# Windows 10 PTP Client Configuration

Since Windows Server 2019 and Windows 10 (v1809), a PTP client is included. A few simple references to go along with the Microsoft documentation are provided here. The documentation I used was from:
https://github.com/microsoft/W32Time/tree/master/Precision%20Time%20Protocol/docs
This is just a high level guide to the process.

First step is adding all the Registry Keys required, should look like this:
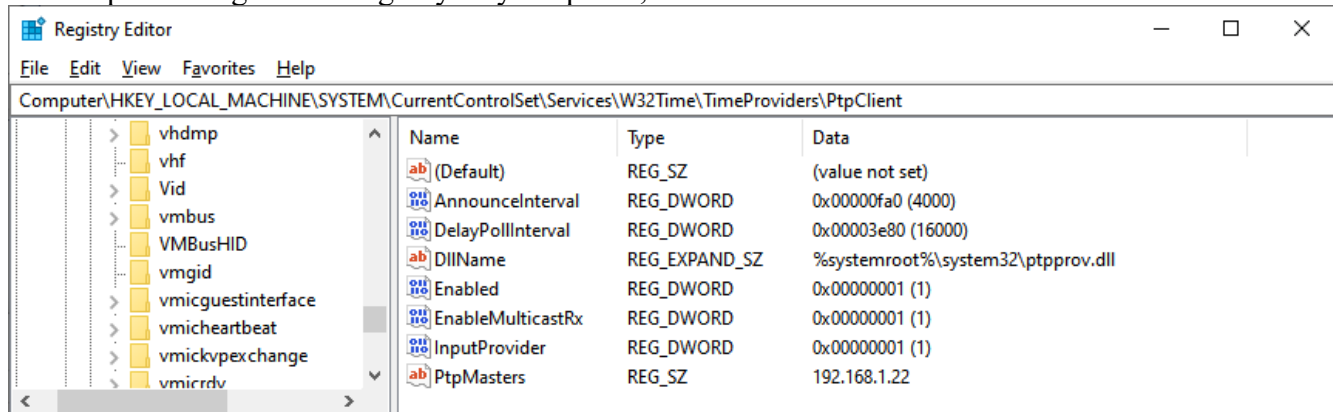
Note:": A quick confirmation of the ptpprov.dll file in the C:\windows\system32 directory confirms that your system can handle PTP client duties. Disabling the NTP Client and VMIC client in the registry can be helpful in testing the implementation as well.

The next step is to add a couple of Inbound Firewall Rules to allow the PTP traffic in. Inbound UDP rules on ports 319 and 320 are required. The firewall can also be disabled as a quick test if things don't seem to be working. Always re-enable it when you are done!
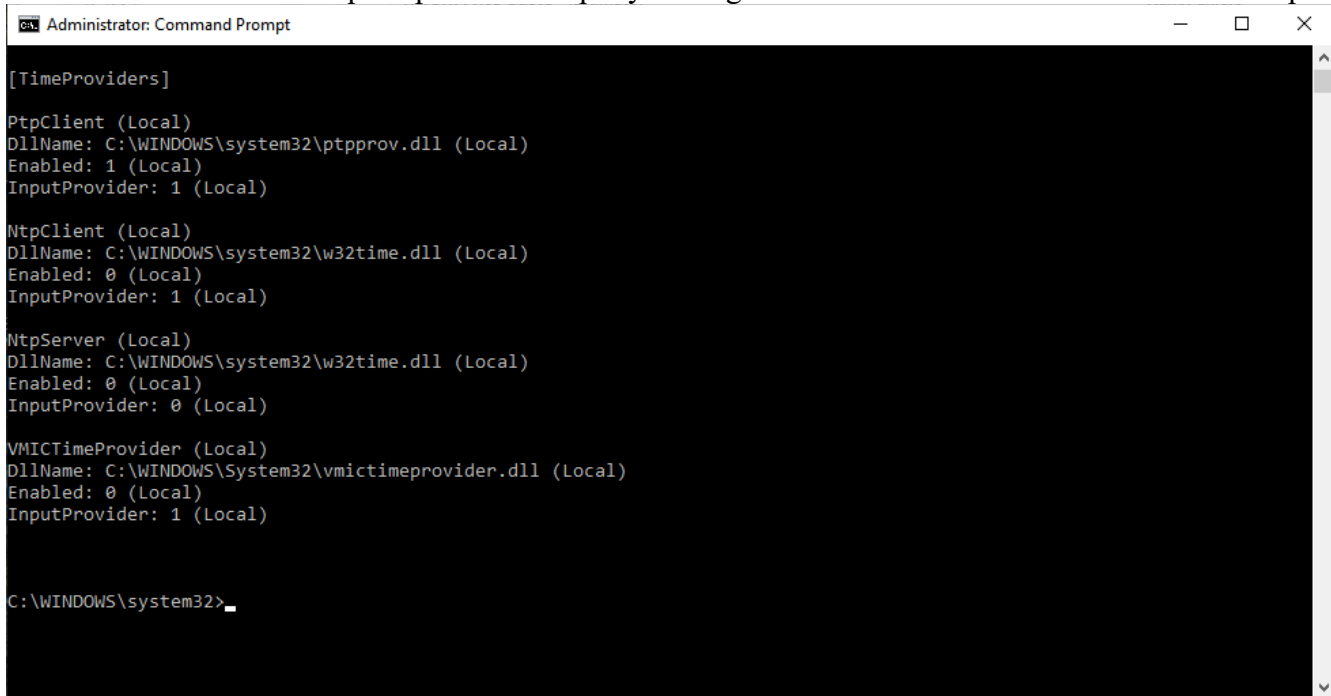
Once these couple of things are done, Windows Time needs to be restarted. This can be done in the services list.

