SEVEN Solutions

HATI integration with Arista MetaWatch

White Rabbit is an ultra-accurate IEEE 1588 (PTP) implementation that achieves sub-nanosecond accuracy. Designed for use in avionics, telecommunications, space, defence and scientific facilities, White Rabbit has become the gold standard for time distribution within electronic trading networks.

Leveraging the best of breed across two technology stacks with integration of the Seven Solutions HATI core (High Accuracy Timing IP) with Arista MetaWatch providing sub-nanosecond timestamping in conjunction with accurate, precise and reliable timing.

Key Features

Designed to improve, augment or replace existing timing infrastructure, White Rabbit with Arista 7130LB drives business value by providing:

- Sub-nanosecond time accuracy across all timestamping devices in the network
- Fiber based White Rabbit communication
- Integrated solution with no user development required
- Pre-calibrated optics available for highest level of precision
- Reduction in the requirement to use coaxial cable
- Sub-nanosecond time distribution to all 7130LB devices on the network
- Sub-nanosecond level timestamping across 48 ports on a single device
- Secure handshake between WR-Z16 and HATI based on a private key

HATI with MetaWatch

The coupling of HATI with MetaWatch opens up the ability to take advantage of the following use-cases:

- An end-to-end White Rabbit based timestamping solution without requiring PPS as an input source to timestamping devices.
- High resolution, sub-nanosecond, time synchronization across multiple points in the network and sub-nanosecond timestamping in each end device.
- Inline tapping, sub-nanosecond timestamping, media conversion, layer 1+ features and telemetry on each tapped link leveraging Arista 7130LB Switches.
- Simplification of overall architecture by eliminating coaxial cabling and PPS distribution equipment leading to cost savings, reduced footprint and less calibration effort.
- Intra-site, sub-nanosecond accurate synchronization of every tapped link across multiple data centers in the same metro region.
- Multiple levels of holdover to allow for clock stability during disruption in time feeds or reference clocks.
- Deep buffering of aggregated, timestamped packets to reduce load on downstream packet capture and analysis devices.
- No custom development or FPGA integration required, a fully tested, packaged and supported timestamping solution leveraging the best of breed technology from both Seven Solutions and Arista Networks.

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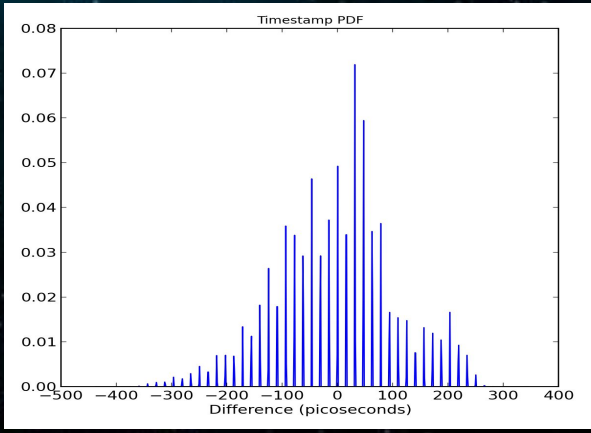
HATI Integration
Arista MetaWatch

SEVEN Solutions

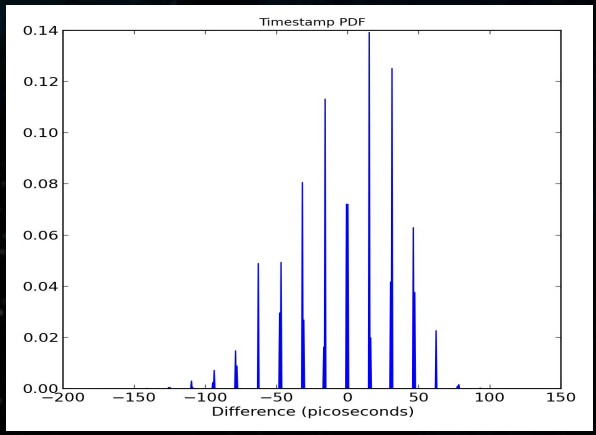
7130 MetaWatch: White Rabbit vs PPS

The below graphs show a comparison between the timestamp accuracy on an Arista 7130LB running MetaWatch, while using PPS as the input time reference and while using White Rabbit.



MetaWatch with PPS (ps)

Median	Mid-range	Half-range	Std. dev	Mean
47.000	0.500	390.500	107.219	44.173



MetaWatch with White Rabbit (ps)

Median	Mid-range	Half-range	Std. dev	Mean
-62.000	78.000	157.000	36.391	-63.846

Supported Models

WR Z16

Reliable & precise time fan-out solution for White Rabbit distribution on 1G Ethernet-based networks. The WR-Z16 is a standalone device with 16 SFP connectors which provides sub-nanosecond accuracy time over plug-and-play optical fiber links. The WR-Z16 provides very precise IEEE 1588-2008 (PTP) in all its optical interfaces and supports NTP interoperability. Picosecond-level frequency distribution is available through a fully digital clock. The WR-Z16 incorporates failover mechanisms which combine multi-source redundancy and holdover capabilities to ensure continuous operation.

Key Features

- Multi-port synchronization fanout.
- 16 x WR, HATI, IEEE 1588 PTPv2 and NTP interoperability optical interfaces.
- Multi-source time references.
- Failover mechanisms.
- Automatic switchover.
- Holdover.
- Time traceability for regulatory purposes.
- Extended monitoring and management tools (authentication, SNMP, security).
- Redundant power supply and fans.
- Serial and Ethernet RJ45 ports.

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