

# Spirent Landslide

## Charging Test Applications and Nodes Emulation



Charging for services in the LTE network is proving to be a challenge for mobile operators as old strategies and business models become obsolete. In the new mobile era, carriers must migrate charging systems from a simple ‘time-based’ strategy to a new environment in which services, such as VoLTE and Mobile Enterprise, will require unique treatment to guarantee a specific billable quality of service. With Spirent Landslide’s comprehensive set of charging test applications and node emulators; carriers can evaluate nodes, validate system topologies and define the most adequate charging strategy for existing and new services.

Traditionally, mobile operators have coupled charging with the duration of the resource usage rather than the consumption of the resource itself. In this context, carriers have deployed Online Charging Nodes (OCS), Offline Charging Nodes (OFCS), and Charging Gateway Function Nodes (CGF), to mostly measure ‘time-based’ events. The intrinsic nature of the networks, with a clear distinction of services based on domains, contributed to simplify charging strategy. However, LTE is an all-IP Network, which means all services are and will be supported as another form of data traffic, including voice/video services. Additionally, subscribers demand for better and higher quality of service (QoS) is also driving new billing models. Dynamic control over QoS and charging will help operators monetize their LTE investment by providing customers with a variety of QoS and charging options when choosing a service.

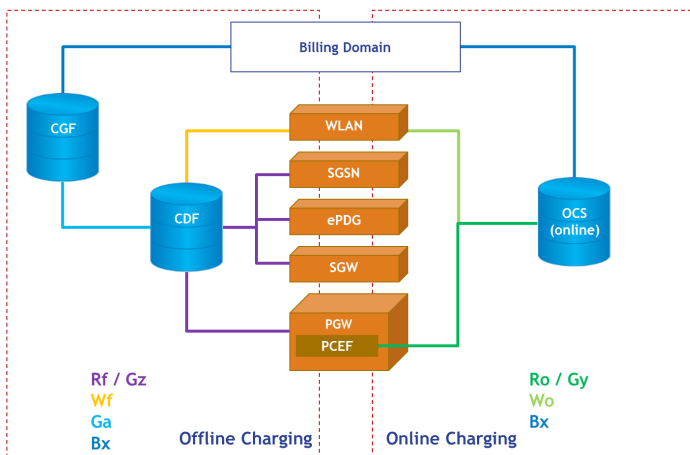
This means that new charging systems will have to differentiate services, with the premises that everything is expected to be available everywhere and at a specific billable quality.

Spirent Landslide provides a comprehensive set of charging test applications and charging node emulators (OCS Node, OFCS Node, DCCA Node, CGF), that allows equipment vendors and carriers to accurately define charging strategies and topologies:

### Charging Testing Applications

By simulating millions of subscribers and real time transactions; Landslide gives users the ability to test charging nodes in capacity and performance under real world conditions. Landslide DCCA Test Application supports Sy, Gy and Ro interfaces to test both the DCCA and OCS Nodes. Whether the user chooses to evaluate triggers that are event-based, session-based or a combination, the DCCA Test Application will generate resource usage reports and credit report requests per subscriber and service. This will allow the user to easily build test sessions composed of mixes of charging events to define the most adequate charging strategy.

Moreover, Landslide SGW and PGW Node Emulators and applications, which natively support the Rf and Ga interfaces, are used to test Offline Charging nodes (OFCS), and Charging Gateway Functions. The user can define reporting per APN, Bearer, Rating Group or a combination of these elements (OFCS), and emulate changing conditions in CDRs (CGF).



Charging Nodes and Interfaces

## Charging Node Emulators

Landslide offers a set of fully stateful charging node emulators to allow users to easily and cost-effectively complete any test lab topology. With the use of these emulators, users can define per-subscriber and service charging policies, validate charging records, and define redundancy mechanisms for charging and monitor resource usage in real time. The emulators are:

**OCS Node Emulator**—Provides per-subscriber and per-session/per subscriber online charging services for PGW and end-to-end service charging testing. Landslide's OCS Node Emulator is fully configurable in terms of services, credit pools, subscriber profiles and monitoring to validate charging enforcement performance and credit policing.

