How To Connect a PC to a Gps-Ntp-Pi Without Using a Router
Typinski, Oct, 2019

If a Gps-Ntp-Pi is to be used at an observatory with no local network router available, this guide explains the procedure required to connect the Gps-Ntp-Pi directly to a PC.

PROCEDURE

First, configure the Gps-Ntp-Pi for a static IP address as outlined in *How To Set Up a Gps-Ntp-Pi With a Static IP Address*.[1] For example, at AJ4CO Observatory, the Gps-Ntp-Pi is configured with a static IP address of 192.168.1.99.

Next, obtain an Ethernet *crossover* cable. This is a special cable that allows two Ethernet clients to communicate without the need for a router. We used the following inexpensive cable, available from Amazon.

Figure 1 – Ethernet crossover cable, available from **https://www.amazon.com/Tripp-Lite-350MHz-Molded-Cross-over/dp/B0056YN7QE/** .

Plug one end of the cable into the Gps-Ntp-Pi and the other end into the PC.

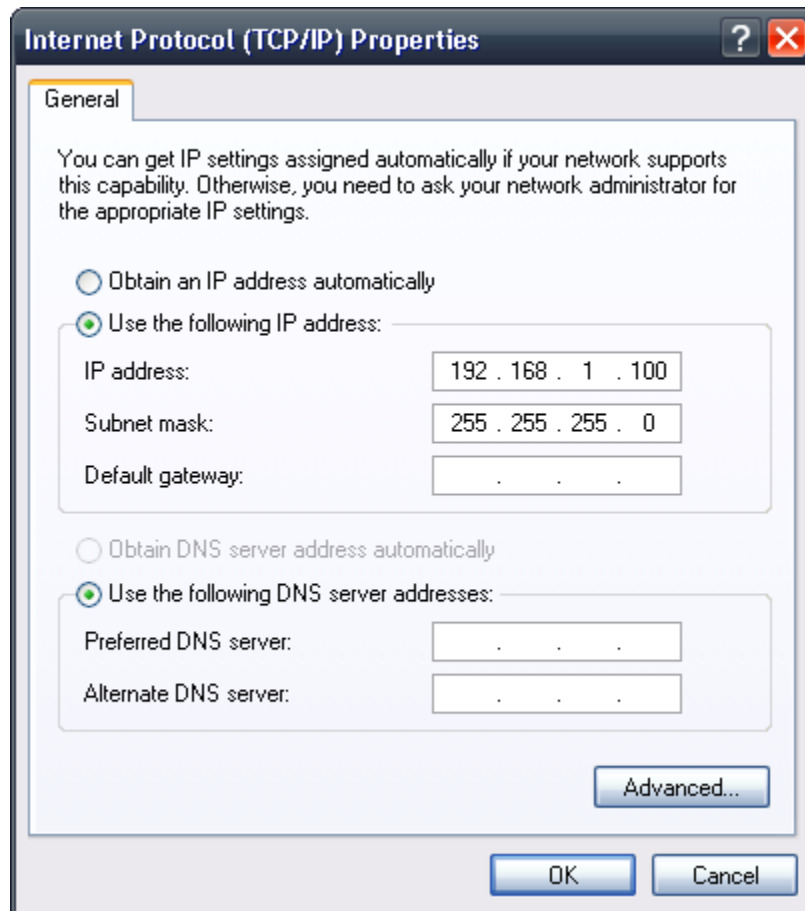Configure the PC's TCP/IP properties as shown in Figure 2.

Figure 2 – Set the IP address and the Subnet mask on the PC
to the values above if the Gps-Ntp-Pi is on 192.168.1.99.
Leave the other fields blank. This example is for Windows
XP, other Windows versions will have a similar dialog to
configure the TCP/IP properties.

