

# GeoProbe® | Media Monitoring

## Network Assurance for Fixed Core



### Monitor Media Quality Directly

In IP networks, voice and video media data is carried by Real-time Transport Protocol (RTP) packets. Depending on the capabilities of each network device, metrics for deriving quality of this media may be provided in Real-time Transport Control Protocol (RTCP) packets, which periodically report packet loss, jitter, and latency in active RTP sessions. An extension to RTCP, RTCP-XR provides specific metrics for VoIP calls—advanced packet loss metrics, jitter buffer performance and analog measures including echo and noise. When available, both RTCP and RTCP-XR information can provide the key metrics necessary for monitoring media quality and ensuring the Quality of Experience (QoE).

Monitoring RTP data directly can provide more accurate and more timely data on performance and media quality. Direct RTP monitoring is vital in cases where RTCP data is not available or special focus is desired, such as newly-provisioned network elements or services and high-value accounts.

When quality issues are detected, instantaneous alerts with information that enable you to quickly diagnose and isolate the problem are essential. You have to be able to determine if the problems are due to signaling or media transmissions.

With traditional data services such as email or text messaging, minor timing delays and out-of-sequence data packets have little impact on the quality of the service—missing packets can be retransmitted, and late packets are still useable. Voice and video however are uniquely time-critical services. Speech audio and video images are extremely sensitive to transmission effects—packet loss, latency and jitter—inherent in IP networks. With media, replacing a missing or delayed packet is almost impossible—the "conversation" has already moved on. Delivering media quality for voice and video over IP services requires tight interworking and millisecond precision across a variety of media and signaling devices.

Whether to ensure adherence to Service Level Agreements or to maximize service growth and minimize churn, it is imperative to ensure the quality of media in an IP multi-service network. The most accurate and effective method of ensuring media quality is to proactively monitor the media streams and correlate results with signaling for the associated voice or video sessions.

**Deliver Reliable Media Quality of Service in Your IP Multi-Service Network**

- Ensure outstanding media quality
- Reduce downtime and trouble tickets
- Reduce operational and capex costs
- Maximize staff efficiency

**Key Benefits**

- Detect service quality issues faster through real-time monitoring of media.
- Isolate and resolve performance problems faster with correlated views of media and signaling for every call and session.
- Meet and exceed your Service Level Agreement standards to drive service adoption rates with new customers, and maintain loyalty and reduce risk of penalties with existing customers.
- Reduce trouble tickets by proactively detecting impending issues before they become problems, outages or complaints.
- Maximize staff effectiveness with an intuitive interface that enables less-experienced staff to easily monitor and pinpoint issues, allowing experienced staff to focus on problem resolution.
- Optimize your network deployment and capex purchasing through accurate analysis and forecasting.

**Direct RTP Monitoring with GeoProbe**

Tektronix Communications' network assurance offering provides an independent, highly-accurate, timely view into media quality through direct RTP monitoring. The GeoProbe system delivers carrier-class performance, providing near-real time insight into media quality for potentially hundreds of thousands of active calls.

With GeoProbe, all media quality metrics from RTP are correlated with the signaling for each call—even across network types and signaling protocols enabling faster detection, isolation and resolution of problems. Configurable alerts enable proactive detection of impeding quality issues, allowing for early notification before outages occur and reducing the number of trouble tickets and customer complaints. Detailed statistics deliver accurate views of performance in real time for operations personnel, and historically for analysis and capacity planning activities.

Perceived media quality scores (MOS) based on direct RTP monitoring are extremely accurate. With the GeoProbe system, MOS is derived from algorithms that are highly consistent with traditional subjective human perception tests. When monitoring millions of calls a day, objective, non-intrusive call quality scoring in real-time is critical to ensuring exceptional quality and customer experience.

**Summary of Features**

**Call Trace:**

- Display media QoS metrics together with signaling in real-time and historical call traces.
- User-specified filters consist of status events including one-way audio or excessive jitter, IP addresses, SSRC and CNAME values.

**Alarms**

- Real-time statistical event alarms are based on media quality and transport statistics and triggered on customizable thresholds.