Verification:
Make sure you have a TM2000A generating Multicast PTP traffic. Wireshark watching traffic on Multicast 224.0.1.129 on ports 319 and 320 will do this nicely.
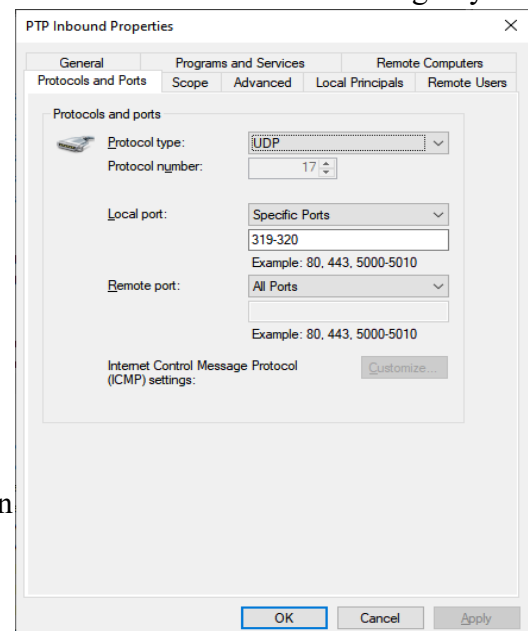
From an Admin command prompt: w32tm /query /configration will confirm if the PTP client is setup.

```
[TimeProviders]

PtpClient (Local)
DllName: C:\WINDOWS\system32\ptpprov.dll (Local)
Enabled: 1 (Local)
InputProvider: 1 (Local)

NtpClient (Local)
DllName: C:\WINDOWS\system32\w32time.dll (Local)
Enabled: 0 (Local)
InputProvider: 1 (Local)

NtpServer (Local)
DllName: C:\WINDOWS\system32\w32time.dll (Local)
Enabled: 0 (Local)
InputProvider: 0 (Local)

VMICTimeProvider (Local)
DllName: C:\WINDOWS\System32\vmictimeprovider.dll (Local)
Enabled: 0 (Local)
InputProvider: 1 (Local)


C:\WINDOWS\system32>_
```
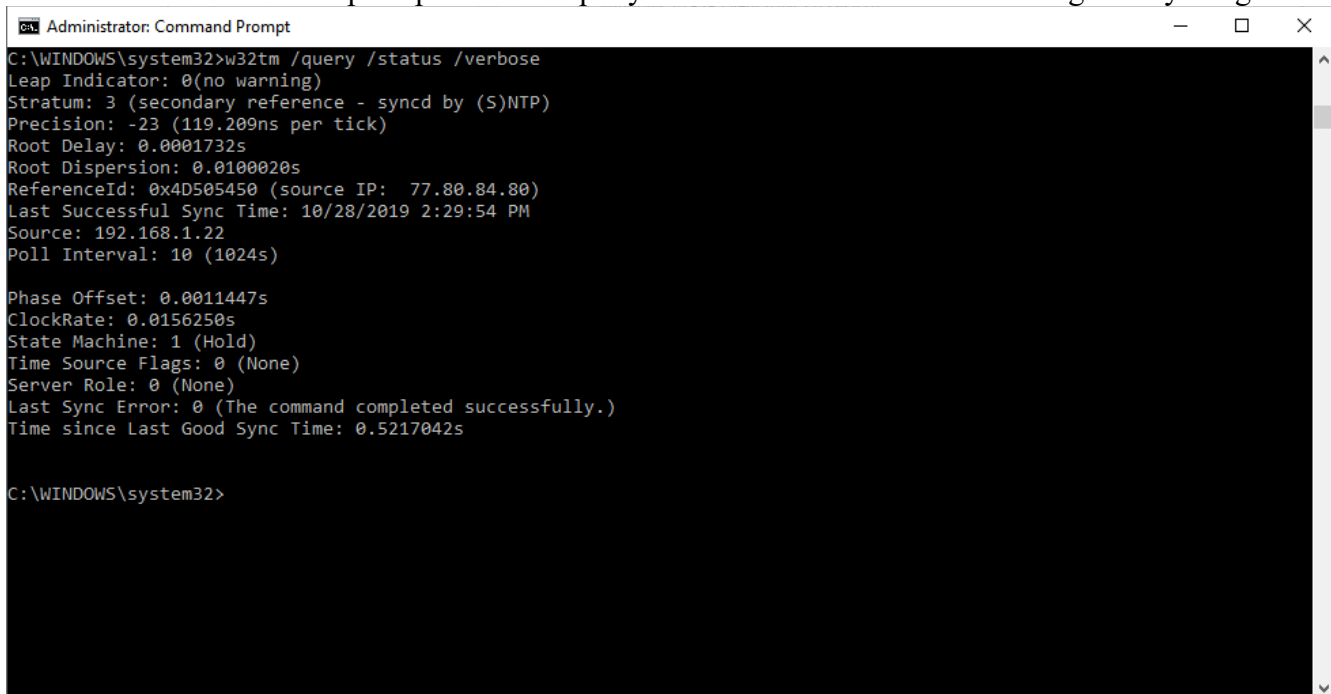
In particular we are looking for any entry that shows the PtpClient section and the correct .dll.

