

Spectrum X

ADVANCED MEDIA SERVER SYSTEM



The Harmonic Spectrum™ X advanced media server system brings new levels of efficiency, simplicity and reliability to broadcast playout workflows.

Designed for mission-critical production and playout applications, Spectrum X combines file, baseband and transport stream ingest with comprehensive integrated channel playout (ICP) capabilities, including graphics, branding, DVE, and live switching of baseband and compressed IP sources. 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. The system's high density, low power consumption and rock-solid reliability further reduce operating expenses while providing high availability.

The software-based Spectrum X supports a broad range of SD and HD formats up to 1080p (3G), and is upgradeable to Ultra HD. 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. All functionality is available via software license keying, resulting in a highly flexible system that allows the easy addition of new codecs, CIAB functionality, IP I/O and other advanced features to baseband I/O when needed.

Fully compatible with Spectrum MediaDirector and MediaCenter servers, and Harmonic Polaris™ playout management systems, Spectrum X fits seamlessly into existing broadcast infrastructures. 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 highly scalable Spectrum X system is ideal for a wide range of applications, including:

- CIAB and ICP workflows
- Integrated master control room (iMCR) workflows
- Hybrid baseband and IP playout environments
- Disaster recovery

As a next-generation media server system, Spectrum X offers a new approach to production and channel playout. With its function integration, workflow flexibility and cost-efficiency, this next-generation server powers new revenue-generating services while delivering low total cost of ownership.

HIGHLIGHTS

- Easy-to-deploy ingest and playout system for baseband and IP workflows
- Supports a broad range of SD and HD formats; software upgradeable to Ultra HD
- Integrates SDI and IP I/O on the same chassis to ease migration to IP workflows
- Adaptable to all production and playout applications, including integrated channel playout, channel-in-a-box and integrated master control
- Integrated video graphics and branding, using industry-standard authoring tools
- Single and dual integrated DVEs for sophisticated content presentation
- Plug and play compatibility with Harmonic Spectrum media servers and Harmonic MediaGrid shared storage
- Open control architecture makes CIAB/ICP available to Harmonic Polaris and third-party automation systems
- Compact 1-RU chassis saves rack space and power



SPECIFICATIONS

FEATURE SUMMARY

Branding & Graphics	Adobe® Creative Suite® compatibility 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 and FLV files
Master Control Switching (MCS)	1-6 live inputs (configurable) Switch between live and recorded clips Key + fill support
Typefaces	All standard font formats are supported
Automation Support	Polaris Advance, Polaris Elite, Polaris Play, Polaris Live All Oxtel protocol automation systems (Ethernet or RS-422) Clip playback control via Spectrum API or VDCP (RS-422)

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 (play only)*	2160p @ 50, 59.94 fps

CODECS

SD	
MPEG-2 DV	3-24.9 Mbps LGOP; 25-50 Mbps I-frame DV 25, DVCPRO25, DVCPRO50
HD 1.5 G (1080i 50/60, 720p 50/60)	
MPEG-2 DV	18-85 Mbps LGOP; 50-100 Mbps I-frame 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
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
UHD	
XAVC	I-Frame, Class 300, 422, 10-bit, 50p/60p
AVCU	I-Frame, Level 5.2, 422, 10-bit, 50p/60p

MEDIA STORAGE OPTIONS

Choice of four internal 3.5" 2-, 4- or 6-TB, 7,200-RPM SAS drives, 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 MediaGrid as MXF OP1a wrapped media

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® decode
Features	Audio down-mix Audio track swapping; track tagging, language rules Audio mix effects; VO insertion

DATA

Closed Caption	EIA-608, EIA-708
Ancillary Data	VBI, VANC
Reference	Analog black with color burst

CONNECTIVITY

Input	Four SD/HD DIN 1.0 connector, SMPTE 259M, 292M, 424M One video input per channel
Output	Four SD/HD DIN 1.0 connector, SMPTE 259M, 292M, 424M Independently configurable up/down/cross-conversion
Simulcast	Four SD/HD DIN 1.0 connector, SMPTE 259M, 292M, 424M
Connectors	RS-422 per video channel (multi-pin connector; available adapter cable) Ethernet from client to Spectrum MediaDirector and MediaCenter
Server Interface	Private, point-to-point, non-switchable gigabit Ethernet to MediaDirector
GPI	Eight GPIO lines, configurable

POWER

Power Supplies	Dual, hot-swappable Platinum efficiency
Power Consumption	505 W (max)

PHYSICAL

Dimensions (W x H x D)	17.67 in x 1.7 in x 27.75 in (1 RU) 44.9 cm x 4.32 cm x 70.5 cm
Weight	37.5 lbs/17.0 kg (with HDDs) 29.5 lbs/13.4 kg (without HDDs)