iSAFT TTEthernet Verification-SPY Tool

The iSAFT TTEthernet Verification-SPY Tool is an advanced, integrated, high performing, modern network traffic capture, recording and analysis platform suitable for the independent verification of Time Triggered Ethernet features, data networks and protocols.

It is capable of capturing data packets on multiple Ethernet links (100/1000 Mbps, Copper and Optical) at full line rate, accurate time stamping, recording, and delivering them to a powerful Network Analyzer for further processing & traffic analysis. It is used for troubleshooting and problem solving at various development stages, minimizing the impact on cost and schedule.

The iSAFT TTEthernet Verification-SPY tool verifies that the network behaves according to the configured real time properties (e.g. worst case latency, jitter, VL scheduling, correct time synchronization). It synchronizes with the network by passively monitoring PCF frames at the monitored links and correlates the captured TT/RC /BE frames with the network-wide synchronized time to retrieve the timing properties of the traffic flows (e.g. min-max frames size, max latency, max jitter per VL, transmission time with respect to scheduled window, etc.) in order to verify them (i.e. measured properties are within the defined limits based on network scheduling configuration).

Based on an open architecture and modular design, the iSAFT TTEthernet Verification-SPY Tool is a future-safe, cost-effective and already validated solution. Operating on a powerful HW platform able to monitor and analyse multiple GbE links in real-time, the SW environment is based on the iSAFT graphical tool chain, thus allowing the management, filtering & searching of the recordings.

Main Features & Competitive Advantages

- Modern Graphical User Interface for complete local operation (Windows 10 x64)
- Boards and ports management & configuration
- Automatic traffic analysis configuration using TTTech's network and device configuration files (TTEPlan and TTEBuild version 5.0) or manual configuration from the graphical user interface
- Automatic time synchronization with the network by passively monitoring PCF frames at the monitored links and extraction of the network-wide synchronized time.
- Real time traffic analysis of all transmitted and received frames. Detection of synchronization and timing errors and calculation/display of delay times with respect to acceptance windows for each TT frame
- Recording of all frames with zero packet loss and real-time display at Wireshark Protocol Analyzer
- Wireshark dissectors for decoding PCF frames and Ethernet traffic (e.g. ETH, IP, UDP, SNMP, etc.) with timing and traffic analysis information for each TT and RC frame.
- Graphical tools for recordings management, searching and filtering
- Filters configuration supporting selective tracing (filtering) per TT / RC / BC classes, per specific Virtual Link IDs (list) and packet patterns. Triggers to Start / Stop Monitoring on specific Events
- Real-time statistics per Ethernet ports, virtual links and traffic classes (TT, RC, BE), network-wide synchronized time
- Traffic logs export to XML, JSON, CSV, or plain text

Key Benefits

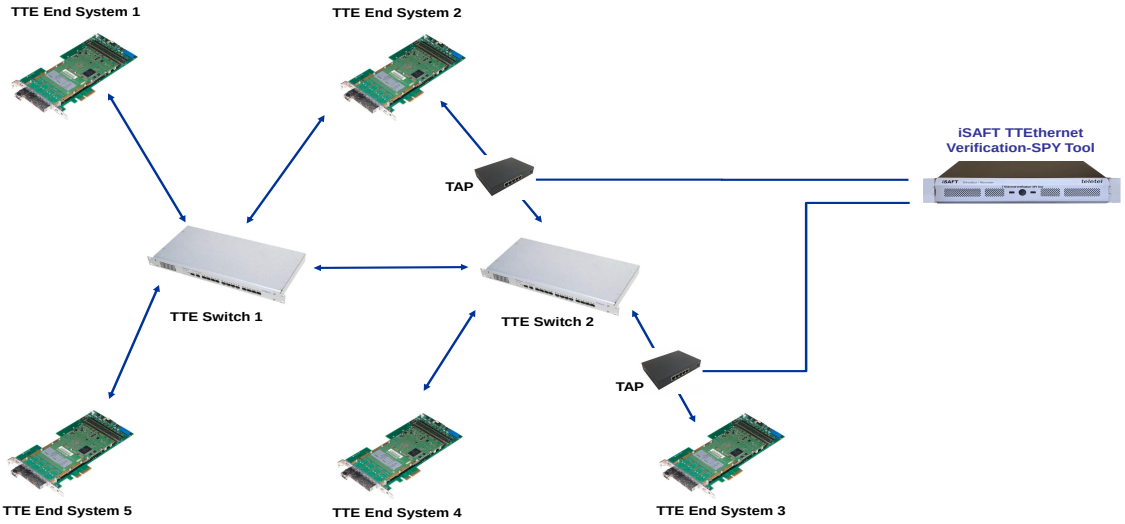
- Independent Verification of TTEthernet networks
- All-in-one recording, observation & verification environment
- Passive monitoring using Copper / Fiber TAPs
- Modern graphical user interface
- 100% internal design, can be customized to customer needs
- First class support at both SW & HW level

Application Areas

- Recording & Independent Verification of Time-Triggered Ethernet networks
- Lab prototyping / experimentation for deterministic Ethernet networks
- EGSE/SCOE and AIT Operations for Space applications
- Industrial control applications
- Avionics networks

Specifications

Use Case Example - Verification of Time-Triggered Ethernet Networks



Technical Data

General	
Form factor	1U Rackmount
Dimensions	448 x 357 x 44.5 mm (W x D x H)
Interfaces	1Gbps Ethernet DVI-I & HDMI 1.3 4 x USB 3 optional WiFi
PCI slots	1 x PCIe x16
CPU	Quad core i7 intel processor
Memory	16GB DDR 4
Storage	128GB SSD drive for OS 1TB SSD raid for data 2TB HDD for Archive
Power supply	110-230V 250W
Operating temp range	0°C to 50°C
Storage temperature Storage Humidity	-40°C to 85°C 10 ~ 95%
Compliances / Standards	CE, RoHS, FMEA available
Warranty	1 year (extendable)

Software	
Supported OS	Windows 10 64bit
Main features (supported by a modern GUI)	Board management, automatic configuration, recording, decoding, real-time analysis, off-line analysis, filters, triggers, statistics, Wireshark protocol analyzer

Ethernet Interface	
Number of ports	4 Ethernet ports 1 IEEE 1588-2008 PTP and PPS for external time synchronization
Connector	SFP or SFP+
Link speed	4 × 1Gbps or 100Mbps Full 1 Gbps per port, zero packet loss for all frame sizes
Bus type	8-lane 8 GT/s PCIe Gen3
Internal RAM	4 GB onboard DDR3 RAM
Performance	Full line-rate processing for all frames from 64 bytes to 10,000 bytes - keep or discard erroneous frames
Clock	Stratum 3 compliant TCXO
Time stamp resolution	1 ns
IEEE standards	IEEE 802.3 1 Gbps or 100 Mbps Ethernet support
Pluggable options	IEEE 1588-2008 PTP and PPS for time synchronization of multiple boards PTP slave in IEEE 1588-2008 default and telecom profiles
Supported SFP modules	1000BASE-SX, 1000BASE-LX, 1000BASE-ZX, 1000BASE-T or 100/1000BASE-T
Supported dual rate SFP+ modules	Multi-mode SR and single-mode LR

Order Information

- iSAFT06.CR-07-031

Contact

TELETEL S.A., Athens, Greece
Tel.: +30 210 6983 393
Email: RTD@teletel.eu
Web: www.teletel.eu