From an Admin command prompt: w32tm /query /status /verbose will show if things are syncing.

```
C:\WINDOWS\system32>w32tm /query /status /verbose
Leap Indicator: 0(no warning)
Stratum: 3 (secondary reference - syncd by (S)NTP)
Precision: -23 (119.209ns per tick)
Root Delay: 0.0001732s
Root Dispersion: 0.0100020s
ReferenceId: 0x4D505450 (source IP:  77.80.84.80)
Last Successful Sync Time: 10/28/2019 2:29:54 PM
Source: 192.168.1.22
Poll Interval: 10 (1024s)

Phase Offset: 0.0011447s
ClockRate: 0.0156250s
State Machine: 1 (Hold)
Time Source Flags: 0 (None)
Server Role: 0 (None)
Last Sync Error: 0 (The command completed successfully.)
Time since Last Good Sync Time: 0.5217042s


C:\WINDOWS\system32>
```

ReferenceId: 0x4D505450 (source IP: 77.80.84.80)   – This indicates Microsoft PTP Provider
Source: 192.168.1.22 – This indicates our specific TM2000A PTP Server
Last Sync Error: 0 (The command completed successfully.)   – This indicates your last sync was successful

Note: October 2021 – We had a customer determine that potentially this will only work with a Windows 10 Professional license. We have not verified this one way or the other.