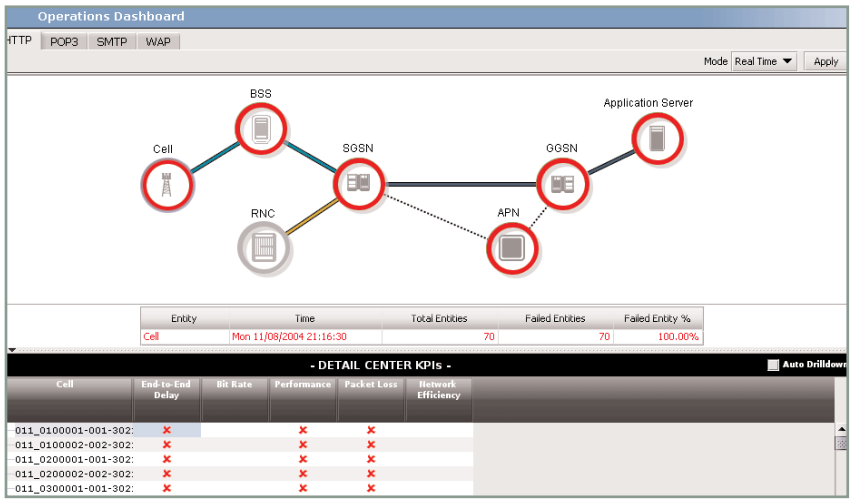
Orion™ | Mobile Data

Service Assurance for Mobile Networks

Proactive Service Management Yields Significant Cost Savings and Revenue Benefits

Through continuous monitoring, Orion | Mobile Data provides real-time indications of Packet Data Service performance degradation in GPRS and UMTS networks.

In turn, this proactive notification facilitates immediate problem detection and localization to the network entity (Handset, LAI, RAI, SAI, BSC, RNC, SGSN, GGSN, APN, Server) in the network core or network access. These capabilities reduce the number of incoming customer complaints and minimize the time and costs associated with troubleshooting and repair.



Orion provides real-time or historical notification of commercial service performance degradation through the Operations Dashboard.

Troubleshooting every network problem reported by a "network" monitoring or management system is inefficient as some network problems may cause only a minor disruption.

With a "service" management tool to prioritize faults based on their impact to service quality and revenues you can target your troubleshooting efforts.

A part of Tektronix' Unified Assurance offering, Orion | Mobile Data helps carriers increase wireless data service revenue while reducing operating costs and capital expenditures.

With Orion, carriers can proactively manage their customers by isolating the network quality performance for specific commercial services including Email (POP3, SMTP), Browsing (HTTP, WAP) and Data (MMS).

Tektronix® Communications

Procedure KPIs:

- Total Procedures
- Successful Procedures
- Successful Procedure %
- Failed Procedures
- Failed Procedure %
- Max Procedure Latency
- Average Procedure Latency
- Total Bin Count
- Bin Count (Excellent to Unacceptable)

Session KPIs:

- Network UL/DL Bytes
- Average Network UL/DL Bytes
- Average Data Rate
- UL/DL Packet Loss Ratio
- UL/DL Effective Ratio
- Average UL/DL Packets

QoS KPIs:

- Total Transactions
- Average Burst Data Rate
- Average E2E Network Delay
- Average Network Transport Delay
- Network Efficiency Ratio
- Average Network Bytes
- Average Effective Bytes
- Packet Loss Ratio
- Average Packets

The same information used to increase service quality may also be used to prove superior performance both within a carrier's organization as well as with end customers.

Combining proactive service management with periodic quality reporting enables carriers to capture and retain more revenue from their customers.

Service Assurance for GPRS and UMTS Networks

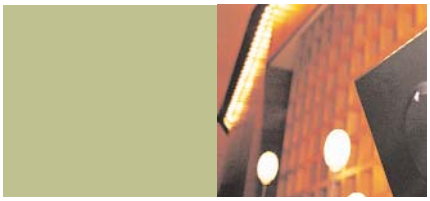
Orion | Mobile Data provides the following qualitative and quantitative information per service:

