SEVEN Solutions
When every nanosecond counts

Inter-Datacenter Time Distribution Through White Rabbit

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Ultra-accurate time distribution (sub-second time error) over different datacenters allows to have the same time reference distributed among all devices in a designated area. A leap forward on synchronized operations and latency measurement that is having a great impact on algorithmic trading.

A local reference can be distributed by using already deployed fiber of any provider. Reaching more than 100 kilometers on a single hop using dedicated fiber or by sharing fiber on a pair of dedicated wavelengths.

Compatible with your already deployed timing infrastructure. Connect your timing grand master to a WR device using 10 MHz and PPS. At the end node there is a range of options to deliver the time: PPS, PTP, NTP, …

## Time distribution in a metro area

Currently, using the time reference in a metro area can be achieved by sending the clock reference over fiber from datacenter A to datacenter B. The only requirement is that they are in an area of around 100-150 Km wide, so they can be reached in a single hop (the distance can be extended by using optical amplification or regeneration).

Datacenter A ← <120 Km → Datacenter B

Interoperability with third-party equipment has been already tested with satisfactory results. Both at the reference clock and at the end nodes (NICs, packet capturing devices, etc.).

The failover mechanisms and holdover capabilities integrated in WR devices allow to work in multi-source time references scenarios providing a full resilient PNT solution.

WR over dedicated fiber
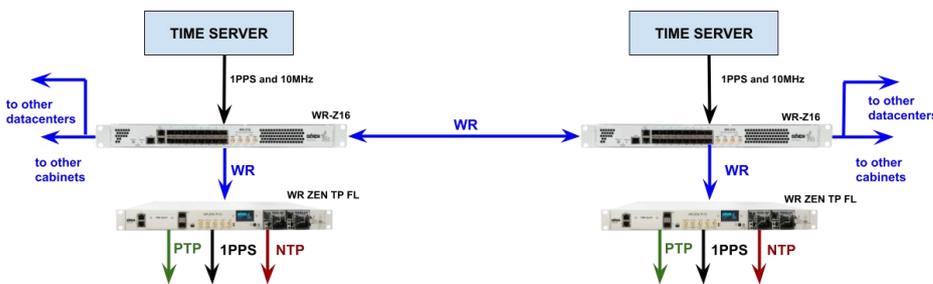
The use of dedicated fiber simplifies the installation and first operation greatly. Between the great advantages over PTP of WR, you can benefit of the automatic and dynamic compensation of the asymmetry. This makes the installation much easier.

This scheme allows datacenters to be sub-nanosecond synchronized easily. Then you can distribute the timing to the entire datacenters or expand it to a third.

WR over shared fiber

Using shared fiber in DWDM systems is a much more cost-effective solution with the disadvantage that the automatic asymmetry compensation is not possible. This is due to elements on the optical path that can change between different infrastructures.

This causes an unknown offset at the timing slave. This handicap can be overcome by using different calibration methods. The methods depend on feasibility and can be GNSS assisted or stand-alone.

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