

Device-Based GNSS

Extended Ephemeris

Accelerates satellite acquisition and boosts sensitivity of any GPS/GLONASS equipped device.



Only Device-Based Solution Designed for Connected & Autonomous Devices

Overview

GPStream™ PGPS is an Assisted-GNSS solution designed to substantially enhance the satellite acquisition performance of virtually any GNSS positioning engine, whether a chipset or next-generation software-GNSS. In practical terms, this means a reduction of Time-To-First-Fix from 45 seconds to 2 seconds or less. Moreover, fixes can be achieved in difficult environments where they were previously impossible.

PGPS works on any mainstream mobile operating system as well as proprietary embedded platforms, and can seamlessly adjust its performance if the device has full, occasional, or no network access at all. PGPS consists of a lightweight and patented software client that enables the device to generate its own GNSS assistance data, i.e. extended ephemeris. Extended ephemeris is a close approximation of the real broadcast ephemeris constantly transmitted by the satellites, which must normally be received by the device before it can start calculating its position.

PGPS preloads extended ephemeris data into the GNSS chipset, thereby avoiding the latency and higher bandwidth usage inherent in real-time Assisted-GNSS approaches. The net result is super fast satellite acquisition and improved GNSS sensitivity. In other words, a better user experience when consuming Location-Based Services.

Dual Mode

GPStream PGPS now integrates the functionality of a previous stand-alone product – GPStream SAGPS – and can now operate in two modes: Connected and Autonomous. In Connected Mode, PGPS receives small (2 kB) weekly data transfer, also known as a “seed” file, delivered from Rx Networks’ Internet based PGPS servers. This advantageously compares with other chipset-proprietary extended ephemeris solutions that require ~70 kB/week for each satellite constellation. The PGPS client uses these seeds to locally generate 7 days of satellite orbit and clock predictions. In Autonomous Mode, when there is no network access, PGPS uses broadcast ephemeris (BCE) collected by the GNSS chipset to generate its own seeds and produce up

to 3 days of satellite orbit and clock predictions. Autonomous Mode works with as little as one BCE observation but continues to develop and refine the prediction every time new BCE is obtained.

PGPS can intelligently switch between modes, maintaining a consistent user experience as the device moves in and out of connectivity, without requiring a real-time AGNSS connection. This is particularly helpful in roaming scenarios or in markets where data plans are not affordable. Alternatively, PGPS can be configured to operate solely in either mode.


Designed for easy integration with existing A-GNSS standards and a wide variety of hardware and software platforms, GPStream PGPS is the only truly ubiquitous extended ephemeris solution that works with any network, device or chipset architecture.

Dual Constellation


PGPS supports both GPS and GLONASS constellations. Additional constellations will be supported as they become commercially viable.

Chipset Vendors 

- “Must-have” competitive feature
- Can be resold or licensed by OEM directly

Device OEMs 

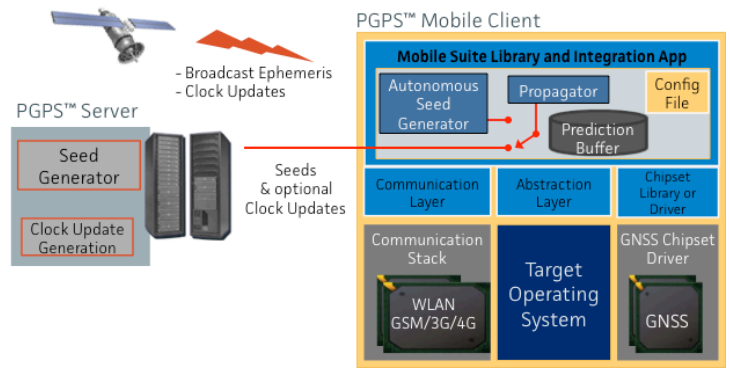
- Reduced design-in times
- Multi-GNSS chipset support
- Consistent user-experience

