

Skype for Business Integration

Integration Guide

QMS 9.4

This document is for the contact center system administrator who installs, configures, and integrates Microsoft Skype for Business with Enghouse Interactive Quality Management Suite (QMS).



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About This Document

Audience

This document is for the contact center system administrator who installs, configures, and integrates Microsoft Skype for Business with Enghouse Interactive Quality Management Suite (QMS).

Reference materials

The content contained in this document works in combination with the information and procedures in the following documents or Help.

- Quality Management Suite System Design Guide
- Quality Management Suite Installation Guide
- Quality Management Suite High Availability Guide

Document conventions

This document uses the following text formats and notation conventions.

Text format

Bold text indicates a button, field, link, option name, or similar function requiring an action.

Italicized text indicates new terms, directory paths, or references to external documents.

Notes and cautions

Icons used throughout this document identify additional details or special conditions.



Note

Provides additional information or describes special circumstances.



Caution

Warns of user actions that may cause system failure or irreversible conditions.



Stop

Describes actions that you should only perform under the supervision of Enghouse Customer Support.

Contact information

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Solution Overview

The QMS Recording solution for a Microsoft Skype for Business environment consists of three possible call recording modes, as well as the option of recording Skype for Business chat sessions. Exact configuration for QMS within a Skype for Business environment can vary greatly, because of the flexibility of Skype for Business setups. General, basic configurations for each recording mode are described in this document. More complex Skype for Business environments will likely need to expand on the basic configurations (for example, more Front End servers require more Telrex Net Service installations).

Along with the usual QMS services installed on the QMS Server, any Skype for Business recording solution will also include at least one installation each of two other QMS components: the RTP Data Collector (RTPDC) for Endpoint mode recording or the QMS Packet Forwarding Service for Mirroring/AtEdge modes, and the Telrex Net Service. When installed on a PC running the Skype for Business client, the RTPDC will forward any RTP audio packets from the PC to the QMS Server. When installed on a Mediation or Edge server, the QMS Packet Forwarding Service will also forward RTP audio packets from IP addresses of interest to the QMS Server.



The QMS Packet Forwarding Service includes two enhancements that the RTPDC does not, which make it the preferred solution for server-side packet capture:

- Support for TURN/STUN encoded audio packets
- Support for multiple QMS deployments within a single environment, making it more useful for hosted service providers.

The Telrex Net Service connects to a Skype for Business Front End Server as a trusted application, in order to communicate call control events to the QMS Server.



Prior to Skype for Business Server, Microsoft's PBX solution was called Lync (versions 2010 and 2013), and Office Communications Server (OCS) before that. Steps for integrating all three variants with QMS are largely the same; when referencing most components, "Skype for Business" and "Lync" can be used interchangeably. Any differences will be noted when necessary.

Mediation Server Recording (Mirroring Mode)

Mediation Server Recording is the most common QMS deployment option. It is not as complex to configure as an Edge Server Recording scenario. Mediation Server Recording also does not suffer from early media issues like those that Edge Server Recording can, because the audio paths to the Mediation Server must be established for audio to start flowing. The drawback of Mediation Server Recording is that no internal calls can be recorded. Mediation Server Recording is therefore often used in call centers and other situations where the recording of internal calls is not needed. Mediation Server Recording can record conference calls and queue calls.

