



# SPIRENT LANDSLIDE

## UMTS PERFORMANCE TEST APPLICATION

The Landslide® UMTS Performance Test Application tests UMTS mobility core packet data networks. The Landslide® UMTS application provides the same Gateway GPRS Support Node (GGSN) test capabilities as Spirent Communications' Landslide® GPRS Performance Test application. In addition, Landslide® UMTS supports the Iu-PS Interface and, optionally, the Gb interface for testing the Support GPRS Serving Node (SGSN) or testing in an end-to-end configuration combining SGSN and GGSN.

### SOLUTION OVERVIEW

The Landslide® UMTS is a comprehensive end-to-end test system that emulates millions of mobile data subscribers, all accessing the wireless network simultaneously via various access models. By emulating all key wireless core packet data network elements and combining control plane and data plane simulation, the Landslide® UMTS provides real-world emulation of millions of mobile nodes in various stages of activation, deactivation and hand-off between cells all while transmitting and receiving real-world application data.

The Landslide® UMTS allows SGSN and GGSN equipment vendors to accurately specify the performance characteristics of their equipment under the real-world conditions experienced in their customers' networks. It also allows service providers to measure the performance of their UMTS networks and to validate new features and services in the lab. By simulating real users with real applications, the Landslide® UMTS helps ensure the transition from the evaluation lab to the live network will be smooth and free of performance problems.

Also available is SGSN node emulation capability which allows the Landslide® to emulate a stand-alone SGSN, supporting Iu/Gb, Gn and Gi (combined SGSN/GGSN emulation) interfaces. This emulator can be used for testing 2G/3G RANs, Firewalls and other devices that communicate over the Gi interface in the case of combined SGSN/GGSN emulation.

### APPLICATIONS

- Validate system scalability and identify capacity limits
- Measure call/data performance
- Characterize system before trial/delivery
- Identify performance ceilings
- Enable accurate capacity planning

