

# TELECOM PRODUCT TESTING

## Overview

Telecom Service Providers are rapidly transforming their legacy networks to support new IP and Multimedia services. Network equipment manufacturers (NEMs) face a constant challenge to expedite the development, testing and deployment of new network elements that offer a wide range of value-added, revenue generating services. Testing of such complex network elements in a service-oriented network in terms of interoperability, service quality and end-user experience often pose a significant challenge.

## ALLEN Calsoft Labs Advantage

ALLEN Calsoft Labs' offer product validation & QA services to OEMs and Service Providers leveraging over two decades of experience in product engineering and network design & operations. Our system testing & QA services are designed to ensure maximum test coverage and handsome productivity gains from test automation. As the networking industry continues to become more competitive globally, ALLEN Calsoft Labs offer multiple engagement options that include near-shore and offshore execution, and SLA driven engagements.

## Market Segments

Broadband Access	Routing & Switching	Optical Networks	Wireless Network
<ul style="list-style-type: none"> <li>➤ DSL CPEs</li> <li>➤ Cable CPEs and CMTS</li> <li>➤ IP Home Gateways, IP STBs</li> <li>➤ IP based MSANs</li> <li>➤ ATM/IP based DSLAMs</li> <li>➤ FTTH/FTTN devices</li> </ul>	<ul style="list-style-type: none"> <li>➤ Routers and Switches</li> <li>➤ Multi-service aggregators</li> <li>➤ BRAS Equipments</li> <li>➤ Video server – VoD servers, Video Headends</li> </ul>	<ul style="list-style-type: none"> <li>➤ ADM</li> <li>➤ Optical Cross Connects</li> <li>➤ Digital cross connects</li> <li>➤ Repeaters, Amplifiers, Generators</li> <li>➤ Metro optical nodes</li> </ul>	<ul style="list-style-type: none"> <li>➤ Mobile Handset testing</li> <li>➤ Wireless infrastructure products for GSM/EDGE, CDMA, HSxPA &amp; LTE</li> <li>➤ Mobile applications</li> </ul>
Network Security	Network Management	L4-L7 testing	Test Automation
<ul style="list-style-type: none"> <li>➤ Intrusion detection and prevention systems</li> <li>➤ Firewalls</li> <li>➤ Virtual private networks</li> <li>➤ Security platforms</li> </ul>	<ul style="list-style-type: none"> <li>➤ Protocol : SNMP, CMIP, TL1/CLI</li> <li>➤ V&amp;V of various FCAPS functionality for EMS/NMS</li> <li>➤ Development of NE simulators</li> <li>➤ Performance and stress testing</li> </ul>	<ul style="list-style-type: none"> <li>➤ IPv4 &amp; IPv6 Server Load Balancers</li> <li>➤ WAN LB, VPN LB, Firewall LB</li> <li>➤ Global Server Load Balancers</li> <li>➤ Application Delivery Controllers</li> </ul>	<ul style="list-style-type: none"> <li>➤ Automation framework development for networking product &amp; EMS testing</li> <li>➤ NE Automation using Perl , Tcl/Tk</li> <li>➤ GUI Automation using Winrunner /SILK, QTP, Perl</li> </ul>

## Product Testing - Service Portfolio

Expertise Areas	Description
Customer Premises Equipment Testing	<ul style="list-style-type: none"> <li>› Functional and Interoperability testing of Home Gateways, Set Top boxes, Cable modems and WiMAX CPEs</li> </ul>
Access Node/Aggregation Testing	<ul style="list-style-type: none"> <li>› Protocol conformance, Data/Voice/Video testing, FCAPS, Scalability testing</li> </ul>
Enterprise Networking Testing	<ul style="list-style-type: none"> <li>› <b>Applications test and debug:</b> SSL, IPSec, ADC, Web Accelerators, Load Balancers, Triple Play, VoIP and IPTV</li> <li>› <b>Functional testing of ADC features:</b> Compression, Caching, Connection Multiplexing, SSL acceleration and TCP optimization</li> <li>› <b>Feature testing of SLBs:</b> Filtering, Application redirection, Health checks, Persistence modes, Bandwidth management and High Availability</li> </ul>
Metro/Core Node Testing	<ul style="list-style-type: none"> <li>› <b>Protocol test &amp; debug:</b> IPv4/IPv6 Routing, Unicast/Multicast Routing, Virtual Routing/Forwarding, QoS DiffServ, 802.1p, Rate-limiting, Traffic Shaping, Queuing, Congestion management, MEF compliance</li> <li>› Functional, Performance and Interoperability testing of Switches/Routers</li> <li>› Testing of B-RAS, VoD servers and Video Headend equipments</li> </ul>
Radio Access Network equipment Testing	<ul style="list-style-type: none"> <li>› Protocol conformance in line with 3GPP specifications, L1/L2/scheduler performance, Application performance &amp; stability, Interoperability testing for HSxPA and LTE NodeB/UE</li> </ul>
Security Testing	<ul style="list-style-type: none"> <li>› Security Features Testing for various deployment scenarios</li> <li>› Functional (Use Case) Testing</li> <li>› Product Performance, Throughput, Capacity and Scalability Testing</li> </ul>
EMS/NMS Testing	<ul style="list-style-type: none"> <li>› System management, AAA, Redundancy, Security</li> <li>› Functional, System, Scalability, Performance, Stress and Negative testing</li> <li>› Automation of EMS testing</li> </ul>
Test Automation	<ul style="list-style-type: none"> <li>› Test infrastructure integration and planning, Test Automation installation and deployment, Test tool development and integration, Test script porting, Test Authoring and third party integration, Test Regression and Test report generation</li> </ul>

## Test Automation Framework

(A complete rigorous automated test frame work for tests ranging from basic sanity checks to extensive stress testing)

- › Simple, comprehensive and user friendly test automation solution that is capable of adapting to a wide range of setups and environment
- › Provides capability to test any device that has a CLI along with telnet or any communication protocol support
- › The product and test frameworks are customized based on the device to be tested
- › The automation setup interacts with the DUT and other test equipments (e.g. L2/L3 routers, traffic generators, Vmware Hosts, etc), executes the tests scenarios and logs results on the reporting server

