VIAVI TTsuite-TSN-Preemption

Test Conformance of Automotive, Industrial and Telecom Applications Against IEEE Standards

The purpose of frame preemption is to provide reduced latency transmission for time-critical frames in a bridged LAN.

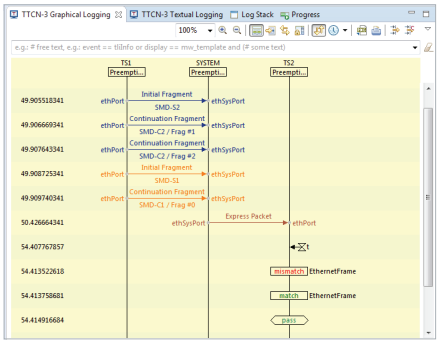
A large, non-time-critical frame may start ahead of time-critical frame transmission. This condition leads to excessive latency for the time-critical frame. This is obvious for slow links as 100Mbps or 1Gbps, commonly used for in vehicle networks today. But even for higher speed links as 2.5G or 10G more common to be used in industrial or telecom environments, preemption is required if a control loop needs below 1us latency.

The lack of transmission preemption severely inhibits the capabilities of an application that uses time-critical frame transmission to implement a real-time control network.

TTsuite-TSN-Preemption verifies that devices are fully conformant to the relevant IEEE standards. It ensures that they meet all the strict requirements for advanced automotive, industrial or telecom applications of the future.

Key Features

- All tests executable against bridges as well as end stations
- Full coverage of the standard
- Reception tests (to verify that the DUT is capable of reassembling fragments)
- Transmission tests(to verify that the DUT is capable of fragmenting Ethernet frames)
- Verify tests (to check the verify state machine of the DUT)
- LLDP tests (to check the preemption capabilities as communicated through LLDP)



Application Areas

Frame preemption is one of the core TSN standards. Time-sensitive networking is a collection of protocols defined by IEEE with applicability in many verticals like:

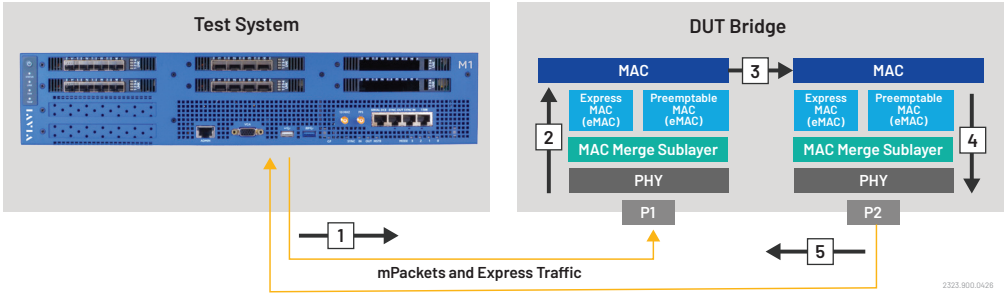
- **Automotive —** Advanced driver-assistance systems (ADAS), X-By-Wire, autonomous driving
- **Industrial —** Smart manufacturing, smart grid, industrial automation, industry 4.0
- **Telecom —** Transport time-sensitive fronthaul streams over Ethernet brigded networks

Standards

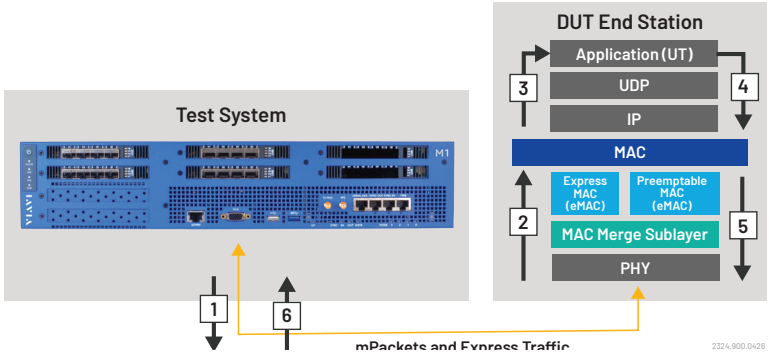
- **IEEE 802.1Qbu-2016** (IEEE 802.1Q-2022, subclause related to Frame Preemption)
- **IEEE 802.3br-2016** (IEEE 802.3-2022 — Ethernet)

Benefits

- Predefined test scenarios fully covering the IEEE standards
- Fully automated testing that can be seamlessly integrated into existing test infrastructures
- Bridge and end station tests (an Upper Tester is required for end station tests)
- Pcap files with complete traffic (including preamble and mCRC/FCS part) appended in the log of each test case execution (special Wireshark dissector also provided)
- Future-proof: Extensible for different profiles (IEEE, Avnu Alliance or IIC)
- Visual failure analysis and correction
- Test report creation with multiple customization options



DUT Bridge TSN Emulation



DUT End-Station TSN Emulation

Ordering Information

Part Number	Description
TEC-SUITE-TSN-PRE	TTsuite-TSN-Preemption Test Suite
TEC-SVC-1015-TS-1Y	TTsuite Support for 1 Year
TEC-TT-WP	TTworkbench Professional Platform
TEC-SVC-1015-WB-1Y	TTworkbench Support for 1 Year

VIAVI

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