

MOBILE COMMUNICATIONS

— industry solutions brochure —

LTE Performance Management

Dynamic IP Intelligence.

Ensure Peak Performance of Vital Links.

The wave of large-scale LTE deployments has arrived. Mobile operators are developing ambitious plans to give their subscribers true, super-fast 4G access anytime, anywhere. But first, mobile infrastructures must be optimized to achieve low latency and high bandwidth. Next, mobile IT teams need the right systems and processes to find problems and resolve issues quickly and keep subscribers happy. The Observer® Platform provides the right set of visibility, metrics, and analysis to help mobile IT administrators ensure on-time delivery of mobile content and services.

Critical Monitoring Capabilities

- **Complete LTE environment views**

Dashboards give you an instant read into overall LTE health; data shows precise location of impact or degradation when issues or incongruities occur (whether an eNodeB within the E-UTRAN or EPC).

- **Extensive subscriber analysis**

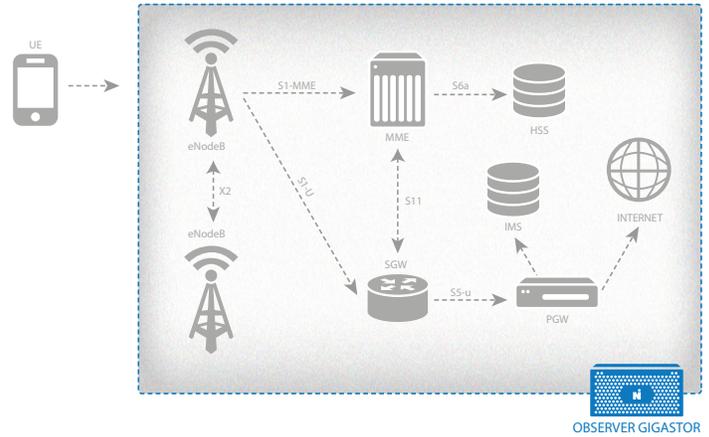
Real-time and historical subscriber breakouts filtered by IMSI quantify specific user and control planes. Our flexible platform delivers broad application and protocol support, plus subscriber/user validation of model projections.

- **Definitive troubleshooting**

Subscriber Extract traces all relevant conversations across LTE infrastructure over time – regardless of tunnelin method or alternative subscriber identifier. Advanced data mining detects errors and session irregularities.

- **Workflows for issue resolution**

Logical workflows couple event recognition with fast anomaly detection. Automated collection of all relevant data speeds troubleshooting and improves root-cause accuracy.

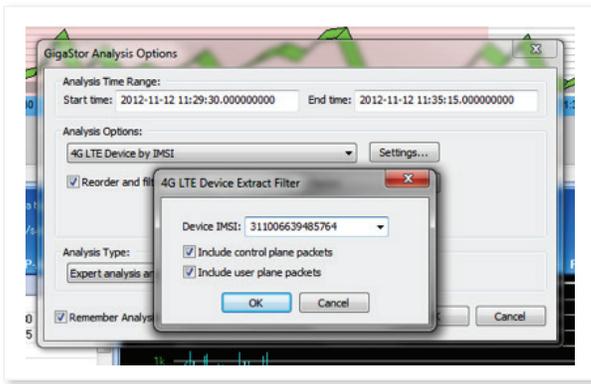


Key Features

Service Insights

Obtain metrics and visibility for all essential interfaces within the LTE environment: eNodeB, X2, S1-U, S1-MME, S5-U, S6a, and S11. These are logically broken out by UE device, eNodeBs, MMEs, SGWs, PGWs, and application tabs. Understand UE and session level summaries by duration, throughput, handovers, errors, applications, and user control planes – more than 30 parameters in all. Get multi-protocol support from the eNodeB access points through the EPC and beyond the PGW for service knowledge related to all major apps.

Devices eNodeBs MMEs SGWs PGWs Applications									
Total Applications: 7 Interval: --- Filter IMSI: --- Not applicable ---									
Summary By Device									
IMSI	IP Address	IMEI	IMEI	TAC	Name	Application	Type	Rx	Tx
31148000004346	10.161.32.16	990000275	Samsung	Telecom America - SPH 1325 (ace)	NTP	UDP	2	2	
	10.161.32.16	990000275	Samsung	Telecom America - SPH 1325 (ace)	HTTPS	TCP	88	114	
	10.161.32.16	990000275	Samsung	Telecom America - SPH 1325 (ace)	DNS	UDP	16	16	
	FD01:161:31:1AE:0:4	990000275	Samsung	Telecom America - SPH 1325 (ace)	SIP	TCP	26	21	
	FD01:161:31:1AE:0:4	990000275	Samsung	Telecom America - SPH 1325 (ace)	RTP	UDP	29	29	
	FD01:161:31:1AE:0:4	990000275	Samsung	Telecom America - SPH 1325 (ace)	RTP	UDP	4962	5075	
	FD01:161:31:1AE:0:4	990000275	Samsung	Telecom America - SPH 1325 (ace)	SIP	UDP	19	39	
	FD01:161:31:1B:0:3	990000275	Samsung	Telecom America - SPH 1325 (ace)	SIP	TCP	24	20	
	FD01:161:31:1B:0:3	990000275	Samsung	Telecom America - SPH 1325 (ace)	SIP	UDP	6	16	
	FD01:161:31:1B:0:3	990000275	Samsung	Telecom America - SPH 1325 (ace)	RTP	UDP	8	8	
31148000004349	10.161.32.17	990000275	Samsung	Telecom America - SPH 1325 (ace)	DNS	UDP	8	8	
	10.161.32.17	990000275	Samsung	Telecom America - SPH 1325 (ace)	HTTPS	TCP	56	72	
	10.161.32.17	990000275	Samsung	Telecom America - SPH 1325 (ace)	NTP	UDP	1	1	
	FD01:161:31:1AD:0:3	990000275	Samsung	Telecom America - SPH 1325 (ace)	SIP	UDP	21	112	
	FD01:161:31:1AD:0:3	990000275	Samsung	Telecom America - SPH 1325 (ace)	RTP	UDP	5075	4964	



