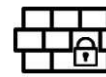




hourglass by itbrainpower.net

high accuracy GNSS synchronized STRATUM1 NTP independent server



hourglass by itbrainpower.net

stand-alone, high precision STRATUM1 NTP server it is designed for isolated networks, DVR, IoT application and for other critical applications - e.g.: e-banking.

Increasing your network security against third party attacks

Your new, Internet independent, internal STRATUM1 NTP server will add more resilience to your infrastructure against "NTP third part attack" by preventing time corruption.

GNSS synchronization

Quite accurate (<20nsec typical) time reference due to the embedded GNSS receiver.

About GNSS as time source

GNSS – constellations of global satellites, well known for positioning, also provide signals for accurate timing. The GNSS systems use atomic clock sources as accurate references



Why accurate time reference?

That's just simple as that! Digital signing, DVR, IoT, e-banking, secure application, logging events, HTTPS, email, data encryption, Whatsup and more application are dependent on time. Without time synchronization between clients, servers or other endpoints, today Internet based data exchange cannot simply operate.

About third party NTP spoofing attack?

Usually, existing networks and services use local NTP servers being synchronized with Internet located time references. In order to kneel down your network dependent services, for a malicious hacker it's sufficient to hijack the third party NTP server(s) assumed by you as *trusted services*.

How hourglass may solve those?

hourglass by itbrainpower.net act as non-Internet dependent NTP server having quite accurate time reference (bellow 20 nsecs typical) due to embedded GNSS engine.

NTP, UTC and Time Zones

NTP is a hierarchical network protocol for time synchro between computer and devices over packet-switched, variable-latency data networks. *hourglass by itbrainpower.net* act de facto as a stratum1 time reference server.

UTC (replacement for GMT) is the primary time standard by which the world regulates clocks and time, is not adjusted for daylight saving time. Via NTP service, *hourglass by itbrainpower.net* provide UTC time reference.

The **time zones** are defined as differing from UTC by an integer number of hours depending on location of the zone. Starting from UTC reference obtained from *hourglass by itbrainpower.net*, the local time zone (including summer/winter time shifting) settings goes into the client tasks.

Should I change some OS used?

Not really! All Linux, Windows or MAC operating systems are compatible. Also, any device/system supporting NTP query mode (E.g.: DVR, IoT, clocking or control access solutions, other) it's compatible.

How difficult is to install it

Around 10minutes for basic operation. Connect the network cable, the GPS antenna (to outdoor) and the power supply. Ready to go.



hourglass by itbrainpower.net

high accuracy GNSS synchronized STRATUM1 NTP independent server

Recommended for

governmental, police, military, energy, financial, IoT, e-banking, security, event logging networks and applications. Last, but not least, for isolated networks,

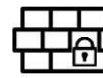
Compatible with

any Linux, Windows or MAC os servers or clients. Also, compatible with any device or system being NTP enabled.

Fast install and setup.

Almost zero management.

Designed in the EU



NTP stratum1 specifications

- Time sources: GNSS PPS (pulse per second) and GNSS date-time
Accuracy to GNSS PPS: $\pm 5\text{nsec}$ typical
- GNSS engine accuracy: down to $\pm 1\text{nsec}$
- Overall accuracy: $\pm 20\text{nsec}$ typical.

ETHERNET / IP specifications

- 10/100 BaseT, full-duplex w. auto-negotiation.
- non-routable private address + second manageable IP address, no default gateway
- non-root user SSH access for management

GNSS antenna specifications

- high gain GNSS active antenna, external, magnetic mounting
- 5m cable, SMA M

Hardware / firmware specifications

- Quad core ARM, 240Mhz, watch-dog
- FLASH disk and RAM disk
Debian based frozen Linux 2.4 for ARM, no servers listeners excepting NTP and SSHD, no active clients no default gateway,
- GNSS engine embedded – highly sensitive, high time accuracy
GPS+GLONASS engine
- reversal polarity and 500mA fuse power supply protection
- power consumption $\sim 1.5\text{W}$
- power supply: between 6-19V. 12V / 0.5A recommended.
temperature range (functional) ^{note1}: -10 to 60 Celsius degrees
- antenna temperature range: -40 to 80 Celsius degrees
- humidity range: 0 to 95% non-condensing

LED indicators & switches

- RED LED – power good.
- BLUE LED – GNSS 3D fix & PPS indicator.
GREEN LED – NTP stratum1 system status
- SYSTEM RESET SWITCH – internal switch used for loading default NTP stratum configuration, including the supervisor initial password

What's inside the package

hourglass by itbrainpower.net NTP stratum1 server – 1 pcs.
high gain GPS antenna 28dBi gain, 5m cable, SMA, magnetic mounting – 1 pcs.
Power supply connector – 1 pcs.



Options

GNSS antenna cable extender 10m, SMA F to SMA M

More information

<https://itbrainpower.net/NTP-stratum1>