



LG

Video Conferencing System for enterprises ensures HD quality over public networks

LG Electronics incorporates **RaptorQ™** forward error correction (FEC) technology into its premium video conferencing system (VCS). The combined solution offers reliable HD video and high-quality audio conferencing in a compact integrated system over public networks.

As a global leader in the design, development and manufacturing of a wide range of digital products, LG places strong emphasis on high performance and value. The new V5000 (1:1 HD) and V5500 (1:3 HD) video conferencing systems integrate many advanced features including:

- Dual-stream content sharing
- 12x PTZ camera
- Wide dynamic range
- H.264 high profile video
- Web-based recording
- Single remote control



The compelling pricing and user-friendly interface of the VCS products will have wide appeal to corporations, hospitals, educational facilities and government institutions of all sizes.

Challenge: Achieving HD video conferencing over public networks

Even with the best hardware components, video and audio quality can be significantly impaired from the inherent packet loss due to the best-effort design of public data networks. To ensure customers receive the desired HD video conferencing experience, all participating VCSs must be able to send and receive all the data packets. Lost packets result in freezes or artifacts in the video and choppy playback for the audio. Because video conferencing is real-time communications, perceptible delays to re-send lost data are not tolerable.

Solution Highlights:

Top Reasons LG selected RaptorQ

- High performance – able to recover the full range of actual network packet loss
- No hardware dependency for FEC performance – broad range of platforms supported
- Many commercial references of RaptorQ deployments
- Conforms to the IETF RFC 6330 standard
- Favorable licensing model supported new product launch

“Our customers rely on public networks for data communications. RaptorQ integrated into the VCS assures clear and sharp video and audio, even over the public Internet.”

Doosoo Yoon, head of VCS development team

Challenge: Providing a high-quality, affordable HD video conferencing solution

Key to the success of the product will be high quality at an affordable price. The integrated IP technologies work together to optimize the video conferencing environment to transmit video and audio that is not only clear and sharp, but also secure.

LG's VCS development team conducted a competitive assessment of several FEC technologies. After careful consideration of all the requirements, RaptorQ was the clear choice for their FEC solution.



Solution: Add best-in-class forward error correction - RaptorQ

After completing their “FEC bake-off”, the development team selected RaptorQ. “RaptorQ can recover the actual data loss, whether it’s 5% or less than 0.2%”, said Doosoo Yoon, head of VCS development team. From a network point of view, RaptorQ’s excellent recovery property reduces the FEC data necessary for missing data reconstruction. From a CPU perspective, it is possible to support HD content delivery and run other applications on the same chip.

Key Benefits of RaptorQ:

- **Software-only solution is network-, device- and operating-system independent**
- **Superior flexibility supports all content delivery solutions, including streaming**
- **Operates efficiently on small memory devices (Set-top boxes/handsets)**
- **RFC 6330, IETF FEC standard for object delivery over Wireless WAN**

The RaptorQ software development kit comes complete with file delivery and streaming media sample application source code.

“The sample code was very helpful and allowed for a straightforward integration with our VCS software platform,” said Yoon.

Key to the success of the product is high quality at an affordable price. RaptorQ is entirely software based, so there are no hardware dependencies or expenses. “The licensing model was very favorable, without any upfront fees,” said Yoon. RaptorQ is available for many platforms including Linux, Android and Windows, with IOS and Mac OS coming soon.



“We evaluated FEC solutions from other companies and RaptorQ was both the best performing and most cost effective technology.”

Doosoo Yoon, head of VCS development team

LG VCS Requirement	RaptorQ Capability
100% data recovery rate	Complete recovery of K packets from any K+2 received packets
Total end-to-end delay < 500 ms	Ability to protect small blocks for low-latency systems due to flexible parameters and great encoding/decoding speed
Latency of FEC protection for 2 Mbps bi-directional stream < 100 ms	Only 50-100 ms added latency
Easy integration with existing system	Field-tested API has straightforward implementation
Minimize hardware dependencies	No hardware dependency
Minimize costs	More favorable pricing than competition

BUSINESS PROFILE

LG Electronics, Inc. is a global leader and technology innovator in consumer electronics, mobile communications and home appliances.

With 117 operations around the world, LG achieved global sales of KRW 54.26 trillion (USD 49 billion) in 2011. LG is comprised of four business units: Home Entertainment, Mobile Communications, Home Appliance, and Air Conditioning & Energy Solutions and is one of the world’s leading producers of flat panel TVs, mobile devices, air conditioners, washing machines and refrigerators.

For more information on LG Electronics, please visit www.lge.com.