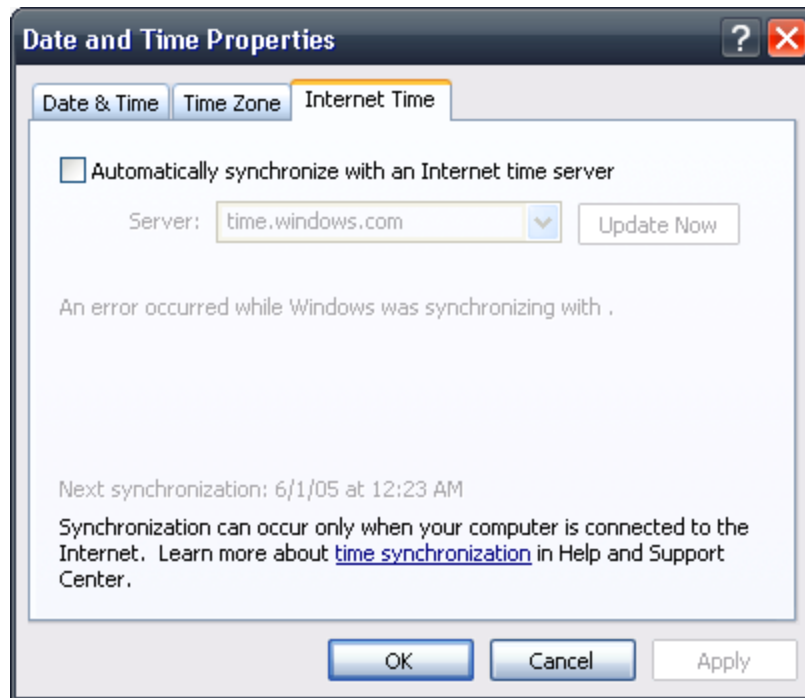Next, disable the built-in Windows NTP client as shown in Figure 3.

Figure 3 – Disable the Windows built-in NTP client by unchecking the box for "Automatically synchronize with an Internet time server." This example is for Windows XP, other versions have a similar dialog to configure the built-in NTP client operation.
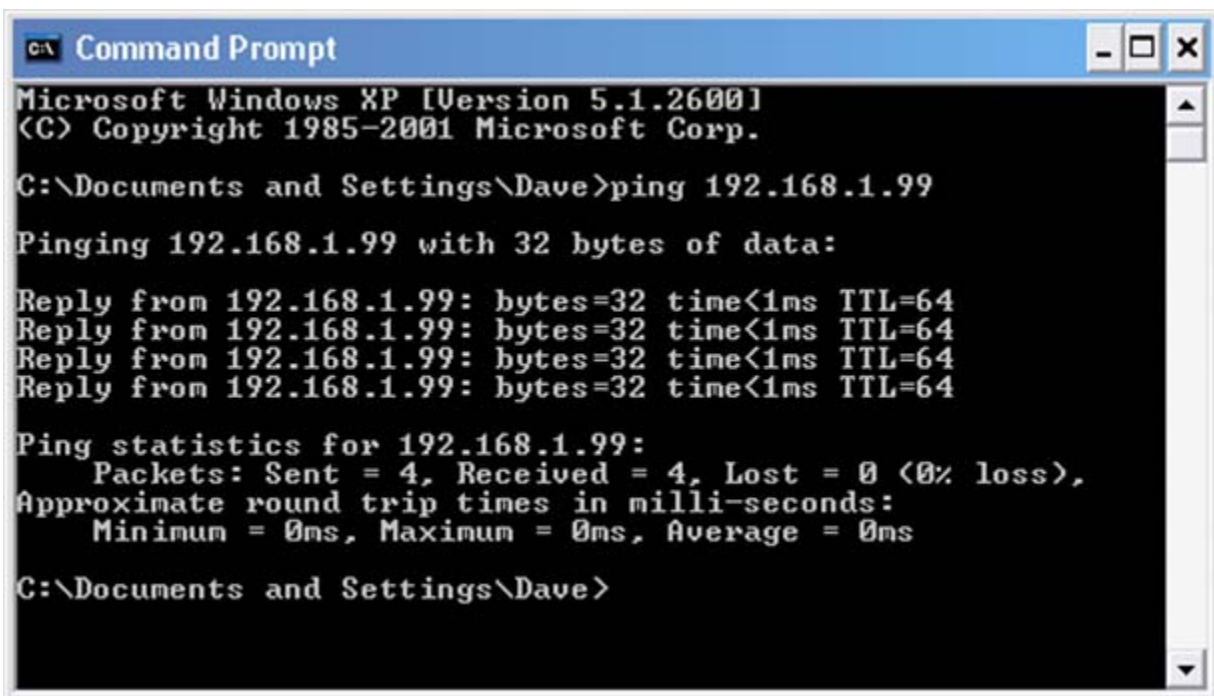
Install the Meinberg NTP software as you would for a PC on a LAN with a router.

