

# Using SQmediator® with Grandstream® IP Phones

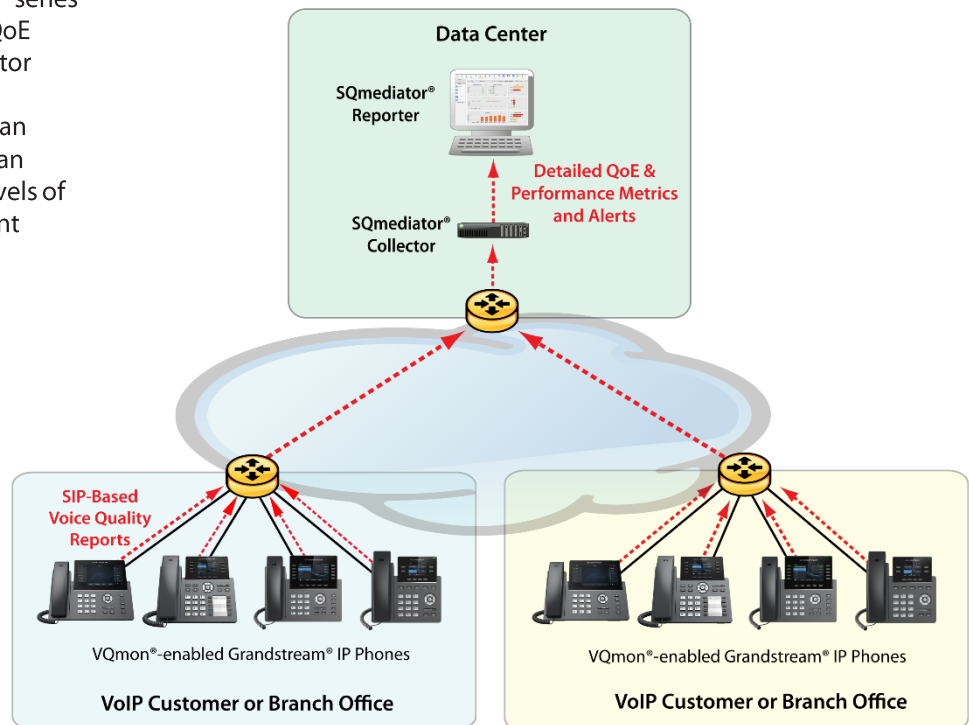
Voice over IP (VoIP) quality is highly sensitive to IP network problems such as packet loss, jitter and delay, which are often transient and difficult to troubleshoot. To manage VoIP performance effectively, it is crucial to understand not just which calls are being impaired, but also the root causes of impairments and how to prevent them.

Telchemy SQmediator® enables system administrators to non-intrusively monitor call quality and proactively diagnose the root cause of performance problems. SQmediator collects Quality of Experience (QoE) and diagnostic metrics directly from a range of Grandstream IP phones, providing a real-time view of the quality of every call as experienced by end users.

All GRP261X, GRP262X, GRP263X and GRP2670 IP series phones are equipped with the ability to report QoE scores (MOS & R-factors) to Telchemy's SQmediator management platform. At the end of a call or at configured intervals during calls, these phones can generate RFC 6035 reports with QoE scores and an extensive set of diagnostic metrics describing levels of packet loss, jitter, delay, and other key impairment factors.

SQmediator collects, correlates, analyzes, and displays QoE metrics sent by Grandstream phones and other devices that are capable of generating RFC 6035 SIP quality reports. By obtaining performance measurements directly from each handset, SQmediator provides a highly accurate view of call quality as perceived by the end user and enables network managers to remotely detect and troubleshoot many types of impairments in real time.

The figure at right depicts a sample application of SQmediator and Grandstream phones used to monitor the performance of IP telephony services.



*Example Application of SQmediator and Grandstream IP Phones in a Service Provider or Enterprise VoIP Network*

## Solution Components

**SQmediator** – requires an Oracle or PostgreSQL relational database for use by the following system components:

1. **SQmediator Collector**, a collector application that receives the quality reports sent by Grandstream phones, correlates and stores them in the system database as call records.
2. **SQmediator Reporter**, a management application with a dashboard interface that enables multiple concurrent users to retrieve and view call records and performance data. In single-server versions of SQmediator, the Reporter and Collector are installed on the same host. In multi-server versions, each system component is installed on a separate host, and the system can be scaled by adding additional Collectors and/or Reporters.
3. **Grandstream IP Phones** - the following Grandstream products are currently supported for use with SQmediator:  
**GRP2612P/W, GRP2613, GRP2614, GRP2615, GRP2616, GRP2624, GRP2634, and GRP2670**

## Configuring Grandstream IP Phones

The following is an overview of the requirements for configuring voice quality monitoring on supporting Grandstream phones. For detailed instructions, refer to the Administration Guide for your Grandstream GRP2600 Series IP phone.

To operate with SQmediator, Grandstream phones must be configured to forward their voice quality reports to the SQmediator Collector. This can be achieved by downloading an XML configuration file to the IP phones from a provisioning server, or by directly logging into the web GUI of the Grandstream phone.

### **To enable voice quality monitoring using the phone's web GUI:**

1. Under the active SIP account's advanced features (**Account 1 -> SIP Settings -> Advanced Features**), specify the name, IP address/hostname, and (optional) port number for the SQmediator Collector. Enable RTCP (or optionally, RTCP XR).

Selecting RTCP XR enables RTCP XR (RFC 3611) reports in addition to RFC 6035 SIP quality reports. RTCP XR messages are exchanged with other RTCP XR capable IP phones and gateways, and can be collected by probes/analyzers (including Telchemy's **SQprobe**® software probe) to compare endpoint and midstream measurements and isolate problems.

2. Specify the type of SIP reports to be generated by the phones. This can be found under **Settings -> Voice Monitoring**. Three types of SIP quality reports can be enabled:
  - Session Reports** Generated at the end of a call.
  - Interval Reports** Generated at a specified interval (5-20 seconds, default 20) during a call. Periodic reporting can greatly increase the volume of reports being generated by phones and is typically used for temporary troubleshooting purposes.
  - Alert Reports** Generated when a call's listening quality (MOS-LQ) degrades below a specified threshold, or one-way delay exceeds a specified threshold. Separate thresholds can be configured for warning and critical alerts.

### **To enable voice quality monitoring using an XML configuration file:**

Voice quality monitoring can also be enabled through `cfgMAC.xml` with the following values. Order is respective to process listed above (P26093, P26094, P26095, P2392, P8492, P8493, P8494, P8495, P8489, P8490). For more details, please reference Grandstream's default configuration templates available at <https://www.grandstream.com/support/tools>.

## Configuring SQmediator

Detailed instructions for installing and configuring SQmediator are available in the Installation Guide provided with the SQmediator software installation package. The basic steps are as follows:

1. Install a database (Oracle 11g/12c or PostgreSQL 10/11/13) to be used by SQmediator.
2. Install the SQmediator Collector and configure it using the menu-driven Collector configuration tool.
3. Install the SQmediator Reporter and configure it using the menu-driven Reporter configuration tool.
4. Start the Collector and Reporter, log into the Reporter using a web browser, and enter the Telchemy-issued license key to activate the platform.

## References

- *Grandstream GRP261x Administration Guide*
- *SQmediator Installation Guide*
- [RFC 6035: Session Initiation Protocol Event Package for Voice Quality Reporting](#)
- [RFC 3611: RTP Control Protocol Extended Reports \(RTCP XR\)](#)
- [RFC 3903: Session Initiation Protocol \(SIP\) Extension for Event State Publication](#)



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