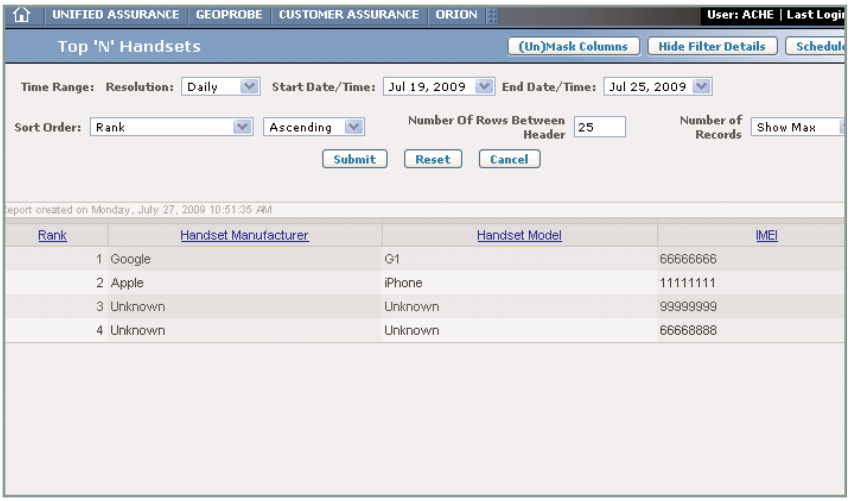
- How well QoS is being delivered with respect to what is being guaranteed by the network for key perception QoS metrics (Throughput and End-to-End Delay)
- Number of Procedures, Success Rate, Failure Rate, Procedure Latency, Uplink/Downlink Bytes, Uplink/Downlink Packets and Effective Ratio

Real-Time, Actionable Path

Each service is individually monitored across all subscriber usage. All service performance is compared to quality thresholds set by the carrier. When thresholds are exceeded, alarms and alerts are created. Orion | Mobile Data provides a real-time, actionable path from the alarming and alerting process to the identification of involved network entities and failure causes.

Additional advanced troubleshooting tools are accessible through Orion's web-based integration with the GeoProbe® System for session tracing and problem resolution. This unique inter-working of Unified Assurance products enables carriers to run their business, by service and by network in a real-time and unified fashion across all relevant organizations, network technologies and services.





Specialty reports facilitate top "N" usage analysis for prioritized troubleshooting and ongoing market studies.

Flexible Historical Analysis

Network Planning and Optimization organizations benefit from Orion | Mobile Data's Planning application.

Through this application, analysis and trending efforts may be performed. Using the Online Analytical Processing (OLAP) tool, complex queries are easily performed with rapid response times.

Unified Assurance Architecture

Tektronix' Unified Assurance solution is based on real-time, network-level data collection from hardware probes.

- Data is collected from both the control and user planes, not from the network elements.
- Allows the solution to present actual subscriber experiences in an end-to-end sense versus just element and network node performance metrics.

The primary interface points for data collection are Gb/IuPS, Gn/Gp and Gi.

Dimensions for KPI Measure Reporting

- Date/Time
- Gb/IuPS SGSN
- GGSN
- MCC/MNC (Mobile Country Code/Mobile Network Code)
- MS (Mobile Station Manufacturer and Model)
- Subscriber Type (Home/Roamer)
- Server (Server Groups, Server Node Names and Server IP Address)
- Protocol
- Release Cause
- APN
- UA Profile (Manufacturer and Model)
- QoS Traffic Class*
- QoS Max Bit Rate*
- QoS Reliability Class*

**only applicable for QoS KPIs.*

Data Collection and Processing

The data collection and processing functions include control plane to user plane correlation to generate one record for QoS Configuration and Service Delivery Quality for each subscriber transaction. A subscriber transaction is defined as a subscriber's total, end-to-end experience when requesting and receiving a specific service within an already established PDP session. These records are received, aggregated, processed and stored by the system to fuel a variety of real-time and historical applications.

Open Architecture

Unified Assurance is based on an open architecture.

- Easily access KPIs from third party applications
- Forward alarms to higher order systems
- Import provisioning information from external systems
- Link to Unified Assurance's Operations GUI from external applications for guided troubleshooting paths

Service Assurance Packaging

Operations Application

- Enables real-time and historical troubleshooting to the root cause
- Real-time (5-minute), Hourly, Daily or Weekly Updates with Alarming and Alerting

Planning Application

- Long-term OLAP Analysis and Reporting Tools: Procedure, QoS and Session Views

Management Reporting Application

Pre-packaged top level status reports deliver commercial service management views with selectable filters.

- Protocol Transaction Performance
- QoS Service Performance
- Session Performance
- Element Detail Protocol Procedure Performance
- Element Detail QoS Service Performance
- Release Cause Category Fault
- Release Cause Fault
- Consumer Marketing
- Top "N" Reports: APNs, Server IPs, UA Profiles, URL Hosts, Handsets

About Tektronix:

Tektronix Communications provides network operators and equipment manufacturers around the world an unparalleled suite of network diagnostics and management solutions for fixed, mobile, IP and converged multi-service networks.

This comprehensive set of solutions support a range of architectures and applications such as LTE, fixed mobile convergence, IMS, broadband wireless access, WiMAX, VoIP and triple play, including IPTV.

For Further Information:

Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology.

Please visit www.tektronixcommunications.com

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