**DCCA Node Emulator**—Provides per-subscriber and per-session/per subscriber online charging services for IMS CSCF and IMS end-to-end service charging testing. Landslide's OCS Node Emulator is fully configurable in terms of services, credit pools, subscriber profiles and monitoring to validate charging enforcement performance and credit policing.

**OFCS Node Emulator**—Provides the offline charging Rf interface to PGW and SGW nodes. The emulator can handle millions of subscribers, assignment of multiple APNs and monitor resources usage per APN, per bearer, per rating group and/or combination of these; as defined by the user.

**CGF Node Emulator**—Provides the capability to collect, validate and report statistics of millions of Charging Data Records (CDRs), generated by SGSN, GGSN, SGW and PGW in order to help the user determine the accuracy of the records generated compared to the subscriber's data traffic usage.

## INTERFACES AND PROTOCOLS

- **Ro/Gy**—3GPP TS 32.240, TS 32.299 R8, R9, R10, R11 Sep 2012
- **Rf**—3GPP TS 32.299 R8, R9, R10, R11 Sep 2012
- **Ga**—TS. 32.298 R8, R9, R10, R11 September 2012
- **Diameter Credit Control Application**—RFC 4005, RFC 4006
- **Diameter**—RFC 3588
- **SCTP**—RFC 2960 (RFC 3309 checksum)
- **TCP**—RFC 793

## APPLICATIONS and ANALYSIS

- Validate charging nodes (OCS, OFCS, DCCA, CGF), in terms of capacity and performance with full node and interface isolation
- Progressively integrate nodes in full scale topology for end-to-end charging evaluation under the same test KPIs
- Apply busy hour call modeling to charging triggers in pre-deployed nodes
- Compare time-based and event-based charging strategies
- Monitor resource usage per APN, bearer, rating group or combination and decide most adequate method for offline charging
- Establish roaming policies and define service breakout applied to charging
- Collect Charging Data Records (CDR), in every single node in the service path and validate them for accuracy
- Choose the most adequate node for CDR collection

## FEATURES

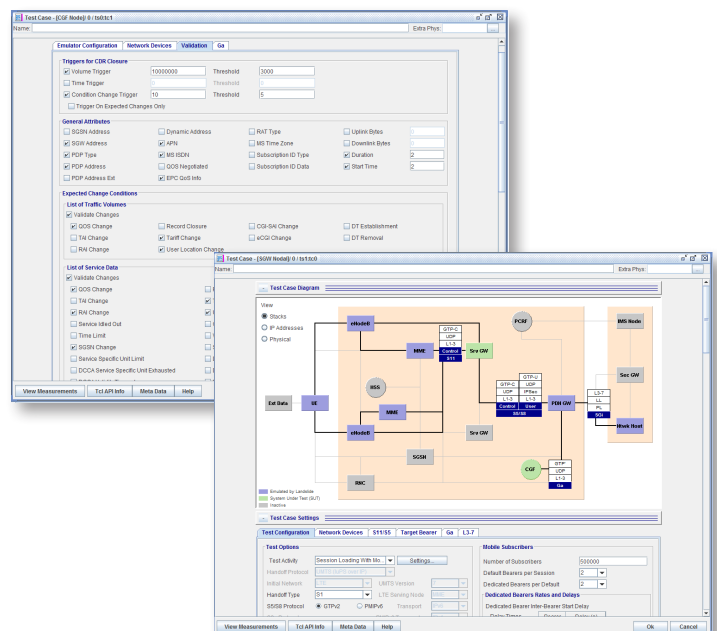
- Charging Test Application over the Ro/Gy interfaces for testing charging events at the OCS
- SGSN, GGSN, SGW and PGW emulation for testing charging events over the Rf interface at the OFCS
- SGSN S-CDR, GGSN G-CDR, SGW-CDR and PGW-CDR generation functions to test CGF nodes
- OCS, DCCA and OFCS node emulation for testing charging node integration and charging topology
- Charging Gateway Function (CGF) node emulation for CDR testing and validation
- On-demand Command execution of charging events and busy hour call modeling
- AVP Editor for easy carrier integration
- Redundancy and Failover testing

