

WROX

White Rabbit Option Card for SecureSync 2400



New:

- High Throughput capability: > 500 000 PTP requests/s
- Management / monitoring via SecureSync base unit

Operations in Critical Infrastructures rely more and more on assured and accurate time distribution. Precise time-stamping of high frequency events or transactions is a key enabler for monitoring, security and performance measurement of high-speed, massive transaction-based operations. Time and Frequency synchronization quality has a direct impact on reliability and performances of multiple civilian and governmental communication systems.

As a way to meet the demand for quick infrastructure growth, including efficiency and scalability improvement, network-based time distribution is seeing strong adoption across all infrastructure industries. Interoperability requirements have led to the standardization of different network-time protocols, enabling time-transfer accuracy improvement from milli-second level (NTP), to sub-micro-second (PTP, IEEE1588). They also lead to supporting higher speed network interfaces, with the on-going migration from 1 Gb Ethernet to 10 Gb Ethernet, or faster, interfaces.

Accurate network time transfer is a key enabler for designing reliable, redundant, time distribution architectures over large infrastructure networks, which combine different types of time reference acquisition and distribution. Using combined PTP/White Rabbit network time distribution, along with GNSS, is an efficient way to address weaknesses of GNSS signals, in particular their vulnerability to GNSS interferences.

Staying true to the modular design of the SecureSync, 1204-58 and 1204-59 WROX Option Cards introduce a new level of network-time distribution, with respectively 1 Gb Ethernet and 10 Gb Ethernet interoperability for NTP, PTP and White Rabbit time distribution, while preserving the wide range of options available with SecureSync (oscillator, timing interface option cards, power supply).

- **Adds White Rabbit interface to SecureSync**
- **White Rabbit & PTP GrandMaster**
- **1 GbE and 10 GbE configurations**
- **4 ports per card, up to 2 option cards fit in SecureSync 2400**

WROX offers high-throughput modes of operation, enabling synchronization of a large number of clients via PTP (Precision Time Protocol) and NTP (Network Time Protocol). Each WROX card can process more than 500,000 requests per second for PTP, or support 4,000 clients at 128 requests per second. This massive throughput contributes to the scalability of time distribution architectures, making them more flexible and robust for demanding environments.

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Use cases

- Network-synchronization as a backup to GNSS-based synchronization, providing ns level accuracy to UTC.
- Improved transaction time-stamping resolution and accuracy, for high-rate transaction infrastructures.
- Efficiency improvement and throughput increase for data replication mechanisms in datacenters.
- Improved visibility on time-distribution monitoring, within infrastructures (time probing and traceability).
- Enabler for Time As A Service infrastructure deployment.

And also, in combination with Safran timing portfolio :

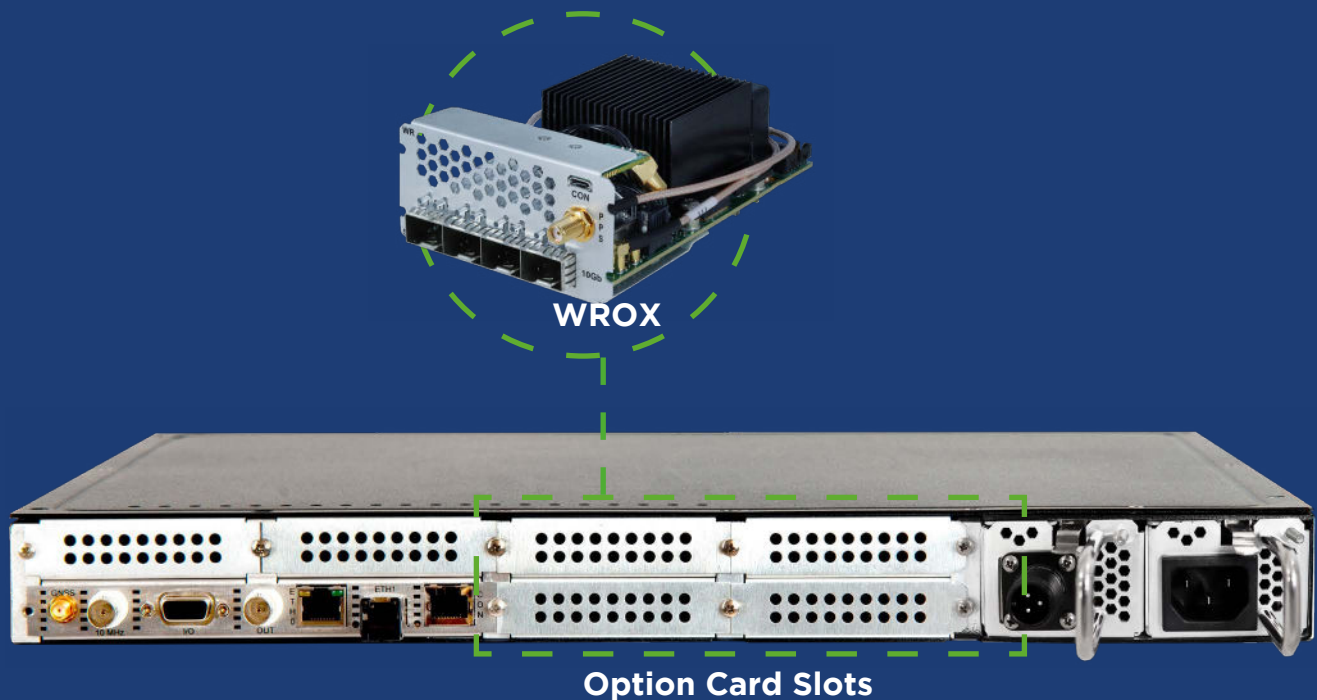
- Easier connection between a WR Z16 and a SecureSync GrandMaster through a WR link (not requiring additional 1 PPS, 10 MHz and NTP links).
- A point-to-point WR link can be created more efficiently between a SecureSync (as the GrandMaster) and a ZEN TP-FL (as the end node).
- Two SecureSyncs on distant sites can be WR linked, each site acting as a WR backup in case GNSS becomes unavailable on the other site.

