# PhaseReady™ Core Audit
Preparing Your Frequency Platform for Phase

A GPS System Fit for Phase

The Issue

Maintaining adequate frequency synchronisation at the edge of your network using SyncE and PTP has been achieved by simply upgrading the resilient five-nines available GPS SSU platform that has been timing your SDH/SONET system successfully for many years.

Delivering phase to the edge presents a whole new challenge, and delivering it from the network core adds new requirements that frequency systems did not have.
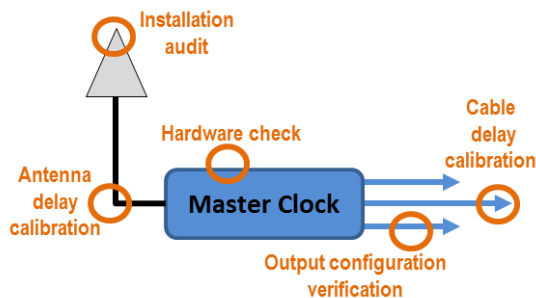
PRTC Ready

The ITU PRTC (Primary Reference Time Clock) when locked "should be accurate to within 100ns or better when verified against the applicable primary time standard (eg UTC)" (ITU-T G.8272/Y.1367 (10/2012)). This requirement obviously places a strict performance target on the clock hardware, but also implies a performance requirement on the clock's GPS system that simply wasn't there for frequency applications.

For deriving frequency a GPS antenna needs to know its position so that it can calculate path losses from the GPS satellites that are in view.

For phase, the clock device itself needs to be accurate to UTC (via the GPS time base); shifting the point of reference from the antenna to the installed hardware clock.

In a typical PVC dielectric coaxial cable, the GPS signal will travel around 20cm in 1ns. A 60m cable run then will take around 300ns; destroying the 100ns PRTC accuracy required before you even reach the clock!

A Premium Service

Chronos has over twenty five years experience in delivering and supporting frequency synchronisation systems for both fixed and wireless carriers. In fact our engineers may have installed the very systems you now need to make PhaseReady™.

Chronos' "Core Audit" gives you the confidence that your core infrastructure is fit for phase; delivers the tools necessary to deliver this; and takes a snapshot of your existing hardware, its location, and any adjacent GPS hardware and its possible (damaging) effects on your system.

For example hardware that was perfectly fit for purpose in your frequency system may have a negative impact on your phase performance; now or in the future. The use of GPS splitters, and their tendency to be added to over time, is not conducive to phase delivery; and the existing lightning protection system may also be inadequate.

In shared locations (some of which have many GPS installations) the location of other GPS antennas can have a profound effect on GPS performance for phase delivery, and a faulty GPS antenna on the roof can destroy your GPS signal.

"PhaseReady™ Core" Delivers:

- GPS system phase delay data
- Assessment of existing GPS hardware
- Assessment of collocated GPS systems and their possible impact on Phase delivery
- Support in updating clock configuration
- Verification of clock performance

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