

Intra-Datacenter Time Distribution Through White Rabbit

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Ultra-accurate time distribution, less than 1 nano-second time error, within a datacenter allows to have the same time reference distributed to all your equipment in a colocation.

A leap forward on synchronized operations and latency measurement that can have great impact on algorithmic trading.

The local reference of timing in the datacenter can be distributed using White Rabbit to all your cabinets. Our timing solution is compatible with your already deployed timing infrastructure. Connect your timing grand master to a White Rabbit device using 10 MHz and PPS. At the end node there is a range of options to deliver the time: PPS, PTP, NTP:

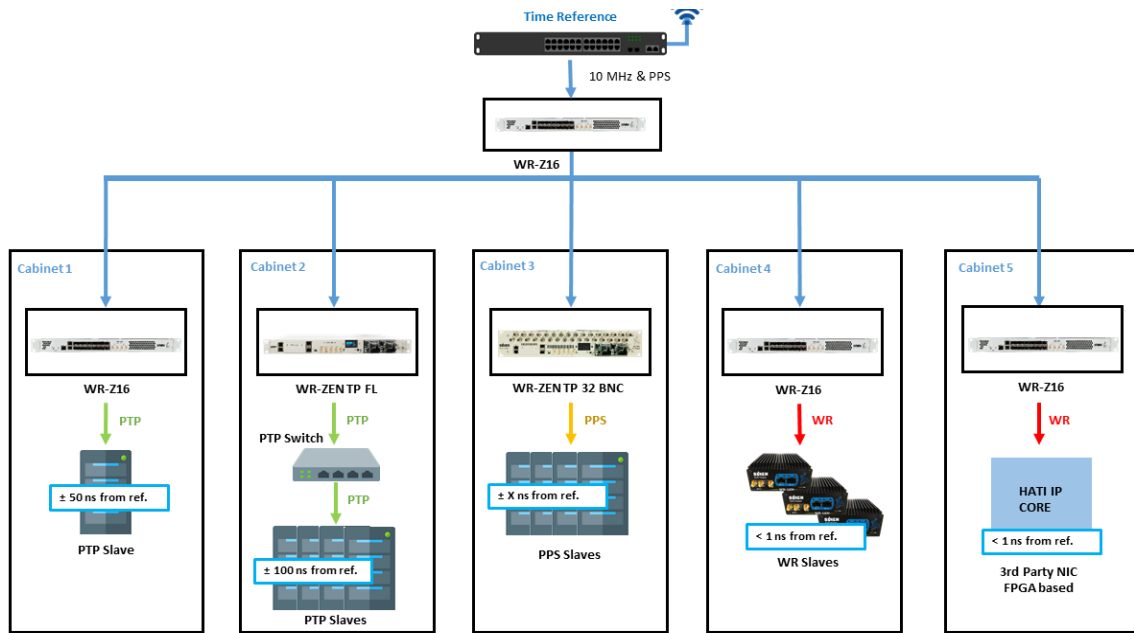
- 1 last PTP hop (± 50 ns from the reference)
- 2 last PTP hops (± 100 ns from the reference)
- 1 PPS hop (depends on clock performance of the slave)
- WR until the end node (< 1 ns from the reference)



Time distribution in the Data Center

Seven Solutions delivers best-in-class synchronization for datacenters. The existing network infrastructures with time synchronization protocols like NTP and PTP is vastly improved by using the White Rabbit protocol for time dissemination. For intra-datacenter, the solution is focused on the distribution of a time reference (GNSS or UTC reference). For minimum impact in time budget, our White Rabbit devices transfer the reference time to any point, any cabinet with sub-nanosecond accuracy.

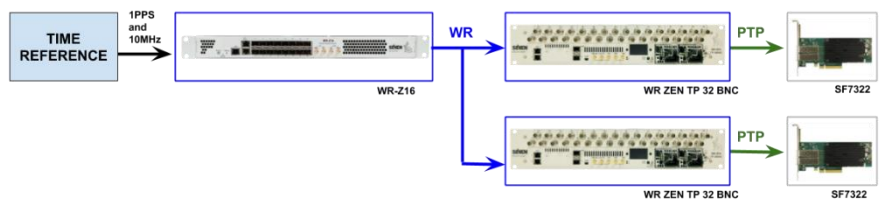
The delivery of timing to the end user equipment is provided with a wide range of protocols available (NTP, PTP, IRIG-B, ToD), as well as standard timing signals like 10MHz and 1PPS. There is no need for link or cables calibrations since White Rabbit is constantly measuring and accounting for the changes in the fiber optic link. White Rabbit is resistant to the Packet Delay Variation (PDV) in environments with abrupt changes in traffic.



Synchronizing Capturing Devices with PPS



Synchronizing NICs and Switches with PTP



Interoperability with other vendors has been already tested with satisfactory results. White Rabbit can be integrated with your current infrastructure enhancing its timing performance.

Capturing devices can make use of the PPS WR distribution. NICs and PTP enabled switches can get synchronized to WR devices issuing standard PTPv2.

Use case	Offset*
Sync Capturing Dev with PPS	<1 ns
Sync NICs with PTP a)	~50 ns
Sync NICs two PTP b)	~100 ns

* PPS offset Peak-to-Peak

1. Timestamping error reported by Metawatch
2. a) PPS offset with respect to time reference
b) PPS offset between two Solarflare 7322 NICs