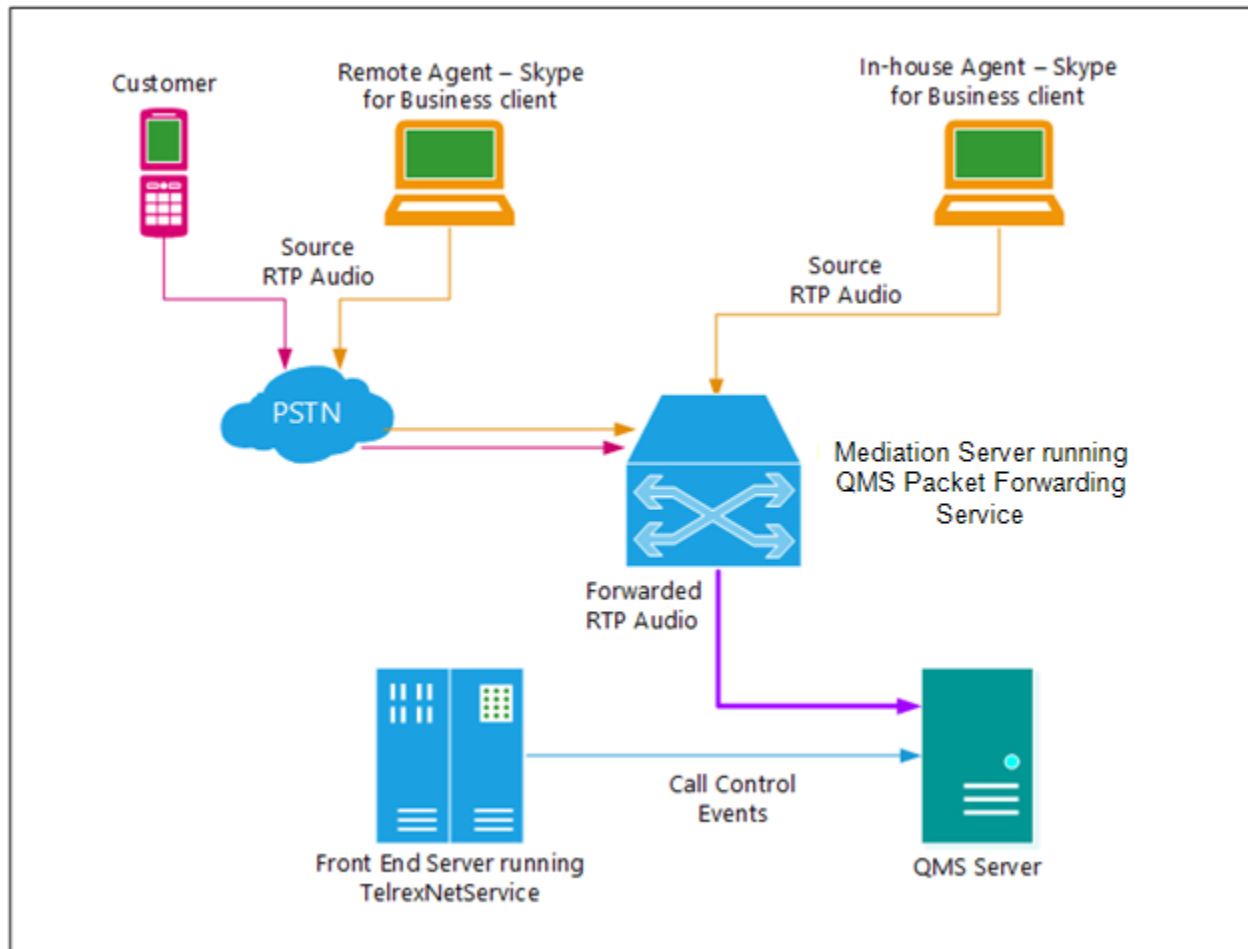


Figure 1 Mediation Server Recording concept diagram.

The QMS components that need to be installed in the Skype for Business topology in order to forward audio and call control to the QMS Server are the Telrex Net Service, installed on the Front End Server, and the QMS Packet Forwarding Service, installed on the Mediation Server. Prior to installing and configuring the QMS components, Media Bypass must be disabled in the Skype for Business Server Control Panel. If Media Bypass is enabled, call routing will flow directly between endpoints and not go through the Mediation Server. This means no audio would flow through the Mediation Server, and there would be nothing for the QMS Packet Forwarding Service to send to the QMS Server.

To disable Media Bypass, do the following:

1. Open the Skype for Business Server Control Panel.
2. In the left navigation bar, click **Network Configuration**.
3. Double-click the **Global** configuration in the table.
4. On the **Edit Global Setting** page, uncheck the **Enable media bypass** check box.
5. Click Commit.

Once Media Bypass has been disabled, see Section 5 below for steps to install the Telrex Net Service on the Front End Server. Next, refer to the QMS Packet Forwarding Service Installation Guide for the steps needed to install the Service on the Mediation Server.

Edge Server Recording (AtEdge Mode)

Edge Server Recording is conceptually similar to Mediation Server Recording, in that audio is forwarded from the Edge Server via the QMS Packet Forwarding Service to the QMS Server for recording. From a high-level point of view, the main difference between the two recording methods is Edge Server Recording allows for the recording of internal calls, along with external, conference, and queue calls, while Mediation Server Recording does not allow recording of internal calls.

