NTP

NTP Infrastructure

History: Over the years it has been evolving, changing. We used to use outside NTP servers, from the WWW , then one, and later a second member provided NTP. One via a Stratum-1 server (Antenna getting PPS (Pulse-Per-Second) via two u-blox receivers) the other one as a stratum-2 (chrony). Those 2 members moved on and another member started a new project at his "home lab" to provide NTP stratum-1. We have now setup some NTP servers using chrony and we have the member's project online (GPS PPS NTP/chrony server with a NEO 7M GPS unit on a raspberry Pi.)

Use **10.10.10.123** as your NTP server address.

What is NTP and how did it started?

The Network Time Protocol is a "network" protocol for devices to synch their clocks. See Wiki How it all started, how does it works, with Dr Julian Onions (University of Nottingham, UK) implementing this after meeting the godfather of Internet time, Dave Mills! Video interview

IP

10.10.10.123 - NTP for the mesh (**Use this one**)

NTP stats and status

Here are some stats on the NTP servers:

NTP Server at SN1 (as an example).

```
On March 9th, 2024

chronyc sources -v
210 Number of sources = 6

  .-- Source mode  '^' = server, '=' = peer, '#' = local clock.
 / .- Source state '*' = current synced, '+' = combined , '-' = not combined,
| /   '?' = unreachable, 'x' = time may be in error, '~' = time too variable.
||                                               .- xxxx [ yyyy ] +/- zzzz
||      Reachability register (octal) -.         |  xxxx = adjusted offset,
||      Log2(Polling interval) --.      |        |  yyyy = measured offset,
||                                \     |        |  zzzz = estimated error.
||                                 |    |         \
MS Name/IP address         Stratum Poll Reach LastRx Last sample
===============================================================================
^- clock.nyc.he.net              2  10   377   497   +828us[ +804us] +/-   33ms
^* 10.70.177.5                   1   4   377    34    -71us[  -83us] +/- 1314us
^- ntp1.net.berkeley.edu         1  10   377   572  -1004us[-1023us] +/-   37ms
^- ntp2.net.berkeley.edu         1  10   377   529   -338us[ -361us] +/-   37ms
^- tic.lbl.gov                   1  10   377   631   -157us[ -171us] +/-   34ms
^- toc.lbl.gov                   1  10   377   569   -202us[ -221us] +/-   35ms

chronyc sourcestats -v
210 Number of sources = 6
                             .- Number of sample points in measurement set.
                            /    .- Number of residual runs with same sign.
                           |    /    .- Length of measurement set (time).
                           |   |    /      .- Est. clock freq error (ppm).
                           |   |   |      /           .- Est. error in freq.
                           |   |   |     |           /         .- Est. offset.
                           |   |   |     |          |          |   On the -.
                           |   |   |     |          |          |   samples. \
                           |   |   |     |          |          |             |
Name/IP Address            NP  NR  Span  Frequency  Freq Skew  Offset  Std Dev
==============================================================================
clock.nyc.he.net            8   4  120m     -0.000      0.056   +712us    64us
10.70.177.5                63  33   76m     -0.001      0.023    -20ns    69us
ntp1.net.berkeley.edu      14   9  223m     -0.013      0.062   -326us   184us
ntp2.net.berkeley.edu      14  10  223m     -0.009      0.094   -261us   291us
tic.lbl.gov                10   6  154m     -0.024      0.041   -318us    79us
toc.lbl.gov                 6   4   86m     -0.043      0.408   -248us   138us
```

Alternatives

There are many NTP servers on the Net, google offers it, some hardware maker such as Ubiquiti, etc..

NTP pool project

A list of NTP servers

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