# GeoProbe® | 2G, 2.5G, 3G and PS Voice

Network Assurance for Mobile Core

In the highly competitive mobile communications market, carriers strive to provide the most innovative and reliable services at attractive price points. Flexibly configured to solve the variety of challenges facing mobile service providers, Tektronix' GeoProbe simplifies network management.

The Call Sequence Trace feature allows users to view the call or transaction in chronological order so they can easily determine the source element and time of each message.

Personal mobile communications have hit the commercial sweet spot. Once sought solely as an in-case-of-emergency accessory, mobile handsets are ubiquitous-providing everything from web access, streaming video and GPS to the more staple services of voice and SMS. With many consumers abandoning landline communications altogether, the performance and health of the mobile network core is a paramount concern for service providers.
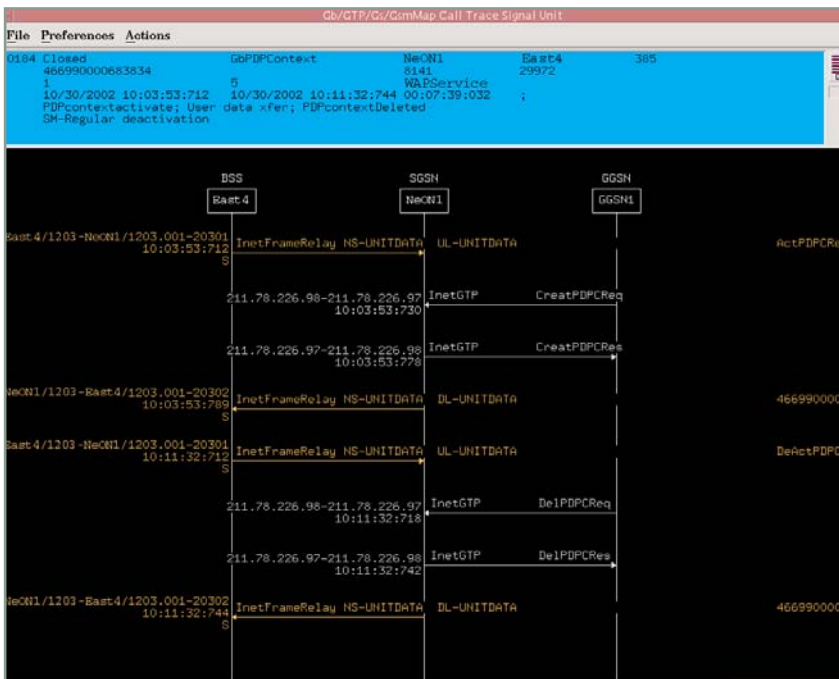
With GeoProbe, carriers can prioritize and maintain the service integrity of their GSM/SS7, GPRS, UMTS and Packet Switched Voice networks while at the same time driving service usage and revenues.

Robust applications address legacy and emerging mobile technologies with a common, industry-proven monitoring platform.

- Real-time monitoring of network health ensures proactive problem detection.

- Comprehensive troubleshooting and analysis tools accelerate problem isolation and resolution.

Network Status Maps

Ideal for NOC wallboard display, customizable map views provide intuitive and ongoing monitoring of disparate mobile network elements.

- Configure maps with ready-to-use icons.

- Color-coded links enable at-a-glance assessment of interface and node health.

Statistics

The GeoProbe system provides a complete selection of real-time and historical statistics. Real-time statistics can be displayed as peg counts, plot graphs and peak detecting bar graphs. Historical statistics can be displayed for interactive analysis and historical reporting with the OLAP-based Historical Analysis application.

- Historical statistics reveal patterns of network and node behavior to assist operations engineers in recurring problem resolution and ongoing prevention.

- These same statistics may be used to generate alarms based on defined thresholds.

Alarms

Network alarms are displayed in order of severity through an intuitive Bullseye display.

- Evaluate your best- and worst-performing nodes with displays that refresh in real time.

