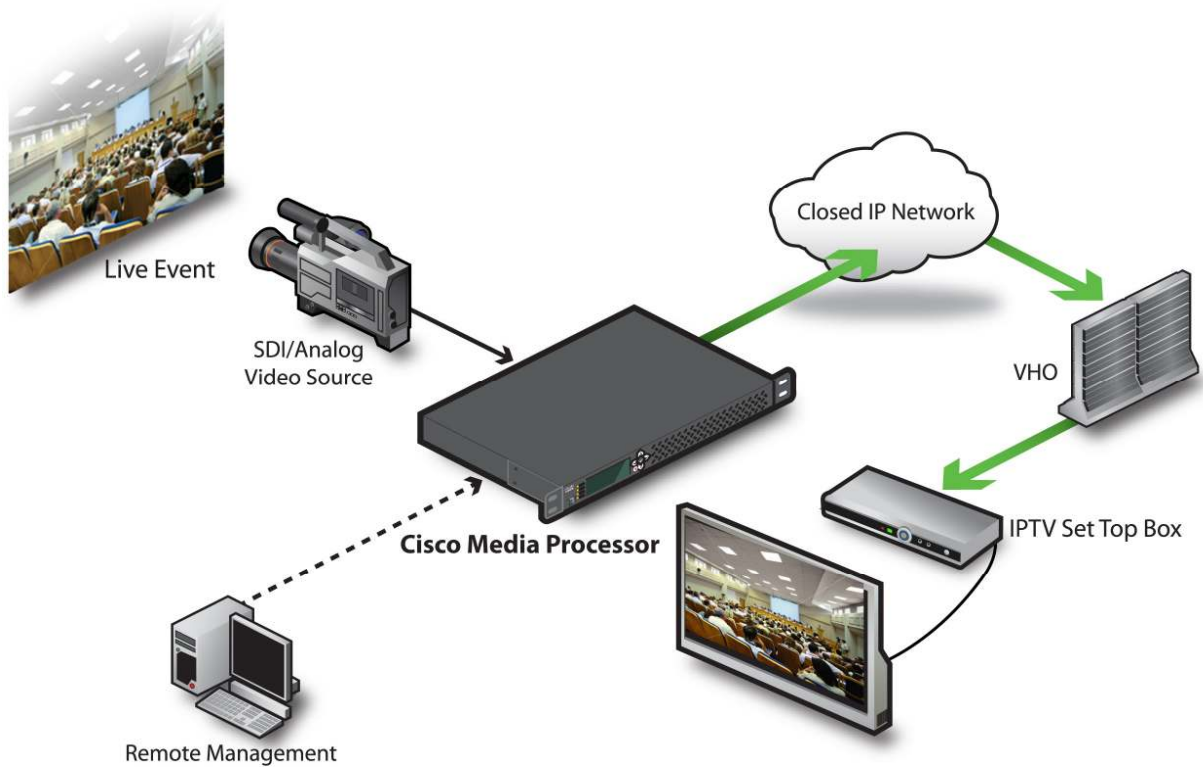# Cisco Media Processor: Adaptive Delivery to iDevices

Delivering live video to the most popular connected devices on the market is not that complicated—when you select the class-leading solution. The award-winning Cisco Media Processor Family of streaming appliances for live audio and video delivery eliminates the need for additional hardware to reach the Apple® iPhone® and iPad® with video.

Apple®'s iOS 4.0 release extends a now-proven approach to delivering video to handsets, and Cisco is at the forefront of this wave. The iPhone® and iPad® continue to deliver adaptive bitrate (ABR) live video, with or without an application on the device.

Cisco collaborates directly with Apple® on this architecture, and the Cisco Media Processor is the accepted solution for broadcasters, media, and entertainment enterprises and sports leagues to deliver content to Apple® iOS-powered devices. The Cisco Media Processor Family has provided the engine for nearly every Apple® HTTP Live Streaming event since the launch of this technology, and we continue to innovate to enable our customers with the latest technology in the space and the best features. Cisco fully supports ABR delivery technology, allowing viewers to move smoothly from one resolution and data rate to another without buffering, pausing, or missing a moment of their video. This approach provides the best viewing experience possible, while offering exciting features we have come to expect in other devices, such as the ability to pause, rewind, or fast forward through content, as we do on our DVRs. With the Cisco Media Processor Core Software Version 5.0, we support this effort and are enabling monetization on the iPhone® and iPad® with our live ad insertion capabilities.