Mobile Operators 

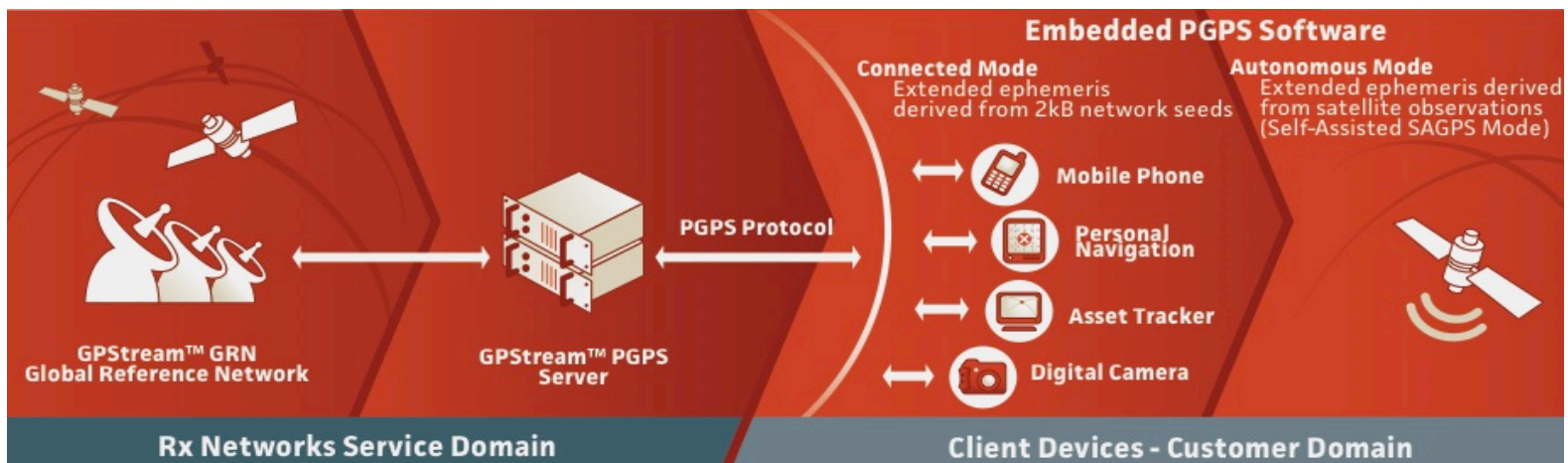
- Offload AGPS service infrastructure
- Data overhead reduced by up to 95%
- Consistent, global performance

Benefits

- Improved user experience
- Lower battery consumption
- Flexible flash memory usage
- Patent protection
- Standards-friendly
- Platform independent



System Performance Benchmarks	Connected Mode	Autonomous Mode
Warm TTFF (GNSS Chipset Dependent)	1 to 10 seconds	1 to 10 seconds
Cold TTFF (GNSS Chipset Dependent)	2 to 15 seconds	2 to 15 seconds
Accuracy Performance 66 Percentile URE	11m Day 1-3 13m Day 4-7	10m Day 1 20m Day 2 35m Day 3 (2 BCE observations)
Network Overhead	2kB/week	None
Platform Support	Windows XP, Windows Mobile, Android, Linux, Embedded ARM, contact Sales for others	
GNSS Chipset Support	Multiple chipsets from several vendors including Texas Instruments, ST Microelectronics, ST Ericsson	
Program Store (OS / CPU Dependent)	~250 kB	
Prediction Buffer	Variable. As low as 43kB.	
Run-Time (Background Task) (1GHz Android 2.1 Platform)	5sec for 7 days of prediction (full constellation)	5 sec for 3 days of prediction (10SVs) (2 BCE observations)
GNSS Constellation Support	GPS, GLONASS	



About Rx Networks

Solving Every "Where". Rx Networks is a mobile positioning technology company that develops hybrid positioning and assisted-GPS solutions that unify any available GPS, GLONASS, cell tower or Wi-Fi information. These solutions, already licensed by leading GNSS semiconductor vendors, device OEMs, network equipment vendors, and mobile operators, bring instant location awareness and help deliver an unmatched mobile location user experience on any device and for any application. GPStream GRN™ provides global real-time and long-term prediction GPS/GLONASS reference data for use by any mobile network location server. GPStream PGPS™ adds GPS and GLONASS extended ephemeris support to increase the sensitivity and acquisition speed of any GNSS chipset, while XYBRID RT™ and XYBRID SUPL LE™ combine Wi-Fi/Cell positioning with real-time A-GPS/GLONASS support to extend the location performance of GNSS chips in difficult areas, such as indoors or urban cores.



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