Cisco AnyRes Live 9500 UHD Encoder

Product Overview

The Cisco® AnyRes Live 9500 UHD Encoder represents a new generation of the Cisco AnyRes Live Family, with support for advanced encoding of live and ultra-high-definition (UHD) video. It is redefining the video experience with best-in-class quality for real-time media-delivery applications such as live sports, 24-hour programming, Internet Protocol television (IPTV), enterprise, education, and government video.

The Cisco AnyRes Live 9500 UHD Encoder delivers the highest-quality encoding using full-frame High Efficiency Video Codec (HEVC) encoding technology developed by Cisco.

The Cisco AnyRes Live 9500 UHD Encoder is a fully optimized solution on the Cisco Unified Computing System™ (Cisco UCS®) server platform including input interfacing for UHD baseband video.

Dual Cisco AnyRes Live 9500 Encoders support resolutions for high-motion content as live sports and other live events being transmitted with frame rates up to 60 frames per second (fps). In addition, a single Cisco AnyRes Live 9500 supports encoding of more theatrical-related material with frame rates of 24, 25, 29.97, or 30 fps. Combined with this wide range of frame rates, the Cisco AnyRes Live 9500 supports video resolutions of both 8 and 10 bits.

With its easy-to-use interface, Cisco AnyRes Live 9500 lets you either configure encoding of your UHD encoding or turn an HD-video source into multiple Internet-ready adaptive-bit-rate (ABR) streams, providing market-leading quality experiences.

This comprehensive, reliable platform has the flexibility to stream multiple formats to any device, including iPhones, iPads, smartphones, and PCs, as well as delivering pristine UHD video to televisions.

Product Specifications

Table 1 lists specifications for the Cisco AnyRes Live 9500 UHD Encoder.

Table 1. Product Specifications

<table>
<thead>
<tr>
<th>Inputs</th>
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</thead>
<tbody>
<tr>
<td>Physical SDI interface</td>
<td>* Input interfaces: 4 x DIN 1.0/2.3 BNC, 75-ohm, break-out cable to standard BNC included</td>
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<tr>
<td></td>
<td>* Input SDI format: SMPTE 424M Level-A or Level-B,1080i (up to 60 fps)</td>
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<td></td>
<td>* Input HD-SDI format: SMPTE 292M,1080i or 720p (up to 60 fps)</td>
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<tr>
<td></td>
<td>* Input: SD-SDI format: SMPTE 259, 480/29.97 or 576i25 fps</td>
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</tbody>
</table>
Ultra high definition
- UHD 3840 x 2160p
- Frame rates with single 9500: 24, 25, 29.97, and 30 fps
- Frame rates with dual 9500s: In addition to the single 9500: 50, 59.94, and 60 fps

High definition
- HD 1920 x 1080, or 1280 x 720
- Frame rates with single 9500: 24, 25, 29.97, 30, 50, 59.94, and 60 fps

Standard definition
- SD 720 x 480/29.97 or 720 x 576/25

Audio
- Embedded audio: SMPTE 299M, up to four stereo pairs – PCM or precompressed

IP interface: option
- Input interfaces: quad GbE IP card in the mLOM (modular LAN-on-motherboard) slot

Video codecs
- AVC or MPEG2 – 4:2:0
  - SD, HD, and full HD (1920 x 1080p/59.94)
- AVC – 4:2:2, 8- or 10-bit: option:
  - SD, HD, and full HD (1920 x 1080p/59.94)

Audio formats
- MPEG1-LII, AAC, AC3, and SMPTE 302M (PCM)

Output Codes
- MPEG2-Transport Stream (MPEG2-TS) over User Datagram Protocol (UDP)

Output Formats
- Multicast streaming
- Standard or adaptive transport stream
- Ability to start or stop archive while encoder is running

MPEG DASH
- MPEG-DASH (ISO-BMFF)
- Multiple languages
- Teletext subtitles formatted to Web Video Text Tracks (WebVTT) or SMPTE-TT – from Teletext PIDs, VBI (SD-SDI), or OP47 (HD-SDI)

Apple HLS
- Full support for Apple HLS including WebVTT, PlayReady, and timed metadata
- Integrated iPhone segmenter: Streams transport-stream segments directly to web server
- Multiple languages
- Teletext subtitles transformed to WebVTT – from Teletext PIDs, VBI (SD-SDI), or OP47 (HD-SDI)

HSS
- HTTP smooth streaming to IIS server
- Teletext subtitles transformed to TTML/DFXP – from Teletext PIDs, VBI (SD-SDI), or OP47 (HD-SDI)

Flash streaming
- HTTP Dynamic Streaming (HDS) to Flash Media Server: option
- Real-Time Messaging Protocol (RTMP) stream over TCP to Flash Media Server

Third-Generation Partnership Project (3GPP)
- H264/AVC baseline with AAC audio (low complexity, HE-AAC v1, and HE-AAC v2)
- H.263 profile 0, 3; Levels 10, 20, 30, and 45 with AMR-NB Audio
- Real-Time Transport Protocol (RTP) – either controlled through Real-Time Streaming Protocol (RTSP) or as raw RTP output
### Baseband Video Processing

