

Your Technology Connection!

Agora Labs' products include the industry-leading elemedia[®] compression technology for Video.

The Agora Labs Software Platforms

The Agora Labs software platforms are the most scalable and reliable in the industry. Originally sold by Lucent's elemedia venture, the codecs been thoroughly tested and utilized by IP service providers. Today, our products are among a minority of offerings usable in high-end networks.

The Software Architecture

Modular and hardware-independent, Agora Labs' software architecture is a perfect solution for carriers with heterogeneous configurations.

The Agora Labs Advantage

With all of the other IP Telephony platform providers in the marketplace, why choose elemedia? We offer a competitive advantage over the other providers in the following areas:

- **Modular and flexible design** enabling cost effective, distributed, and scalable implementations
- **Carrier-grade quality:** high reliability, high scalability, and high interoperability
- **Scalability** from low-end to carrier-grade solutions for central office applications
- **Flexible design** enabling distributed architectures
- **Expertise** and assets in Internet telephony software components:
 - H.323 Protocol Stack
 - Video coding



Transmission and storage of video in its raw format is very complex and expensive. The following table compares video bandwidth requirement to that of telephony.

Raw Signal	Raw Bandwidth	Application
CIF (352x288) 10 frames/sec 24 bit per pixel color video	24,330,240	Business video conferencing
QCIF (176x144) 5 frames/sec 24 bit per pixel color video	3,041,280	Consumer video phone
PCM, toll quality voice	64,000	Telephony

In order to establish a video phone session over a dial-up 28.8 kbps channel, the video signal must be compressed by a factor of 150.

The Agora Labs family of Video Codecs are standards compliant video compression drivers utilizing Perceptual Modeling and Picture Quality Control to optimize the reproduced picture quality at the receiver.

The VX2000 video codec generates and decodes a layered video bitstream which is a very useful feature for streaming applications in heterogeneous transmission environments.

All the Agora Labs codes are available for Windows 32 bit platforms. Implementations on other platforms including DSP platforms can be provided upon request.

Agora Labs Codecs Include:

ITU H.263 Video Codecs - VX1000

The VX1000 Video Codecs conform to ITU-T H.263 standard. They are intended for low bit rate and good quality internet, ISDN, and ATM videotelephony/conferencing and streaming applications.

ITU H.263+ Video Codecs - VX2000

The VX2000 Video Codecs conform to ITU-T H.263+ standard. They are intended for low bit rate and good quality Internet, ISDN, ATM, and wireless videotelephony/conferencing and streaming applications.

VX2000 video codecs generate and decode a layered video bitstream which is a very useful feature for streaming applications in heterogeneous transmission environments.

ITU H.261 Video Codecs - VX3000S

The VX3000S Video Codecs conform to ITU-T H.261 standard. They are intended for good quality Internet, ISDN, ATM, and wireless videotelephony/conferencing systems, and is mandatory for H.320, H.323, H.324, H.322, H.321, and H.310.



Encoder

Feature	VX1000SP (H.263)	VX2000S (H.263+)	VX3000S (H.261)
<i>Input Picture Dimensions</i>	Any multiple of 16; crops and centers the input to the nearest std dim: SQCIF, QCIF & CIF	Any multiple of 16; crops and centers the input to the nearest std dim: SQCIF, QCIF & CIF	Any multiple of 16; crops and centers the input to the nearest std dim: QCIF & CIF
<i>Many Input Format including</i>	BI_RGB 8, 16, 24 YUV4:2:2 YUY2 IBM Think Pad YVU9	BI_RGB 8, 16, 24 YUV4:2:2 YUY2 IBM Think Pad YVU9	BI-RGB 8, 16, 24 & 32 YUV4:2:2 YUY2 IBM Think Pad YVU9
<i>Block Encoding Type</i>	Rate/ Disortion Optimized	Rate/ Distortion Optimized	All 9MB types
<i>Motion Estimation</i>	Real Time Half Pixel, Bit-rate Optimized	Real Time Half Pixel, Bit-rate Optimized Four modes are available depending on apps	Real Time, Full Pixel, Rate/ Distortion Optimized
<i>Rate Control</i>	Adaptive	Adaptive	Adaptive
<i>Encoding time on a 1GHz Pentium™ running Win98</i>	2ms per QCIF frame	2.6 ms per QCIF frame	3.2 ms per QCIF frame