While Edge Server Recording allows all calls to be recorded, properly setting up and configuring an Edge environment is usually more complex than a Mediation Server Recording environment. More details about the environment are needed to get the correct IP addresses for the users. Proper firewall rules must be defined to make sure audio can flow correctly to each Edge Server. The Telrex Net Service cannot force call audio through the Edge Server; it can only promote the Edge audio path as the preferred path for a call's audio. It is possible that another audio path is chosen for the call, and the call will not be recorded because audio is not flowing through the Edge Server. For example, in an environment with two Edge Servers, if firewall rules between the Edge Servers are not defined correctly, an audio path cannot be established for a call between the two Edge Servers. An audio path is then established that doesn't include the Edge Servers, meaning no audio flows to the Edge Servers, and the call can't be recorded.

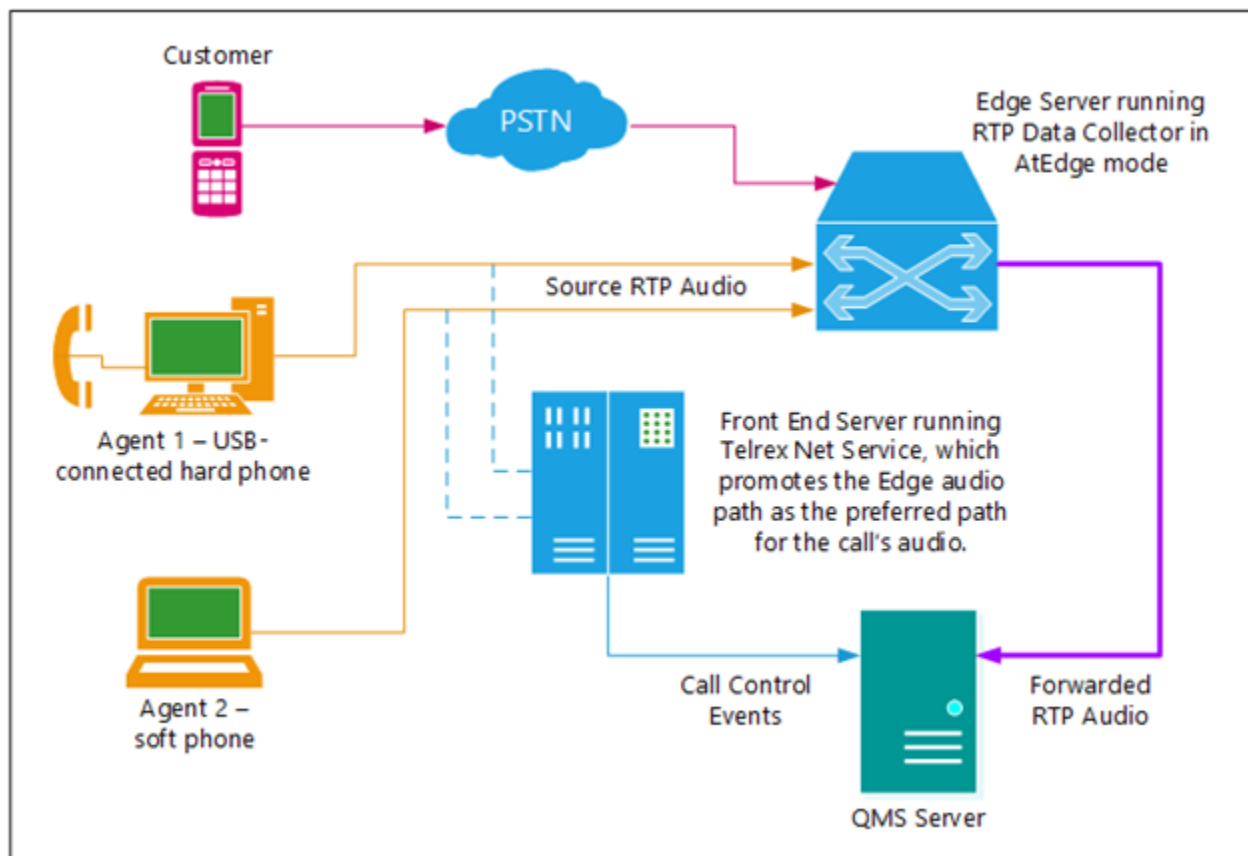


Figure 2 Edge Server Recording concept diagram.

