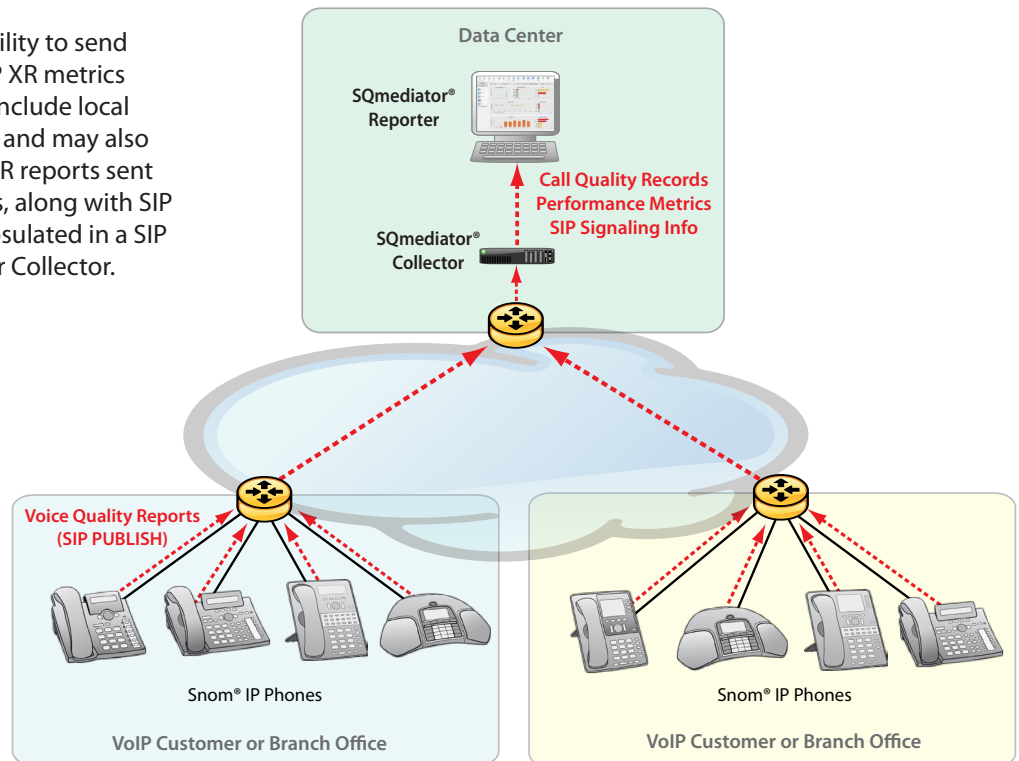# Using SQmediator® with Snom® IP Phones

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 diagnostic metrics directly from Snom IP phones, providing a real-time view of the performance of every call.

Select models of Snom IP phones have the ability to send a voice quality report containing a set of RTCP XR metrics (RFC3611) at the end of a call. These metrics include local measurements of packet loss, jitter and delay, and may also include remote metrics obtained from RTCP XR reports sent by the other call endpoint. The quality metrics, along with SIP registration information for the call, are encapsulated in a SIP PUBLISH message and sent to the SQmediator Collector.

SQmediator collects, correlates, analyzes, and displays performance metrics* sent by Snom IP phones and other devices that are capable of generating RFC6035 SIP session 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 Snom IP phones used to monitor the performance of IP telephony services.

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

Solution Components

SQmediator - requires access to a database (Oracle 11g/12c or PostgreSQL 9.6-10.x) for use by the following system components:

- **SQmediator Collector,** which collects and correlates the quality reports sent by Snom phones and stores them in the system database as call records.

- **SQmediator Reporter**, a browser-based multi-user GUI for retrieving and viewing 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.

Snom IP Phones - the following Snom products are currently supported for use with SQmediator:

- Snom 3x0, 7xx, 8xx, and MeetingPoint IP phones running Firmware Version 8
- Snom PA1 Public Announcement System running Firmware Version 8

* Snom IP phones do not currently generate the full RTCP XR metrics set, which includes estimated listening and conversational quality scores (R-factors and Mean Opinion Scores). An optional MOS calculation feature can be purchased with SQmediator to obtain MOS values from the RTCP XR metrics reported by Snom phones.

Configuring Snom IP Phones

Note: the following is an overview of the requirements for configuring voice quality monitoring on supported Snom IP phones. For detailed instructions, refer to the Administration Guide for your Snom product model.

To operate with SQmediator, Snom phones must be configured to forward their voice quality reports to the SQmediator Collector. This can be done on an individual phone using the phone's built-in web user interface, or on multiple phones by directly editing an XML configuration file that is typically downloaded to the phones from a provisioning server. The basic steps are as follows:

1. Configure the address of the Collector. In the web user interface, in the **Advanced** > **SIP** settings, enter the address into the **Voice Quality Report Collector** field. Depending on your network configuration, a SIP username may or may not be required. For example:

    ```
    sip:collector.example.com:5060          sip:username@collector.example.com:5060
    sip:192.168.1.144:5060                  sip:username@192.168.1.144:5060
    ```

    If using the XML configuration file, enter the address in the following format:

    ```
    <vq_report_collector perm="PERMISSIONFLAG">VALIDVALUE</vq_report_collector>
    ```

    where PERMISSIONFLAG specifies the read/write permissions for this configuration parameter and VALIDVALUE is the address (FQDN or IP address) and port number of the Collector. For example:

    ```
    <vq_report_collector perm="R">sip:collector.example.com:5060</vq_report_collector>
    ```

    For details on PERMISSIONFLAG parameter options, refer to your Snom product documentation.

2. Specify the RTCP XR metrics to be included in the voice quality reports. In the web user interface, type the following line into the **RTCP-XR Report Format** field:

    ```
    voip-metrics stat-summary=loss,dup,jitt
    ```

    If using the XML configuration file, enter the following line:

    ```
    <rtcp_xr perm="PERMISSIONFLAG">voip-metrics stat-summary=loss,dup,jitt</rtcp_xr>
    ```

    where PERMISSIONFLAG specifies the read/write permissions for this configuration parameter.

Configuring SQmediator

Detailed instructions for installing and configuring SQmediator are provided 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 9.6-10.x) 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

-   wiki.snom.com/Settings/vq_report_collector
-   wiki.snom.com/Settings/rtcp_xr

-   IETF RFC 6035 (SIP Event Package for Voice Quality Reporting)
-   IETF RFC 3611 (RTCP XR)

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