Decoder

Feature	VX1000SP (H.263)	VX2000S (H.263+)	VX3000S (H.261)
<i>Picture Size</i>	SQCIF, QCIF & CIF	SQCIF, QCIF & CIF	QCIF & CIF
<i>Motion Compensation</i>	Half Pixel	Half Pixel	Full Pixel
<i>UMV</i>	Yes	Yes	
<i>APM</i>	Yes	Yes	
<i>PB Frame</i>	Yes		
<i>Post Processing</i>	Yes	Yes	Yes
<i>Output Format</i>	RGB 8, 16, 24 & 32	RGB 8, 16, 24 & 32	RGB 8, 16, 24 & 32, YCrCb
<i>Decoding time on a 1GHz Pentium™, running Win98</i>	1 ms	1.2 ms	1.6ms
<i>H.263 Bitstream Decoding</i>		Yes	





Your Technology Connection!

Our Bell Labs Heritage

Agora Labs was founded by a group of Bell Lab's engineers who were the architects and developers of the elemedia products. These engineers have had distinguished careers at Bell Labs, earned several Doctorates, a number of patents, and have contributed to Video Codec specifications.

Our Stack's Heritage

The elemedia Video Codecs were, and are, recognized as the leading Video Codecs. While developing the elemedia products, Lucent engineers and scientists chaired many ITU committees, including the ones responsible for the H.261, H.263 and H.263+ specification.

Agora Lab's Pledge to Evolve

Video Codecs are evolving and Agora Labs pledges that its codecs will not only keep pace with the evolving videoconferencing market but will lead in technology and innovation.

Related Products

Agora Labs also supplies an H.323 stack and an RTP stack.

We Only Do One Thing, But We Do It Well!

We are specialists in H.323 and its related Codec technology, and would rather be expert in one protocol than be dilettantes in several. Therefore, we have created complete, robust, high-performance Video Codecs.

Building these codecs is a natural for Agora Labs. Our team of developers is experienced in architecting, developing, and testing video codecs for use in high reliability products. We are accustomed to building products for use in telephony networks designed with the five 9s of reliability required of a telecom system. Agora Labs understands the issues surrounding quality, reliability, scalability, and manageability because our engineers are experts in building products for telecommunications and data communications networks.

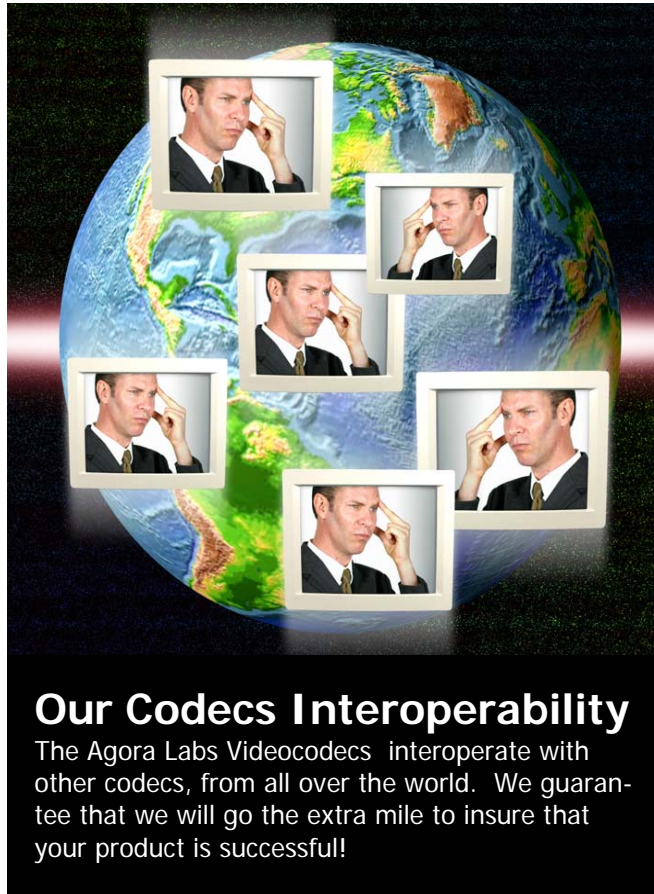
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Our Codecs Interoperability

The Agora Labs Videocoders interoperate with other codecs, from all over the world. We guarantee that we will go the extra mile to insure that your product is successful!

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