A drawback of Edge Server Recording is the Skype for Business concept of “early media”. For QMS to record a call in Edge Server Recording, a media path for the call must be established through the Edge Server. Once audio reaches the Edge Server, the QMS Packet Forwarding Service will forward the audio to the QMS Server. Building the media path through the Edge Server might take a few seconds, however. The audio endpoints on a call are able to start sending audio directly to each other well before they establish an audio path between one another. Because the first few seconds of audio, the “early media”, might be sent directly between endpoints, the Edge Server does not receive that audio and therefore cannot forward it to the QMS Server to be recorded. As a result, these call recordings will be missing the first few seconds of audio.

See Section 5 below for steps to install the Telrex Net Service on the Front End Server. Next, refer to the QMS Packet Forwarding Service Installation Guide for the steps needed to install the Service on the Mediation Server.

Endpoint Recording (Endpoint Mode)

The third recording mode that QMS employs in a Skype for Business environment is called Endpoint Recording. As with the first two recording modes, Endpoint Recording requires installing the Telrex Net Service on the Front End Server to send call control events to the QMS Server. The main conceptual difference between Endpoint Recording and the other two modes is the use of the RTP Data Collector on every recorded agent's PC, rather than using the QMS Packet Forwarding Service on a centrally located server. Any audio flowing into or out of the agent's PC is forwarded by the RTPDC directly to the QMS Server. Endpoint recording will work with Skype for Business clients (softphones), as well as with USB-connected hard phones that are compatible with Skype for Business.

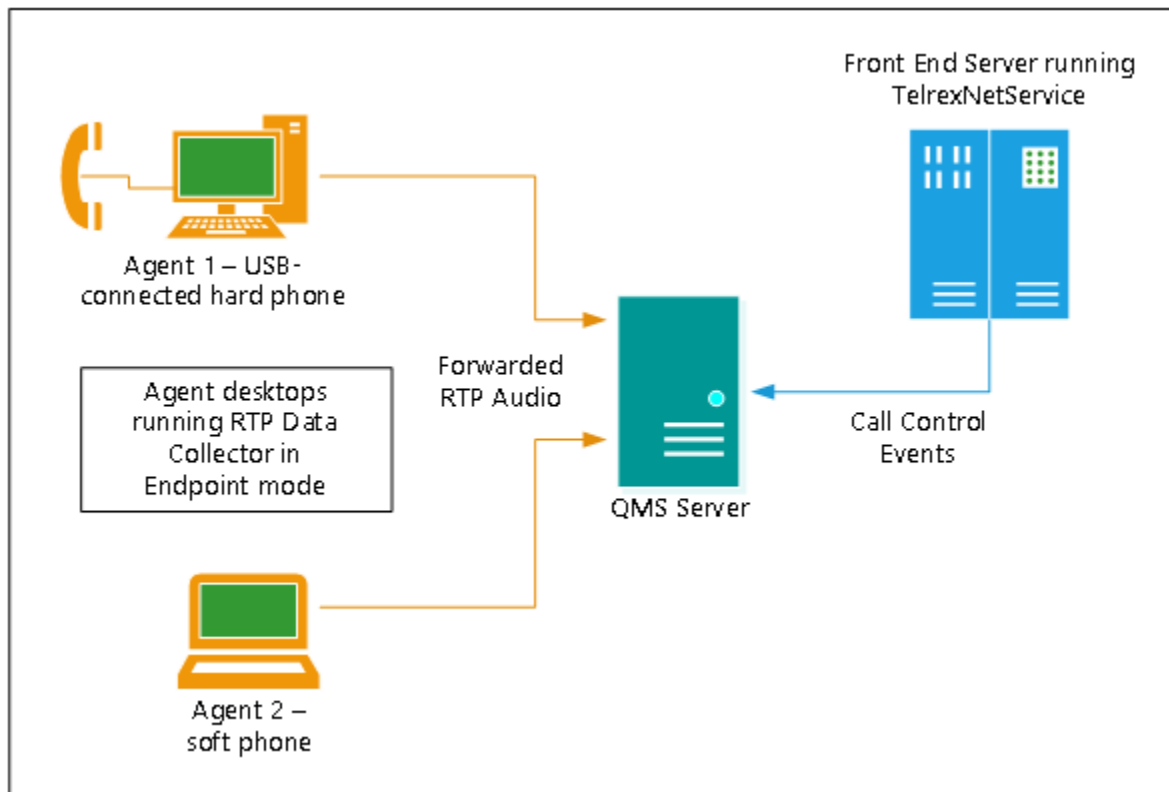


Figure 3 Endpoint Recording concept diagram.

