

SQprobe® is a non-intrusive Voice over IP and IP Video probe that incorporates Telchemy's market-leading **VQmon®** performance analysis software. SQprobe produces real-time quality metrics for every call and video session, including Mean Opinion Scores (MOS), R-factors, and a wealth of diagnostic information. Deployed in an Enterprise or Service Provider network, SQprobe provides immediate visibility into service quality levels and the ability to rapidly drill down and diagnose problems.

SQprobe® passively monitors a 100Base-T or Gigabit Ethernet link, automatically detects active VoIP, IPTV, or IP Videoconferencing sessions, and analyzes each session. SQprobe produces real-time quality and performance data both during and at the end of the session, and generates alerts if quality falls below preset service level thresholds. SQprobe is available as a Linux software application.

Key quality metrics produced per call/session include:

- Listening and conversational quality MOS and R-factor scores for VoIP calls
- Video, audio, and audiovisual MOS scores for IPTV and IP videoconferencing sessions
- Session quality during "good" and "poor" periods
- Percentage of degradation due to loss, jitter, delay, codec properties, signal level, etc.
- Detailed IP, RTP, and MPEG Transport packet statistics
- Metrics describing transient IP problems

SQprobe's advanced diagnostic data makes it easier to quickly identify and resolve problems that can impact the quality of VoIP, IPTV, or IP videoconferencing services. Quality information is available at scheduled intervals—for example, every 15 seconds—or when calls/sessions complete. When used with endpoint agent software such as Telchemy's **VQmon®/EP** or **SQlive™**, SQprobe automatically incorporates and correlates endpoint-reported metrics such as signal, noise, and echo levels.

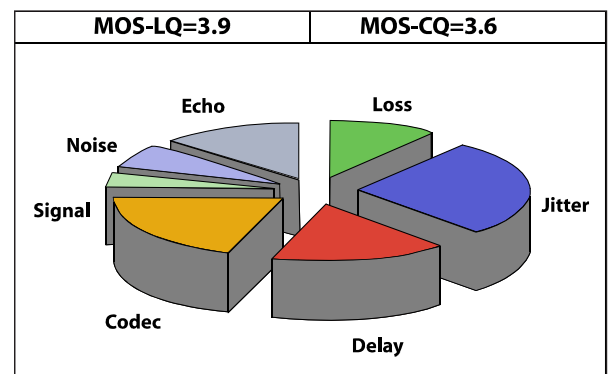
SQprobe's Expert Analysis technology examines collected data in real time, and can identify specific problem factors that affect IP voice and video quality. A typical VoIP or IPTV service has thousands of active sessions, any of which may experience transient problems. SQprobe's real-time problem inference technology can dramatically reduce the time required to detect, identify, and resolve problems.

SQprobe creates a quality record for each VoIP or video stream, incorporating endpoint-reported quality metrics if they are available. Metrics may be retrieved via SQprobe's integral Web Service interface, which supports integration with third-party NMS/OSS systems..

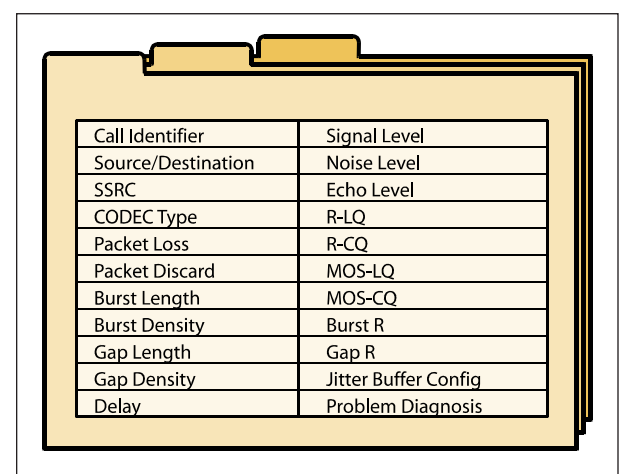
Real-time thresholding can detect if either average or individual call/session quality falls below preset thresholds, providing early warning of network problems that may affect service level agreements (SLAs).

SQprobe is fast, accurate, and informative, providing real-time visibility into service quality and the ability to monitor service and diagnose problem conditions at key locations in the enterprise or service provider network.

