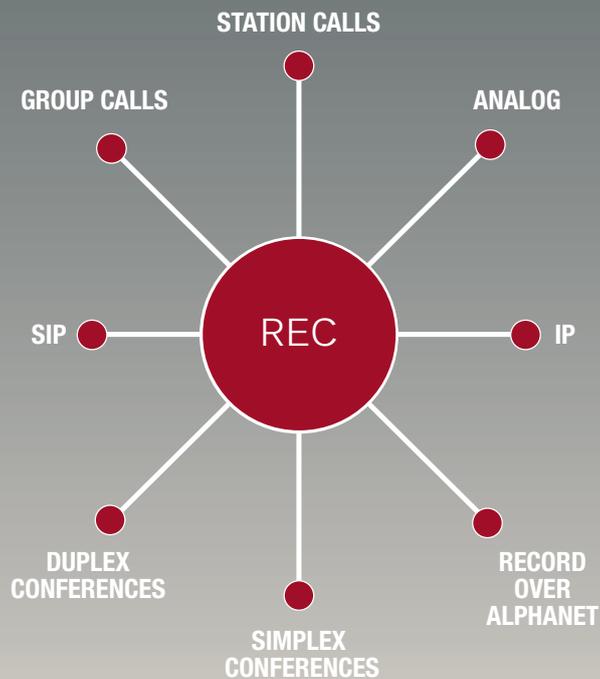


VS Recorder Software

Installation & Operation

AUDIO RECORDING



About this Document

Document Scope

This document describes the installation and operation of the STENTOFON Recorder Software.

Use of the software is based on the STENTOFON Recorder Software licenses which are available for the AlphaCom XE audio server.

Publication Log

Rev.	Date	Author	Status
1.0	7 July 2011	HKL	published
1.5	27 Feb 2013	HKL	Lite version restrictions
2.0	23 April 2014	HKL	new SW version
2.1	2 July 2019	HKL	CS e-mail

Related Documentation

For further information, refer to the following documentation:

Doc. no.	Documentation
A100K10602	AlphaCom User Guide
A100K10001	AlphaCom System Manual

1	STENTOFON Recording	4
1.1	General Description	4
1.2	Recording	5
1.3	STENTOFON Recorder Licenses	5
1.4	Recommended Minimum Requirements	6
1.5	AlphaCom Licenses	6
2	STENTOFON Recorder Software	7
2.1	Downloading Software	7
2.2	Obtaining a License	7
2.3	Demo Licenses	8
2.4	Recorder Software Installation	8
2.5	Recorder Configuration	9
2.5.1	Lite Version	10
2.5.2	Standard & Enterprise Version	12
2.5.3	Conversion of Recordings	12
2.5.4	Windows Firewall	13
2.5.5	Windows Logging	14
2.6	Playback Client Software Installation	14
2.6.1	Enterprise Version	14
2.6.2	Standalone Use	16
3	AlphaCom Recording Interface	17
3.1	AlphaCom XE Licenses	17
3.2	AlphaPro Programming	17
3.2.1	Programming Recording Interface	17
3.2.1.1	Recorder Registration	18
3.2.1.2	Audio Streams	18
3.2.2	Programming Stations	19
3.2.3	Programming Group Calls	19
3.2.4	Programming Conferences	20
3.3	AlphaNet	21
4	Recording & Playback	22
4.1	Recording	22
4.2	Recorder Status	22
4.3	Playback from Archive	23
4.4	Archiving – Exporting Recordings	25
4.5	Playback from File	26
A:	Enterprise Playback API	27
A.1	Custom Playback Client	27
A.2	API	27
A.3	Conference Packaging	28
A.4	Player Control Library	29
B:	Specifications	30

1 STENTOFON Recording

1.1 General Description

The STENTOFON Recorder Software is a fully featured IP-based audio recorder for the AlphaCom XE audio server. The solution is able to record calls from all types of terminals connected to AlphaCom XE including:

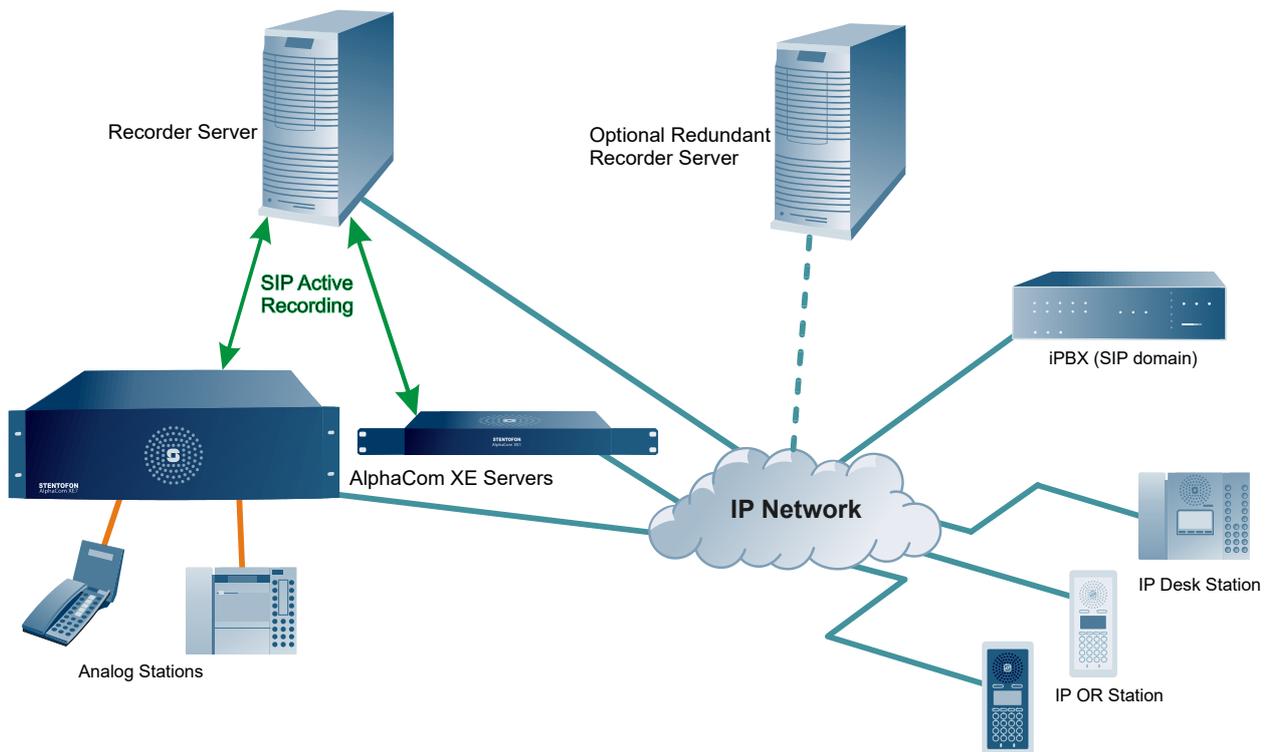
- analog intercom
- IP intercom
- analog phone
- IP phone

The solution records audio for two-way calls, group calls, and simplex and duplex conferences.

The Recorder Software is easy to install. When connecting the recorder server to the IP network, it is able to record conversations from all AlphaCom XE servers in the network.

When a call is going to be recorded, the AlphaCom XE server will intercept the audio for the call and set up a SIP session to the recorder server.

No additional hardware is needed in AlphaCom XE to enable recording. The recording function is activated by installing a license key in the AlphaCom XE server.



Conversations are stored securely, employing digital watermarking immediately after call termination to ensure audio log authenticity in the future.

The complete recording package consists of licenses for the AlphaCom XE audio server based on the number of stations that require the recording facility and the STENTOFON Recorder Software itself.

1.2 Recording

When recording, the AlphaCom XE audio server sets up a SIP session to the STENTOFON Recorder Software. The audio that needs to be recorded is sent to the recorder as RTP streams.

In a multi-module configuration, the RTP streams will be sent to the recorder directly from the module the station is connected to.

