The **VERIPOS Apex5** is a global, high-accuracy, GNSS positioning service designed to meet all offshore positioning and navigation applications. Apex5 is an extension to the VERIPOS Apex services using GNSS observations from 5 available GNSS systems; GPS, GLONASS, BEIDOU, GALILEO and QZSS.

Apex5 operates using Precise Point Positioning (PPP) – an absolute positioning technique which corrects or models all GNSS error sources, i.e. GPS satellite orbit and clocks, tropospheric, ionospheric and multipath errors. The PPP technique consists of a single set of 'globally applicable' corrections to the satellite orbits and clocks, so position accuracy is maintained regardless of user location.

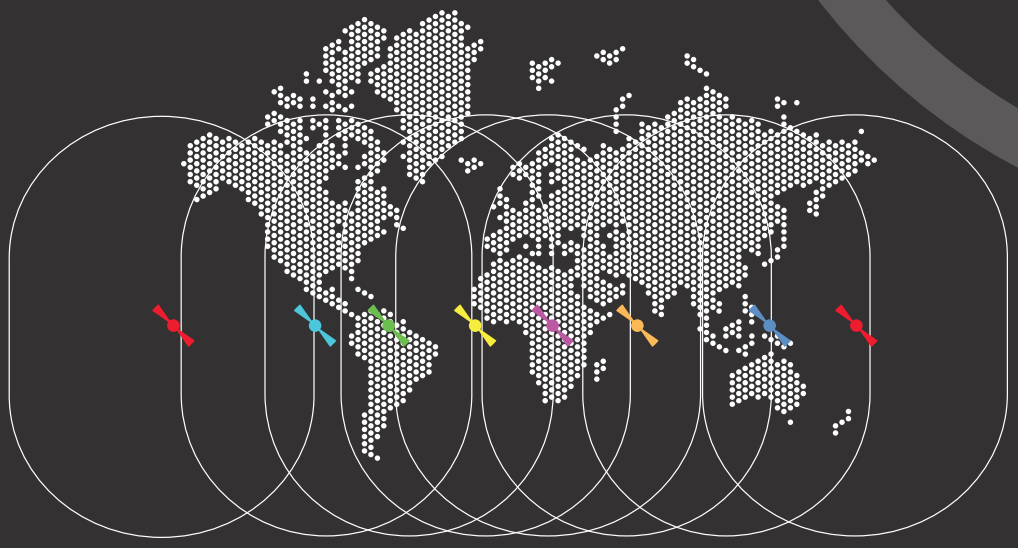
VERIPOS operates its own orbit and clock determination system (OCDS) which derives real-time corrections for all available satellites in the GNSS constellations using proprietary algorithms. The OCDS uses data from the VERIPOS reference station network with multiple and redundant OCDS systems running in VERIPOS-operated Network Control Centres in Aberdeen and Singapore.

The Apex5 service uses satellites from the GPS, GLONASS, BEIDOU, GALILEO and QZSS constellations. New constellations mean that VERIPOS now has access to, new civilian signals, higher power levels on signals and constellations that are interoperable. This all combines to provide the multi-constellation Apex5 service which will provide users with the following benefits:

- More satellites ,more observations, more redundancy
- Faster convergence of Apex5 PPP service
- Improved satellite count, and position availability, in masked and scintillated environments
- Delivering more robust and reliable positioning

As more satellites are added to the BEIDOU, GALILEO and QZSS constellations, these will automatically become available within the Apex5 service once the satellite is set healthy.

Apex5 service is broadcast alongside the Apex/Apex2 Ultra services via seven geostationary communications satellites to ensure availability and service redundancy.



Precise Satellite Positioning Services

TECHNICAL SPECIFICATIONS

GNSS Satellite Constellation
GPS, GLONASS, GALILEO*, BEIDOU, QZSS

Observations used
GPS L1/L2
GLONASS L1/L2
BEIDOU B1 & B2
GALILEO* E1 & E5b
QZSS L1C & L2L

Positioning Technique
Precise Point Positioning (PPP)

Reference station network
VERIPOS

Availability
Global

Geostationary satellites
25E 98W 143.5E AORE AORW IOR POR

Horizontal Accuracy**
<5cm at 2σ (95%)

Vertical Accuracy**
<12cm at 2σ (95%)

Coordinate Reference Frame
ITRF08

** The Galileo constellation is not currently set healthy so will be omitted in the calculations. When the constellation is set healthy then the system will operate including Galileo in the calculations without a software change.*

*** Based on static data logged in Aberdeen, Houston and Singapore over a 7 day period. Accuracy will vary with observing conditions.*

Precise Satellite Positioning Services