See Sections 4 and 5 below for steps to install the RTPDC on each recorded agent's PC, and to install the Telrex Net Service on the Front End Server, respectively.

Chat Session Recordings

Along with recording phone calls, QMS has the capability of recording Skype for Business chat sessions. The recording will start with the first message sent in a chat session, and the recording will end once the chat session windows are closed. Chat recording capability requires a separate Text Recording license for each user that needs this feature.

Satisfy the Requirements

A single user account on the Skype for Business Front End server that is a member of these groups:

- RTCHSUniversalServices (Active Directory group)
- RTCUniversalServerAdmins (Active Directory group)
- RTC Server Applications (Front-End Server local group)

If your organization plans to enable recording encryption in the Call Recording system, in addition to the permissions listed above, the Logon account used by the QMS Call Recording Service needs to have the following permissions:

- The account has to be able to read the private key data of the certificate the Recording Server uses to establish TLS connectivity with the Lync Front End Server. This permission can be granted using the Certificates snap-in for the Microsoft Management Console.
- The account has to be a member of the RTC Component Local Group on the Call Recording Server. This permission can be granted using the Local Users and Groups snap-in for the Microsoft Management Console.



Please refer to the Quality Management Suite System Design Guide for information on hardware, software, and system requirements for the QMS server.

RTP Data Collector (RTPDC)

The RTPDC is a service that captures RTP audio packets flowing into or out of the device on which the service has been installed, and forwards those RTP packets to the QMS Call Recording Service.



Prior to QMS 7.1, the RTPDC was used for all three recording modes. Enhancements made to the QMS Packet Forwarding Service for QMS 7.1 and higher make it the better option for Mediation Recording and Edge Recording. When upgrading to QMS 7.1, while it's possible to leave RTPDC in place when running in Mediation or Edge Recording modes, it is recommended to replace RTPDC with the QMS Packet Forwarding Service.

RTP Data Collector Installation

To install the RTPDC, complete the following steps.

1. Copy the **RtpDataCollectorSetup.exe** file to the device on which the RTPDC service needs to run.
2. Double-click **RtpDataCollectorSetup.exe**
3. The QMS RTP Data Collector Service installation wizard runs.
4. In the wizard, click **Install** to begin the installation.
5. If WinPcap isn't installed, the **WinPcap 4.1.3** installer is run as a sub-installer.
 - a. Click **Next** to start the installation.
 - b. Click **I agree** to accept the licensing terms.
 - c. Make sure the box to automatically start the WinPcap driver at boot time is checked and click **Install**.
 - d. Click **Finish** to close the sub-installer.
6. In the wizard, click Next. The End-User License Agreement page displays
7. Select the I accept the terms in the License Agreement checkbox on the License Agreement page, and then click Next. The Customize Service Setting page displays.
8. Enter the QMS Call Recording Service host machine or the IP address in the Enghouse Interactive Recording Service Address field. You can enter one address or two addresses and separate them by a comma. Click Next.
9. Click **Install**. The installation progress window displays.
10. Click **Finish**.
11. Click **Close** to exit out the window.

RTP Data Collector Configuration

The RTP Data Collector (RTPDC) configuration can be modified using the QMS Lync Component Configuration tool in the installation directory of the RTPDC. The tool will make changes to the RTPDataCollectionService.exe.config file in the RTPDC installation directory. To change the RTPDC configuration, double-click the QMSLyncComponentConfiguration executable in the **RTP Data Collector** installation directory, and select the RTP Data Collector tab. Make any required configuration changes and click **Save** to save the changes. Any changes will be lost if the tool is closed without saving. Restart the **RTP Data Collector Service** after making any configuration changes, in order to put the changes into effect.