Live Event · SDI/Analog Video Source · Cisco Media Processor · Remote Management · Closed IP Network · VHO · IPTV Set Top Box

How Does It Work?

The Cisco Media Processor takes the source video signal and produces H.264/AAC encoded content formatted for adaptive delivery to the iPhone® and iPad®.

The Cisco Media Processor creates MPEG-2 transport streams (.ts), and then divides those streams into small files of equal duration. The Media Processor also creates an index file (.m3u8) that contains references to these smaller files. This index file is continually updated as long as the stream is live. The index and media files can then be deployed using common web server infrastructure—HTTP—which is the protocol used to serve content to the iPhone® and iPad®.

HTTP and ABR

Why HTTP? HTTP is known as a "stateless" protocol, meaning if a HTTP client requests some data, the server responds by sending the data, but does not remember the client or its state. Each HTTP request is handled as a completely standalone one-time session.

By using adaptive delivery methodology, we eliminate the "forgetfulness" factor, because the files are delivered in bite-sized chunks, and the player is periodically monitoring bandwidth and switching between streams as needed.

HTTP is the ideal mechanism for ingesting segmented .ts content to web servers and content delivery networks (CDNs), because:

- HTTP is simple and is supported by nearly all platforms.
- The mechanism is easy to implement and maintain.
- HTTP POST is a "push" from the encoder, and it works from behind firewalls and Network Address Translation (NAT).

- There is very little protocol overhead, in terms of bytes or cycles.
- In many cases a persistent connection is maintained.

To anticipate changes in bandwidth fluctuation on the networks and on the Apple® iOS 4, you should plan to offer multiple discrete bitrates. This approach allows for the native player of the iPhone® and iPad® to periodically check its connection and enable it to pull these discrete data rates and inherent files, switching up and down between them as bandwidth improves or degrades. This process constitutes the heart of ABR delivery methodology.

Setting It Up

To enable ABR technology in your enterprise, you need:

- Cisco AS5100 Series Media Processor for standard-definition (SD) content, Cisco AS7100 or AS8100 Series Media Processor for high-definition (HD) content, or Cisco AS6000 for IPTV .
- Web server or CDN to serve the HTTP content.

The Cisco Media Processor is preconfigured with the settings needed to deliver the streams required—for iPhone® or iPad®. All you need to do is point the processor to your CDN or web server so that it can publish the files there. You can use many different protocols, each with its own benefit and risk.

Most CDNs and web servers support several ways of ingesting content:

- HTTP (POST/DELETE): Of all transfer mechanisms, HTTP is the preferred protocol for live ingest.
- FTP: FTP has more overhead, is more complex, and is more likely to cause problems with firewalls.
- RSYNC: RSYNC has more overhead, particularly as the number of files increases.
- Secure copy (SCP) and SSH File Transfer Protocol (SFTP): SCP and SFTP are much more complex to implement, and they also have more overhead than HTTP—but they may be desirable if your content requires higher levels of security during transit. Remember as well that our built-in segmenter can encrypt the segments using Advanced Encryption Standard (AES)-128 encryption.

Performance-Grade Reliability and Features

The Cisco Media Processor is the ideal choice for Apple® iOS adaptive delivery. Its award-winning web-based interface gives you the flexibility of controlling the encoder from any networked computer. You can use one of the preloaded presets optimized by the experts at Cisco, or take advantage of Cisco's almost unlimited—and unmatched—ability to customize encoding settings. The processor also automatically detects your video source, and even lets you preview your video source before starting the encoder. Additionally, the Cisco Media Processor comes with built-in authentication to deliver content to the major CDNs. All Cisco Media Processors are field-upgradable to the latest software release, meaning your infrastructure investment is protected when Cisco develops new software features.

State-of-the-Art—and Beyond

Embrace the mobile streaming revolution and let the Cisco Media Processor make the transition fast and easy. In addition, take advantage of our industry-leading reach and partnerships. For Apple® iOS live delivery, Cisco has partnered with Akamai to help our customers quickly enable this solution.

For More Information

For more information, please visit Cisco Media Processor Family page or call your local Cisco account representative.

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