The audio that is recorded is the audio that has been audible at the destination loudspeaker(s). This means that in a simplex or voice-switched duplex conversation/conference, the recorded audio is the one sent to the receiving station(s).

1.3 STENTOFON Recorder Licenses

STENTOFON Recorder Software is available as different licensed package versions: Lite, Standard, and Enterprise.

	Lite	Standard	Enterprise
Networking	One AlphaCom server	Multiple AlphaCom servers	Multiple AlphaCom servers
Number of calls	To be recorded, a call must include 1 out of 10 pre-defined directory numbers		
Playback clients	Playback Client must reside on the recording server	Playback Client must reside on the recording server	<ul style="list-style-type: none"> - Playback Client can be installed on separate PC which is on the same network as the recording server. - Recorder can accept 2 simultaneous playback client connections. - Recorder can accept multiple simultaneous playback client connections through licensing.
API			Recorder exposes an API for the connection of custom playback clients

The item numbers for the different licenses are:

Item Number	License
1190100100	STENTOFON Recorder Software – Lite
1190100101	STENTOFON Recorder Software – Standard
1190100102	STENTOFON Recorder Software – Enterprise
1190100103	STENTOFON Recording Playback Client License - extends the Enterprise version with more than its default 2 simultaneous playback client connections

1.4 Recommended Minimum Requirements

The STENTOFON Recorder Software runs on a standard PC server.

STENTOFON Recorder Software	Lite	Standard	Enterprise
Maximum number of simultaneous recordings	5 simultaneous calls	20 simultaneous calls	100 simultaneous calls
Operating system	Windows 7 Professional	Windows 7 Professional	Windows Server 2008
Software dependency	.NET 3.5 Framework SP1	.NET 3.5 Framework SP1	.NET 3.5 Framework SP1
Processor	Intel Pentium Dual-Core E5400	Intel Core2 Duo E8600 processor	Intel Quad Core Xeon E5440 processor
Memory	1 GByte	2 GBytes	4 GBytes
Hard Disk - CallHours @ 1 RTP stream per conversation - CallHours @ 2 RTP streams per conversation	> 100 GBytes recommended 3600	> 320 GBytes recommended 11000	> 1 TByte recommended 38000
	1800	5700	19000
Hard disk transfer speed	480 Mbit/sec	1.5 Gbit/sec	1.5 Gbit/sec
Hard disk with RAID technology			Recommended
Network speed	100 Mbit/sec	100 Mbit/sec	1 Gbit/sec
Soundcard	Required	Required	Optional - only required when Playback Client resides on the same PC
Speakers	Required	Required	Optional - only required when Playback Client resides on the same PC

1.5 AlphaCom Licenses

To enable the Recording Interface on the AlphaCom XE audio server, an Active Recording Interface License is required. There are several types of licenses, all depending on the number of users in the system.

Item Number	License	No. of Users
1009648092	Active Recording Interface	2
1009648093	Active Recording Interface	6
1009648094	Active Recording Interface	12
1009648095	Active Recording Interface	36
1009648096	Active Recording Interface	72
1009648097	Active Recording Interface	138
1009648098	Active Recording Interface	276
1009648099	Active Recording Interface	552

2 STENTOFON Recorder Software

① When replacing Stentofon Recorder Software version 1.0.3.x with version 1.1.3.x or later, please refer to section 2.5.3 before proceeding.

2.1 Downloading Software

The STENTOFON Recorder Software is available from the AlphaWiki support pages. There are 4 packages available for download:

- LicenseRequestUtility.exe
- STENTOFONRecorder.zip
- STENTOFONPlaybackClient.zip
- STENTOFONRecorderAPI.zip

The software components in the zipped packages require Microsoft .NET 3.5 Framework SP1.

2.2 Obtaining a License

The procedure to obtain and activate a license is as follows:

1. Download **LicenseRequestUtility.exe** to your PC
2. Double-click **LicenseRequestUtility.exe** and fill out the form displayed
 - red fields are mandatory

3. Click **Generate Request File**
4. Save the resulting file: the default file name is related to the input for **Company Name** and **Contact Name** in the form, e.g. **Acme Inc-John Doe.req**
5. Send the file to **sales@stentofon.com** and include a reference to the purchase order for the STENTOFON Recorder Software

You should then normally receive a license file within 2 business days - the file has file extension **.lic**. When installing the STENTOFON Recorder Software, the installation wizard will guide you to browse to the location where this file is stored

2.3 Demo Licenses

All three license types are available on AlphaWiki to try as demo versions. These licenses are fully functional but have the following restrictions:

- The STENTOFON Recorder Software shuts down automatically after 5 hours and deletes all recordings – the service can be started again manually (see section 2.5).
- The licenses are valid for 200 days, with starting dates of 1st January and 1st July – new licenses will be posted on AlphaWiki in the month preceding these dates

As these demo licenses are not tied to the hardware of the PC on which the STENTOFON Recorder Software is running, it is not necessary to run the STENTOFON License Request Utility to obtain them - they can just be downloaded directly from AlphaWiki.

2.4 Recorder Software Installation

The procedure to install the STENTOFON Recorder Software is as follows:

1. Open **STENTOFONRecorder.zip**
2. Double-click the file **STENTOFONRecorderSetup.exe**
 - this will start the setup wizard which will guide you through the installation procedure
3. Please read the End User License Agreement (EULA) carefully before clicking the **I Agree** radio-button



By default the software will be installed in **C:\Program Files\STENTOFON\STENTOFON Recorder**.

The default installation process will add the following items to the Start menu:

- **Start > STENTOFON > STENTOFON Recorder > STENTOFON Playback Client**
- **Start > STENTOFON > STENTOFON Recorder > STENTOFON Recorder Configuration Utility**

At the end of the installation process, a dialog-box will appear for browsing to the location of the recorder license.

The recorder software will be installed as a Windows service and will automatically start up when the PC is started. The STENTOFON Recorder Configuration Utility (see section 2.5) has a Start/Stop button with which it is possible to start and stop the recorder service manually. It is therefore not necessary to restart the PC as long as this utility is used to start the service.

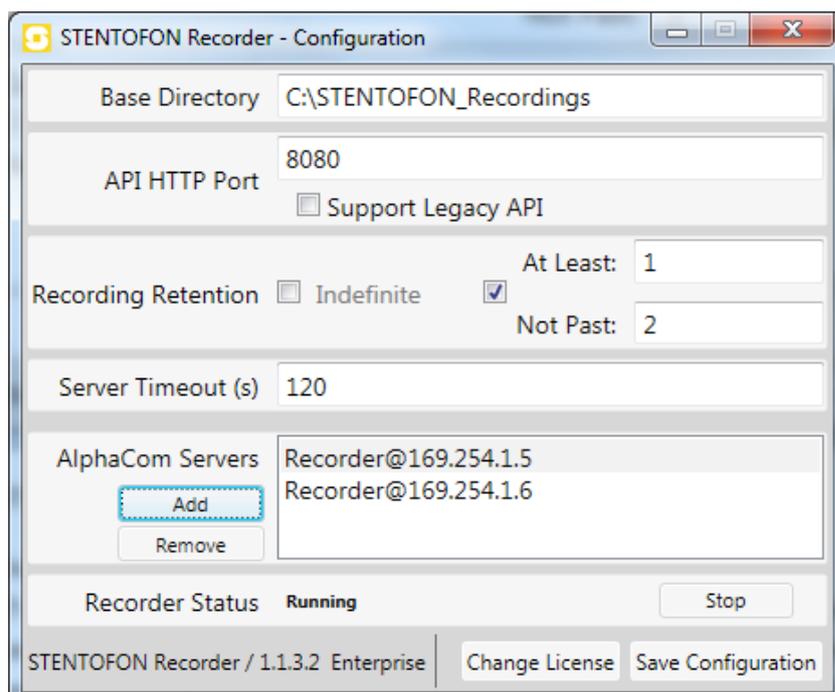
Note that the **STENTOFON Recorder Status Monitor** (see section 4.2) is added to the **Start > Startup** menu. This means that when the PC is restarted, this monitor program also automatically starts and it can also be started manually by navigating to this start menu item.

