



NTP Blades for TimeHub

Carrier-class, Plug-in NTP Server Cards for TimeHub® Building Integrated Timing Supply

FEATURES

- Five Nines Availability
- Superior Accuracy – Hardware Time Stamping
- Card-Based Scalability
- Security and Authentication
- NEBS Level 3 Certification

APPLICATIONS

- IPTV Content and Delivery
- Digital Rights Management (DRM)
- Billing Record Management
- IP SLA Monitoring
- QoS Measurement Systems/Probes



CARRIER-CLASS NTP

NTP requirements in telecommunication networks have rapidly evolved from a “best effort” utility to a mission-critical requirement for high QoS content delivery. Carriers have long relied on the Building Integrated Timing Supply (BITS) to meet all physical layer synchronization requirements with five nines availability. With the introduction of high-performance NTP servers on a card, the BITS platform can now deliver carrier-class NTP to meet demanding NGN PacketTime™ requirements. Designed to take full advantage of the Building Integrated Timing Supply environment, TimeHub’s NTP server cards provide the performance, scale, availability and security to assure high QoS delivery of advanced services such as IPTV.

Today, carriers are finding that “best effort” NTP is not sufficient for high QoS packet networks and advanced services. NGN applications such as IPTV are highly dependant on carrier-class NTP. Time coordination of massive amounts of digital content in the head end serving locations is reliant on accurate and secure NTP timestamps.

Symmetricom’s NTP server blades are fully integrated into the TimeHub

Building Integrated Timing Supply system. NTP cards can be installed as single servers or redundant pairs in any available master or expansion shelf output slot. NTP capacity scales up at a rate of up to 1000 fully authenticated transactions per second for each added card. Front-access NTP traffic ports utilize Small Form-factor Pluggable (SFP) modules for flexibility to support 1000 Base-X optical or electrical interfaces. NTP server cards can support independent public and private network domains providing added security and flexibility. All configuration and management is consolidated through TimeHub system management ports to maintain security and isolation from NTP traffic ports.

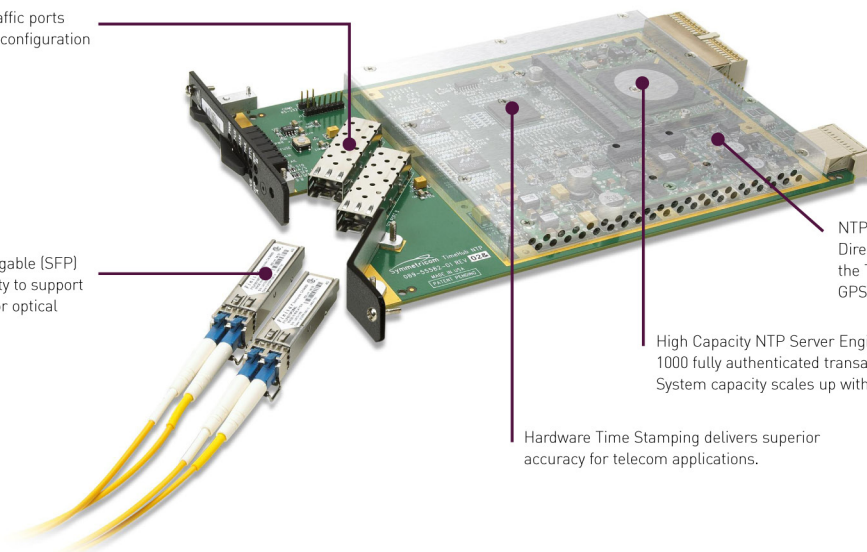
Symmetricom NTP Blades for TimeHub provide superior stability and protection through direct connection to the TimeHub system backplane. NTP Stratum level 1 UTC time traceability is established with a simple connection to the TimeSource PRS Time-of-Day (ToD) output. For offices without a PRS, NTP server cards can be configured with an optional GPS, or can operate at NTP Stratum level 2 with UTC time traceability back to a NTP Stratum 1 card in another office.