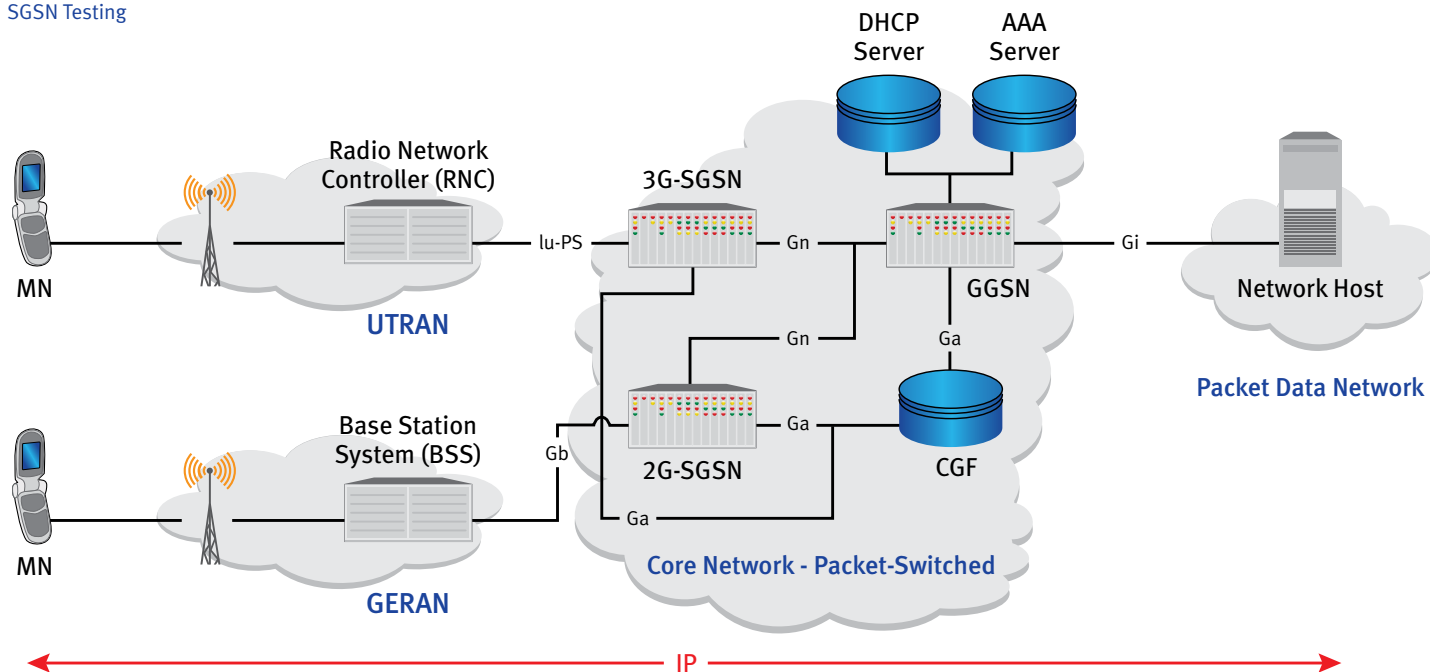
### FEATURES & BENEFITS

- Realistic, real-world simulations allow equipment vendors to accurately specify the performance characteristics of their equipment under real-world conditions
- Simultaneous control and user plane permits service providers to measure the performance of their network and to validate new features and services in the lab
- Unmatched scalability for the user to simulate subscriber loads ranging from a small rural town to the largest metropolitan city
- Standard Web browser interface so there is no need to load software onto user equipment
- Emulation of multiple network elements to test in a variety of network topologies providing more effective utilization of lab equipment and reducing capital expenditure and ongoing support costs associated with a test lab
- Automation control so the user can run many test cases simultaneously or serially on multiple Landslide® test servers, creating real-world scenarios for heavy load and long duration stability tests
- TCL Interface for the user to control/monitor the Landslide from a higher level management system, thus making it possible to compile specific test reports for both the emulation (Landslide®) and the device under test
- SGSN Nodal Testing – The UMTS test case can be used in a nodal configuration to test an SGSN
- SGSN Node Emulation - allows the Landslide® to emulate a stand-alone SGSN or a combined SGSN/GGSN.
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SGSN Testing



The UMTS test application provides a comprehensive nodal and end-to-end test capability for the packet-switching support nodes in a 3G Universal Mobile Telecommunications System (UMTS) core network. The optional Gb/IP Support feature provides nodal and end-to-end test capability in a 2G GSM core network. In the UMTS network control plane, both Asynchronous Transfer Mode (ATM) and Ethernet with IPv4 or IPv6 are supported on the Iu-PS interface and Ethernet is supported on the Gn interface. In the bearer (user) plane, IP-based application data can run over IPv4 or IPv6 using an ATM or Ethernet transport on the Iu-PS interface and Ethernet on the Gn and Gi interfaces. The GSM network control plane uses an Ethernet transport with IPv4 or IPv6 on the Gb and Gn interfaces and Ethernet transport on the Gn and Gi interfaces.

### FEATURES & BENEFITS (CONTINUED)

- End-to-End so the UMTS test case can be used in an end-to-end configuration to test an SGSN and a GGSN in tandem
- Control Plane – In the UMTS network control plane, both Asynchronous Transfer Mode (ATM) and Ethernet with IPv4 or IPv6 are supported on the Iu-PS interface and Ethernet is supported on the Gn interface. The GSM network control plane uses an Ethernet transport with IPv4 or IPv6 on the Gb and Gn interfaces and Ethernet transport on the Gn and Gi interfaces.
- Billing – The user can configure the emulated SGSN or GGSN nodes to generate CDRs for the MN Data Traffic processed during the test. When used in conjunction with the CGF Node test case you can validate the G-CDRs or S-CDRs generated by the SUTs against LDRs generated by the emulated nodes.