The installation of the STENTOFON Recorder Software will also install the STENTOFON Playback Client.

- ① *The description of the installation of the STENTOFON Playback Client in section 2.6 is only relevant if the playback client is to be installed on a PC other than the one on which the STENTOFON Recorder Software resides.*

2.5 Recorder Configuration

The recorder software is configured through the **STENTOFON Recorder Configuration Utility**.



- Click **Change License** to change to a new license, for instance, when upgrading from a Lite or Standard license to an Enterprise license.
- In the **Base Directory** field, enter the directory where you wish to store the recorded files.
 - The default directory is: **C:\STENTOFON_Recordings**
- In the **API HTTP Port** field, enter the port number on which the recorder communicates via its API. By default, this port number is set to **8080**.
 - Note that the Playback client uses the same port number.
- **Support Legacy API**

- If this version of the recorder is replacing 1.0.3.1 or earlier, then it is possible to access all files recorded previously from the new playback client when this parameter is enabled. This is not recommended as it will make searching and accessing files much slower. It is highly recommended to keep this parameter disabled and to convert all existing recorders to the new format. See section 2.5.3.

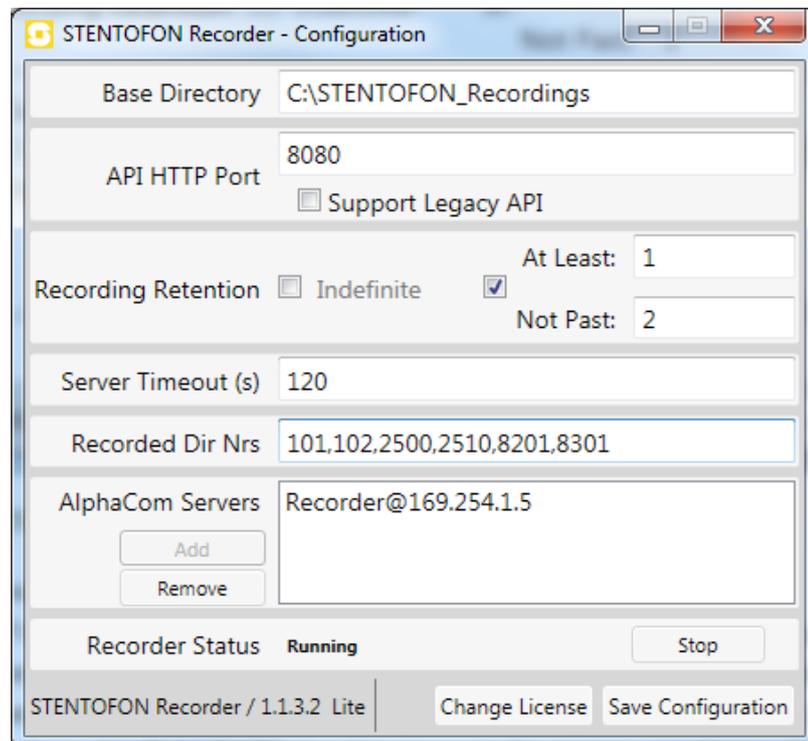
● **Recording Retention**

- This parameter defines how long recordings should be kept. Enabling **Indefinite** will not delete any recordings automatically.
- The fields **At Least** and **Not Past** take values in number of months. Once a recording is older than the value in the **Not Past** field, it will be deleted. Files with ages within the period **At Least** and **Not Past** will be kept if the available disk space allows it. Recordings that are not older than **At Least** will not be deleted automatically.
- When automatic deletion is enabled, the recorder will use a maximum of 90% of available disk space, i.e. 10% will not be used. If it is required to keep another value other than 10% free, a new key must be added to the Registry:

1. Navigate to: **KEY_LOCAL_MACHINE\SOFTWARE\Stentofon.Recorder**
2. Create a 32-bit **DWORD:minstoragespace**
3. Set the base to decimal and enter the value, for instance 20, if 20% should be kept free

- In the **Server Timeout (s)** field, the Registration Interval can be changed from its default value of **120 seconds**. Normally this field can be left at 120, but in some IP networks it may be necessary to change this value.
- **Recorder Status** shows whether the recorder service is running or not. The **Start/Stop** button allows the service to be started or stopped manually.
- Click **Save Configuration** to store any changes to the settings.

2.5.1 Lite Version



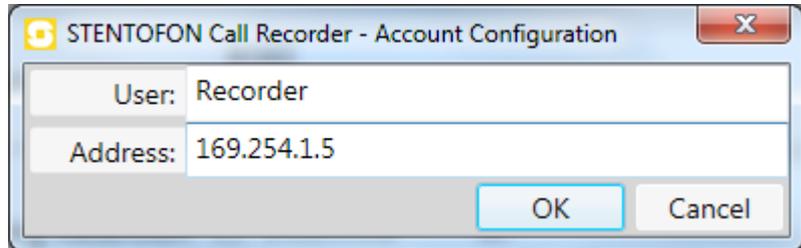
In the field **Recorded Dir Nrs**, upto 10 directory numbers can be entered, separated by commas.

① *Note that AlphaCom does not report individual subscribers as conference*

participants, meaning that if a conference is to be part of the conversations to be recorded, its directory number must also be listed as one of the 10 directory numbers.

The **AlphaCom Servers** field shows the IP address of the AlphaCom with which the recorder must register. To enter the IP address of the AlphaCom server:

- Click **Add** to open a new dialog-box



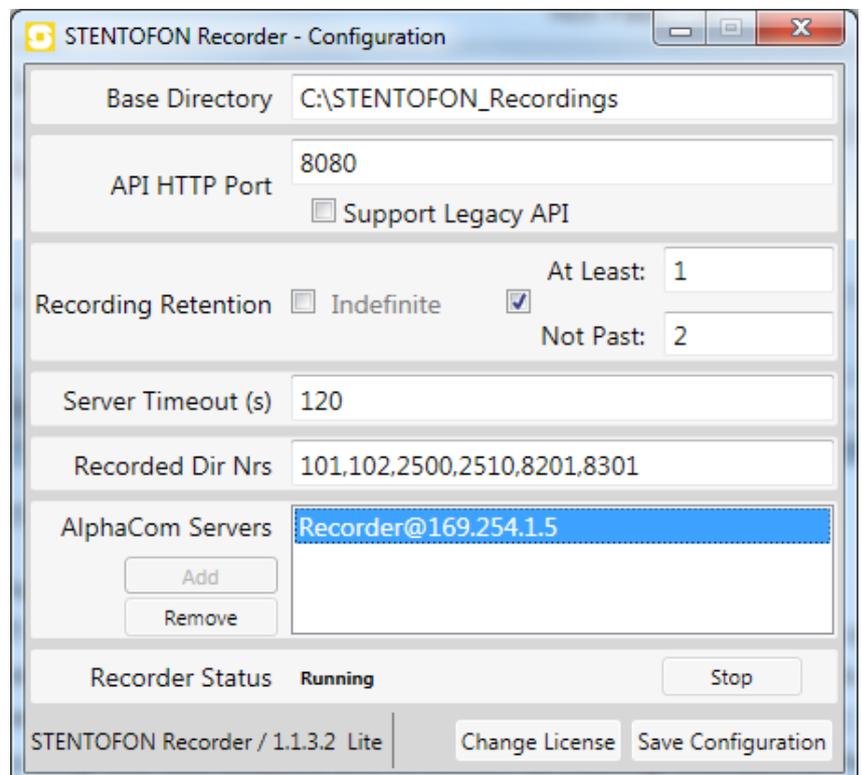
The screenshot shows a dialog box titled "STENTOFON Call Recorder - Account Configuration". It has two input fields: "User:" with the value "Recorder" and "Address:" with the value "169.254.1.5". At the bottom right, there are two buttons: "OK" and "Cancel".

- In the **User** field, enter the registration name of the recorder
- In the **Address** field, enter the IP address of the AlphaCom server

For the Lite version, the recorder can only register with one AlphaCom - once the details for one AlphaCom have been entered, the **Add** button will be disabled.