NTP Performance	Enterprise Class	Carrier-Class
Time Stamping Precision	Software (10µs)	Hardware (10ns)
Scalability	Fixed	Card based
Holdover	✓	✓
Redundancy		✓
TL1 Management		✓
NEBS		✓

TABLE 1: Carrier-class NTP meets high QoS requirements for NGN telecommunication networks

Dual front-access NTP traffic ports allow for flexible network configuration and protection.

Small Form-factor Pluggable (SFP) modules provide flexibility to support 1000 Base-X electrical or optical interfaces.

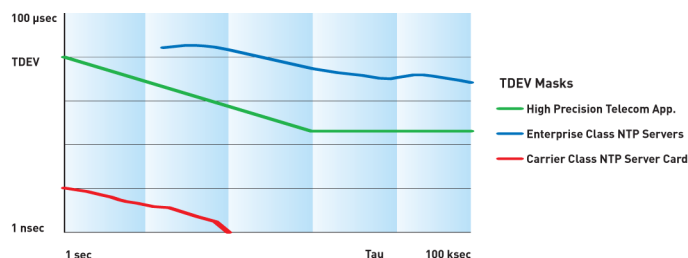


NTP Stratum 1 performance with Direct Time-of-Day reference from the TimeSource PRS or optional GPS input.

High Capacity NTP Server Engine supports up to 1000 fully authenticated transactions per second. System capacity scales up with additional cards.

Hardware Time Stamping delivers superior accuracy for telecom applications.

FIG 1: Carrier-class NTP server — system on a card



GRAPH 1: TDEV: Carrier-Class NTP Server Card meets high precision telecom requirements

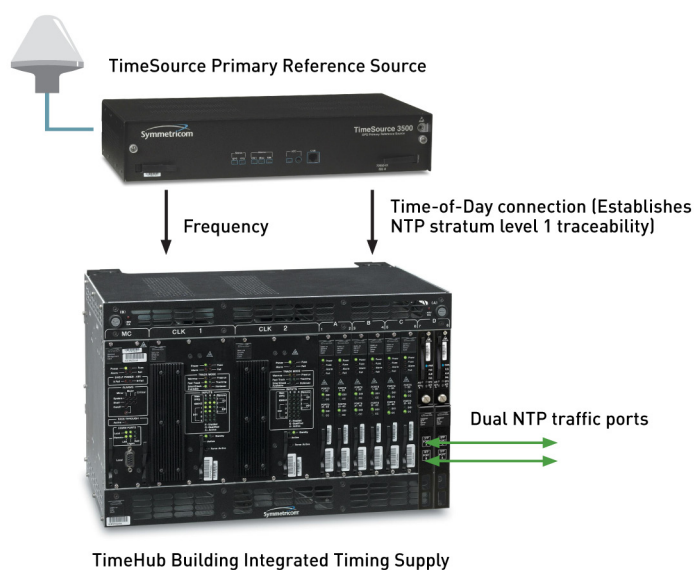


FIG 2: NTP server cards leverage carrier-class synchronization infrastructure

Specifications

NETWORK PROTOCOL

- NTP v3 - RFC1305 compliant
- IPv4

TIME STAMPING

- Hardware Time Stamping

SERVER PRECISION

10 ns rms typical (See graph 1)

INPUTS

- Stratum 1
 - Time-of-Day feed from TimeSource
 - Type: Cisco ToD
 - Connector: RJ45
 - Format: RS-422 (1000 ft range)
 - Optional GPS input (12 channel, 50ns rms)
 - Connector: TNC (L1 Antenna)
- Stratum 2
 - Full NTP client

NTP TRAFFIC PORTS

- 2 Ethernet Small Form-factor Pluggable (SFP)
 - Optical: 1000 Base-X
 - Electrical: 1000 Base-T

NTP TRANSACTION RATE

- 1000/s fully authenticated (up to 1500/s unauthenticated)

AUTHENTICATION

- MD5 (RFC1321)

PROTECTION

- 1:1 protection

MANAGEMENT

TL1- Integrated into TimeHub system management (physical isolation from NTP traffic ports)

Please refer to TimeHub 5500 data sheet for full system specifications.