

GE CHRONOS



Time-Sensitive Networking Toolset

A comprehensive tool for planning, design, analysis, and configuration of time-sensitive networks for deterministic and safety-critical applications.



Self-Service Network Configuration

- Field-configure any TSN-compliant device to rapidly deploy a coherent network configuration to all devices
- Auto-provision mix of best-effort, rate-constrained, and scheduled traffic
- Analyze link utilization, schedule, latency, jitter, and delivery bounds
- Check design feasibility and identify bottlenecks



Support for Open IEEE TSN Standards

- Shaping for both time-aware and rate-constrained traffic
- Stream isolation and seamless network redundancy
- Integrated CUC and CNC for static engineered networks
- YANG-based device configuration



Purpose built for Aerospace System Integrators

- Supports multi-vendor equipment and device specific hardware/software constraints
- Fast and robust for configuring large vehicle networks
- Verifier module per DO-178C/DO-330 and compatible with other safety-related such as ISO-26262 and IEC-61508¹



Flexible Integration

- GUI or command-line interface to process several input and output file formats
- Easily integrates into your MBSE toolchain or leverage GE's MBD Integration avionics integration toolset
- Kickstarter guides and detailed manuals to aide integrations



Features

| | |
|---------------------------|---|
| Operating Systems | <ul style="list-style-type: none"> • Microsoft Windows® 10 64-bit • Ubuntu Linux 64-bit (available in FY2023)¹ |
| Inputs | <p>Standard Parsers</p> <ul style="list-style-type: none"> • IEEE 802.1Qcc XML, IETF Topology XML <p>Custom Parsers</p> <ul style="list-style-type: none"> • Table-based input with Excel template, DDS (Data Distribution Service), ARINC 664 Network Configuration file (NCF). Contact GE for additional formats not listed |
| Outputs | <p>Configuration Data Models</p> <ul style="list-style-type: none"> • IEEE YANG models and their variants • Custom and vendor specific models <p>Data Loading</p> <ul style="list-style-type: none"> • Direct device programming with NETCONF and SCP • Offline configuration files in XML, JSON, and ASCII formats • Generates XML to be used by external ARINC 665 tools for ARINC 615A data loading |
| Features | <p>Topology & Streams</p> <ul style="list-style-type: none"> • Interactive GUI representation of the input scenario • Redundant data path selection for FRER streams • Visualize per-stream schedule, VLAN, and queue assignment overlaid on topology <p>Scheduling & Analysis</p> <ul style="list-style-type: none"> • High performance scheduling engine to robustly handle large networks • Link Utilization Distribution, Transmission & Reception Strip Chart • Flow Arrival Time, Network Latency, Packet Delay Variation <p>Support Standards (selective list)</p> <ul style="list-style-type: none"> • IEEE Std 802.1Q VLAN • IEEE Std 802.1AS-2011 Time Synchronization • IEEE Std 802.1AS-2020 Time Synchronization² • IEEE Std 802.1Qbv Time Aware Scheduling • IEEE Std 802.1CB Frame Replication & Elimination • IEEE Std 802.1Qci Ingress Policing² • IEEE Std 802.1Qav Credit-Based Shaper² • IEEE Std 802.1Qcc Stream Configuration • IEEE Std 802.1Qcp Static MAC forwarding • IEEE Std 802.1 Qcw, CBcv YANG data models for configuration |
| Aerospace Specific | <ul style="list-style-type: none"> • Expected compliance with IEEE P802.1DP and SAE AS6675 • Verifier module qualification per DO-330/DO-178C¹ |

Note 1: Under development. Check availability with sales contact.

Note 2: Available in Q3 2023

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