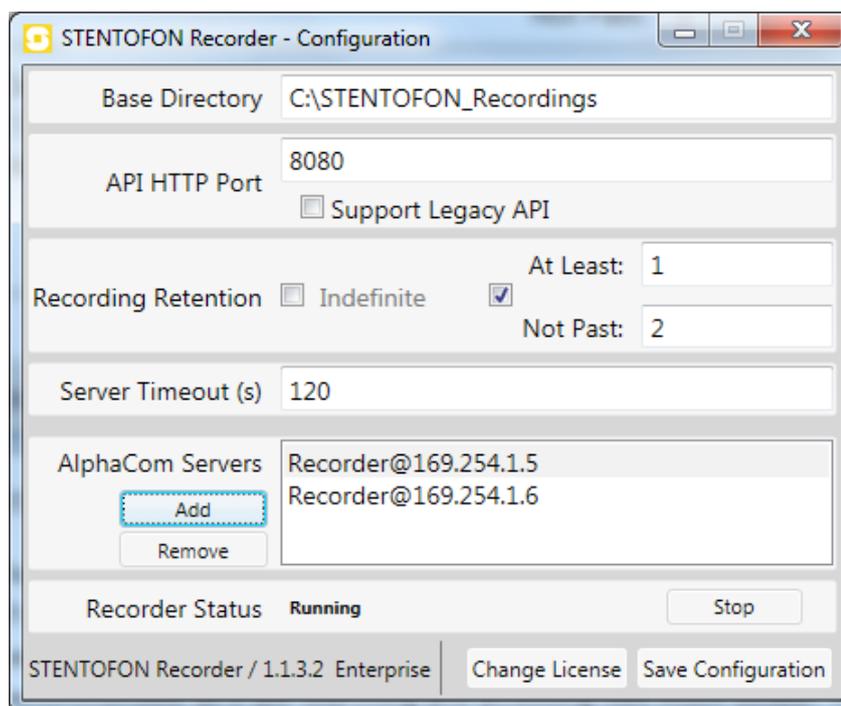
To change the AlphaCom on which the recorder shall register, the current details must first be deleted.

- Highlight the input text in the **AlphaCom Servers** field and click **Remove**.



The screenshot shows the "STENTOFON Recorder - Configuration" window. It contains several configuration fields: "Base Directory" (C:\STENTOFON_Recordings), "API HTTP Port" (8080), "Support Legacy API" (unchecked), "Recording Retention" (Indefinite unchecked, Not Past checked, At Least: 1, Not Past: 2), "Server Timeout (s)" (120), "Recorded Dir Nrs" (101,102,2500,2510,8201,8301), and "AlphaCom Servers" (Recorder@169.254.1.5, highlighted). Below the AlphaCom Servers field are "Add" and "Remove" buttons. At the bottom, "Recorder Status" is "Running" with a "Stop" button. The footer shows "STENTOFON Recorder / 1.1.3.2 Lite" and "Change License" and "Save Configuration" buttons.

2.5.2 Standard & Enterprise Version



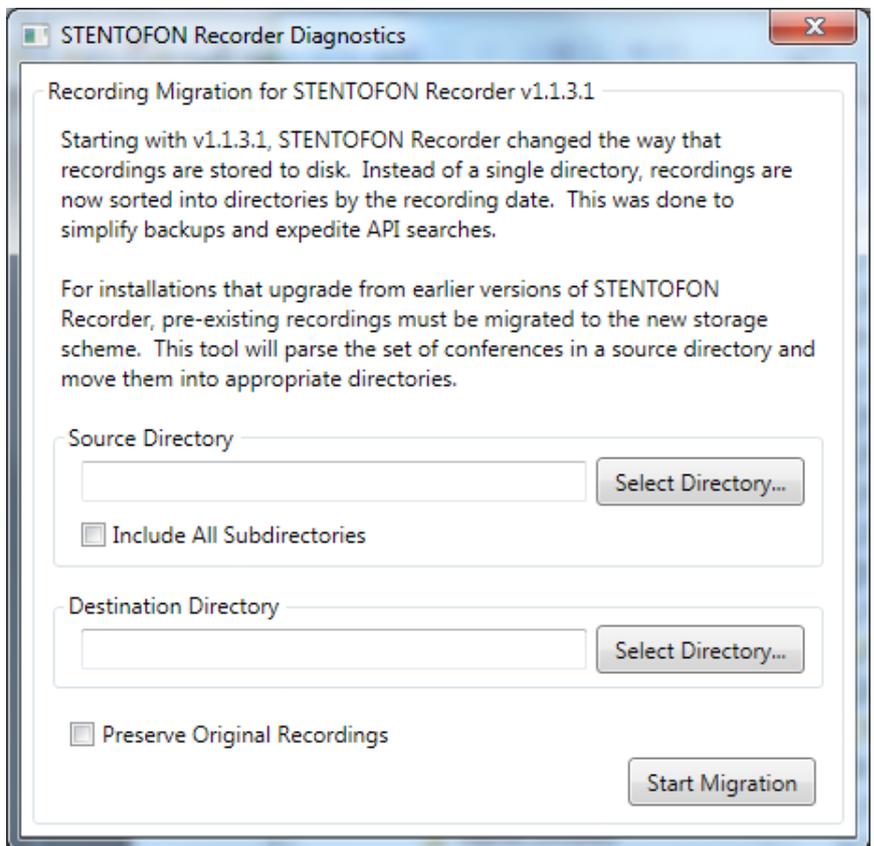
Both the Standard and Enterprise versions can register on multiple AlphaCom servers. Consequently, the **Add** button is not disabled after the details of the first AlphaCom have been entered. The procedure for adding and removing AlphaCom servers to register on is the same as for the Lite version.

2.5.3 Conversion of Recordings

STENTOFON Recorder Software version 1.1.3.1 stores recorded files in directories related to the recording date so as to prevent the recording directory from growing to a size that is difficult to manage. It also simplifies the selection of recordings that need to be deleted manually. Note that manual deletion must be done via Windows Explorer.

If this version replaces an older version of STENTOFON Recorder, it is highly recommended to convert the old recordings to the new format such that the playback client can easily find and access the recordings.

- Uninstall the old recorder software
- Locate the directory previously used for storing the recordings and rename this directory so as to make it possible for the new software to re-use that same directory name as its base if so required.
- Install the new recorder software and start the service
- Run **Stentofon.Recorder.Diagnostics.exe**, normally located in **C:\Program Files (x86)\STENTOFON\STENTOFON Recorder**



- **Source Directory** is the directory containing the old recordings, while **Destination Directory** is the Base Directory which will be used to store new recordings.
- Enable both the parameters **Include All Subdirectories** and **Preserve Original Recordings**
- Click **Start Migration** and allow the operation to run until completion. Depending on the number of existing recordings, this may take a while.

2.5.4 Windows Firewall

In order for RTP streams to be recorded correctly it may be necessary to add **Stentofon.Recorder.Service.exe** (by default located in **C:\Program Files\STENTOFON\STENTOFON Recorder**) to Windows Firewall Exceptions.

For **Windows XP**, the procedure is as follows:

1. Start the **Control Panel** and double-click **Windows Firewall**
2. Select the **Exceptions** tab and click **Add Program...**
3. Browse to **C:\Program Files\STENTOFON\STENTOFON Recorder** and select **Stentofon.Recorder.Service.exe**
4. Click **Open**
- this will close the browse dialog box
5. Click **OK** to accept the choice
6. Click **OK** to close the Windows firewall dialog box

For **Windows 7**, the procedure is as follows:

1. Start the **Control Panel** and select **System and Security**
2. Under **Windows Firewall** select **Allow a program through Windows Firewall**

3. Click **Allow another program...**
 - If the **Allow another program...** button is disabled, click **Change settings**
4. Browse to **C:\Program Files\STENTOFON\STENTOFON Recorder** and select **Stentofon.Recorder.Service.exe**
5. Click **Open**
 - this will close the browse dialog box
6. Click **Add** to accept the choice
7. Click **OK** to close the Windows firewall dialog box

2.5.5 Windows Logging

The STENTOFON Recorder service will log information into the Application logs of a Windows PC on startup. On some operating systems such as Windows XP, these entries may fail to be written if the log is already full. In some cases, this may cause an error when attempting to start the service. If this occurs, clear the application log, and attempt to start the service again.

