**RFC 6349-Based and TrueSpeed™: Experience Your Network As Your Customers Do**

**The Gap in Ethernet Turn-Up Testing**

- RFC 2544 and Y1544 tests verify network performance in Layers 2/3, but customers still blame the network when their applications run slowly. Business customers applications run over TCP (Layer 4) — a layer typically not tested at turn-up.
- TrueSpeed is a test methodology based on RFC 6349, co-authored by VIAVI in 2011. TrueSpeed bridges the testing gap by adding Layer 4 TCP tests at turn-up, which identifies costly problems that negatively affect the customer experience and increase churn.
- TrueSpeed is a scientific and repeatable approach to TCP throughput testing, as opposed to non-standard-based, free tools available on the Internet. An extra three minutes to perform the test can save service providers up to 10% in OpEx by quickly resolving small problems at turn-up that if left unattended, turn into large problems.

**TCP Problem #1: Misconfigured CPE End Host**

- **Location/Responsibility**
  - **End Host** (Provider)
  - **Switch, load balancer, proxy, router, firewall** (Provider)
  - **Customer traffic** (Customer)

- **Description**
  - High packet loss and/or send/retransmissions
  - High latency
  - TCP throughput abnormal

- **Solution**
  - Check switch, load balancer, proxy, router, firewall
  - Check customer traffic

**TCP Problem #2: Network Buffer Queues**

- **Location/Responsibility**
  - **Router/switch buffer** (Provider)
  - **Customer traffic** (Customer)

- **Description**
  - Bursty TCP traffic is dropped by buffer, causing retransmissions

- **Solution**
  - Reduce buffer size or delay buffer de-queue

**RFC 6349 Bridges the Gap in Service-Activation Testing.**

- RFC 6349 is the VIAVI implementation of IETF RFC, a practical methodology for measuring end-to-end TCP throughput in a managed IP network. The goal of RFC 6349 is to provide a better evaluation of the true user experience by verifying TCP-layer performance. TrueSpeed is a practical tool to verify TCP and IP parameters that optimize TCP throughput.

**RFC 6349: TCP Throughput Test Methodology**

- **Baseline round-trip delay and bandwidth** to predict the optimal TCP window size using a set of automatically calculated TCP efficiency metrics.

**RFC TrueSpeed TCP Metrics**

<table>
<thead>
<tr>
<th>Problem</th>
<th>RFC 6349</th>
<th>RFC 2544</th>
<th>Y.1564</th>
<th>N/A</th>
<th>N/A</th>
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<tbody>
<tr>
<td>Turn-up Problems and Applicable Testing Standards</td>
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</tbody>
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**TRUE SPEED**

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**TrueSpeed** is currently available on these VIAVI product platforms:

- **Test End Points**: OneExpert (up to 1GE), Smart SFP (MEP) 1GE and 10GE
- **Centralized Test Heads**: MAP-2100 (100GE)
- **Test Agents**: QT-400 (10GE)

**To learn more, visit viavisolutions.com**

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