

**SQmediator®** Symphony is a suite of advanced performance management software products that support passive monitoring for Voice over IP and videoconferencing services and active testing for VoIP, videoconferencing, Web, Email, DNS, DHCP and IP transport.

SQmediator provides a real-time view of IP voice and video service quality and network health via an interactive dashboard interface, with clickable charts that enable users to quickly identify problems and drill down into detailed diagnostic data. SQmediator is modular software that can be license key enabled for passive monitoring and/or active testing, and is available in a range of customized product versions—from a single-server edition for small business VoIP/videoconferencing monitoring up to multiple-server editions for large-scale service provider applications.

Key features of SQmediator include:

- Customized editions for small business, enterprise, and service provider applications
- Supports passive monitoring via collection of quality reports from IP phones/gateways (RFC 6035), probes, and videoconferencing endpoints
- Supports active testing using distributed software test agents—simulated VoIP & videoconferencing calls, network diagnostics, and network service/application transactions
- Browser-based dashboard interface with color-coded, clickable charts helps users quickly identify and diagnose problems
- Customized dashboards for specific services, customers, locations, etc.
- Supports SIP signaling analysis with active or passive probes
- User-definable thresholds for quality metrics, alerts, and SLAs
- Mean Opinion Scores for listening & conversational call quality (MOS-LQ/MOS-CQ and video, audio & audiovisual quality (MOS-V, MOS-A, MOS-AV)
- Expert Diagnosis feature identifies sources of call quality problems in plain English
- Web service interface (Service Provider edition)
- IA Assured edition available—designed to meet stringent DoD security requirements



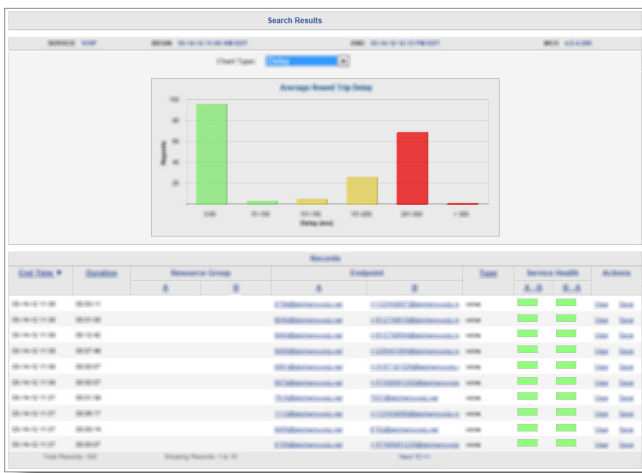
### SQmediator Reporter Dashboard

SQmediator is a powerful performance monitoring tool for passive monitoring, active testing, and troubleshooting of IP multimedia services and network health in small business, large enterprise, and service provider environments. When used for passive monitoring, the SQmediator Collector collects call quality reports from distributed reporting agents—including passive probes, RFC 6035-capable IP phones, or a combination of both—correlates multiple reports and provides real-time access to quality and performance metrics via a browser-based dashboard interface. For active testing applications, SQmediator uses distributed software test agents capable of generating simulated VoIP and videoconferencing calls with a variety of codec and payload types, as well as network diagnostic tests and analysis of synthetic transactions with DNS, DHCP, HTTP, POP3, and SMTP servers.

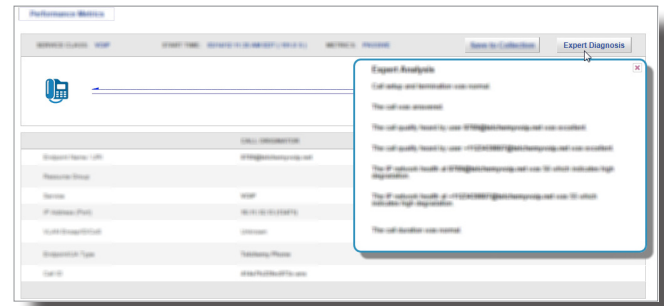
The SQmediator Reporter dashboard provides a real-time display of quality metrics and diagnostic information obtained from monitored calls or active tests. Color-coded charts give network support staff an

immediate warning of service or network problems. By clicking a chart, users can quickly drill down into more detailed data—for example, if the **Problem Indicators** chart shows a red bar for **Loss**, clicking the bar generates a list of calls with high packet loss. From there, users can drill down further into individual call metrics and obtain a plain-English diagnosis of the factors causing excessive packet loss.

