Spectrum™ X

VSX2 ADVANCED MEDIA SERVER SYSTEM

VSX2 is the newest version of Harmonic's Spectrum™ X advanced media server. Leveraging the latest COTS servers generation, VSX2 provides high quality, reliable ingest, production and playout video workflows, now with even better performance.

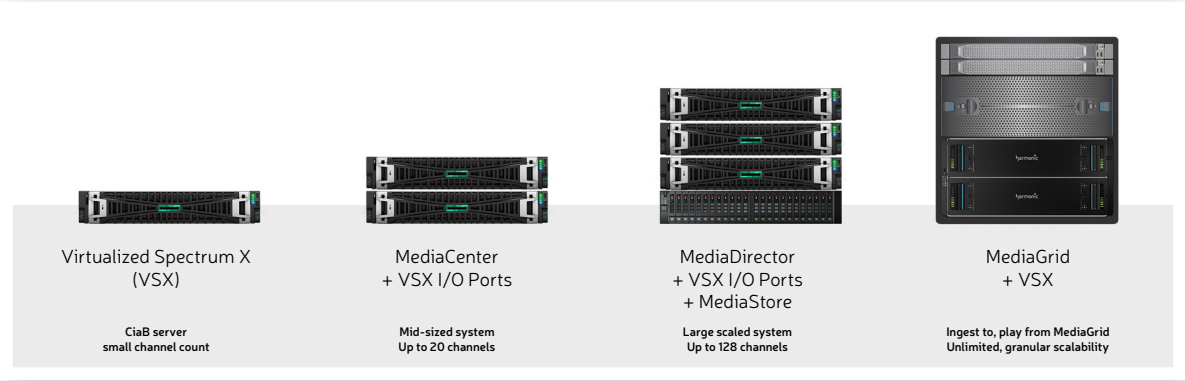
Designed for mission-critical, low-latency production and playout applications, Spectrum X combines file, baseband and IP ingest with comprehensive integrated channel playout (ICP) capabilities, including HTML5 graphics, branding, DVE, and live switching of baseband and compressed IP sources. Integrated SDR/HDR tone mapping and tone expansion enable vivid color workflows. By reducing the number of discrete devices required to produce and distribute branded programming, Spectrum X lowers capital expenditures, simplifies workflows and reduces operational costs.

Spectrum X supports a broad range of SD, HD and UHD formats. It can operate as a true channel-in-a-box (CiaB) or as part of a Spectrum shared storage infrastructure that includes everything from simple ingest and playout to feature-rich ICP capabilities. Open APIs enable control of media workflows and facilitate the integration with any third-party automation system. All functionality is available via software licenses, resulting in a highly flexible system that grows with customer needs.

The Spectrum X system is ideal for a wide range of applications, including:

- CiaB and ICP workflows
- Studio production
- Hybrid baseband/IP ingest & playout
- Integrated master control room (iMCR) workflows
- News production
- Disaster recovery

Fully compatible with Spectrum MediaDirector and MediaCenter servers, Spectrum X is a highly scalable system enabling single channel to massive multi-channel deployments. By integrating SDI and IP I/O on the same chassis, Spectrum X also eases the migration to IP playout workflows, allowing broadcasters to transition away from baseband at their own pace.



The Spectrum X media server system offers a high-quality, comprehensive approach to production and channel playout. With its function integration, workflow flexibility and cost-efficiency, Spectrum X powers the most demanding workflows with the utmost reliability.

HIGHLIGHTS

- Ingest and playout system for SDI & IP workflows (SMPTE-2110, SMPTE-2022-6, NDI)
- Any format SD, HD and UHD, SDR & HDR including advanced conversions
- Hardened Linux-based software for maximum IT security
- On-board HTML-5 graphics and branding, single and dual integrated DVEs for sophisticated content presentation
- CIAB/ ICP control available with Harmonic Polaris and third-party automation systems
- Spectrum Media Studio Live application enables manual control of your channels
- Spectrum Media Studio Ingest application facilitates instant and scheduled recordings

SPECIFICATIONS

FEATURE SUMMARY

Proxy generation	Real time proxy file generation during ingest
Branding & Graphics	Adobe® Creative Cloud, Google Web Designer Integrated DVE; single and dual 2D DVE mode Independent branding for each primary and simulcast channel Up to eight layers of graphics per channel Static and animated graphics, logo, full-screen slate, rolls, crawls, voice-over
Graphics Formats	PNG, JPG, TIFF, GIF, Targa, WEBM, MP4, with HTML5
Master Control Switching (MCS)	1-6 live inputs (configurable) Switch between live and recorded clips Key + fill support
Confidence Monitor	Low-latency, low-resolution version of ingested or playing video & audio, streamed over IP
Automation Support	Polaris Play, Spectrum Media Studio All Oxtel protocol automation systems (Ethernet or RS-422) Clip playback control via Spectrum API, VDCP (RS-422) and VDCP-over-IP
Audio Watermarking	Kantar® Media Watermarking
Delay Service	Realtime program delay capability
Captions & Subtitles	Localized and customized open captions Live & file-based open- and closed-caption insertion
EAS Support (U.S. only)	Text and audio sourced from customer's EAS equipment
Loop Record Service	Continuously records short clip segments from an incoming video feed