**Statistics**

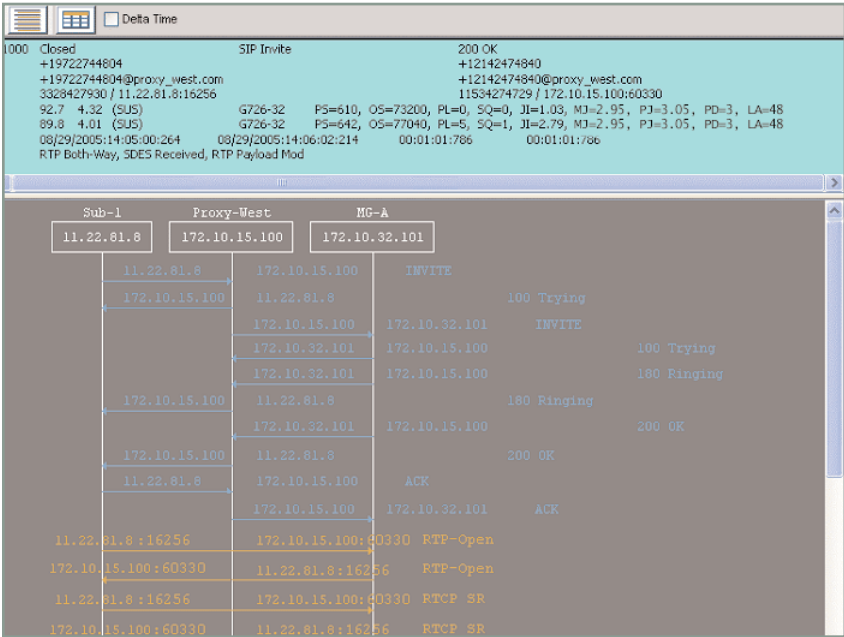
- View packet counts, latency, jitter, lost/out-of-sequence packets and MOS historically or in real time.

**Data Records**

- Generate RTP call records including the best, worst and overall performance for each stream.

**RTP Stream Capture**

- Capture streams for analysis or playback based on configurable filter criteria.



Ensuring quality in IP multi-service networks requires that both the signaling and media be monitored effectively. Tektronix Communications' monitoring capabilities analyze and correlate media and signaling for every call, enabling you to deliver outstanding media quality while reducing downtime, trouble tickets and associated costs.

Direct RTP monitoring complements Tektronix Communications' other call quality scoring capabilities, and provides the flexibility of simultaneous monitoring of RTP, RTCP, RTCP-XR and end-of-call quality measurements for service performance monitoring and SLA management.

## GeoProbe Architecture Offers Highest Capacity and Scalability

Vendor-independent direct RTP Monitoring is accomplished through passive monitoring with no additional impact to the network. Advanced hardware-based RTP processing enables higher capacities and scalability.

- Monitor several thousand to hundreds of thousands of bidirectional calls respectively with a single 2U or 14U Splprobe.
- Applications handle high RTP data rates efficiently by presenting only the RTP Packets for key events—start/end, stream modifications, packet loss and jitter events.

## Media Quality and Transport Statistics

Statistics are available for display in real time (5-second interval) or historically (15-minute+ intervals).

### RTP Statistics

- RTP octets
- RTP packets
- RTP packets lost
- RTP packets out of sequence
- RTP delay (average)
- RTP jitter (average)

### RTCP Statistics

- RTCP octets
- RTCP octets per packet type
- RTCP packets
- RTCP packets per packet type

### Quality Scores

- Average RTP MOS score
- Average RTCP R-Factor score



## Media Quality of Service Metrics

The GeoProbe system correlates signaling and media for each call for display in a single, simplified view. Collected media quality metrics are made available to higher level Unified Assurance applications through KPIs.

- Media quality is measured and displayed for each call.
- Quality scoring is provided for each session based on MOS and R-Factor.
- Packet-level statistics are provided for each session, including: packets sent, octets sent, packets lost, out-of-sequence, jitter, latency.
- Media quality data is derived from any combination of direct monitoring of RTP, RTCP, RTCP-XR, or "end of call" Quality of Service in MGCP and H.248. SIP EoCQ is also supported.

## Data Record Generation

GeoProbe's Direct RTP Monitoring application is designed to generate xDRs to convey the following important RTP Media Stream QoS information for use with Tektronix Communications' higher layer Unified Assurance applications:

- RTP Stream MOS
- RTP Stream Average Performance
- RTP Stream Worst Performance
- RTP Stream Best Performance
- RTP Stream RTCP-XR Performance

RTP xDRs are generated once for each unidirectional or bi-directional RTP/RTCP session.

Depending on the GeoProbe configuration, RTP/RTCP xDR information may be derived from Direct RTP measurements, RTCP monitoring, RTCP-XR monitoring, or any combination of the three.

## 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](http://www.tektronixcommunications.com)

## Contact Tektronix:

Please visit [www.tektronixcommunications.com](http://www.tektronixcommunications.com)

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

Locate your nearest  
Tektronix representative at  
[www.tektronix.com/contactus](http://www.tektronix.com/contactus)