The configurable parameters the tool exposes are as follows:

1. **Recording Server(s):** The hostname or IP address of the QMS call recording server. Enter up to three Call Recording Servers here in a redundant or High Availability installation.
2. **Operation Mode:** Select one of three possible options:
 - a. **Endpoint** if installing at a recorded endpoint.
 - b. **Mirroring** if installing in a centralized location with endpoint audio mirrored toward it, or when using a Mediation Server. (deprecated – use only in upgrade from versions prior to QMS 7.1 scenarios)
 - c. **AtEdge** if deployed on an Edge Server with the TelrexNetService routing audio to the Edge pool. (deprecated – use only in upgrade from versions prior to QMS 7.1 scenarios)
3. **Log Folder Location:** Either enter in a directory path manually, or click the Browse (...) button to select a directory path. The directory must already exist and the Logon account that the RTPDC service uses must have full read/write permissions to the directory. (deprecated – use only in upgrade from versions prior to QMS 7.1 scenarios)
4. **Capture:** In AtEdge mode a list of network adapters on the machine is presented in a table. If the Capture checkbox for an adapter is checked, that adapter will be sniffed for audio. Both the public and private adapters should be sniffed.
5. **Alternate IPs:** In AtEdge mode a list of network adapters on the machine is presented in a table. The Alternatelps field for an adapter gives the administrator the opportunity to list other IPV4 IP addresses associated with the adapter. All IPV4 addresses associated with the adapter must be listed, multiple IPs can be separated with a comma. (deprecated – use only in upgrade from versions prior to QMS 7.1 scenarios)
6. Restart the **RTP Data Collector Service** to pick up any configuration changes.

Telrex Net Service (TRNS)

Telrex Net Service Installation

Install the TRNS on the Skype for Business Front End server:

1. Login as a user that is a member of:
 - RTCHUniversalServices (Active Directory group)
 - RTCUniversalServerAdmins (Active Directory group)
 - RTC Server Applications (Front End server local group)
2. Copy the **TelrexNetServiceSetup.msi** installer to the server and unzip it.
3. Double-click **TelrexNetServiceSetup.msi**.
4. Click **Next**. The License Agreement page displays.
5. Select the **I agree** radio button and click **Next**. The Configure TelrexNetService page displays.
6. Select the version that is running on this Front End server.
7. Enter the **Fully Qualified Domain Name (FQDN)** of your Skype for Business Front End pool.
8. In the **Hostname** field enter the machine name or IP address of the Call Recording Server. In an environment where there is more than one Call Recording Server, multiple machine names or IP addresses can be entered, separated by spaces. The TRNS creates a persistent TCP connection to the named Call Recording Server(s) on port 8008.
9. Enter the Skype for Business Server SIP domain. For example, if Skype for Business users are addressed as user@enghouse.com, the SIP domain setting is enghouse.com..
10. Enter a Windows user account, which will serve as the Logon account used by the TRNS. The user specified must meet the membership requirements in step 1. Specify the username only.
11. Enter the Domain for the user account in step 10.
12. Enter the Password for the user account in step 10.
13. Click **Next**. The Ready to Install page displays.
14. Click **Install** to begin the installation. The Installation Complete page displays when the installer finishes.
15. Click **Finish** to close the installer. The TelrexNetService is now installed, and the service should be running.

Telrex Net Service Configuration

After installing the TRNS, you need to run the QMS Lync Component Configuration tool, which is located in the installation directory for the TelrexNetService. The tool will make changes to the TelrexNetService.exe.config file in the installation directory. Double click the **QMSLyncComponentConfiguration** executable in the TRNS installation directory, and select the **Telrex Net Service** tab. Make any required configuration changes and click **Save** to save changes. Any changes will be lost if the tool is closed without saving. Restart the **TelrexNetService** after making any configuration changes, in order to put the changes into effect.

The configurable parameters the tool exposes are as follows:

1. Record Sip Dialogs: Check to create a log of each session dialog in the installation directory. This is for debugging purposes only.
2. Log all Sip Messaging: Check to log all SIP messages passing through the TelrexNetService in the installation directory. This is for debugging purposes only.

3. QMS Hosts: The hostname or IP address of the QMS call recording server. Enter up to three call recording servers here in a redundant or High Availability installation.
4. Local SIP Domain(s): The name of the local SIP domain. Enter up to three SIP domains here if applicable.
5. Disallowed IP Addresses: A space delimited list of IP addresses a QMS user cannot be associated with. The setting should reflect the IPV4 addresses of the Recording Server, any Skype for Business Front End servers, and any Skype for Business Edge Servers if present in the topology, as well as any Exchange servers (if voicemails are being answered by Exchange). In all installations, the Disallowed IP Addresses should be configured.
6. Allowed codecs: Check the checkboxes corresponding to the codecs used in the current Skype for Business environment.
7. Route All Audio Through Edge: Check this checkbox if audio is captured at the Edge server instead of the end points or a mirrored location. If checked, Edge Public IP Addresses should also be administered.
8. Edge External (Public) IP Address(es): A space-delimited list of the public IPv4 addresses for all of the Edge servers in the topology.



