
Frequently Asked Questions

Evolution in Video Entertainment Will Cease Without Multi-Format Transcoding



1. What did TI announce on November 6, 2006?

TI announced that transcoding will be essential for the continued evolution of the video entertainment market. A new research study done by International Data Corporation (IDC) concurs finding that the ability to transcode multiple video formats will be key to allowing consumers to seamlessly access their content. IDC believes it is as an essential technology for delivering digital content to video playback devices that were previously incompatible including computers, cell phones and portable media players.

2. What is transcoding? Can you give some examples of transcoding scenarios?

Transcoding is the ability to take existing video content and change the format, bit rate and/or resolution in order to play it back on another video playback device. It codes and recodes digital content from one compressed format to another to enable transmission over different media and playback over various devices.

A transcoding example would be moving content from a STB to a PMP or cell phone. Transcoding would change the resolution of the content to meet the lower resolution screens and transcode to a lower bit rate to work within the portable device's power constraints. Formats may also need to change from MPEG-2 HD received by a STB via broadcast down to MPEG-4 simple profile at a lower bit rate and resolution for a PMP – so in this case all three variables would be transcoded.

3. What product(s) will use transcoding? Where would transcoding function reside? Is STB the hub?

Set-top boxes and digital video recorders are natural fits for transcoding since they can be the media gateway in the home with centralized storage. Transcoding can compress content by lowering the bit rate to reduce the storage requirements of the HDD, optimizing for storage but keeping the same quality.

PMPs also could have a cradle that would do the transcoding of broadcast content. PCs or other devices could do this as well.

4. What benefits does this technology ultimately afford the consumer?

Consumers will want their content (including HD content) available to multiple devices. It is here where transcoding will include bit rate, resolution, and codec/format changes to make the data usable everywhere. Because consumers have so many different devices, with different requirements, many industry experts believe the home is one of the best places for transcoding, rather than putting too many demands on the network.

5. How is HD transcoding different from SD transcoding?

Transcoding HD content is much more complex because of the size of the files and detail in the content. More processing power is required to do this, particularly in real time.

6. What is the expected growth of this market?

Transcoding will be an integral part of the many solutions for digital content delivery and represents a significant opportunity for TI. Transcoding will be required in client devices like STBs, digital TVs, as well as in portable CE devices such as cell phones and portable media players.

7. What are the key market drivers?

Transcoding is key to solving the consumer's needs to access their video content anywhere within the home or on the go. Transcoding multiple formats will be a key market driver, enabling the seamless transition of moving any video content to any video product.

8. Exactly when will the actual product be available?

TI has been offering our customers multi-format support of advanced video codecs for years, dating back to its first generation of TMS320DMxxx products and now is offered on TI's DaVinci™ technology. TI already has transcoding solutions with the TMS320DM6xx and TMS320DM6xxx platforms. TI is working to enhance our DaVinci technology-based solutions to provide HD encode, decode, and transcode support of advanced video codecs at HD resolutions and expects to have solutions in the market in the first half of 2007.

9. What are the challenges of transcoding and how will TI address them?

As content transitions from analog to digital, from standard-definition to high-definition video, and from MPEG-2 to H.264/VC-1, video products will need to become increasingly complex. Transcoding is the ability to take existing video content and change the format, bit rate and/or resolution in order to view it on another video device. By utilizing the programmability and performance of a DSP-based solution, TI will provide the ideal solution to address the transcoding market.

10. What new features will be enabled?

The ability to seamlessly move content in real-time from device to device is only made possible by transcoding. Transcoding can also reduce the amount of space content takes up in a DVR.

11. Will transcoding be a part of TI's DaVinci product offerings, and/or will it extend beyond DaVinci products?

Currently, we support SD transcoding, with plans to support HD transcoding in the future. Common software libraries and APIs with future DaVinci HD offerings from TI will allow significant reuse as designers extend their solutions to support HD resolutions for advanced codecs.

12. Is transcoding a technology limited to a DSP chip, or is it something that can be integrated onto other digital signal processing components (such as ARM®-based components)?

Transcoding can be done utilizing different types of silicon. Transcoding requires a lot of performance that's optimized for very compute-intensive functions, plus flexibility to support multiple formats that are always changing. TI believes a dual-core solution with hardware video accelerators is the ideal approach to manage the combination of requirements.

13. What is real-time transcoding vs. just transcoding. What does that mean?

Real-time transcoding is when the transcoding is being done on-the-fly or as the content is being played back. Many manufacturers will require faster than real-time, meaning 2x+ the time the content would take to be played. Transcoding will be required to be done in real-time to make a good user experience as consumers don't want to have to wait for hours to transcode content. Client-side devices are very cost sensitive, and real-time transcoding will bring infrastructure-level processing to a client cost point. That will drive the need for very optimized silicon with advanced techniques for dealing with these cost/performance requirements.

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