3G Networks Test Solutions
(UMTS, GPRS Networks)

- Protocol Analysis
  - UMTS (over TDM, IP)
  - GPRS (over TDM, IP)

- Protocol Emulation
  - UMTS (over IP)
  - GPRS (over IP)

- UMTS, GPRS Network Monitoring Solutions over TDM & IP

- Automated Voice, Data & Video Quality Testing

GL Communications Inc.
818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878
Phone: (301) 670-4784  Fax: (301) 670-9187  Email: info@gl.com
UMTS Protocol Analysis - TDM, IP

**UMTS Protocol Analyzer**
(over OC-3/STM-1, OC-12/STM-4, T1, E1)

**UMTS Protocol Analyzers** are available with GL’s T1/E1, and OC-3/OC-12 platforms. The analyzer is capable of capturing, decoding and analyzing UMTS signaling over TDM and Optical networks. Supports both real-time and offline analysis applications. Other features include -

- Performs numerous measurements across Iub, Iur, IuCS and IuPS interfaces based ATM transport layer
- Decodes different control plane protocols-NBAP, RNSAP, RANAP, ALCAP, SSCOP and user plane protocols-Iu-UP, Iu-FP, AMR
- Decode NAS protocols (i.e. CC/MM/SM/SMS/GMM) along with the UTRAN specific protocols.

For more information,
- **UMTS Protocol Analyzer for OC-3/STM-1 and OC-12/STM-4** - (XX165)

**UMTS Protocol Analyzer (over IP)**

GL’s **PacketScan™ - All IP Protocol Analyzer** supports monitoring all 2G, 3G and 4G wireless communication protocols such as GSM, GPRS, UMTS, SIGTRAN, LTE, and Diameter, in addition to IP protocols such as SIP, MGCP, MEGACO, Skinny, and H.323.

**PacketScan™** cellular protocol analyzers support analyzing signaling across multiple technologies (Mobile, IMS, LTE, SIGTRAN, VoIP, etc). Monitor calls progressing through advanced 3G or 4G networks from a central location, along with the powerful and customizable reporting tools.

UMTS IuCs and IuPs supported over IP by **PacketScan™** permits -

- Testing RNC, MSC, Home NodeB (HnB) and Home NodeB Gateway (HN GW) entities.
- Decode and analyze different control plane protocols i.e. NBAP, RNSAP, RANAP and more over IuCS, IuH, and IuPS interfaces.
GPRS Protocol Analysis - TDM, IP

GPRS Protocol Analyzer (over T1, E1)

GPRS Protocol Analyzers are available with GL’s T1/E1 platforms. The analyzer is capable of capturing, decoding and analyzing GPRS signaling over TDM and Optical networks. Supports both real-time and offline analysis. Decode and analysis across the Gb (T1/E1) and Gn (Ethernet) interfaces.

- Displays Summary, Detail, Hex-dump, Statistics, and Call Trace Views
- Supports filtering and search features
- Multiple trace files can be loaded simultaneously with different GUI instances for offline analysis

For more information,

👉 Real-Time GPRS Protocol Analyzer - (XX155)

GPRS Protocol Analyzer (over IP)

GL's PacketScan™ - All IP Protocol Analyzer supports monitoring all 2G, 3G and 4G wireless communication protocols such as GSM, GPRS, UMTS, SIGTRAN, LTE, and Diameter, in addition to IP protocols such as SIP, MGCP, MEGACO, Skinny, and H.323.

PacketScan™ cellular protocol analyzers support analyzing signaling across multiple technologies (Mobile, IMS, LTE, SIGTRAN, VoIP, etc). Monitor calls progressing through advanced 3G or 4G networks from a central location, along with the powerful and customizable reporting tools.

GPRS Analysis over IP by PacketScan™ permits decoding and analysis of signaling and user data protocols over Gb and Ga/Gn interfaces.

For more information,

👉 PacketScan - All IP Analyzer - (PKV100)
UMTS Protocol Emulation - IP

MAPS™ UMTS IuCS & IuH Emulator (over IP)

- Simulates RNC, MSC, Home NodeB (HnB) and Home NodeB Gateway (HN GW) entities.
- Generates and process all Mobility Management, Session Management, RANAP and DTAP messages.
- User controlled access to RANAP, and DTAP messages.
- Ready scripts for Mobile Originating, Mobile Terminating, Location Updating procedures for quick testing
- Supports RTP traffic generation and reception (requires additional license)
- Supported all industry standard codecs

For more information,

MAPS™ UMTS IuCS, IuH Interfaces Emulator - (PKS160)

MAPS™ UMTS IuPS Emulator (over IP)

- Simulates RNC, and SGSN entities.
- Generates and supports all Mobility Management, Session Management, RANAP and DTAP messages.
- User controlled access to RANAP, and DTAP messages.
- Ready scripts for Routing Area Updating, GPRS Attach, and Detach procedures for quick testing.
- Supports Authentication, TMSI Reallocation, Encryption, and other optional procedures.
- Supports mobile traffic simulation with additional licenses.