SQmediator is available in a variety of product versions designed to fit specific network environments and applications. For business or call center quality monitoring, a single-server edition of SQmediator provides ease of installation. Multiple-server versions of SQmediator are also available, providing unlimited scalability for large service provider, large enterprise, and government applications. All editions of SQmediator support definition of service quality thresholds, SNMP trap and email alert generation, secure multi-user browser based user interface, advanced interactive dashboards with rapid drill down for troubleshooting individual calls and a range of other features.



**Results of a Call Report Search**



**Call Performance Metrics and Expert Diagnosis**

Each SQmediator call report (see figure above) contains a series of color-coded charts showing detailed information—including listening and conversational quality MOS scores/R-factors, rates of packet loss/discard, and burst/gap loss statistics—for all calls contained in the report. These charts, like those on the dashboard, can be clicked to drill down into more specific information.

A list of call records corresponding to the specified search criteria is provided, with separate statistics shown (when available) for each direction of a call. By clicking one of the listed calls, you can quickly “drill down” to view detailed performance metrics for that call (see figure at top right). This screen identifies call endpoints and provides both cumulative and individual statistics for each alert, interval, and end-of-call report exchanged between the endpoints. Color-coded bar indicators make it easy to interpret metric results at a glance, without the need to remember complex numeric ranges. If a metric is acceptable, the indicator appears on the green portion of the bar; yellow indicates a possible area of concern, and red reflects a severe problem.

SQmediator’s Expert Diagnosis feature provides a brief text-based assessment of call quality and, if problems are present, identifies the specific factors causing quality degradation. When additional troubleshooting is required, users can save individual calls to a collection where they can be compared and analyzed.

SQmediator is designed to provide customized data filtering and analysis capabilities for specific applications. In a small business environment, it may only be necessary to monitor the performance of the company’s VoIP or videoconferencing service, while large enterprise and service provider environments may consist of multiple customers, departments, office locations, networks, etc. For these larger-scale applications, SQmediator supports user-definable resource groups, which allow incoming quality reports to be associated with one or more customers, locations, network or equipment types. By filtering on resource groups, users can quickly view and diagnose calls associated with a specific branch office, customer workgroup, network device, endpoint type, etc. where users are experiencing poor call quality.

SQmediator is a high performance application designed to accommodate high call volume environments and to scale easily to meet expanding business needs. The SQmediator Reporter can support 8 or more simultaneous users (for multi-server installations) or 4 users (for single-server installations). Additional SQmediator Collectors and Reporters can be added to a multi-server installation as needed.

For more information about SQmediator please visit:

[www.telchemy.com](http://www.telchemy.com)

### Supported Protocols

- Accepts RFC 6035 (SIP RTP Summary) reports from IP phones and gateways
- Can be configured to collect quality reports from third-party (non-SIP) reporting devices

### Call Quality Metrics

- Listening and conversational quality MOS scores— 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

### Video Quality Metrics

- Video, Audio & Audiovisual MOS scores— MOS-V, MOS-A, MOS-AV
- Video codec, frame size, frame rate, GoP structure and length
- Count and proportion of I/B/P frames received, lost, impaired

- Levels of detail, motion, panning - identifies blank, frozen, empty frame content

### IP/RTP Metrics

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

### Minimum/Recommended Server Hardware

- Dual-core processor (quad-core recommended)
- 4 GB RAM (8-12 GB recommended)
- 250 GB hard disk (1 TB or more with RAID 0, 1, or 10 recommended)
- Minimum of one 10/100/1000 Ethernet interface (report collection and management port)

### Supported Databases

- PostgreSQL version 8.4 and higher
- Oracle 11g Release 1 / Release 2

### Supported Platforms

- Red Hat Linux / CentOS v5
- Sun/Oracle Java SE 6 (or higher) JRE required



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