## Ordering Information

Description	Part Number
LANDSLIDE DIAMETER CREDIT CONTROL APPLICATION (DCCA)—Adds Diameter Credit Control Application test application to an existing Landslide Test system.	L-APP-011
LANDSLIDE CGF SERVER EMULATION—Adds the CGF server emulation to a UMTS or GPRS Landslide Test System.	L-FT-012
LANDSLIDE PCRF NODE EMULATION—Adds PCRF emulation to Landslide LTE, WiMAX, UMTS, CDMA or eHRPD applications.	L-FT-026
LANDSLIDE 3GPP OFFLINE BILLING OPTION—Collects, acknowledges and counts charging events from the SGW/PGW over the Rf interface.	L-FT-042
LANDSLIDE 3GPP ONLINE BILLING OPTION—Collects charging events from a PGW over the Gy/Ro interface and allows/disallows the call as appropriate.	L-FT-043
LANDSLIDE GGSN G-CDR VALIDATION—Adds GGSN G-CDR Validation to a UMTS or GPRS Landslide Test System.	L-FT-013
LANDSLIDE SGSN CDR VALIDATION—Adds SGSN S-CDR Validation to a UMTS Landslide Test System.	L-FT-018
LANDSLIDE LTE SGW-CDR VALIDATION—Adds SGW-CDR validation to a LTE GW test system. Requires Landslide LTE GW Application and CGF Server Emulation feature.	L-FT-047
LANDSLIDE LTE PGW-CDR VALIDATION—Adds PGW-CDR validation to a LTE GW test system. Requires Landslide LTE GW Application and CGF Server Emulation feature.	L-FT-048
LANDSLIDE C50 DIAMETER CREDIT CONTROL APPLICATION (DCCA)—Adds Diameter Credit Control Application test application to an existing Landslide C50 Test system.	L-APP-011-C50
LANDSLIDE C50 CGF SERVER EMULATION—Adds the CGF server emulation to a UMTS or GPRS Landslide C50 Test System.	L-FT-012-C50
LANDSLIDE C50 PCRF NODE EMULATION —Adds PCRF emulation to Landslide LTE, WiMAX, UMTS, CDMA or eHRPD applications.	L-FT-026-C50
LANDSLIDE C50 3GPP OFFLINE BILLING OPTION—Collects, acknowledges and counts charging events from the SGW/PGW over the Rf interface.	L-FT-042-C50
LANDSLIDE C50 3GPP ONLINE BILLING OPTION—Collects charging events from a PGW over the Gy/Ro interface and allows/disallows the call as appropriate.	L-FT-043-C50
LANDSLIDE C50 GGSN G-CDR VALIDATION—Adds GGSN G-CDR Validation to a UMTS or GPRS Landslide C50 Test System.	L-FT-013-C50
LANDSLIDE C50 SGSN CDR VALIDATION—Adds SGSN S-CDR Validation to a UMTS Landslide C50 Test System.	L-FT-018-C50
LANDSLIDE C50 LTE SGW-CDR VALIDATION—Adds SGW-CDR validation to a Landslide C50 LTE GW test system. Requires Landslide LTE GW Application and CGF Server Emulation feature.	L-FT-047-C50
LANDSLIDE C50 LTE PGW-CDR VALIDATION—Adds PGW-CDR validation to a Landslide C50 LTE GW test system. Requires Landslide LTE GW Application and CGF Server Emulation feature.	L-FT-048-C50

## Spirent Global Services

Spirent Global Services provides a variety of professional services, support services and education services—all focused on helping customers meet their complex testing and service assurance requirements. For more information, visit the Global Services website at [www.spirent.com/gs](http://www.spirent.com/gs) or contact your Spirent sales representative.



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