Install the Meinberg NTP Time Server Monitor software as you would for a PC on a LAN with a router.

Open a command prompt window and type the command

```
ping 192.168.1.99
```

The results should indicate that packets are being received from the Gps-Ntp-Pi as shown in Figure 4.

Figure 4 – Results of pinging a Gps-Ntp-Pi directly connected to a PC via a crossover cable.

Opening the Meinberg NTP Time Server Monitor should show a status as in Figure 5.
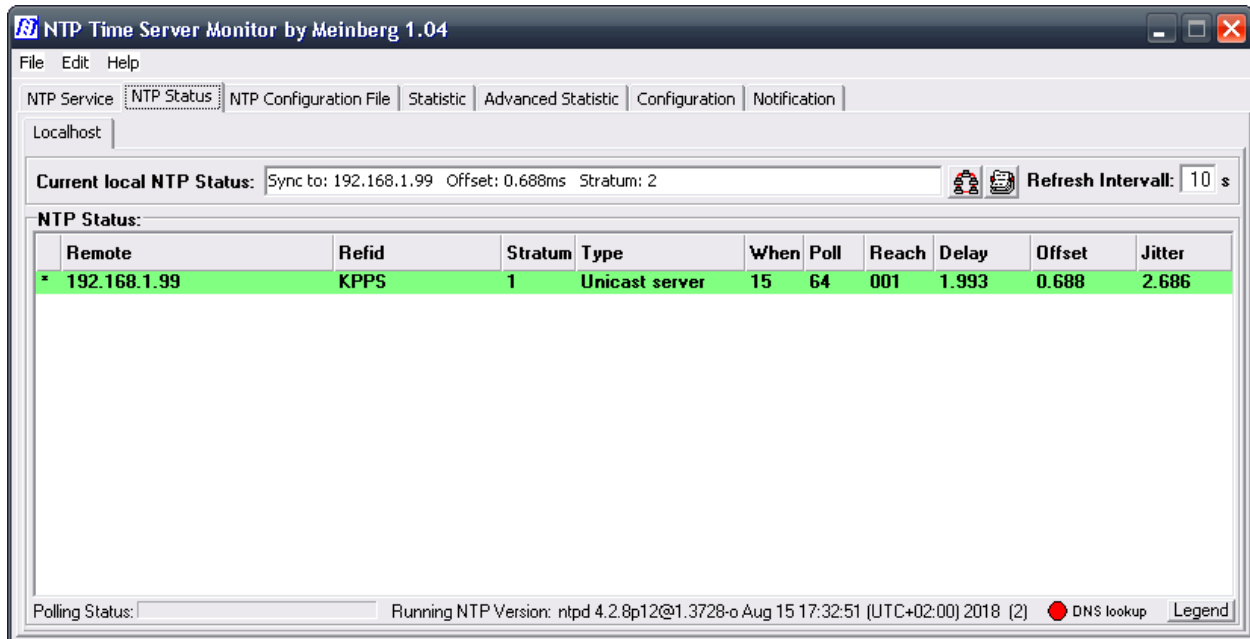

Figure 5 – If the Meinberg NTP Time Server Monitor's NTP Status tab looks like this, the NTP client is receiving data from the Gps-Ntp-Pi and keeping the PC's clock accurate.

NOTE: After the Gps-Ntp-Pi is powered on or rebooted and after the Meinberg NTP Time Server Monitor is started, it may take up to 15 minutes for the NTP status line to turn green and the Refid field to indicate KPPS (both of which indicate a valid connection to the Gps-Ntp-Pi).

References

1) How to set up a GpsNtp-Pi with a static IP address:
   http://www.radiojove.org/SUG/Pubs/How%20To%20Set%20Up%20a%20GpsNtp-Pi%20With%20a%20Static%20IP%20Address%202019%2010%2020,%20Typinski.pdf