Cisco AnyRes Video on Demand Post-Encode Node

Product Overview

Cisco® AnyRes Video on Demand (VoD) helps expand the revenue potential of video content for service providers, media distributors, and content providers by generating high-quality VoD assets that are compatible with any device. By eliminating the manual bottlenecks typically involved with high-volume, file-based transcoding workflow, which prepares video files for set-top boxes, PCs, and mobile devices, Cisco AnyRes VoD helps lower operating expenses (OpEx). It also produces high-quality assets for every screen with exceptional performance, maximizing advertising opportunities without compromising the viewing experience.

Post-Encode Node Summary

Within the Cisco AnyRes VoD product suite, the post-encode node performs the following functions:

- Transwrapping video files into any, or all, of the popular adaptive bit rate (ABR) formats
- Packaging Adaptive Transport Stream (ATS) assets into a Common Index Format (CIF) to support unique functions on the Cisco Videoscape™ Distribution Suite Origin Server (VDS-OS)
- Checking files for quality
- Delivering media assets

The post-encode node license is optional for the Cisco AnyRes VoD, but it is required for the tasks listed in the summary.

Cisco AnyRes VoD streamlines the steps required to target multiple formats. When preparing video for ABR delivery, one source file is typically encoded into five to ten separate files, in addition to their corresponding metadata files. Popular examples of HTTP-based ABR formats include Apple HTTP Live Streaming (HLS), Adobe HTTP Dynamic Streaming (HDS), Microsoft HTTP Smooth Streaming (HSS), and MPEG Dynamic Adaptive Streaming over HTTP (MPEG-DASH). The ABR formats you choose depend on the devices you are targeting and the limitations of your transcoding software and hardware. The number of layers, or streams, required in each ABR format is a choice that is based partly on source resolution and network limitations. It is also based on a business decision to balance storage costs and the end user's quality of experience (QoE).

For example, you might want to deliver a 30-minute, high-definition video file to Apple devices using Apple HLS, as well as to personal computers using Adobe HDS. You might also consider Smooth Streaming for Microsoft's Xbox. In the conventional method, an encoder would output ten different profiles for each ABR format, for a total of 30 different encodes. These would be spread out across multiple encoding servers. This is CPU intensive, costly, and in many ways redundant because your target compression profiles are so similar across formats.

Cisco AnyRes VoD makes generating multiple ABR formats more efficient. This is done by separating the CPU-intensive encoding from the light transwrapping and segmenting that is handled by the post-encode node. In our example, the source video is encoded into only one intermediary set of files, then quickly packaged into HLS, HDS, and HSS. This method saves you 60 percent of your time, when compared with the total time required to encode each ABR format separately. This reduces your OpEx and CapEx and gets your assets ready for quality analysis or distribution quicker.

Checking the quality of every frame of every output file is tedious and painstaking, especially when outputting multiple files for ABR. The Cisco AnyRes VoD post-encode node lends much-needed support for this tedious task by checking stream by stream, if desired.

Features and Benefits

The post-encode node:

- Improves OpEx up to 60 percent by reducing encodes to a common set of ABR profiles and transwrapping them into your desired delivery formats
- Provides automated quality-control analysis on all ABR streams, making it easy to quality-check all ABR profiles
- Is a licensed component of Cisco AnyRes VoD; no additional hardware or software is required to host, but is recommended
- Integrates into the work order feature of Cisco AnyRes VoD, allowing flexibility of use
- Packages and delivers output and companion files to locations outside the network

Platform Support and Compatibility

Cisco AnyRes Video on Demand is optimized for use on Cisco Unified Computing System™ (Cisco UCS™) hardware, such as on the B200 M3 blade server. This provides customers with a single system that encompasses:

- Network: Cisco Unified Fabric
- Industry-standard x86 computing
- Storage with access options
- Virtualization optimization
- Unified management model
- Dynamic resource provisioning
- Efficient scaling
- Lower cost, with fewer servers, switches, adapters, and cables
- Lower power consumption
- Fewer points of management

Licensing

License requirements for Cisco AnyRes Video on Demand vary by node, as outlined in Table 1.

