Overview

GL’s MAPS™ Server with PacketLoad appliance supports massive simulation of UEs (up to 500000) with high density (up to 4 Gbps or 40 Gbps) mobile data traffic simulation for both UMTS, and LTE networks.

The solution allows to encapsulate the generated packet data within GTP headers and transmit through the gateway points such as SGSN & GGSN, or SGW & PGW. It allows simultaneous simulation of multiple sessions per user to verify bearer allocation bandwidth at the end points. Currently, the solution offers stateful TCP/HTTP, and PCAP Replay traffic types. PacketLoad supports HTTP traffic simulation with the base requirements such as port number, server IP address, and pre-canned HTTP traffic file.

The MAPS™ Server system controls PacketLoad appliance through CLI. At the generating end, MAPS™ automates the process of creating UEs with different mobile traffic parameters. At the receiving end, MAPS™ with PacketLoad verifies the received data and provides various statistics, which include, Total packets transmitted and received, Latency, Delay, Bandwidth, Total TCP connections created, Successful connections, Packet loss, etc.

For detailed information on PacketLoad, visit [http://www.gl.com/packetload-high-density-traffic-simulation-using-maps.html](http://www.gl.com/packetload-high-density-traffic-simulation-using-maps.html)

PacketLoad is available in following platform variants-

- **PacketLoad™ 4 x 1Gbps (PKS172)** - Data Traffic Generator 1U Rack Appliance with 4 x 1Gbps NIC interfaces: total capacity of up to 4 Gbits/sec Stateful TCP/HTTP Traffic

- **PacketLoad™ 4 x 10Gbps (PKS174)** - Data Traffic Generator 2U Rack Appliance with 4 x 10Gbps NIC interfaces: total capacity of up to 40 Gbits/sec Stateful TCP/HTTP Traffic
## PacketLoad System Specifications

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<td>2U Rack Mountable &lt;br&gt; 4 x 10M/100M/1G/10GigE Electrical or 4 x 10 GigE Fiber &lt;br&gt; 1 x 10M/100M/1GigE Electrical Management &lt;br&gt; 1 Console &lt;br&gt; 2 x USB 2.0 &lt;br&gt; 100-240VAC 100W power w/switch &lt;br&gt; 0°C – 40°C Operating Temperature</td>
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<td>2M+ TCP/HTTP Transactions/sec &lt;br&gt; 100M+ Concurrent TCP flows &lt;br&gt; Zero-transaction size support &lt;br&gt; Variable POST vs. GET Ratio</td>
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<td>Dynamically add/stop/delete 10K+ User Adds and Deletes per sec &lt;br&gt; Up to 5,000,000 maximum subscribers &lt;br&gt; GTP-U Encapsulation (User Bandwidth Allocation)</td>
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Application on 3G Networks

End to End Testing

MAPS™ Server configured as RNC simulates GTP-U traffic with the help of PacketLoad and transmits through the SGSN & GGSN gateway points in UMTS network. The generated packet data is encapsulated within GTP headers. At the receiving end, MAPS™ Server with Packet Load is used to verify the incoming packet data. The solution provides various statistics such as Total packets transmitted and received, Latency, Delay, Bandwidth per port, Total TCP connections created, Successful connections, Packet loss, etc. This helps to test UMTS network performance end to end at full load under various traffic conditions.

Single Interface Testing

MAPS™ Server as RNC (MAPS™ UMTS IuPS), and GGSN (MAPS™ UMTS Gn Gp) along with PacketLoad appliance can function together to test customer’s SGSN (DUT) operation at full load under various traffic conditions, and thus perform comprehensive load testing.

4G Networks

End to End Testing

MAPS™ configured as eNodeB simulates GTP traffic in LTE network. MAPS™ eNodeB simulator allows to simulate massive number of UEs (more than 100,000) with the packet data traffic encapsulated within GTP headers. The generated packet data is transmitted through the SGW & PGW gateway points. At the receiving end, MAPS™ Server with Packet Load is used to verify the received data with the various statistics such as Total packets transmitted and received, Latency, Delay, Bandwidth per port, Total TCP connections created, Successful connections, Packet loss, etc.

Single Interface Testing

Simulated eNode +MME (MAPS™ LTE S1), PGW (MAPS™ LTE eGTP) along with the PacketLoad appliance can function together to test customer’s SGW (DUT) operation at full load under various traffic conditions, and thus perform comprehensive load testing.
Modes of Operation

The application offers Transparent mode (with VLAN), Routed mode (with VLAN), Server-only, and Client-only modes of operating methods. When a DUT is operating transparently (example: L2 devices, IPS), “Transparent” (or “GTP to GTP Traffic”) mode of operation is chosen. To work with devices such as routers and L3 switches, selected “Routed Mode” (or “GTP to IP Traffic”) mode of operation is chosen.

Transparent Mode (GTP to GTP Traffic)

Transparent mode supports the user plane GTP packets through a DUT that is transparent to the network and passes the traffic without any IP translation.

Routed Mode (GTP to IP)

Routed Mode supports the packet transmission and reception services through a gateway, where the network packets from PacketLoad will pass through a Gateway and converts the traffic mode form GTP to IP, and sends the IP traffic for further analysis.

Call Control and Mobile Data Traffic Statistics

The PacketLoad global parameters are defined in the call generation scripts, which are calculated and updated periodically providing real-time mobile data traffic metrics. Typically following statistics are generated from the application. Users can customize the statistics for the generated stateful TCP/HTTP, and PCAP Replay and other Mobile Data traffic.

- Link Level - Link state/speed, ARP
- Per Port - TX/RX rate/s, packets /sizes, Bytes
- Packet - Payload Size via MSS (1B to 9400B)
- TCP/IP– SYN, SYN_ACK, ACK, RST, HTTP_GET, HTTP_POST, TCP/IP Checksum Errors
- PCAP Replay - Packets Sent and Received
- UDP - Packets Sent and Received

Buyer’s Guide

PKS172 - MAPS™ Server with PacketLoad 1G
PKS174 - MAPS™ Server with PacketLoad 10G

Related Software

ETH101 - Mobile Traffic Core-GTP
ETH102 - Mobile Traffic Core-Gateway
ETH103 - Mobile Traffic - Gb
PKS166 - MAPS™ UMTS Gn Gp Emulator
PKS140 - MAPS™ LTE S1 Emulator
PKS142 - MAPS™ LTE eGTP (S3, S4, S5, S8, S10, S11 & S16)
PKS160 - MAPS™ UMTS IuCS IuH IP Emulator


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