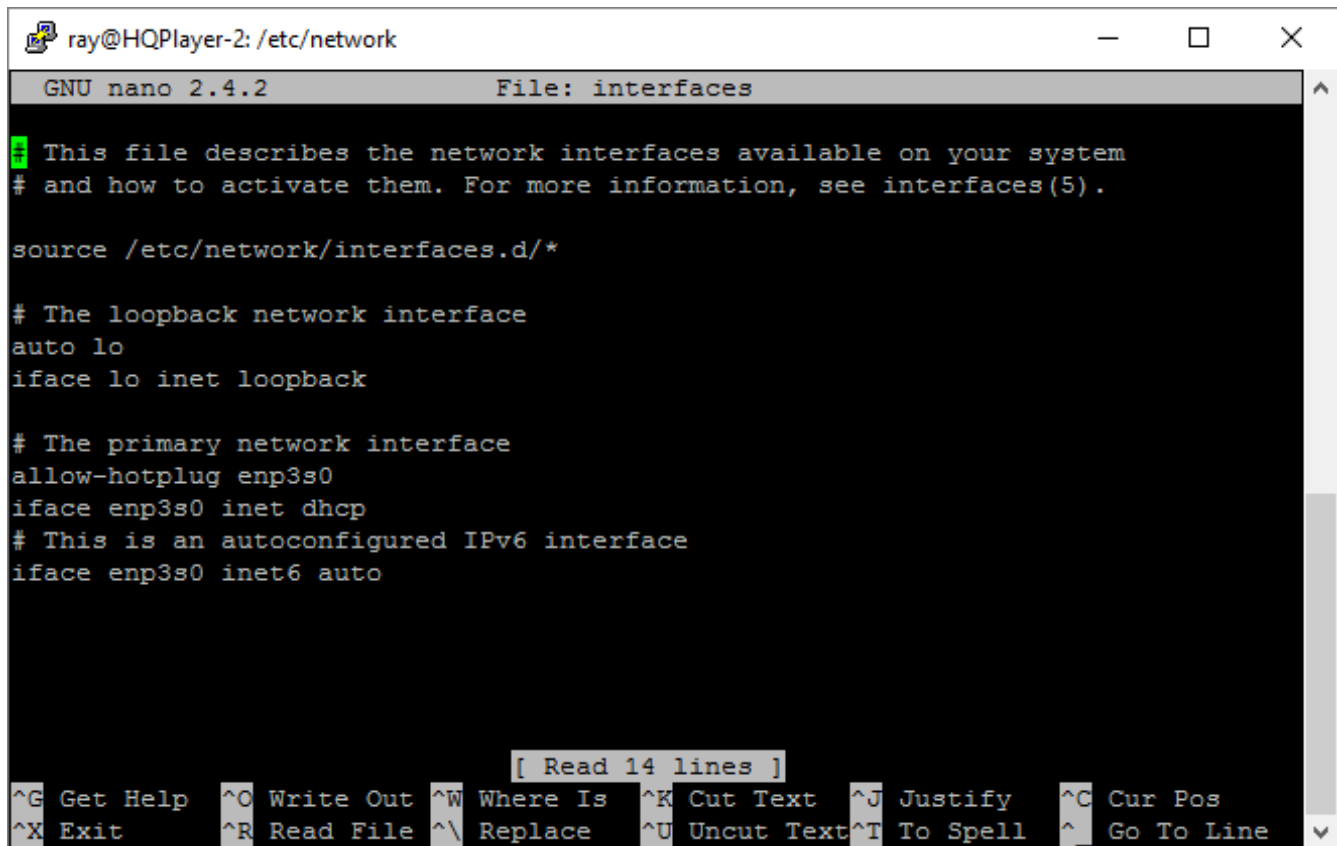
Step 4. Fix the NAA so it runs at startup

Via PuTTY, login to your NAA computer and navigate to the network interfaces directory and view the interfaces file;

```
cd /etc/network
```

```
cat interfaces
```

You should see something like this;



The screenshot shows a terminal window titled 'ray@HQPlayer-2: /etc/network'. Inside, the GNU nano 2.4.2 editor is open, displaying the file 'interfaces'. The file's content is as follows:

```
This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
allow-hotplug enp3s0
iface enp3s0 inet dhcp
# This is an autoconfigured IPv6 interface
iface enp3s0 inet6 auto
```

At the bottom of the editor, a status bar indicates '[Read 14 lines]' and a list of keyboard shortcuts: ^G Get Help, ^O Write Out, ^W Where Is, ^K Cut Text, ^J Justify, ^C Cur Pos, ^X Exit, ^R Read File, ^\ Replace, ^U Uncut Text, ^T To Spell, and ^_ Go To Line.

‘enp3s0’ is my network interface, yours may have a different name.

The fix to networkaudiod failing at start-up is to set a static IP address for the NAA computer. To do this we will edit (I use ‘nano’, which is a very simple to use text editor) the above interfaces file. ‘su’ to root and enter;

```
nano interfaces
```

use ‘nano’ to edit the file so that it looks like this;

```
ray@HQPlayer-2: /etc/network
root@HQPlayer-2:/etc/network# nano interfaces
GNU nano 2.4.2      File: interfaces      Modified

allow-hotplug enp3s0
# iface enp3s0 inet dhcp
# This is an autoconfigured IPv6 interface
# iface enp3s0 inet6 auto

# Static IP address interface
auto enp3s0
iface enp3s0 inet static
address 192.168.0.20
netmask 255.255.255.0
gateway 192.168.0.1
```

Obviously the addresses relate to my home network so yours may need to be different. Your gateway will normally be the address of your network router.

Note: It is a good idea to access your router and reserve the IP address you have just set up for the NAA computer, otherwise the router may assign it to another device.

Save the changes, exit nano and reboot the computer. After it has rebooted you can log back in and use *systemctl* to check that networkd has started up, as documented above.