### TECHNICAL SPECIFICATIONS

- Test Activities
  - Capacity Test
  - Session Loading
  - QoS Update
  - Mobility
  - Session Loading with Mobility
- Landslide Manager
  - Up to 125 user accounts
  - Up to 48 simultaneous users
  - Up to 32 Landslide test appliances

**TECHNICAL SPECIFICATIONS (CONTINUED)**

- Landslide Test Server (without performance accelerator)
  - 150,000 simultaneous sessions
  - Up to 11 (total) primary or secondary tunnels per mobile station
  - Up to 4.9 Gbps of bearer traffic (IuIP); 504 Mbps (ATM)
  - Activate/deactivate up to 1,000 sessions per second
  - Up to 3 simultaneous users per test appliance
  - Emulate up to 255 RNCs; 1,000 BSSs; 1,000 GGSNs
- Landslide Test Server Ethernet ports
  - 4-port 10/100/1000Base-T NIC (P/N L-NIC-22)
  - 4-port 10/100/1000Base-SX NIC (P/N L-NIC-11)
  - Single-port 10 Gigabit XF SR NIC (P/N L-NIC-10)
- Basic UMTS Procedures
  - GPRS Attach/Detach
  - PDP Context Activation/Deactivation
  - Iu Release
  - Paging and Service Request
  - Routing Area Update
  - SNRS Relocation
  - 2G -- 3G SGSN mobility
  - Direct Tunnel
- Protocol Support (3GPP Rel 4, 6 and 7)
  - Iu-PS – RANAP, GMM, SM, SCCP, MTP3, ATM
  - Gb – LLC, BSSGP, NS, GMM, SM, SNDTCP

- GbIP Dynamic configuration
- Gn – GTP, PPPoGTP, IPv4, IPv6
- Gi – IPv4, IPv6, RIP v1 and v2, BGP v4
- Stateful data traffic
- Referenced Specifications
  - ITU-T Q.2110 SSCOP
  - ITU-T Q.711 Functional Description of SCCP
  - ITU-T Q.712 Definition and Function of SCCP Messages
  - 3GPP TS 09.060 GPRS Tunneling Protocol (GTP) (Release 1997)
  - 3GPP TS 29.060 GPRS Tunneling Protocol (GTP) (Rel 4 and beyond)
  - 3GPP TS 03.060 GPRS Service Description; Stage 2 (Release 1997)
  - 3GPP TS 23.060 GPRS Service Description; Stage 2 (Rel 4 and beyond)
  - 3GPP TS 24.008 Core Network Protocols Stage 3
  - 3GPP TS 25.413 UTRAN Iu interface RANAP Signaling
  - 3GPP TS 48.016 BSS – SGSN Interface; Network Service
  - 3GPP TS 48.018 BSS – SGSN; BSSGP
  - 3GPP TS 44.064 MSS – SGSN; LLC
  - 3GPP TS 44.065 MSS – SGSN; SNDTCP
  - 3GPP TS 43.020 Security Related network functions
  - 3GPP TS 55.216 GEA3 encryption algorithm for GPRS

The listed specifications were used as reference material in the development of this application. This does not necessarily imply full implementation of all requirements within the referenced specifications.

**ORDERING INFORMATION**

Description	Part Number
<b>LANDSLIDE UMTS TEST SYSTEM (MM) - Includes one LANDSLIDE Manager and one LANDSLIDE test server with UMTS application and two quad copper and two ATM OC-3c/STM-1 Multi-Mode NICs.</b>	L-KIT-1005-MM
<b>LANDSLIDE UMTS TEST SYSTEM (SM) - Includes one LANDSLIDE Manager and one LANDSLIDE test server with UMTS application and two quad copper and two ATM OC-3c/STM-1 Single-Mode NICs.</b>	L-KIT-1005-SM
<b>TEST SERVER W/ UMTS - Includes LS test server with UMTS application. Must be purchased as expansion to UMTS Test System. Requires two NICs, sold separately. LANDSLIDE Manager required.</b>	L-TS-1005
<b>UPGRADE LANDSLIDE GPRS TO UMTS APPLICATION - Upgrades GPRS application to UMTS application. NOTE: ATM cards must be purchased separately. Landslide Manager required.</b>	L-UPG-001