- Scaling
- Cropping
- Advanced de-interlacing
- Inverse telecine
- Adaptive image filtering
- Slate insertion
- Logo insertion
- DVB subtitles (bitmapped) or SCTE-27 subtitles can optionally be burned in to the baseband video

### Metadata Processing

- Automated ad insertion with playlists generated by playout servers
- Support for slate insertion to remove broadcast ads
- Ability to remonetize video with Internet ads for browser, mobile, and set-top box
- Ad avail blanking and black-out capability based on either SCTE-104 on SDI or SCTE-35 on IP
- Nielsen ID3 support
- SCTE-35 and SCTE-104 support
- Support for auxiliary data (EBIF, KLV, V-Chip, and CGMS-A)

### Encryption and DRM

- Comprehensive encryption and digital rights management (DRM) support

### Redundancy

- A 1:1 redundancy scheme is supported through the use of the Cisco DCM D9901 or DCM D9902 Digital Content Manager equipped with a Gigabit Ethernet card
- On the DCM the redundancy is achieved through a very robust service backup mechanism that can be configured with various triggers. For further information please consult the DCM configuration guide.
- An N:M redundancy with either IP (up to full HD) or with SDI (up to UHD) including SDI-router control is supported by the Cisco Video Service Manager (VSM)

### Certifications

#### Safety

- UL 60950-1:No. 21CFR1040 Second Edition
- CAN/CSA—C22.2 no. 60950-1 Second Edition
- IEC 60950-1 Second Edition
- EN 60950-1 Second Edition
- ASINZS 60950-1
- GB4943 2001

#### EMC

- FCC (CFR 47, Part 15) Class A
- AS/NZS CISPR22 Class A
- CISPR2 2 Class A
- EN55022 Class A
- ICES003 Class A
- VCCI Class A
- EN61000-3-2
- EN61000-3-3
- KN22 Class A
- CNS 13438 Class A

#### Physical

- Dimensions (H x W x D) 1.7 x 16.9 x 31 in. (4.32 x 43 x 78.7 cm) (1 rack unit [1RU])
- 770W power supply (optional redundant power supply available)
- AC input voltage range 90 to 264 VAC (self-ranging, 100 to 240 VAC nominal)
- AC input frequency range: 47 to 63 Hz (single phase, 50 to 60 Hz nominal)  
  - AC line input current (typical) 5.50A at 100 VAC/2.64A at 208 VAC  
  - AC line input current (maximum 100% CPU load) 6.16A at 100 VAC/2.96A at 208 VAC  
- Connectivity: Two 1-Gbps Ethernet ports (10/100/1000BASE-T Ethernet)
- Operating temperature: 41 to 95°F (5 to 35°C)
- Nonoperating (storage): –40 to 149°F (–40 to 65°C)
- Operating: 10 to 90% noncondensing
Control

- Remote web-based GUI
- Customizable encoding templates
- Local user interface
- Simple Network Management Protocol Version 2 (SNMPv2) for traps
- XML Simple Object Access Protocol (SOAP) messaging service
- Front-panel connector: One KVM console connector (supplies 2 USB, 1 VGA, and 1 serial connector)
- Standard connectivity: One 10/100/1000BASE-T Ethernet or Two 1-Gb Ethernet ports

Figure 1. Rear View of Cisco AnyRes Live 9500 – with a quad GbE card mounted in the mLOM slot.

Cisco Integrated Management Controller (CIMC) interface is a standard feature on all Cisco AnyRes Live encoders

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. To download software, visit the Cisco Software Center.

Table 2. Ordering Information

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Part Number</th>
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<tbody>
<tr>
<td>Cisco AnyRes Live 9500 Platform Gen4 KONA4, 4 HD-SDI</td>
<td>SPN-9500-K9</td>
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</tbody>
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The Cisco AnyRes Live 9500 comes standard with:

- 2 multicore Intel Xeon processor E5-2600 v3 series CPUs
- 64GB RAM
- Dual hot pluggable, sled mounted, 600GB HDD
- Dual port 10GBase-T adapter
- One Power Supply
- Quad 1GbE RJ45 in the mLOM-slot
- One Power Supply

Optionally, the user can select to order the Cisco AnyRes Live 9500 equipped with extra HDD for archive purposes

<table>
<thead>
<tr>
<th>Optionally the Cisco AnyRes Live 9500 can be ordered with:</th>
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<tbody>
<tr>
<td>IP Input</td>
<td>LSPN-IP</td>
</tr>
<tr>
<td>Broadcast decoder input, supporting AVC 4:2:2 8/10bit SD/HD/FHD</td>
<td>LSPN-DEC-422</td>
</tr>
<tr>
<td>UHD Option - includes HEVC and support for all lower resolutions</td>
<td>LSPN-UHD</td>
</tr>
<tr>
<td>HEVC for ABR/SD/HD/FHD applications</td>
<td>LSPN-HEVC</td>
</tr>
<tr>
<td>HTTP Dynamic Streaming (HDS) to Flash Media Server</td>
<td>LSPN-HDS</td>
</tr>
<tr>
<td>DD or DD plus encoding, or DD to DD plus transcoding (1/stereo)</td>
<td>LSPN-DD-DDP-XC</td>
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For More Information
For more information about the Cisco AnyRes Live 9500 UHD Encoder contact your local account representative.