The public IP addresses of the Edge server adapters can be determined using the Skype for Business Topology Builder. All External IPv4 addresses assigned to any Edge server in the installation qualify as a public IP address.

9. Edge Relay Gateway(s): A space-delimited list of public IPv4 addresses for a separate gateway that serves as an intermediary between the public Edge adapter and an end user, through which audio is routed.
10. Log Folder Location: Either enter in a directory path manually, or click the Browse (...) button to select a directory path. The directory must already exist and the Logon account that the RTPDC service uses must have full read/write permissions to the directory.



Make changes to the following settings only when instructed to do so by Enghouse Customer Support:

11. Disable SSRTTP on Replaces Header: Check to disable pulling updated SRTP keys from a sip message with a Replaces header.
12. Disable SRTP Key Reset: Check to prevent SRTP keys from being updated when they are detected as incorrect.
13. MSPL Script: Names the script that filters and dispatches SIP messages to the TelrexNetService. Typically set to TelrexNetService.am. Setting the script value to TelrexNetServiceNotification.am improves scaling, but only supports reviewing rather than changing SIP messages. Routing audio through the Edge and suppressing unsupported codecs or encryption requires changing messages.
14. Disallowed User Agents: Enter a semi colon-delimited list of SIP URLs whose call control messages should be suppressed.
15. Uncommon Suppressed Codecs: A space-delimited numerical list of audio codecs to disallow.

QMS Configuration

Services configuration

1. Log into the QMS Client as a user with permissions to create new or update existing Services information.
2. Click on Services under Administration in the navigation area.
3. Select the Call Recording Service that will have users assigned, and click Edit.
4. A new tab will appear, displaying the settings for the service. Select Microsoft Lync/Skype for Business as the PBX Type.
5. Enter in the PBX IP Address.
6. Enter the Address override if needed.
7. Click Save.

Users configuration

1. Log into the QMS Client as a user with permissions to create new or update existing User information.
2. Click on Users under Administration in the navigation area.
3. Click Add to create a new user, or if users already exist in the system, select a user to update from the user list and click Edit.
4. Fill out the Personal and Account Information sections.
5. Check the Call Recording checkbox in the Licenses section.
6. In the Call Recording Settings section, pick the name of the server used to record the user.
7. Set the Endpoint IP Address to 0.0.0.0, if the field is blank. The actual address will be detected and updated automatically. Endpoint IP addresses do not need to be unique, as audio for multiple users can originate from the same IP address.
8. Enter the SIP URI, which has the format sip:<user>@<domain>.
9. Click Save, and repeat for each additional QMS user.

Configuration File Settings (Optional)

The following are Skype for Business-specific settings that can be added if necessary to the **CallRecordingService.exe** config file, located in the QMS installation folder.

1. UseLocalSniffingForLyncAudio: Rather than having the RTP Data Collectors sending RTP audio to a specific UDP port on the QMS server, which is the default behavior, setting UseLocalSniffingForLyncAudio to **true** will enable packet sniffing on a local NIC in the QMS server to capture RTP packets. This key is located in the <Recording /> section.
2. Silk16CodecPayloadTypes: Enables support for the Silk 16-bit codec payload types when this key is set to **true**. This key is located in the <System /> section.
3. Silk8CodecPayloadTypes: Enables support for the Silk 8-bit codec payload types when this key is set to **true**. This key is located in the <System /> section.
4. EnableSipResolveAudioViaSDP: If set to True the Call Recording Service will examine the IP Address/Port pairs in the audio candidates of the SDP that sets up a call to determine which audio is associated to a QMS user. Enabling this feature allows recording in an environment where audio for many recorded QMS uses is from the same source IP Address. This key is located in the <Control /> section.

