Electra VS

CONVERGENT VIDEO SYSTEM

The Electra™ VS convergent video system (formerly ViBE® VS7000) from Harmonic is a next-generation compression platform for all-IP environments, encompassing mission-critical applications including live broadcast-quality encoding and faster-than-real-time file transcoding.

Tailored for all-new convergent applications such as multiscreen and over-the-top (OTT) service delivery, as well as traditional IPTV and IP/cable delivery, the Electra VS platform enables video operators to expand the reach of their services with unprecedented versatility. The software-based system, which leverages the Harmonic VOS™ Flex operating system, is available as a turnkey solution with hardware provided, as software only for running on standard COTS servers, or as fully virtualized for data center environments.

Superior Video Quality

End-user quality starts with the video itself. Whether it is delivering HD to the living room or streaming content to mobile devices equipped with high-resolution displays, service providers seek to offer their viewers the best possible video experience. Leveraging more than 15 years of best-in-class video quality and innovation in video compression algorithms, the Electra VS meets this requirement with stunning pictures for all delivery networks.

Workflow Flexibility

Every video operator's environment is unique, which is why the Electra VS possesses the flexibility for individual operators to design workflows that meet their exact needs. A simple yet powerful, integrated Workflow Builder tool allows the creation of live, file-based and mixed workflows — for any kind of network — with the click of a mouse.

Multiscreen, Multi-Codec, Multiformat

With new video formats emerging at a brisk pace, delivering content to multiple networks is a real challenge. Supporting the major audio/video codecs and latest adaptive streaming formats, the Electra VS readily adapts to IPTV and cable delivery, as well as OTT live and video-on-demand (VOD) streaming. HEVC encoding is available for both live and file workflows in CBR, VBR and statistical multiplexing applications. Ultra HD processing with HDR support is also available for live and file applications, making tomorrow's applications easily achievable with the Electra VS.

HIGHLIGHTS

- Best-in-class video quality for MPEG-2, H.264 and HEVC
- Support for live and file-based applications
- Available as a turnkey, software-only or virtualized solution
- Video resolution up to Ultra HD with HDR support
- Broad subtitling management
- MPEG transport stream support
- Built-in OTT packager
- Broadcast & OTT Ad-Insertion support
- Progressive and interlaced modes
- Any bit rate compliance: CBR, VBR with Statmux, MBR/ABR
- Advanced processing like mosaic video generation, AES-67 voice over
- Integrated content protection
- HTTP/HTTPS centralized operation
- Workflow Builder tool
- Integrated load balancing and failover
- SOAP/web services for external interfacing