Subscriber Extract

Subscriber Breakout

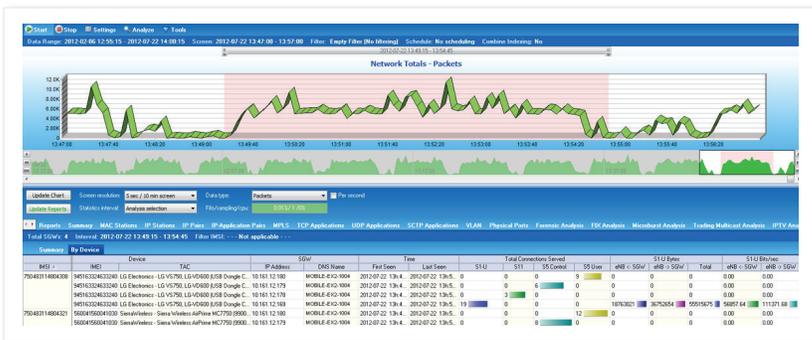
Get detailed subscriber session use and error reporting, including those related to authentication, rejection, connectivity, handover, or application. Find relevant information through powerful filtering that investigates specific subscribers via IMSI. For relevant data mining results, create custom filters for any layer 2-7 metric or condition. Subscriber Extract delivers automated, in-depth visibility into all customer sessions from the E-UTRAN to EPC.



VoLTE Support

Precision Troubleshooting

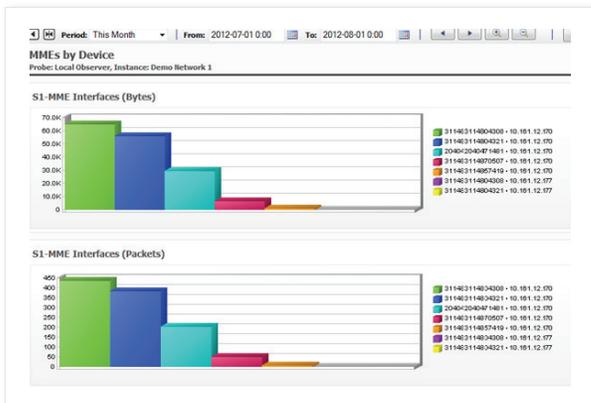
Troubleshoot with complete VoLTE analytics, including call setup, and teardown, replay capabilities, MOS, jitter, and packet loss metric assessments. Connection dynamics and multi-hop analysis offer packet-by-packet insight into individual session setup, content delivery, and teardown – spanning all user and control planes. Broad video codec and streaming media support help ensure on-time delivery, providing the details needed for immediate issue resolution.



Observer GigaStor™ LTE Analysis

Real-Time and Post-Event Analysis

Get comprehensive analysis for individual subscriber activities and session irregularities, as well as bandwidth utilization for each interface (S1-U, etc.).



LTE Dashboard

Operational Awareness

Summarize massive data quantities over time. Use custom or pre-defined reports for all monitored interfaces or operating parameters to assess long-term usage trends. Create static or behaviorally generated baselines based on your distinct network for any performance or volume metric, allowing you to place alerts and alarms on critical or marginal conditions.

LTE Performance Management Platform

The Observer Platform is a full-service IT platform for optimizing LTE performance management. Each system element fits precisely together with all other components, increasing capabilities, power, and speed. As integral platform components, Observer Apex™, GigaStor™, and Analyzer play vital roles in elevating mobile performance for high-speed, complex environments.

Observer GigaStor

Flexible packet capture and analysis support network speeds up to 40 Gb, multiple port configurations, and capacities from 2 TB to 5 PB. GigaStor provides sustained high-speed packet capture and write-to-disk with real-time metadata generation for rapid indexing and root-cause analysis.

Key assets:

- Exclusive capture card with hardware-based capture and accelerated filtering
- Appliances are field upgradeable
- Multiple hardware configurations with robust fault tolerance
- Scalability to accommodate surges in customer traffic



Observer Analyzer

Achieve real-time monitoring of all critical interfaces and user sessions. View status from the standpoint of UE devices, SGWs, PGWs, MMEs, or applications.

Key assets:

- Automated searches by IMSI or other identifiers; sorting by performance metrics
- Advanced layer 2-7 analytics
- Detailed insight into over-the-top app usage and bandwidth consumption
- Aggregate summary or individual session views for service distribution

Observer Apex

Observer Apex offers high-level views of overall LTE backhaul performance in real time through easily constructed dashboards. Apex includes baselining which links historical performance with current health to illustrate behavioral operating tendencies – invaluable for long-term trending and quantifying marginal or critical threshold exceptions.

Key assets:

- Long-term perspectives of any performance or volume metric
- Pre-built or custom reports with intuitive graphic or tab format options
- Correlation of disparate parameters for insight into inter-metric dependencies
- Root-cause drilldown with logical workflows to speed resolution



JDSU Performance Management

About Network Instruments

Network Instruments, a JDSU Performance Management Solution is an industry leader in application and network management. It provides products that optimize performance and speed problem resolution, helping ensure delivery of critical applications for businesses worldwide.

For more information, visit www.networkinstruments.com.

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