Performance and Conformance Testing from Low-End Microcontrollers to High-End Processors for Data Center Equipment

Supported by Ixia’s IxANVL
TCP is one of the core protocols of the Internet protocol (IP) suite. It provides reliable, in-order delivery of a byte stream, and it provides a communication service at an intermediate level between an application program and the IP. It is often referred to as "the TCP/IP suite".

TCP is suitable for apps like file transfer and e-mail; therefore, it plays a key role for:

- Embedded processors and microcontrollers
- Smart phones
- Network attached storage devices and routers
- Televisions
- Industrial systems
- And more….

TCP was first introduced in 1974 and is very ‘standardized’ so why the need to test it now?

Performance
(e.g. sustained packets transferred)

and Conformance

No standard exists for measuring performance
(similar to MPG in cars or PPM in printers – only true under certain assumptions.)

ETCP includes 24 real-world scenarios to effectively evaluate and compare performance of systems acting as TCP servers. Metrics include connections/sec and MB/sec.

Testing the fundamental requirements for a fully functional TCP stack.

Tests any system capable of implementing a TCP stack

Supports all industry-standard test interfaces, from 10/100/1000 to 40G

The EEMBC Technology Center (ETC) offering:

- Independent benchmark testing services including full system configuration and setup
- Certification to verify full compliance to standardized run rules
- Utilizes Ixia’s iSimCity as a base for ETCP test validation operations
TCP Conformance Component

Tests use EEMBC specific version of IxANVL (Automated Network Validation Library) to verify conformance with multiple standards

- RFCs 793, 1122, 1323, 2018, 2581, 2582

Actual system capabilities reported along with performance metrics to make sure results are comparable on different systems using different software.

Benchmark Covers 24 Real-World Scenarios

Parameters are defined and standardized:

- IP address and Netmask
- client MAC addresses
- TCP handshake protocol options
- and actual content of packets expected

TCP Performance Component

Uses the Ixia IxLoad to generate network traffic

An EEMBC framework configures the platform for specific conditions and measures performance using standardized run rules.

- The run rules are automatically followed by using the framework

The EEMBC framework relies on IxLoad Tcl API to configure the traffic generator and analyze the traffic.