

Assuring your Products

A High Quality Experience

Customer Premises Equipment (CPE) such as DSL modems, Set-top Boxes, IPTV, Printers, Handheld Devices, Media Players and Media Servers have grown to become multi-function devices with rich features and functionality. Their evolution continues at a rapid pace to meet consumer demands for rich experience and ease-of-use, and service-provider demands for differentiation, resulting in highly discrete, heterogeneous environments.

As a CPE supplier, your product development challenges include:

- Validating for high quality.
- Reducing warranty and re-work costs.
- Delivering high product performance - standalone and in its environment.
- Ensuring interoperability with other elements for a rich, meaningful experience.

Areas of Expertise

SIT Capabilities

- Proven experience of over 150 person-years in product integration and validation of:
 - Consumer Electronics Products
 - Consumer Telecom Products
 - Digital Home Solutions
 - Printers and Multi-function devices
 - Mobile, PDAs and other Small form-factor devices
- Validations based on understanding of domain, technology, user and market needs.
- Structured and field-proven methodology supported by defined test strategy, test plan, procedures, automated tools, testing scripts, test logs and test reports.
- Experience with industry-leading test tools and infrastructure.
- Collaborative process enabling close co-ordination and interaction with software development and product management teams for quicker analysis and resolution of product issues.

- Mitigating risk and impact of spiraling development and support costs due to changes.

With our rich expertise in media, telecom, print and consumer domains, and a strong process-oriented quality assurance experience, Celstream can be your partner in the on-time delivery of high-quality products. You can leverage our System Integration & Testing capabilities to:

- Focus your organisation on product innovation and differentiation.
- Utilize our specialized skills and multi-vendor environment knowledge for flexible, faster product development.
- Achieve significant cost savings through offshore-based program execution.

Testing Expertise

Celstream has rich experience in validating products for various parameters:

- Functional
- Performance
- User Help
- Localization
- Interoperability
- Alpha
- Error handling
- Duration
- Security
- Random
- Diagnostics
- Beta
- Stress
- User Interface, Usability
- Installation
- Regression
- Field test
- Acceptance test

We also possess the capability to perform Certification & Compliance tests:

- Wi-Fi, UPnP, IPSec & TR-069
- Windows® Logo Test & WHQL Compliance
- Section 508 Accessibility for Web based applications
- SNMP Agent Compliance as per World Wide Consortium (W3C) standards.

Domain Expertise

Celstream has strong experience in validating compliance, conformance, interoperability and functional behaviors of several CPE devices. The following is a representative list of SIT activities that Celstream can provide:

Products	<ul style="list-style-type: none"> • Access Points • DSL Modems - Residential • DSL Modems - Business • DSL Modems - SOHO • WIFI Products • DECT Telephones 	<ul style="list-style-type: none"> • Set Top Boxes (STBs) • DVD Players • DVD Recorders • HDD Recorders • STB - PVRs • HDTV • Media Servers 	<ul style="list-style-type: none"> • Printers/MFPs • Scanners & Copiers • Digital Senders • Fax Machines • Handhelds • Mobile Phones • Digital Cameras
Protocols & Technology	<ul style="list-style-type: none"> • Voice over IP • ADSL • ADSL2+ • SHDSL • VDSL • DECT • Wireless 802.11 a/b/g • PPPoE/oA, IPoA, ETHoA • VoIP solution - SIP, MGCP, H323 • Routing - RIP, OSPF, BGP • ATM • Security - IPSec, Firewall, SSL, SSH, PPTP, NAT • Management - SNMP v1/v2/v3, Syslog, Sntp, TR-069 • QoS - IPQoS, ATM QoS • DNS, DHCP • HTTP/HTTPS 	<ul style="list-style-type: none"> • DVB-S • DVB-T • DVC-C • EN50221 Common Interface Specification • CA • SNMP v1/2/3 • TCP/IP • IR RC5/RC6 	<ul style="list-style-type: none"> • TWAIN • USB • FireWire® • Ipv6 • UPnP • SSL • LDAP • PDL (PS, PCL, Raster) • RIP • DLNA • TR-069
Domains	<ul style="list-style-type: none"> • Networking Protocols • Audio/Video/Image Standards & Formats • Device Drivers • Security • Software components • Management Interface • Application Services • User Interface 		

Track Record

- Broadband hub product integration for a major telecom customer.
- Integration and Validation of Wireless Router with ADSL, 802.11g and USB ports for a major consumer electronics company.
- Operating a Test Lab for validating protocols and device connectivity of multi-functional device product line for a pioneering printer company.
- Customization and Integration of device drivers for Set-top-box for a global media products company.
- Integration of middleware, device drivers and application services for media CPE device of a global technology company.
- Test Automation and Simulators based on Open Source Software for validation of hardware and embedded software for media consumption devices.

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