

conaito VoIP EVO SDK

A simple way to VoIP-enable your applications and Websites.

Software Product: conaito VoIP EVO SDK - Enterprise/Secure Edition

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conaito VoIP EVO SDK for VoIP conferencing

The conaito VoIP EVO SDK contains a high performance VoIP conferencing client capable of delivering crystal clear sound even for both low and high-bandwidth users. Conaito VoIP EVO users are arranged in a tree-structure where each node is a room/channel where users can talk, send instant messages and share files. More than 40 users can be in each room/channel and participate in a conference while resource usage, both memory-wise and CPU-wise, is still kept at an acceptable level for gaming and other types of resource intensive tasks.

What's new in Enterprise Edition - Version 3.0

The most important new feature is the ability for the admin to record conversations to files. The admin can now also stream .wav files to clients. Volume levels can now be controlled by AGC (automatic gain control) so all users have the same audio level.

- Switched to Unicode clients
- Improved AGC (auto gain controller) to ensure all users have the same volume level
- Record VoIP conferences to WAV and MP3
- Admin can store all conversations to disk (wav or mp3)
- Play (Stream) WAV to conferences (for IVR solutions)
- Added ability to do stereo playback
- Ignore audio, private text messages and channel text messages
- Fully updated examples with source code
- Phased out the OCX (but still available as v2.2)

Here is a list of the main features of the conaito VoIP EVO SDK - Enterprise/ Secure Edition:

- VoIP conferencing with crystal clear sound even for both low and high-bandwidth users (Speex Codec)
- Full Duplex - VoIP conferencing solution (multi-user conferences)
- Comes with Windows as well Linux server (running as service).
- Work with DirectSound as well with Windows Audio.
- Remote console server administration (e.g. use telnet to control the server)
- Administrator EVO Server API (VoIP EVO Admin COM control) - 2 SDK versions (VoIP EVO Client SDK and VoIP EVO Admin SDK) are available.
- Record conferences to WAV and MP3 - Voice conferencing recording (*.wav and *.mp3 format)
- Cryptography (SSL for TCP data transmission and BLOW FISH for UDP data transmission) is used for Encryption/Decryption (only by Secure Edition).
- Arrange users in rooms/channels with topics and passwords.
- Full rooms/channels control including protection.
- User status control (participant available, away) including status messages.
- Get user talking function - Check whether a user is talking.
- Private and public instant text messaging.
- Broadcast server messages - sending text messages from server to all connected users.
- Channel Messages as well Message of the Day support.
- File Transfer - Share files among users in the same channel.
- Ban/ Un-Ban/ Kick Clients as well as set Client connection number limits.

- Set Clients to Operator or Administrator for different rights.
- Listing of participants and rooms/channels.
- Push-to-talk (set Keyboard shortcuts) to enable voice transmission.
- VAD (Voice Activity Detection) to enable voice transmission.
- Denoising - Noise reduction of outgoing audio
- AGC (auto gain controller) - gaining of outgoing audio by set the voice gain level.
- Position users using 3D sound.
- Microphone and Speaker Volume with Mute support.
- Microphone and Speaker Visualization support
- Individual volume for each user including Mute all.
- Mic Boost - more Microphone sensitivity
- 8 KHz, 16 KHz and 32 KHz voice recording each with multiple voice quality levels.
- Throughput between approx. 600 to 6000 bytes/sec. depending on voice quality.
- Packet loss resistant.
- Build-In Auto Voice Lag Controller
- Bound Data Control (Data flow control)
- NAT (Router) & Firewall friendly
- Works with all kinds of Internet connections
- Royalty free licensing
- No Yearly/Monthly fee
- Very easy to incorporate
- Comes with VoIP EVO Live Demo (Client and Admin) to demonstrate all the features
- A new conaito VoIP EVO Client Web-based example demonstration is included

... and much more!

Having the above features available makes it simple to develop any type of VoIP-enabled application, like e.g. a teaching tool, live support, chat, meeting tool, a multiplayer game or any other type of application which requires users being able to talk, type messages and send files to each other.

For conaito VoIP EVO clients to be able to interact with each other they must connect to a conaito VoIP EVO server which keeps track of where users are located and forwards voice-data packets between clients. The conaito VoIP EVO server is able to serve 1000 simultaneous clients and can be hosted in both LAN and internet environments.

Technical walkthrough of conaito VoIP EVO conferencing

The conaito VoIP EVO client is a network enabled application which requires a conaito VoIP EVO server to connect to in order to interact with other users. The conaito VoIP EVO server's tasks are very simple in the sense that all it does is keep track of where users are located and forward the voice-data it receives from a user to other users in the same conference.