Adds White Rabbit interface to SecureSync

White Rabbit and PTP master, NTP server

1 GbE and 10 GbE configurations

4 ports per card, up to 2 option cards fit in SecureSync 2400



Technical Specifications

Note: features available at time of introduction are in **black**, additional features to be introduced later in 2026 are identified in **blue**.

Physical

- Two-slot-high Option Card for SecureSync ; two WROX modules max per SecureSync base unit.
(Requires 6-slot capable base unit – 2406-xyz).

Interfaces

- 4 x Ethernet ports: 10 GbE (SFP+) or 1 GbE (SFP).
- 1 PPS output (SMA, 3.3V).
- Console port (micro-USB).

Interoperability

NTP : compliant with RFC 5905

- * Unicast
- * symmetric key authentication

NTP Secure (NTS)

PTP : compliant with IEEE 1588 v2 and **v2.1**

- Support E2E & P2P delay mechanism, L2/L3, Unicast & Multicast.

Support for default, enterprise, power, and **ITU-T G.8275.1 telecom profile** , **High Accuracy**.

White Rabbit : interoperable with any device implementing CERN-originated protocol.

Modes

Ports can be configured as WR Master, WR Slave, PTP Master only, PTP Slave only, or NTP server (exclusive configuration per port).

High Throughput network timing

- High Throughput for PTP 10 GbE : 4000 slaves @ 128 req/s
- Support for High Throughput NTP will be available in later release.

Security

- RADIUS, TACACS+ authentication.
- SSH
- SFTP/SCP secure file transfer over SSH session.

Management

- WROX can be managed directly from the WROX card itself, or through SecureSync base unit.
- Management from SecureSync base unit :
 - Console port: CLI
 - Ethernet port: CLI via SSH, Rest API, SNMP
- Management from WROX card :
 - Console port: CLI
 - Ethernet port: CLI via SSH, RestAPI, SNMP

Network

- DHCP
- Persistent configurable Iptables, Iprules, Iproutes

Monitoring

- SNMPv3 + traps with enterprise MIB.
- RestAPI.
- RSyslog.

Environmental

- Maximum in-operation temperature for SecureSync 2400 with WROX Option Card installed is limited to +55°C for TCXO and OCXO configurations, and +50°C with Rubidium oscillator.
- Power : with each added WROX option card, overall power consumption from SecureSync is increased by 10 W, plus 1 to 2 W per SFP.

Regulatory approvals

- CE, UKCA, FCC part 15 class A, RoHS, REACH, WEEE.

Ordering information

- 1204-58 : WROX Option Card 1 GbE
- 1204-59 : WROX Option Card 10 GbE
- WROX-LIC001 : WROX High Throughput SW license option

Product Ecosystem

Safran offers a range of SFPs which are compatible with SecureSync base units and option cards. The portfolio includes:

- White Rabbit dedicated fiber SFPs (1 Gb / 10 Gb, OLT/ONU).
- General purpose SFPs (1 Gb / 10 Gb) for PTP.

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