- Set unique node, interface, link and linkset thresholds to trigger and clear alarm conditions for a variety of parameters including bandwidth, release causes, PDP context failures, service not subscribed and missing or unknown APN.

Cost-effectively plan for and rapidly deploy new technologies and services.

- Node and interface statistics provide the insight you need to make and monitor important capacity planning decisions

- Meet the challenges of multi-vendor equipment and complex service provisioning. Advanced session trace and alarm capabilities keep you on target with deployment schedules-minimizing costly delays.
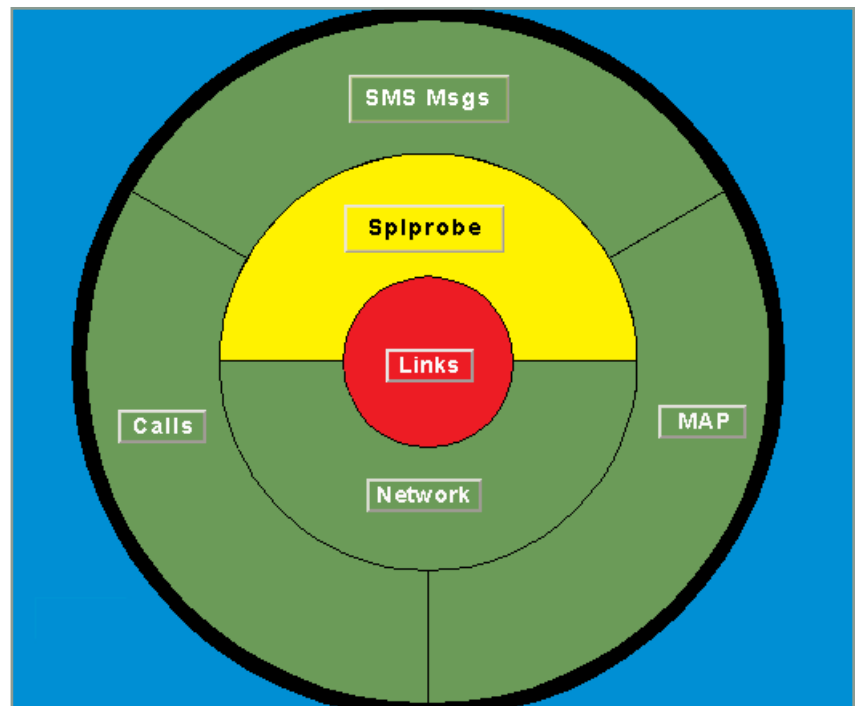
The Bullseye window simplifies troubleshooting and problem resolution. This user interface provides a quick look at the status of the network and serves as a top-level visual summary of the network status.

Monitor and troubleshoot critical mobile operations including accessibility and mobility.

- Subscriber access and authentication are mission critical to driving billable usage. With the GeoProbe, you can ensure that these connections are "always-on.

- With subscribers constantly on the move, guaranteeing connectivity and ensuring service delivery can be complicated. Simplify the task with Tektronix' advanced mobility management capabilities.

Proactively address subscriber satisfaction and session performance to ensure profitability and growth.

- Both subscribers and services play a role in determining the QoS demands placed on your mobile network strike a balance between requested and negotiated service levels by tracking and troubleshooting session performance.

Highly Scalable, Decentralized Architecture

Delivered on a distributed ATCA platform, Tektronix' GeoProbe system can address the complexity, variety and scope of the most advanced mobile core network technologies.

- One platform supports SS7, IP, Mobile, Voice, Video and Data networks with signaling/control and media/user plane monitoring

- Modular architecture provides unrivaled scaling of capacity, performance, reliability, availability, serviceability, and manageability

- Extensive pre-filtering at the Probe ensures only the information requested is sent over the LAN/WAN, decreasing bandwidth requirements and associated costs

- Supports simultaneous real-time capabilities for any number of users at multiple, geographically diverse locations

- Provides true end-to-end correlation across interfaces and protocols and multi-protocol support expandable at the card level without additional link taps

Multi-protocol Call Trace

Real-time and Historical (SUDStore) Call Trace capabilities provide a comprehensive view of individual calls through the capture and correlation of all associated data. Call traces may be saved to disk or printed for further analysis.