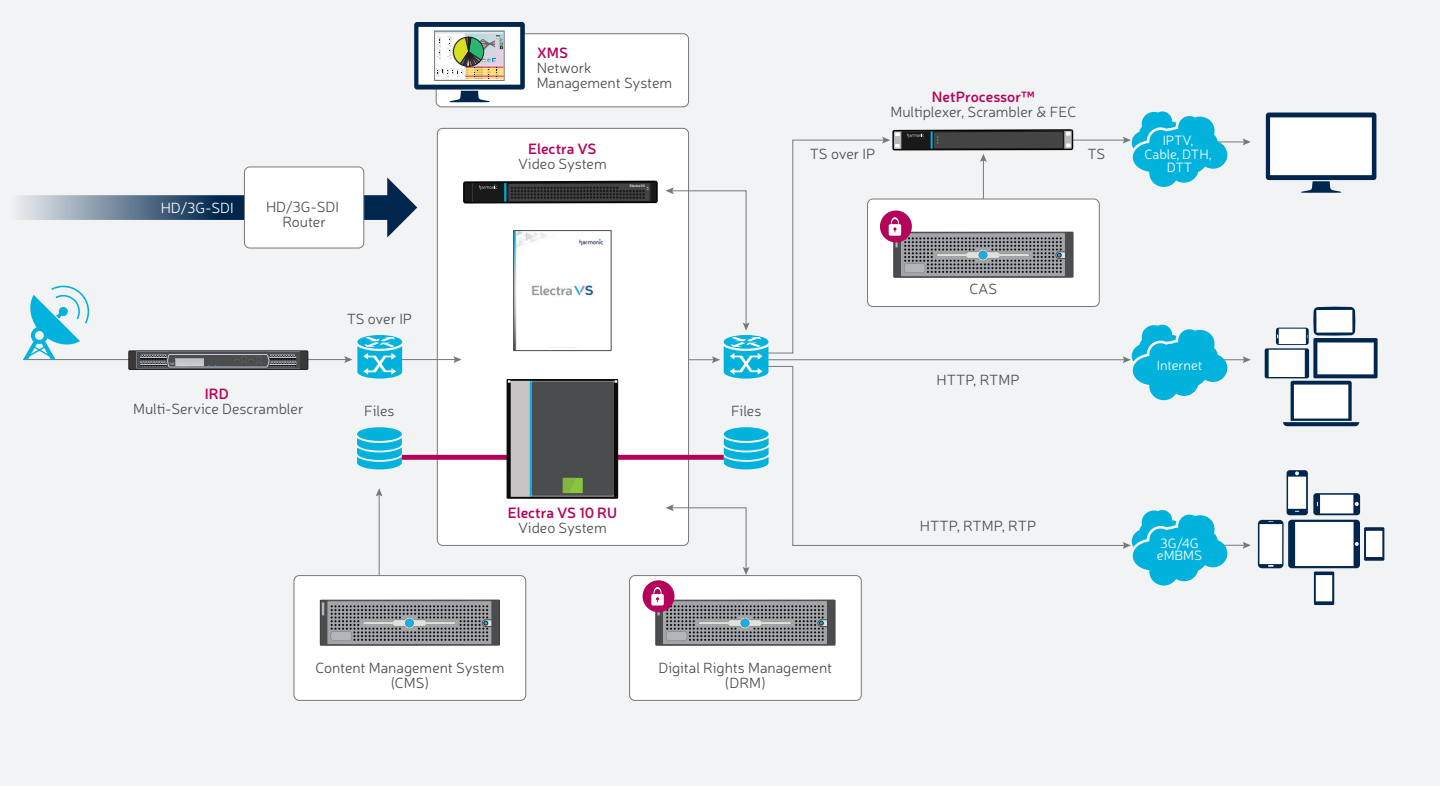
VOS Flex: Operational Excellence

The VOS Flex video operating system that powers the Electra VS platform provides a comprehensive set of digital content delivery tools for configuration and control, workflow analysis, and the monitoring of video distribution workflows, setting a new standard for operational excellence. The primary benefits of VOS Flex include:

- **Simplicity**
  The unique graphical user interface allows for the control and monitoring of hundreds of channels simultaneously. With built-in 10-GbE switches on the Electra VS, racking and cabling nightmares vanish.
- **Reliability**
  Built around highly resilient IT platforms equipped with hot-swappable, redundant components, the Electra VS provides native load-balancing and system redundancy to avoid downtime.
- **Scalability**
  From a single-server to multi-blade systems, VOS Flex enables the Electra VS to scale and grow with your business.

World-Class Service and Support

Harmonic stands behind the Electra VS platform with comprehensive service and support programs, including system design, service deployment, technical support and network maintenance. World-class service plans and a global network of flexible and responsive support professionals help ensure your ability to deliver outstanding "anytime, anywhere, any-device" customer experiences.



A unified broadcast and multiscreen workflow with the Electra VS

SPECIFICATIONS

VIDEO INPUT/OUTPUT

Live Inputs	MPEG-2 TS MPTS/SPTS over IP (CBR/VBR) Unicast/multicast RTMP IPV4 support IGMP v2/v3
Live Outputs	MPEG-2 TS MPTS/SPTS over IP TS/RTP/UDP streaming EBP compliant Adobe Flash/RTMP Apple HLS Microsoft Smooth Streaming MPEG-DASH Unicast/multicast IPV4 support IGMP v2/v3
File Input/Outputs:	NFS, CIFS
Physical Interfaces	10-GbE optical 1-GbE electrical and optical SD/HD-SDI/3G-SDI

VIDEO PROCESSING

Encoding Profiles	MPEG-2 Simple/Main H.264 Baseline/Main/High HEVC Main (8/10-bit)
Decoding Profiles	MPEG-2 Simple/Main/High/4:2:2 HEVC Main/Main-10 4:2:0 H.264 Baseline/Main/High/High 4:2:2 Apple ProRes, up to 4444 XQ (offline only)
Resolutions and Frame Rates	
Offline	Up to 3840x2160p @ 60 fps
Live H.264	Up to 1920x1080i @ 30 fps Up to 1920x1080p @ 30 fps Up to 1280x720p @ 60 fps
Live HEVC	Up to 3840x2160p @ 60 fps Up to 1920x1080i @ 30 fps Up to 1920x1080p @ 60 fps Up to 1280x720p @ 60 fps
Minimum Resolution	64x64 pixels
Resolution & Frame Rate	adjustable
Processing Capabilities	Smart deinterlacing Picture resizing Picture cropping/clipping Logo/graphics overlays Logo/text effects AFD conversion Thumbnail extraction Mosaic generation Blackout management Crawling text Slate insertion HDR HLG & HDR PQ (SMPTE-2084) support Watermarking
File Formats	MPEG-2 TS/PS MXF (OP-1a) MOV MP4 (progressive download included) Apple HLS Microsoft Smooth Streaming MPEG-DASH
Subtitles	DVB teletext Closed captions DFXP subtitles WebVTT subtitles SMPTE TT subtitles
Content Protection	AES scrambling Apple HLS encryption Common Encryption (CENC) Microsoft PlayReady® DRM
Ad Insertion	SCTE-35 passthrough EBP & ESAM compliant SMPTE 2010 (SCTE-104 in SDI) to SCTE-35 Frame accurate I picture insertion
Passthrough	Audio including AC-4 Video Data

AUDIO PROCESSING

Encoding Profiles	MPEG-1 Layer II AAC-LC HE-AAC v1.0/v2.0 Dolby® Digital (AC-3)/Dolby Digital Plus (E-AC-3)
Decoding Profiles	MPEG-1 Layer II AAC-LC HE-AAC v1.0/v2.0 AC-3/E-AC-3 Dolby E
Processing Capabilities	Resampling (8 to 48 kHz) Stereo/mono conversions Multichannel down-mixing Static gain adjustment Automatic loudness control with EBU measurements Delay adjustment AES67 input/output (AoIP)

PHYSICAL

Rack Height	1 RU x 19 in 10 RU x 19 in
Cooling	Front-to-rear airflow
Hot-Swappable Components	Power supplies Fans IP switches

ENVIRONMENTAL

Operating Temperature	50° to 95° F 10° to 35° C
Storage Temperature	-22° to 140° F -30° to 60° C
Maximum Humidity	90%

ORDERING INFORMATION

BASE SYSTEM

Part Number	Description
ELC-VS-SW-SOFT-ONLY	Electra VS software delivery for bare-metal installations
ELC-VS-SW-VIRTUALIZED	Electra VS for virtualized environments
ELC-VS-1U-2AC-SYS	Electra VS processing platform and system storage, RAID 1 HDD, 1 RU
ELC-VS-1U-2AC-PRO	Electra VS processing platform, diskless, 1 RU
ELC-VS-10U-AC	Electra VS blade chassis, hosts up to 16 blades, 10 RU