2.6 Playback Client Software Installation

- ① *Note that it is not necessary to install the Playback Client on the PC which already has the STENTOFON Recorder Software installed as the Playback Client would have been installed together with it.*

The procedure to install the STENTOFON Playback Client Software is as follows:

1. Open **STENTOFONPlaybackClient.zip** and extract the files.
2. Double-click the file **STENTOFONPlaybackClientSetup.exe**
 - this will automatically start the setup wizard.
 - please read the EULA carefully before accepting it.

By default, the software will be installed on **C:\Program Files\STENTOFON\STENTOFON Playback Client**. The default installation process will add short cuts to the Start menu and on the desktop for starting the playback client:

- **Start > STENTOFON > STENTOFON Recorder > STENTOFON Playback Client**

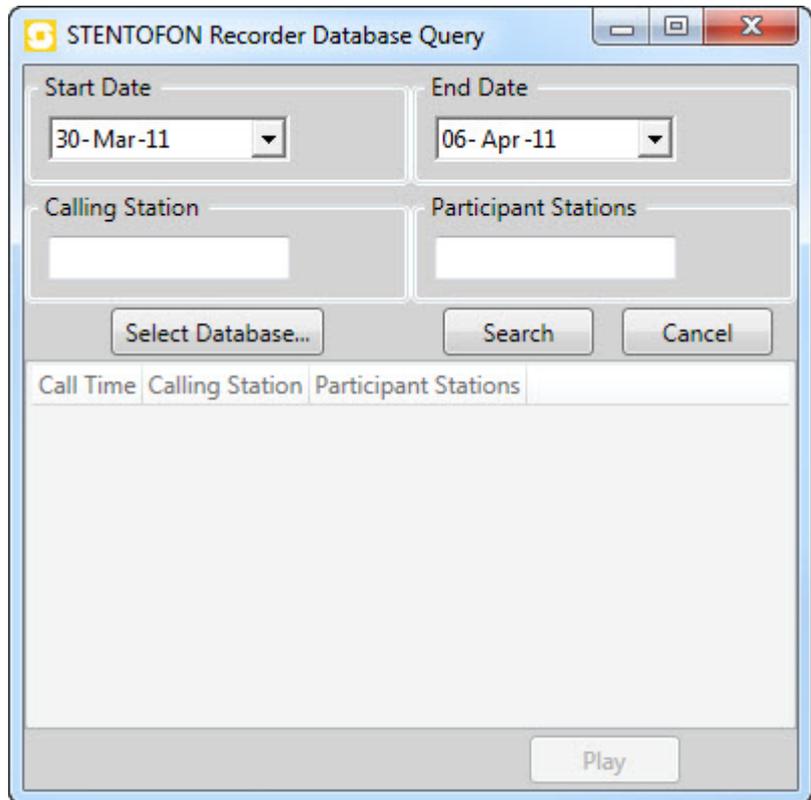
2.6.1 Enterprise Version

With the Enterprise version, the STENTOFON Playback Client can run on any PC in the network.

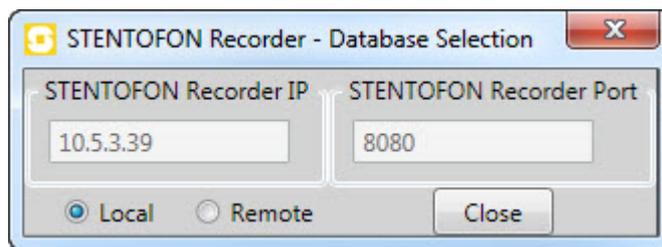
- **Start > STENTOFON > STENTOFON Recorder > STENTOFON Playback Client**



- Click **Play from Archive**



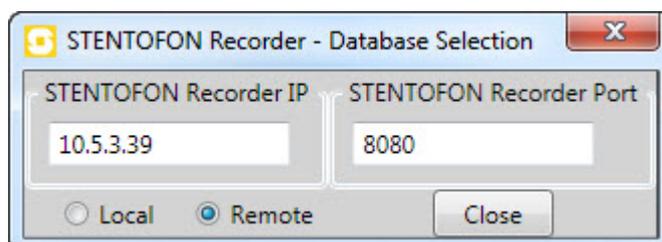
- Click **Select Database...**



When **Local** is selected, the playback client will contact the STENTOFON recorder software which must be running on the same PC.

If the STENTOFON Recorder Software is running on a different PC:

- Select **Remote** and enter the IP address of the PC on which the STENTOFON recorder is running in the **STENTOFON Recorder IP** field
- Enter the port number to use to connect to the recorder software in the **STENTOFON Recorder Port** field



If the STENTOFON Recorder software does not have an Enterprise license, the playback client will not be able to connect to the STENTOFON Recorder and only **Local** will be a valid choice.

2.6.2 Standalone Use

The STENTOFON Playback Client can be used in 'standalone' mode to play back previously exported recordings (see section 4.5).

3 AlphaCom Recording Interface

3.1 AlphaCom XE Licenses

The Active Recording Interface is a license-based feature of the AlphaCom XE audio server. In AlphaPro, it is possible to enable recording for as many specific intercom stations as the number of licenses purchased. To record both sides of a conversation, only one of the two stations in the conversation needs the appropriate flag enabled.

This means that in an installation with many substations and only a few master stations, where the substations are not able to call each other, only as many licenses are required as there are master stations.

When the recording interface is enabled (the license key has been inserted) it is also possible to record conferences and group calls.

To insert the Active Recording Interface license key for the AlphaCom server:

1. Start AlphaWeb from a web browser by entering the IP address of the AlphaCom server and logging in.
 - The default username is **admin** and the default password is **alphaadmin**
2. Select the **System Configuration** tab and then **Licensing** and click **Insert new License Key**
3. Enter the license key into the input field and click **Insert Key**
4. Accept the Terms and Conditions by clicking **Yes**
 - The license key is now inserted but not yet activated.
5. To activate, click **Yes** to the question **Do you want to reset the amc system now?**

① *When using STENTOFON Recorder Software – Lite, please refer to section 2.5.1 for information related to restrictions on the recording capacity of the Lite version.*

3.2 AlphaPro Programming

The following sections describe the programming of the Recording Interface, Stations, Group Calls, and Conferences in AlphaPro.



3.2.1 Programming Recording Interface

In AlphaPro, programming of the Recording Interface is done under the **Recording** tab in the dialog box where all system-wide information is programmed:



1. Open AlphaPro
2. Click the **Exchange & System** icon
3. Click the **System** button
4. Click the **Recording** tab

① *Note that after sending the changes to the AlphaCom audio server, the server needs to be reset in order to activate the changes which are made as described in this section.*

Update Records...

General | Calls and Options | Logs and Errors | Timers | Fire Alarm | VoIP | **Recording**

	Primary Recorder	Secondary Recorder
Username:	Recorder	Recorder_Sec
IP Address:		

Need Single RTP:

Codecs

All	<input checked="" type="checkbox"/>
G.711u	<input checked="" type="checkbox"/>
G.711a	<input checked="" type="checkbox"/>
G.722	<input checked="" type="checkbox"/>

3.2.1.1 Recorder Registration

The STENTOFON Recorder Software registers with AlphaCom as a SIP device.

- If only one recorder is used, enter its registration name in the **Username** field for **Primary Recorder**.
- If there is a redundant recorder as well, enter its registration name in the **Username** field for **Secondary Recorder**.

AlphaCom will first attempt to record a conversation on the Primary Recorder but if that recorder is not available, the Secondary Recorder will be used.

Note that the **IP Address** field is not relevant for this application and should be left empty.