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6. **Limitation of Liability.** SUPPLIER'S LIABILITY FOR DAMAGES FOR ANY CAUSE WHATSOEVER, AND REGARDLESS OF THE FORM OF ACTION, SHALL BE LIMITED TO, AT SUPPLIER'S OPTION, REPAIR OR REPLACEMENT OF THE DEFECTIVE SOFTWARE. IN NO EVENT WILL SUPPLIER BE LIABLE FOR DAMAGES IN EXCESS OF the fees paid PURSUANT TO AN ORDER THAT FORMS THE BASIS OF THE CLAIM. IN NO EVENT SHALL SUPPLIER BE LIABLE OR RESPONSIBLE FOR ANY REPROCUREMENT COSTS, LOSS OF PROFITS, LOSS OF USE, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES OF ANY KIND, WHETHER IN AN ACTION OF CONTRACT OR TORT, EVEN IF ADVISED OF THE POSSIBILITY THEREOF. THIS LIMITATION OF LIABILITY AND EXCLUSION OF CERTAIN DAMAGES SHALL APPLY REGARDLESS OF THE SUCCESS OR EFFECTIVENESS OF OTHER REMEDIES. NO ACTION ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR ANY TRANSACTION HEREUNDER MAY BE BROUGHT AGAINST SUPPLIER MORE THAN TWELVE (12) MONTHS AFTER THE CAUSE OF ACTION HAS ARISEN.
7. **Relationship of the Parties.** Each party acknowledges that they are independent contractors, and that the relationship between Supplier and Customer is that of manufacturer/Customer. Neither party shall in any way represent or obligate the other party to any contract, term, or condition, nor may it represent the other party as agent, employee, franchisee, or in any other capacity. Customer is expressly prohibited from making representations to other third parties regarding Supplier or the Software and Services in excess of or contrary to representations contained in Supplier's or its third-party supplier's product specifications, brochures, newsletters, and other publications provided to Customer by Supplier. Nothing in this Agreement shall be construed to limit either party's right to independently develop or distribute products which are functionally similar to the other party's products, so long as Confidential Information of the other party is not used in such development or distribution.
8. **Assignment.** Neither this Agreement nor any rights under it may be assigned by Customer without Supplier's prior written consent. Any unauthorized assignment by Customer shall be void. Supplier may assign the Agreement, in whole or in part, upon thirty (30) days' notice to the Customer.

9. **Severability.** If a court of competent jurisdiction holds any provision in this Agreement to be invalid, void, or unenforceable, the remaining provisions will yet continue in full force without being impaired or invalidated in any way
10. **Notices.** Any notices given to Supplier may be made either by facsimile, overnight courier, hand delivery, or by registered or certified mail, postage prepaid with return receipt requested. Mailed notices shall be addressed to Supplier at the address appearing below, but Supplier may change such address by written notice in accordance with this paragraph. Notices mailed, or delivered personally or by electronic means will be deemed communicated as of actual receipt or the date of transmission, as applicable.

Enghouse Interactive
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11. **Confidentiality.** The parties agree to accept in confidence all Confidential Information provided to them. The parties further agree not to use or disclose any Confidential Information supplied by the other except as required to perform their obligations in accordance with this Agreement. Any disclosure of Confidential Information to agents or employees shall be made only in the normal course of business, on a need-to-know basis, within the scope and purpose of this Agreement, and under written agreements requiring such agents or employees to treat all such information as strictly confidential. The parties agree not to use, publish, reproduce, disseminate, or otherwise disclose the other's proprietary or Confidential Information, including, but not limited to customer lists, without the prior written consent of the other.
- Customer shall not develop, manufacture, maintain, or, except as contemplated under this Agreement, market products or services incorporating Supplier's Confidential Information or Software. Customer agrees to include Supplier's proprietary notice on all copies of Supplier's Confidential Information made by Customer and to maintain records of the location of these copies.
- Customer agrees that the Software, and any proprietary and/or trade secret information and data furnished to Customer by Supplier or any of its third-party suppliers will be considered Confidential Information and subject to the provisions of this Section. Supplier reserves for itself all proprietary rights in all designs, engineering details, and other data pertaining to the Software and other proprietary data arising out of work done in connection with designing, manufacturing, servicing, and testing the Software, including the sole right to manufacture and, except as provided herein, market all such items. Customer shall not reverse, translate, disassemble, or decompile the Software or any component of the Software.
12. **Entire Agreement.** This Agreement is the entire agreement of the parties regarding the subject matter hereof, and supersedes and terminates any prior agreements, understandings or representations, written or oral, except with respect to any trade indebtedness owing between the parties.

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