For more information,

MAPS™ UMTS IuPS Interface Emulator - (PKS164)

www.gl.com  Phone: (301) 670-4784  Fax: (301) 670-9187  Email: info@gl.com
MAPS™ UMTS Gn Gp Emulator (over IP)

- Simulates SGSN and GGSN.
- Supports GTP Control plane.
- Generates hundreds of Control Signaling (Load Testing).
- Generates and processes GTP messages.
- Supports GTP Traffic (GTP User Plane Data) which includes: verification like BERT testing, HTTP traffic generation capability, GGSN can actually be connected to real IP network to simulate Gateway testing
- Mobile traffic core – GTP (ETH101) simulation for user-plane packet transmission and reception services
- Mobile Traffic Core – Gateway (ETH102) module allows simulation of Gateway Traffic to test media gateway telephony interfaces over IP
- Traffic simulation modules also support generation and verification of data traffic such as Email, FTP, Web (HTTP), Video, and more.

For more information,

MAPS™ Gn Gp Interface Emulator - (PKS166)
MAPS™ GPRS Gb Emulator (over IP)

- Simulates SGSN (Serving GPRS Support Node) and BSS (Base Station Subsystem) elements in GPRS Gb interface over IP.
- Simulates Control plane Gb mode.
- Generates hundreds of Control Signaling (Load Testing).
- Generates and processes NS (Network Service), BSSGP (Base Station Subsystem GPRS Protocol), and various GPRS session procedure messages.
- Supports Gb interface procedures including Network Service Control, Identity Check, Combined GPRS / IMSI Attach, and Routing Area Update
- Mobile Traffic Simulation, requires additional license GPRS Gb (ETH103), which allows transmission of pre-canned HTTP file (*.txt), multiplexes both signaling and traffic over Gb interface.

For more information,

MAPS™ GPRS Gb Interface Emulator - (PKS133)
UMTS-GPRS Network Monitoring

NMS for 3G Networks (over T1 / E1)

GL's Net Surveyor live demo system facilitates to monitor real-time SS7 / ISDN / GSM / GPRS data probed and captured.

- Typical application includes Call Detail Records, fraud detection and location, remote protocol analysis and troubleshooting, real-time signaling monitor, traffic optimization engineering, statistics
- NMS features include a central database for historical and near real time data storage, a WebServer for "browser based" access to information.
- Records are stored into a relational database (Oracle, DB2, Sybase, Microsoft Access...) using ODBC.
- The web-based client NetSurveyor™ connected to SS7 / ISDN / GSM / GPRS probes through a web server facilitates result display using a web interface.

For more information,

SS7, ISDN, GSM, GPRS Protocol Monitoring and Surveillance System - (XX170)

NMS for 3G Networks (over IP)

PacketScanWeb™ is a is a simple, easy to use Web browser client, with which users can remotely monitor the status of entire IP network with the PacketScan™ probes or PacketProbes™ distributed within network. Whenever a monitored call completes, the probe calculates a variety of quality metrics (MOS, loss, delay, jitter, etc) and sends the metrics to the central Oracle database for storage. This data can then be accessed in real-time from anywhere in the world through PacketScanWeb™.

The PacketScan™ is a feature-robust Windows® based software tool that captures and monitors live IP traffic. In the VoIP world, it can monitor and measure SIP, H323, Megaco, MGCP, T.38 and video calls. In the Wireless network, it can monitor 2G, 3G, and 4G protocols such as GSM, UMTS, GPRS, SIGTRAN, and LTE over IP network.

For more information,

Packet Monitoring and Surveillance System - (PKV170)
UMTS-GPRS Network Monitoring

VQuad™ with Dual UTA is a comprehensive hardware device designed for complete end to end voice, data, video quality testing of UMTS/GPRS network. Also available is VQuad™ Probe, which is a self-contained all-in-one unit that supports all of the functionalities with an embedded PC and Dual UTA.

- Test 3G devices for Voice, Data, Video quality metrics with complete automation and centrally controlled system.
- Automated tests including TCP, UDP, HTTP, VoIP, Route, FTP, DNS, SMS, UEInfo, SIMInfo, and Phone Info
- Automated testing of Wireless Devices including Smartphones (Android/Apple phone/Tablet)
- All PC based internet connections are supported including WiFi, Broadband Card (3G/4G/LTE), and Wired Ethernet.

For more information,

→ Automated Data Testing over Wired & Wireless Networks - (VQT601, VQT600, VQT610)

GL Communications Inc.

www.gl.com
## UMTS-GPRS Network Monitoring

### VQT WebViewer™ - Centralized Monitor-

The **WebViewer™** is a simple, easy to use Web browser client, with which users can remotely view status of entire network and control all VQuad™ nodes distributed within network.

GL’s voice-video-data quality test solution allows connecting to any network, any service, and any interface, with a centralized control and monitoring capabilities. The test solution is network independent, all networks are supported including 3G, 4G, WiMax, LTE, and Advanced LTE. In addition all PC based internet connections are supported including WiFi, Broadband Card (3G/4G/LTE), and Wired Ethernet.

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For more information, [VQT WebViewer™ - (VQT040)](mailto:info@gl.com)

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### VQT WebViewer™ Table

<table>
<thead>
<tr>
<th>Network</th>
<th>Device</th>
<th>Status</th>
<th>Latency (ms)</th>
<th>Data Loss (%)</th>
<th>Package Loss (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network A</td>
<td>Device 1</td>
<td>Online</td>
<td>120</td>
<td>0.4%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Network B</td>
<td>Device 2</td>
<td>Offline</td>
<td>240</td>
<td>3.6%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Network C</td>
<td>Device 3</td>
<td>Online</td>
<td>180</td>
<td>2.1%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Network D</td>
<td>Device 4</td>
<td>Offline</td>
<td>300</td>
<td>4.8%</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

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![Network Status Table]( UMTC-GPRS.bmp )

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