3.2.1.2 Audio Streams

The RTP audio stream characteristics should be set as follows

- Uncheck the **Need Single RTP** box
- Check the **All** box under **Codecs**

The STENTOFON Recorder Software is able to capture multiple RTP streams for a conversation. Hence, it is not necessary to force AlphaCom to mix those streams into a single stream.

The STENTOFON Recorder Software also supports all the codecs that are supported by AlphaCom. It is therefore not necessary to force a transcoding to a specific codec.



3.2.2 Programming Stations

To program the stations for recording in AlphaPro:

1. Click the **Users & Stations** icon
2. Click the **General** tab

In the dialog box there are 2 flags for each station:

- Recording – Incoming
- Recording – Outgoing

General | User Preferences | Station Type | Automatic S

Physical Number: Def.

Directory Number:

Display Text:

Station Type: ▼

Group Access Level: ▼

Call Setup Priority: ▼

Volume (dB): ▼

Class Of Service: ▼

Recording: Incoming Outgoing

By enabling these flags, it can be determined whether only incoming or outgoing calls should be recorded, or both. Note that only as many stations should be selected for recording as recording licenses have been purchased to avoid calls not being recorded.

By default, the **Incoming** and **Outgoing** boxes are unchecked.

In a system where most stations require recording, click the **Apply to All** button. The recording flag for all 552 users will then have the same settings as that for the station where the **Apply to All** button is selected.

Conversations within the same AlphaCom will only be recorded once, even if both stations in the conversation have both recording flags enabled.

If one of the stations has the appropriate recording flag enabled, the conversation will be recorded independent of whether any recording flags are enabled for the other participant in the conversation.

3.2.3 Programming Group Calls

When a recording license is present, all local and global group calls are recorded by default, regardless of whether stations have a recording flag enabled or not. Recording of specific local and global group calls can be disabled by deselecting the recording flag for the group call.

To program Groups for recording in AlphaPro under the **General** tab:

- Click the **Groups** icon
 - select either **Local Groups** or **Global Groups**



General	Members
Group Number:	2
Descriptive Name:	Station Group 2
Directory Number:	85
Display Text:	GroupCall 2
Group Access Level:	Medium
Setup Priority:	Normal
Gong Type:	Ding Dong
Max Missing Members:	0 Answer <input checked="" type="checkbox"/>
Recording	<input checked="" type="checkbox"/>

- Enable or disable the recording flag as required by checking or unchecking the **Recording** box.

3.2.4 Programming Conferences

When a recording license is present, all simplex and duplex conferences are recorded by default, regardless of whether stations have a recording flag enabled or not. Recording of specific conferences can be disabled by deselecting the recording flag for the conference.

In AlphaPro, click the **Simplex Conferences** or **Open Duplex Conferences** icon and select the appropriate conference.

- Enable or disable the recording flag as required by checking or unchecking the **Recording** box.



Simplex Conference

Conference Number:	2
Description:	Conference 2
Default Member:	No Physical Number
Default Member is Default Speaker	<input type="checkbox"/>
Minimum Talk Priority	Low
Conference over Conversation/AlphaNet Setup Priority	<input type="checkbox"/>
Alphanet Global Conference	<input type="checkbox"/>
Recording	<input checked="" type="checkbox"/>



Open Duplex Conference

Conference Number:	2
Description:	OpenConf 2
Master:	No Physical Number
Setup Priority:	Normal
Recording	<input checked="" type="checkbox"/>

3.3 AlphaNet

Similar to stations, each AlphaNet link also has 2 recording flags associated with it, for incoming and outgoing calls. By default, both these flags are enabled.

For the recording of AlphaNet calls, the rule is:

- Record incoming call if the **Incoming** flags for both the station AND the source node are enabled
- Record outgoing call if the **Outgoing** flags for both the station AND the destination node are enabled

This makes it possible to select the side on which to record an AlphaNet call or to have the option to record the call at both ends.

The AlphaNet recording flags are part of the **Exchange & System > Net Routing** dialog box:

The screenshot shows a 'Destination' dialog box with the following fields and settings:

- Destination: 38
- Description: (empty)
- IP Addr.\Hostname: 169.254.1.5 \ 10.5.11.38
- General Settings | Advanced Settings
- Preferred codec: Best Available
- RTP Packet Size: 20 (ms)
- Billing Node: N/A
- Recording: Incoming, Outgoing

The STENTOFON Recorder Software licensed as Standard or Enterprise is able to register with many AlphaCom XE audio servers simultaneously, so that even in a large AlphaNet it is possible to use just a single recorder. However, in geographically dispersed systems, it may be advisable to have recorders at different locations.

- ① *Note that every AlphaCom XE audio server in an AlphaNet requires its own recording licenses.*

4 Recording & Playback

4.1 Recording

Once the STENTOFON Recorder Software is installed and commissioned, there are no operator actions required to record a conversation, group call or conference call. The AlphaCom XE audio server will automatically set up a SIP connection if and when required, and the audio with its associated metadata will be recorded.

At the end of the call, the recording will be digitally signed to ensure that the recording cannot be tampered with.

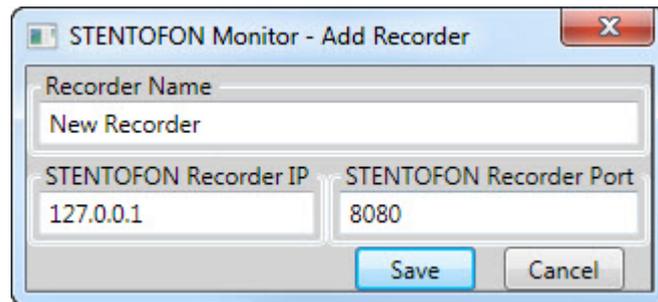
4.2 Recorder Status

There is an icon in the system tray which shows the status of the STENTOFON Recorder. The icon can show 2 statuses:

-  • All monitored STENTOFON Recorders running and registered
-  • A STENTOFON Recorder not running or not registered

It is possible to monitor several recorders from one location:

- Right-click the icon and select **Add Recorder**



- Enter the recorder name and IP address of the PC on which the STENTOFON Recorder Software is running and click **Save**.
- Right-click the icon and select **Remove Recorder** to remove a recorder which is being monitored.

Double-clicking the icon opens a new window which displays:

- All monitored recorders
- Either the software version of the Recorder or **Not Connected**
- Which AlphaCom audio server each recorder is assigned to
- The status of the recorder connection to each of these AlphaCom audio servers



The various listed statuses can be:

- OK
- Recording
- Not Registered

4.3 Playback from Archive

The STENTOFON Recorder Software digitally signs the recorded file at the end of the conversation. This is to ensure that the recording cannot be tampered with and to allow its use in a court of law. Due to this, the recorded file can only be played back using the STENTOFON Recording Player in the Playback Client.

Open the playback client by clicking the Start button in one of two ways.

On a PC on which the STENTOFON Recorder Software is installed:

- **Start > STENTOFON > STENTOFON Recorder > STENTOFON Playback Client**

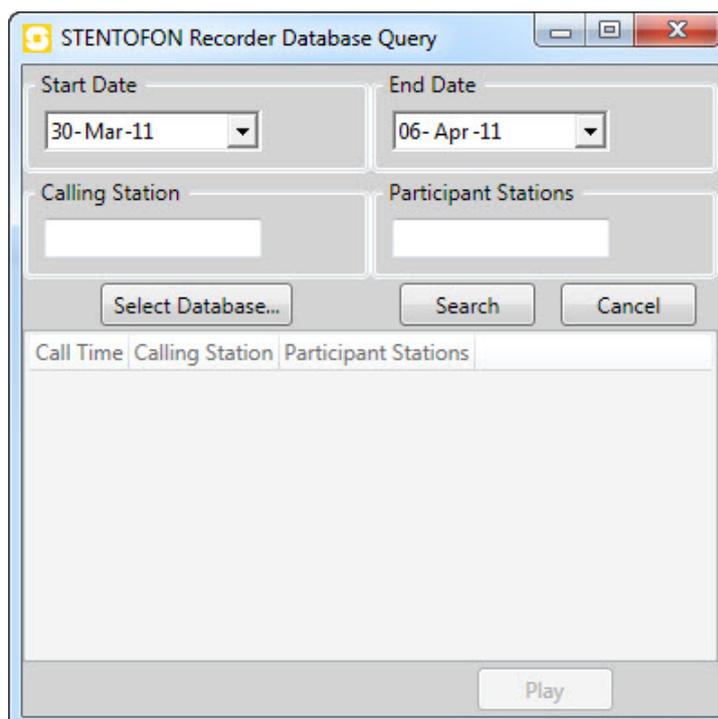
On a PC on which the STENTOFON Playback Client is installed 'standalone':

- **Start > STENTOFON > STENTOFON Playback Client > STENTOFON Playback Client**



- Click **Play from Archive** to query the STENTOFON Recorder for recorded files
- Click **Play from File** to bring up a standard Windows dialog box for browsing to a previously exported playback file (see section 4.5).