**SPIRENT LANDSLIDE**  
**UMTS PERFORMANCE TEST APPLICATION**

<b>ORDERING INFORMATION (CONTINUED)</b>	
<b>Description</b>	<b>Part Number</b>
<b>LANDSLIDE UMTS TEST SYSTEM SOFTWARE</b> - Includes software only for one Landslide Manager and one Landslide test server with UMTS application. SVC-6064 purchase required for installation of software on Manager and TS. NICs sold separately.	L-KIT-007-SW
<b>LANDSLIDE GPRS GB INTERFACE TEST SYSTEM SOFTWARE</b> - Software only for one Landslide Manager and one Landslide test server with GPRS app, and GB over IP. SVC-6064 purchase req'd for installation of software on Manager and TS. NICs sold separately.	L-KIT-205-SW
<b>LANDSLIDE UMTS TS SOFTWARE</b> - Landslide test server software for UMTS application. Must be purchased as an expansion to a UMTS Test System. Landslide Manager required. SVC-6064 purchase required. NICs sold separately.	L-TS-UMTS-SW
<b>LANDSLIDE UMTS APPLICATION</b> - Adds UMTS test application to an existing ASN-GW, CDMA, CSN, or MIPv6 Landslide Test System. Landslide manager required.	L-APP-005
<b>GB OVER IP SUPPORT FOR LANDSLIDE GPRS APPLICATION</b> - Add Gb over IP support to existing GPRS systems. Allows users to tests GPRS capable SGSNs. Landslide Manager required.	L-FT-025
<b>SGSN Node Emulation</b> - Emulates stand-alone SGSN. Supports testing over the Iu, Gb and Gn interfaces. Landslide Manager required.	L-FT-036
<b>MULTI-MODE OC-3/STM-1 NIC</b> - Single port multi-mode ATM module.	NIC-04
<b>SINGLE-MODE OC-3/STM-1 NIC</b> - Single port single mode ATM module.	NIC-05
<b>AAA DIAMETER SERVER EMULATION</b> - Adds the AAA DIAMETER server emulation to a CDMA2000, GPRS, or MIPv6 Landslide Test System. Landslide Manager required. NOTE: IPsec is sold as separate option.	L-FT-010
<b>AAA RADIUS SERVER EMULATION</b> - Adds the AAA Radius server emulation to applications such as CDMA2000, GPRS, or MIPv6 Landslide Test Systems Landslide Manager required.	L-FT-003
<b>CGF SERVER EMULATION</b> - Adds the CGF server emulation to a UMTS or GPRS Landslide Test System. Landslide Manager required.	L-FT-012
<b>SGSN CDR VALIDATION</b> - Adds SGSN S-CDR Validation to a UMTS Landslide Test System. Note: Requires the CGF Server Emulation feature Landslide Manager.	L-FT-018
<b>GGSN G-CDR VALIDATION</b> - Adds GGSN G-CDR Validation to a UMTS or GPRS Landslide Test System. Note: Requires the CGF Server Emulation feature Landslide Manager required.	L-FT-013
<b>UMTS GB INTERFACE OVER IP</b> - Allows Gb signaling to be sent over IP through Ethernet Interfaces for Landslides UMTS Application Landslide Manager required.	L-FT-023
<b>LANDSLIDE IP DATA APPLICATION</b> - Adds IP Data Application to an existing Landslide Test System Landslide Manager required.	L-APP-007
<b>DYNAMIC IPSEC EMULATION</b> - Adds IPsec emulation to an existing Landslide Test System. IPsec accelerator must be ordered separately. Landslide Manager required.	L-FT-004
<b>LANDSLIDE IPSEC ACCELERATOR CARD</b> - Provide hardware accelerated IPsec processing for Landslide Test Server. Requires L-FT-004 Dynamic IPsec Emulation feature. See sales rep for more information.	L-ACC-004
<b>DATA THROUGHPUT ACCELERATOR LICENSE</b> - Improves test server data throughput for Landslide Test Applications. Price per test server.	L-FT-032-A
<b>PERFORMANCE ACCELERATOR LICENSE</b> - Improves test server data throughput and control plane performance for mobility test applications. Price per test server.	L-FT-032-B

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