Client/server interaction

A conaito VoIP EVO client connects to a server by first opening a TCP connection (typically to port 10300) and afterwards sends a UDP "hello" packet (typically to port 10301) to the server. The TCP connection is used for handling all "administrative" commands like joining and leaving channels whereas the UDP connection is only used for handling voice-data. All administrative commands sent on the TCP connection are human readable and it's fairly simple to interact with a conaito VoIP EVO server using e.g. Telnet in a Linux-shell or Windows command-prompt. The conaito VoIP EVO SDK contains a list of all the administrative commands which can be issued to the server.

Server limitations

Since each client requires a TCP connection the server it is, besides bandwidth, limited to a maximum of 1000 concurrent clients. This limitation is, however, very theoretical and to ensure proper

performance a conaito VoIP EVO server generally shouldn't have more than 500 active connections (500 connected users).

Voice-data transmission

Voice-data recorded by a conaito VoIP EVO client is transmitted to users in the same conference by sending the voice-data to the conaito VoIP EVO server which then forwards the voice-data to the other users.

By having the server forward the voice-data takes the load of the clients so each client doesn't have to send its voice-data packet to every other user in the same conference. Since voice-data is simply forwarded by the conaito VoIP EVO server, a client can receive voice-data from multiple users at the same time.

This increases the load on the client's download bandwidth but since a conference typically only have one speaker it's not a big issue and today's ADSL and cable internet users typically have higher download than upload speed. Given this information it's possible to calculate the bandwidth required for the server to host, say a 12 user conference. If one user is talking and uses a 2 KBytes/sec voice quality the server must transmit $(12 - 1) * 2 \text{ KBytes/sec} = 22 \text{ KBytes/sec}$. If three users are talking it's $3 * 22 \text{ KBytes/sec} = 66 \text{ KBytes/sec}$ in bandwidth usage on the server. For each "non-talking" client participating in this conference where three people are talking they must have a downstream of at least $3 * 2 \text{ KBytes/sec} = 6 \text{ KBytes/sec}$.

Integrating the conaito VoIP EVO VoIP client

The conaito VoIP EVO client is available as a Win32 DLL with a C-interface, a Win32 COM control and a Win32 OCX. All client implementations provide pretty much the same interface only with minor differences in the naming of functions. Visual Basic and .NET users will probably be most comfortable with the COM control whereas C++ developers are most likely to prefer the C-interface DLL. The DLL, however, requires thorough knowledge of HWND and Win32 message passing (PostMessage, SendMessage and GetMessage).

Security

The licensed conaito VoIP EVO Enterprise SDK is available in both an encrypted (Secure Edition) and an unencrypted (Enterprise Edition) version. For most applications the unencrypted (Enterprise Edition) version provides enough security in the way that a server and the channels on a server can be password-protected so unauthorized users are denied access. If, however, it is also important that the data being transmitted between clients and the server then it is necessary to use the encrypted (Secure Edition) version of the SDK which uses SSL encryption for TCP data transmission and Blowfish encryption for UDP data transmission. The API exposed by the VoIP clients and EVO Server API in both the encrypted (Secure Edition) and unencrypted (Enterprise Edition) SDK are exactly the same.

Development environment

The conaito VoIP EVO SDK provides the documentation, samples and related libraries you need to integrate with other applications or systems.

Conaito VoIP EVO SDK also includes a Win32 DLL with a C-interface, a Win32 COM control and a Win32 OCX that can be used from any programming language like C++, Visual Basic, Delphi, ASP, JSP, PHP, JavaScript, VBScript, etc.

The contents of conaito VoIP EVO SDK and the supported development environments include all of the necessary software components for building systems based on conaito VoIP EVO SDK including documented operational software applications, examples (with source code), explanations as well as necessary service programs, libraries and components.

The supported development environments include:

- Visual Basic .NET
- Visual C++ .NET
- Visual C# .NET
- ASP.NET
- ASP, JSP, PHP
- JavaScript/HTML
- Visual Basic
- Visual C++
- Borland Delphi
- and all development environments with Win32 DLL with a C-interface, a Win32 COM control and a Win32 OCX support

Server system requirements:

Operating system: Windows, Linux

Licensing the conaito VoIP EVO SDK

The conaito VoIP EVO Enterprise SDK and Secure Edition is available as a trial version which expires after 30 days.

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Further information can be found in our license agreement or in the download section.

Pricing of the conaito VoIP EVO Enterprise SDK can be found in the "Pricing" section of the conaito.com website.

Please, don't hesitate trying our VoIP EVO Enterprise SDK at once and get yourself, as well as your customers, the exciting experience of easy, fast and high quality standard applications which VoIP-enable your application and websites.

We hope you enjoy the new conaito VoIP EVO Enterprise SDK - A simple way to VoIP-enable your applications and websites.

The conaito Technologies Team