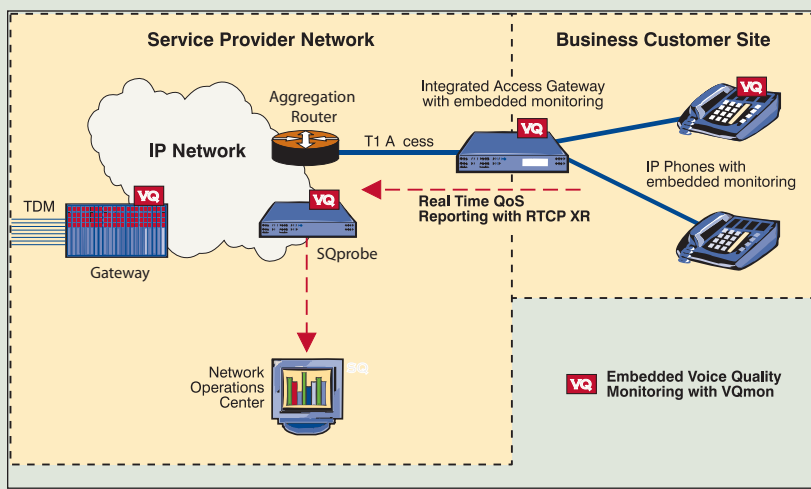
Degradation Factors



Call Quality Record

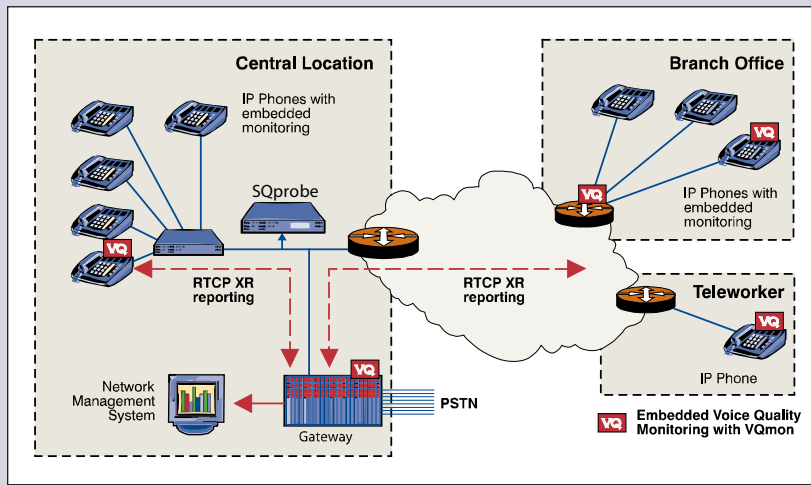


Call Identifier	Signal Level
Source/Destination	Noise Level
SSRC	Echo Level
CODEC Type	R-LQ
Packet Loss	R-CQ
Packet Discard	MOS-LQ
Burst Length	MOS-CQ
Burst Density	Burst R
Gap Length	Gap R
Gap Density	Jitter Buffer Config
Delay	Problem Diagnosis



Hosted PBX Service Provider Application

Located within the service provider network, SQprobe collects RTCP XR statistics and monitors incoming VoIP traffic.



Enterprise IP Telephony Application

Located at key traffic aggregation points, SQprobe collects RTCP XR statistics and monitors VoIP WAN traffic.

Technical Specifications

- Call quality analysis using VQmon - Optimized ITU-T G.107 with ETSI TS 101 329-5 Annex E
- Supports Japanese TTC JJ201.01 VoIP monitoring requirements
- Interprets RTCP XR (RFC3611) VoIP metrics payloads

Call Quality Metrics

- Listening and conversational quality MOS Scores with ACR, ITU and TTC scalings – MOS-LQ, MOS-CQ
- Listening and conversational quality R-factors – R-LQ, R-CQ
- Separate R-factors for burst and gap conditions – R-Burst, R-Gap

IPTV/IP Videoconferencing Metrics

- Video, Audio, and Audiovisual MOS scores (MOS-V, MOS-A, MOS-AV)
- I/B/P Frame Statistics and impairment levels
- TR 101 290 MPEG Transport Metrics

IP/RTP Metrics

- Packet loss rate, packet discard rate, burst length/density, gap length/density

Degradation Factors

- Percentage degradation due to loss, jitter, codec, delay, signal level, noise level, echo, recency

Interface Protocol Compatibility

- Network monitoring interface – IPV4/IPV6, UDP, RTP (RFC3550), RTCP XR (RFC3611)
- Reporting interface – IPV4/IPV6, TCP/UDP, SNMP, FTP

Supported Platforms

- Approved versions/ releases/ builds of Linux



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