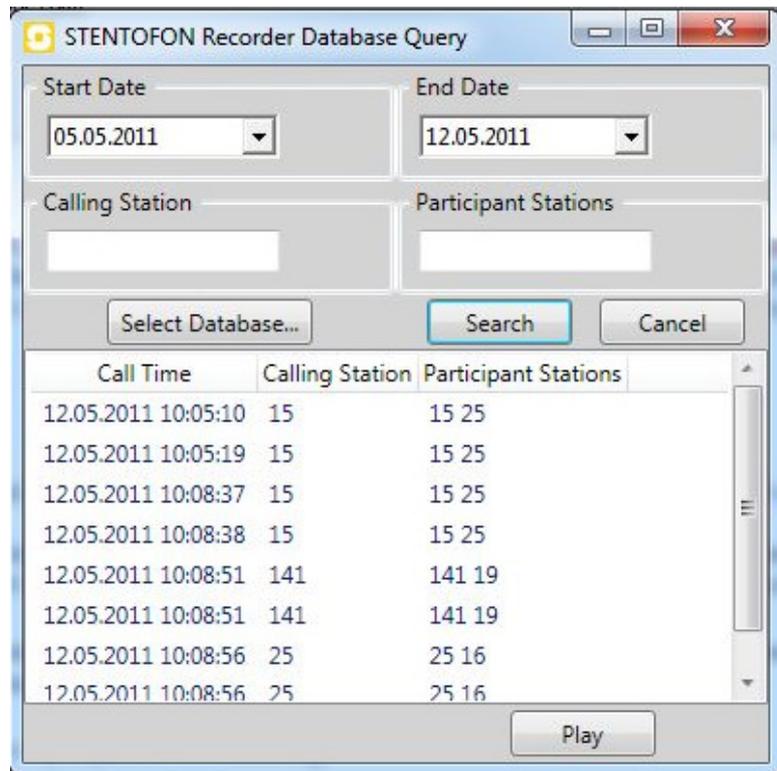
When **Play from Archive** is selected, the following dialog box will be shown:



The **Start Date** and **End Date** fields allow the selection of a time period in which to search for recordings.

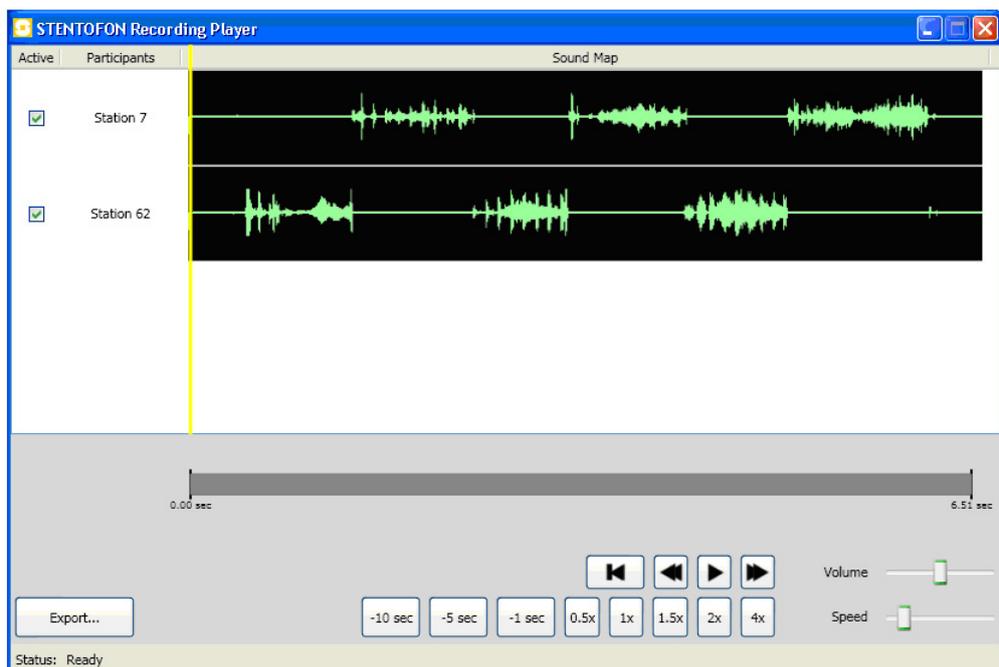
The **Calling Station** and **Participant Stations** fields are optional:

- **Calling Station** – enter the directory number of the station that made the call
- **Participant Stations** – enter the directory number of a participating station
 - this is intended to be used in cases where it is not certain whether the station of interest was the call originator or call recipient, or the field can be used to further refine the search if the field **Calling Station** is also used
- Click **Search** to obtain a list of recordings that satisfies the chosen criteria



- Select a recording from the list and click **Play**

The STENTOFON Recording Player will then be opened:



If the call was between two IP stations, the audio tracks for both stations will be shown separately as in the example above. In this case, it is possible to mute a track by checking its **Active** box. For other types of calls, there will be a single track with mixed audio.

The STENTOFON Recording Player has the following controls:



- **Playback** – Plays the audio from the point of the timeline
- **Pause** – Pauses the playback
- **Jump** – Jumps back to the beginning
- **Fast forward** – Moves the timeline forward, no audible audio. Fast forward functions while the button is held down
- **Rewind** – Moves the timeline at backward, no audible audio. Rewind functions while the button is held down
- **Volume** slider control – Changes the audio level of the playback signal relative to the general PC audio volume setting
- **Mute** – By checking the **Active** boxes in front of each RTP line, it is possible to select individual RTP streams for playback. This is only relevant for recordings consisting of more than 1 RTP stream.
- -10 sec – Jump back 10 seconds
- -5 sec – Jump back 5 seconds
- -1 sec – Jump back 1 second
- 0.5x – Play back at half the speed
- 1x – Play back at normal speed
- 1.5x – Play back at 1.5 times the speed
- 2x – Play back at twice the speed
- 4x – Play back at 4 times the speed
- **Speed** slider control – Play back at a speed between 0.1 and 6 times the speed. When the slider control has been selected, using the left and right arrow keys will decrease or increase the playback speed in increments of 0.1x.

The status bar at the bottom-left of the window indicates whether the audio file is loaded, paused, or playing at what speed.

4.4 Archiving – Exporting Recordings

Recordings that are meant to be archived can be copied to:

- A different PC
- A different hard disk on the same server
- Different media such as CD, DVD, USB flash memory

In the STENTOFON Recording Player, clicking the **Export...** button will allow you to browse to a directory where the file is to be stored.

The file can be saved in one of two formats:

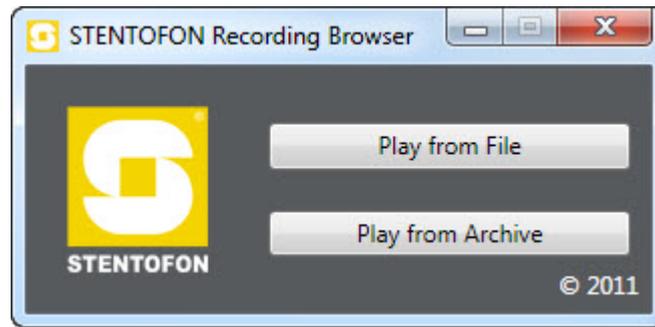
.conference – the resulting file is stored in its original watermarked format and can only be played back using the STENTOFON Playback Client

.wav – the resulting file can be played back using other programs such as Windows Media Player

4.5 Playback from File

A recorded file which is stored in **.conference** format can only be played back using the STENTOFON Recording Player.