CODECS

SD	
MPEG-2	3-24.9 Mbps LGOP; 25-50 Mbps I-frame
DV	DV 25, DVCPRO25, DVCPRO50
HD 1.5 G (1080i 50/60, 720p 50/60)	
MPEG-2	18-85 Mbps LGOP; 50-100 Mbps I-frame
DV	DVCPRO HD
XDCAM HD	18, 25, 35, 50 Mbps
RP 2027 Class 50/100 (Generic)	Class 100, 1920x1080i (25/29.97 Hz); 1280x720p (50/59.94 Hz)
AVC-Ultra (Panasonic)	Class 50 and Class 100, 1920x1080i (25/29.97 Hz); 1280x720p (50/59.94 Hz)
XAVC-I Class 100 (Sony)	Class 100, 1920x1080i (25/29.97 Hz); 1280x720p (50/59.94 Hz)
XAVC-L	High 422, Level 4, 25, 50 Mbps
AVC-LongG	Record: 25, 50 Mbps; Playback: 12, 25, 50 Mbps
VC-3 (SMPTE 2019-1)	120, 145, 220 Mbps
ProRes	122, 147, 220 Mbps; SQ and HQ modes
HD 3G (1080p 50/60)	
AVC I-Frame	XAVC-I, AVC-Intra , AVC-I RP 2027 Class 100 (generic)
XAVC-L	XAVC, High 422, Level 4.2, up to 50 Mbps
AVC-LongG	35, 40, 45, 50 Mbps
AVCU-LongG	12, 25, 50 Mbps
VC-3 (SMPTE 2019-1)	190, 220, 367, 440 Mbps, HQX mode
ProRes	440 Mbps, LT mode
UHD	
XAVC	I-Frame, Class 300, 422, 10-bit, 50p/60p L-Gop 10bit 4.2.2 200mbs 50p/60p
AVCU	I-Frame, Level 5.2, 422, 10-bit, 50p/60p
VC-3 (SMPTE 2019-1)	145-180 Mbps, LB mode
ProRes	821 Mbps LT mode

RASTER

SD	525i @ 29.97 fps 625i @ 25 fps
HD 1.5 G	1080i @ 25, 29.97 fps 720p @ 50, 59.94 fps
HD 3G	1080p @ 50, 59.94 fps
UHD 4 x 3G	2160p@50, 59.94 fps
UHD 12G, 2RU only	2160p@50, 59.94 fps

MEDIA STORAGE OPTIONS

Four or eight (2RU only) optional internal 3.5" 2-, 4- or 8-TB HDDs or 1.9-TB SSDs 3+1 modified RAID 4 (single parity)
Connect to Spectrum MediaCenter (MCP-2200 series) via GbE
Connect to Spectrum SAN (MediaDirector, MCP-2250 series) via GbE
Ingest to Harmonic MediaGrid as MXF OP1a wrapped media
Preview/Playout from Harmonic MediaGrid via 10GbE

AUDIO PROCESSING

Channels	SMPTE 299M/272M, up to 16 embedded per video channel
Formats	Uncompressed: 16, 24, PCM @ 48 kHz Compressed: audio pass-through, Dolby® encode and decode
Features	Audio up-mix and down-mix, Audio loudness control Audio track swapping; track tagging, language rules Audio mix effects; VO insertion

DATA

Closed, Open, Live Captions	EIA-608, EIA-708
Ancillary Data	VBI, VANC
Reference	Analog black with color burst, PTP for 2110 IP I/O

CONNECTIVITY

SDI Input	SDI inputs for Live or Recording for multiple configurable channels. Integrated frame-accurate MCS switching.
SDI Output	SDI output options for primary video plus up to two secondary video outputs per channel. Independently configurable up-, down-, cross-conversion.
IP I/O	Optional dual 10GE ports for NDI® I/O Optional dual 10GE ports for Ingest/Play from MediaGrid Optional dual 25GE ports for UHD/HD 2110 IP I/O (2RU only)
Connectors	RS-422, AES, LTC and GPIO (multi-pin connector; available adapter cable) Four 10GE ports (1RU) or four 1GE ports (2RU) for connection to the Server, SystemManager, file transfers or API control
Server Interface	Private, point-to-point, non-switchable gigabit Ethernet to MediaDirector or MediaCenter Server

POWER

Power Supplies	Dual, redundant, hot-swappable
1RU Power Consumption	550W at 20C (typical), 800W at 35C (max)
2RU Power Consumption	725W at 20C (typical), 950W at 35C (max)

PHYSICAL

1RU Dimensions (W x H x D)	17.11 x 1.7 x 30.43 in (1 RU) 43.46 x 4.32 x 77.3 cm
2RU Dimensions (W x H x D)	17.53 x 3.44 x 28.75 in (2RU) 44.55 x 8.74 x 73.03 cm