- Use real-time traces to track known issues for timeouts, sequence errors, release causes and Routing/Location Area update errors.

- Review historical traces to pinpoint recurring problems and "hot spots" or to train engineers in troubleshooting procedures.

- Filtering by MSISDN, IMSI and IP address enables identification of problems by subscriber or service.

- Advanced State Machine-based filtering enhances investigation of network-wide problems or impact analysis of outages.

- Support of calls in progress enables on-the-fly troubleshooting.

- Multi-protocol correlation capabilities support the tracing of 2G/2.5G/3G handovers.

Protocol Analysis with Extensive Filtering

Capabilities enable decoding, protocol analysis and specialized filtering down to the message type.

- Drill-through filter and search capabilities accelerate troubleshooting efforts.

- Multi-protocol analysis enables simultaneous viewing of 2G, 2.5G and 3G mobile protocols
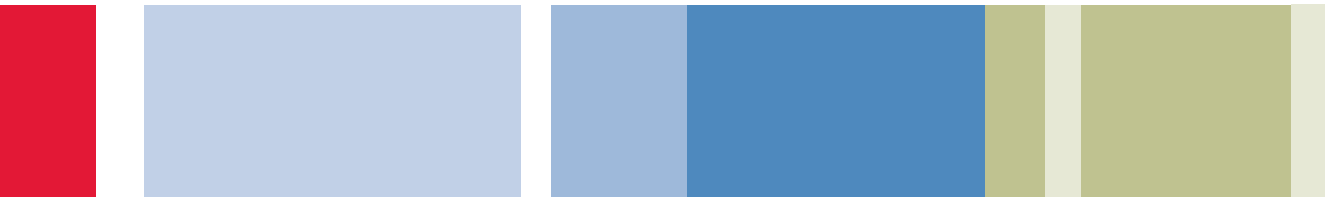
Mobile Core Monitoring Support

GSM/SS7

- **Circuit-related protocols:** ISUP/TUP/NUP/IUP/BSSAP with ANSI, ITU-U and country specific variants

- **TCAP protocols:** AIN/INAP/800/LIDB/CLASS/GSM MAP/CAP

- **Sigtran adaptation layer:** M3UA/M2UA/SUA

GPRS

- **Gb:** control and user plane

- **GTP-C (Gn/Gp):** control and user plane

- **Gr:** control plane for deciphering keys

- **Gs:** control plane

UMTS

- **IuPS:** control plane

- **IuCS:** control plane

- **GTP-U/Gi:** user plane for PS domains

- **CSCN (RTP/RTCP):** user plane for CS domains

Packet Switched Voice

- **Mc:** GCP/M3UA/SCTP/IP

- **Nc:** BICC/M3UA/SCTP/IP

Mobile Data

- **Service Protocols:** Web Browsing (HTTP), Email (SMTP, POP3), WAP, MMS

- **Control Protocols:** Radius, DHCP, DNS, LDAP, SMPP,

- **RTSP**

Mobile Video

- **Control Protocols:** RTSP, SIP

- **Media Protocols:** RTP/RTCP

About Tektronix:

Tektronix has more than 60 years of experience in providing network operators and equipment manufacturers a comprehensive and unparalleled suite of network diagnostics and management solutions for fixed, mobile, IP and converged multi-service networks.

These solutions support such architectures and applications as 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.tektronix.com/communications

Contact Tektronix:

Please visit www.tektronix.com/communications

Phone:
1-800-833-9200 option 1
+1-469-330-4000

Locate your nearest Tektronix representative at www.tektronix.com/contactus

Tektronix®
Communications