- Click the **Play from File** button to access the stored files



A: Enterprise Playback API

A.1 Custom Playback Client

The Enterprise version of the STENTOFON Recorder Software offers the possibility for 3rd party developers to write a custom playback client.

By default, the Enterprise version allows the connection of 2 playback clients, but licenses to connect more playback clients can be purchased separately.

The Lite and Standard versions of the STENTOFON Recorder Software do not accept HTTP requests from remote computers.

The complete package to enable the writing of a custom playback client consists of:

- This document
- A set of files that enables a custom playback client to be written in an easy way

An API is exposed by the STENTOFON Recorder and allows the custom playback client to request data about calls which have been recorded. This data can then be used by the custom playback client to select the appropriate file to be played back for which the provided player control library files are available (see section 5.4).

A.2 API

The API for the STENTOFON Recorder is simple to use, and can be accessed manually with a web browser.

To start, enter the following in a web browser:

http://<ipaddr>:<port>/

- **<ipaddr>** is the IP address of the PC on which the STENTOFON Recorder is currently running
- **<port>** is the HTTP port specified using the STENTOFON Recorder Configuration Utility

If defaults are used, and the API is being accessed from the PC running the service, the proper STENTOFON Recorder API URL would be **http://127.0.0.1:8080**. An XML document will be displayed with a root element of type **conferenceList** which contains 0 or more conference child elements.

The API provides a filtering mechanism for **conferenceList** documents. The following URL parameters are accepted:

- **origin** – Conference originator.
- **time** – Conference creation time, formatted as 'YYYYMMDD-hh:mm:ss'
- **participants** – Conference participants, delimited by the vertical bar character '|'

To retrieve conference-specific metadata, create a Conference URL by combining the API URL with the conference ID:

http://<ipaddr>:<port>/<confID>/

This request will return an XML document detailing this recording. The presented document will have a root element of type **conference**, with parameters that correspond to the record provided in the conferenceList document. Each conference element will have 0 or more child elements

of type **stream**, and each stream element will have 0 or more child elements of type **substream**.

The API also hosts a conference archive package, suitable for playback where the server is not readily available. To retrieve a conference archive package, combine **<confid>.conference** with the API URL, for example:

http://<ipaddr>:<port>/<confid>.conference

This request will return a file containing the conference data and metadata. This file can be played back using the STENTOFON Playback Client executable.

- ① *For details regarding the XML schema for API metadata and the format of the conference archive package, see section 5.3.*

A.3 Conference Packaging

For a better understanding of how information is retrieved through the API, this section describes the way in which audio and metadata are stored.

Recordings are stored in files with the extension **.conference**. This conference file is a zip package comprising two primary parts. First, a **conference.xml** file is located in the root of the package which provides metadata for the conference components. Second, one or more **.bin** files store the audio data which corresponds to each substream.

The **conference.xml** file contains an XML Document with a root element of type **conference**, with the following parameters:

- **id** – A GUID (globally unique identifier) for each conference.
- **origin** – The station which initiated this conference.
- **time** – The time that the conference was started, formatted as 'YYYYMMDD-hh:mm:ss'
- **participants** – A list of participating stations, delimited by the vertical bar character '|'.

Each conference element contains zero or more child elements of type **stream**, where each stream element represents the audio track for one or more participants. Note that a conference with no streams may occur in the event of a failed call. The stream element has the following parameters:

- **joined** – offset in milliseconds from conference creation when the participant stream was added to the conference.
- **participants** – A list of participating stations, delimited by the vertical bar character '|'.

Each stream element contains zero or more child elements of type **substream**, where each substream element represents a continuous sequence of RTP audio as received from the network. The STENTOFON Recorder will create a new substream after an extended (4+ packet) period of signal loss, or if the RTP SSRC or Payload-Type changes.

- **id** – A GUID for each substream.
- **offset** – offset in milliseconds from stream instantiation when the first packet was received from the network.
- **pt** – The RTP payload type associated with this audio stream

For each substream, the conference package includes a file named **<guid>.bin**, where <guid> matches the substream ID in the **conference.xml** metadata. This file contains the encoded audio data as received from the network.

As an alternative to using the encoded audio from the conference archive, the STENTOFON Recorder API can directly provide a substream-specific WAV file. To retrieve a WAV file containing the audio from a particular substream, build a URL in the following format, where <host> is the STENTOFON Recorder API endpoint, <confid> is the conference ID, and <ssid> is the substream ID:

http://<host>/<confid>/<ssid>

A.4 Player Control Library

The procedure for obtaining the files to be able to write a fully functional playback client is as follows:

- Download **STENTOFONRecorderAPI.zip** from AlphaWiki and unzip the software

The package contains the following files:

- Stentofon.Recorder.Player.chm
- Stentofon.Recorder.Config.dll
- Stentofon.Recorder.Player.dll
- Stentofon.Recorder.Player.xml
- NHI.Media.Audio.Codecs.dll
- NHI.Media.Audio.Converter.dll
- Common-AnalogGraphicControls.dll

Stentofon.Recorder.Player.chm contains all documentation for writing a playback client. The following sample code is for a fully functional player:

```
namespace MyPlayer
{
    class Program
    {
        [STAThread]
        static void Main(string[] args)
        {
            Nullable<Boolean> result;
            OpenFileDialog ofd = new OpenFileDialog();
            ofd.Filter = 'SCR Conference File|*.conference';
            result = ofd.ShowDialog();

            if (result.HasValue && result.Value)
            {
                Window playerWindow = new Window();
                ConferencePlayerControl playerControl = new
                ConferencePlayerControl();
                RtpConferenceDescriptor conf = new
                RtpConferenceDescriptor(ofd.FileName);

                conf.LoadStreams();
                conf.LoadSubStreams();
                conf.UpdateWaveFile();
                playerControl.ConferenceSource = conf;

                playerWindow.SizeToContent = SizeToContent.
                WidthAndHeight;
                playerWindow.Content = playerControl;
                playerWindow.ShowDialog();
            }
        }
    }
}
```

B: Specifications

Recording format	G.711 (A-law and μ -law), G.722 No transcoding of audio data for optimal audio characteristics.
Frequency response	Depending on chosen codec, max 300 Hz - 7 kHz
Security	RSA digitally signed recordings and metadata.
Archiving	Recordings can be archived to different server, different hard drive or different media.
Embedded Audio Player	Play, Pause, Seek, Fast-forward, Rewind, Play slow, Play fast, Jump back by 10, 5 or 1 seconds, Play at 0.5x, 1x, 1.5x, 2x and 4x speed
API for STENTOFON Recorder Software - Enterprise	Web services based API and a set of library files are provided for the development of a custom playback client. Support for searching of recordings on date, time and conversation parties. Support for all features of the Embedded Audio Player.
Audio Player Licensing STENTOFON Recorder Software - Enterprise	The STENTOFON Recorder Software - Enterprise has licenses for 2 playback clients. Additional licenses may be purchased.

www.zenitel.com

Zenitel Norway AS
P.O. Box 4498 Nydalen
NO-0403 OSLO
Norway

DOC NO.

A100K11036

customer.service@zenitel.com



Zenitel and its subsidiaries assume no responsibility for any errors that may appear in this publication, or for damages arising from the information therein. Vingtor-Stentofon products are developed and marketed by Zenitel. The company's Quality Assurance System is certified to meet the requirements in NS-EN ISO 9001. Zenitel reserves the right to modify designs and alter specifications without notice. ZENITEL PROPRIETARY. This document and its supplementing elements, contain Zenitel or third party information which is proprietary and confidential. Any disclosure, copying, distribution or use is prohibited, if not otherwise explicitly agreed in writing with Zenitel. Any authorized reproduction, in part or in whole, must include this legend. Zenitel – All rights reserved.