Timing & Synchronization

Carrier Grade NTP & PTP IEEE 1588 Grand Masters

Timing and Synchronization

Timing and synchronization are indispensable in our increasingly digital, networked world. Precise, accurate time enables virtually all infrastructures such as data centers, wired and wireless communications, financial exchanges, industrial networks, smart powergrid, and other secure communications. Wireless networks, for example, rely on highly accurate timing and synchronization for smooth cell-to-cell transfers of the mass of voice, video and mobile data deluging the networks daily. Precise timing is similarly vital for financial networks processing billions of dollars in transactions daily.

Achieving highly accurate precision time is no easy feat from a technological perspective, so it's important to find a resource you can trust. Our end-to-end timing solutions generate, distribute, and apply precise time for multiple industries, including communications, aerospace/defense, IT infrastructure, financial services, industrial and more. Microchip customers range from communications service providers and network equipment manufacturers to governments and their suppliers worldwide.

Leveraging Microchip's advanced portfolio of timing technologies, services, and solutions, we enable our customers to build more reliable networks and systems supporting today's precise timing standards, including:

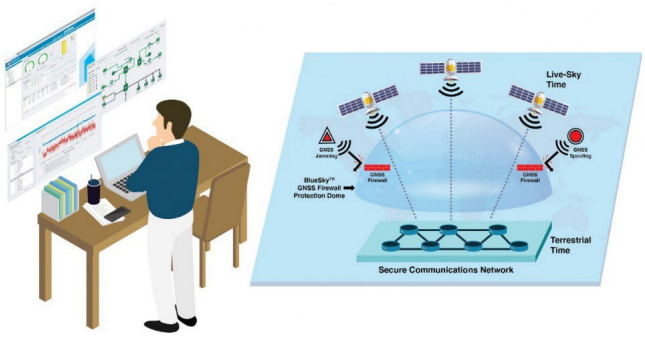
- GPS-based timing
- IEEE 1588 Precision Time Protocol (PTP)
- Network Time Protocol (NTP)
- Synchronous Ethernet (SyncE) and
- Data-over-Cable Service Interface Specifications (DOCSIS) timing

Updates to GPS Data Validation Rules

Microchip is continuously tracking GPS signal activity.

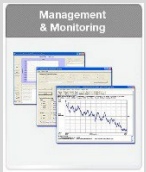
Microchip's worldwide deployment of atomic clocks and GPS systems are used as a reference frame to continuously analyze GPS data for changes including spoofing threats, jamming attacks, multipath signal interference, atmospheric activity and any other effect that degrades GPS performance.

Unified Management of "Terrestrial Time" and "Live-Sky Time" Sources to Enable Resilient Timing for Critical Infrastructure



PTP Solutions for the Telecom Network

The PackeTime IEEE 1588 Grand Master product range is designed to address evolving LTE synchronization requirements, small cell deployments and uncertain backhaul situations which present new timing challenges with both technical and economic requirements

Product	Product Photo	Product Features
TimeProvider 4100 PTP Grandmaster		• High capacity: 2,000 PTP unicast timeReceiver clocks at 128 PPS • Reliable fanless passive thermal operation • Redundancy via software mechanisms using two active and standby units • Patented enhanced APTS with Automatic Asymmetry Compensation (AAC) • Zero Trust security Grandmaster with strong differentiated timing security • Performance monitoring for phase and legacy signals
TimeProvider 4500 PTP Grand Master		• First PTP grandmaster with 25 Gigabit Ethernet (GbE) support • 1 GbE/10 GbE ports significantly exceed the performance of Class D timing requirements (typical accuracy better than ± 2ns) • All ports use hardware timestamping to ensure highest accuracy
TimeProvider 5000 Grand Master		• Up to 2000 IEEE1588 Unicast Clients at 128 messages/second • Single or Dual GNSS receiver • Redundant Power supplies • $1x10^{-11}$ daily holdover
TimeProvider XT Extension System		• Two Rack Unit (RU) shelf can be rack mounted with TimeProvider 4100 Grandmasters • Reversible rack ears allow for installation in all rack types • Can be configured with only one distribution module and one plug-in module for small Point-of-Presence (PoP) applications
Integrated GNSS Grand Masters Indoor, Outdoor, External		• Integrated GNSS receiver • Up to 60 IEEE1588 clients • Under 12.95W, PoE Class 3 • Outdoor, integrated Antenna: IGM-1100o • Indoor, integrated Antenna: IGM 1100i • Indoor, external Antenna: IGM-1100x
Management & Monitoring		• TimePictra: manage timing across your carrier network • TimeMonitor • TimeCraft

Support

Microchip is committed to supporting its customers in developing products faster and more efficiently. We maintain a worldwide network of field applications engineers and technical support ready to provide product and system assistance. For more information, please visit www.microchip.com:

- Technical Support: www.microchip.com/support
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- Knowledge base and peer help: www.microchip.com/forums
- Sales and Global Distribution: www.microchip.com/sales

Training

If additional training interests you, Microchip offers several resources including in-depth technical training and referencematerial, self-paced tutorials and significant online resources.

- Overview of Technical Training Resources: www.microchip.com/training
- MASTERs Conferences: www.microchip.com/masters
- Developer Help Website: www.microchip.com/developerhelp
- Technical Training Centers: www.microchip.com/seminars

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