Table 1. License Requirements

Node	License Requirements
Client	Unlicensed, but required initially for setup and to operate Cisco AnyRes VoD; can be bypassed by the Cisco AnyRes VoD server API
Server	Required for all installations; one license per server or blade
Encoding	Transcoding and digital rights management (DRM)
Analysis	Pre-encoding analysis and “decision logic”
Post-encoding	Quality check, offline packaging, and delivery
Enhanced transport stream	Generates CableLabs®-compliant files
AC-3 Dolby	Encoding AC-3 files; pass-through does not require license
Common format indexing	Generates files compatible with Cisco Videoscape™ Distribution Suite Origin Server (VDS-OS) on-demand packaging
IP mode	Puts Cisco AnyRes VoD into “online enhancement” mode for Cisco VDS Optimization Engine (VDS-OE) solution

Product Specifications

Table 2 lists product specifications for Cisco AnyRes Video on Demand Post-Encode Node.

Table 2. Product Specifications

Outputs	
Transwrapping	ATS files can be transwrapped into the following formats: • Apple HLS, encrypted AES-128, key intervals (using Verimatrix) or with Microsoft PlayReady DRM • Adobe HDS, Protected HDS, or with Flash Access DRM • Microsoft HSS, with PlayReady DRM • CIF for Cisco VDS-OS
Post-processing	• Digital rights management (DRM) • AviSynth script management • User-defined post-job process • ASF-to-TS conversion
Integrated quality control	• Quantization • Bit rate • Frame size • Dropped frames • Skipped frames • Buffer fullness • Key frame size • Audio
Quality Control Parameters	
Frame quality	• Frame size • Dropped frames • Skipped frames • Key frame size
Encoded data quality	• Quantization • Bit rate • Buffer fullness
Audio quality	• Audio level

Delivery	
Compression types	• .zip • .tar
Companion file examples	• Poster art • Movie trailers • XML files
Protocols	• FTP • Network file transfer

System Requirements

Table 3 lists system requirements for the Cisco AnyRes Video on Demand Post-Encode Node. It is recommended that Cisco AnyRes Video on Demand be run on Cisco's Unified Computing System (UCS) blade or server hardware.

Table 3. System Requirements

Minimum system requirements	• Quad-core Xeon processor* • Windows Server 2008 R2 • 8-GB RAM • 500 GB hard drive * Faster processors reduce job time; additional processors increase density
Also supported	• vSphere v5.0 or later

Warranty Information

Find warranty information on Cisco.com at the Product Warranties page.

Ordering Information

To place an order, visit the Cisco Ordering Home Page and use the information in Table 4. To download software, visit the Cisco Software Center.

Table 4. Ordering Information

Product Name	Part Number
Cisco AnyRes Video on Demand Post-Encode Node	R-ARM-SWK-510-DN=, L-ARM-PENCD-VOD=

Cisco Services

Cisco Services brings together the people, processes, tools, and partners to accelerate service providers' success by using their IP Next-Generation (IP NGN) architectural platforms. Cisco Services is focused on promoting business outcomes through network, services, and operational transformation. Through a collaborative approach and tailored engagements, Cisco Services can help accelerate time to market, mitigate risk, reduce cost through improving operational efficiencies, and help assure the user experience.

Cisco Services' approach and differentiation in services comes from a heritage of network capabilities and a wealth of experience in providing solutions to service providers in all sectors around the world. That is reflected in over 20 years' involvement in the market with services and solutions that are strategically aligned with those of the service provider. Cisco Services has also made a massive research and development commitment to the service provider community, developing innovative roadmaps and solutions to keep the sector ahead of the competition.

For More Information

For more information about the Cisco AnyRes Video on Demand Post-Encode Node, visit http://www.cisco.com/en/US/products/ps11800/index.html, or contact your local account representative.

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