How To Set Up a GpsNtp-Pi With a Static IP Address
Typinski, Oct, 2019

> If the GpsNtp-Pi device is the only device on the Local Area Network (LAN) to use Dynamic Host Configuration Protocol (DHCP), configuring the GpsNtp-Pi to use a static Internet Protocol (IP) address is NOT necessary.
>
> If the GpsNtp-Pi device is on a LAN with multiple DHCP clients, the GpsNtp-Pi should be configured with a static IP address.

The GpsNtp-Pi device ships configured to pull an IP address via DHCP. This can cause problems during power failures if more than one device on the LAN is set to use DHCP. Common DHCP clients are cell phones, televisions, DVD/Blu-Ray players, and laptop computers. When AC mains power is restored after a failure, all the DHCP devices connected to the LAN may not be assigned the same IP addresses they had before the power failure.

This happens because the DHCP server – usually a router – assigns DHCP addresses on a first-come first-serve basis. There is no practical way to ensure all the DHCP client devices are present (phones, laptops) and power back on in the same order (televisions, DVD players) any time power is restored. If an NTP client – e.g., a PC running Radio Sky Spectrograph (RSS) – is looking at a specific IP address for the GpsNtp-Pi NTP server, the GpsNtp-Pi may no longer be at that address after a power failure.

Thus, a GpsNtp-Pi device should be configured with a static IP address when installed in a network environment containing multiple DHCP clients.

PROCEDURE

Ensure the IP address you assign to the GpsNtp-Pi does not lie within the range of the router's DHCP pool. For example, at AJ4CO Observatory, the router's DHCP pool contains 21 IP addresses from 192.168.1.10 to 192.168.1.30 while the Gps-Ntp-Pi is configured with a static IP address of 192.168.1.99, an address that is easy to remember.

To avoid any IP address conflicts, either use your router's management interface to alter the DHCP server's pool parameters so it avoids the desired IP address of the Gps-Ntp-Pi, or alter your choice of IP address for the Gps-Ntp-Pi to avoid the range of IP addresses in the DHCP server's pool.

Connect the GpsNtp-Pi to the LAN (use an Ethernet cable) and power the GpsNtp-Pi on.

Find the GpsNtp-Pi's current IP address from your router's management interface – it will be listed under "attached devices" or similar. The device name is GpsNtp-Pi.

To log on to the GpsNtp-Pi device:
Download PuTTY from the following web page and install it.
https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html
Run PuTTY.
Use the defaults, just enter the GpsNtp-Pi device's IP address.

Login: pi
Password: GpsNtp-Pi

NOTE To reboot the device:

```
sudo reboot
```

NOTE To shut down the device:

```
sudo shutdown -h now
```

At the command prompt, enter the following:

```
sudo cat /etc/dhcpd.conf
```

If the `dhcpcd.conf` file does not exist, use METHOD 1 below.

If the `dhcpcd.conf` file exists, use METHOD 2 below.

METHOD 1

1) At the command prompt, enter the following:

```
sudo nano /etc/network/interfaces
```

2) On the `iface eth0 inet dhcp` line, change `dhcp` to `static`

3) Add the following lines beneath the `iface eth0 inet static` line (the IP addresses here are examples from AJ4CO Observatory):

```
address 192.168.1.99
netmask 255.255.255.0
network 192.168.1.0
broadcast 192.168.1.255
gateway 192.168.1.1
```

4) Do ctrl-O to write the changes, then ctrl-X to exit the nano text editor.

5) At the command prompt, enter the following:

```
sudo reboot
```

6) Re-open PuTTY and verify that you can connect to the GpsNtp-Pi on the new IP address.

METHOD 2

1) At the command prompt, enter the following:

```
sudo nano /etc/dhcpcd.conf
```

2) Add the following lines to the bottom of the file (the IP addresses here are examples from AJ4CO Observatory):

```
interface eth0
static ip_address=192.168.1.99/24
static routers=192.168.1.1
static domain_name_servers=192.168.1.1
```

3) Do ctrl-O to write the changes, then ctrl-X to exit the nano text editor.

4) At the command prompt, enter the following:

```
sudo reboot
```

5) Re-open PuTTY and verify that you can connect to the GpsNtp-Pi on the new IP address.