

# Spectrum™ X Plus

ADVANCED MEDIA SERVER



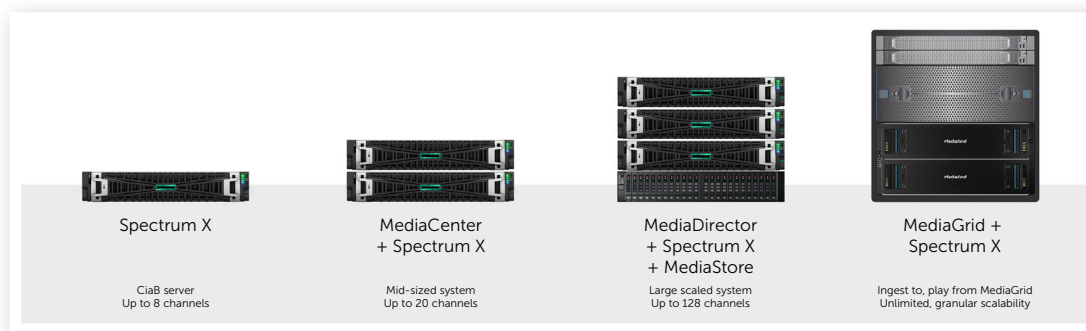
**For decades, broadcasters have counted on Spectrum for high quality, reliable ingest, production and playout video workflows. The next generation Spectrum X Plus carries on the tradition with higher channel density and new advanced features.**

## A Tradition of Excellence

The Spectrum X Plus advanced media server delivers the broadcast quality and mission-critical reliability of the world's leading video server in a convenient and cost-effective package. Spectrum X Plus packs multiple video channels into a single chassis, supporting a wide range of video codecs, resolutions and I/O options with integrated features such as HTML5 graphics, audio processing and full HDR support. Spectrum X Plus leverages the newest generation of HPe servers and the industry's most trusted 3rd-party I/O cards running on Spectrum's time-proven, ultra-secure Linux operating system. An Nvidia GPU supercharges the processing power and improves efficiency by offloading demanding calculations from the server's CPUs.

## Scalable Architecture

Spectrum X Plus can operate as a true channel-in-a-box (CiaB) when configured with onboard storage. Spectrum X Plus is also compatible with larger Spectrum MediaDirector, MediaCenter and MediaGrid shared storage systems. Servers can be customized with optional I/O cards and onboard HDD or SSD storage. All functionality is available via software license keying, resulting in a highly flexible system that allows for the easy addition of new features when needed.



## Workflow Compatibility

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

- UHD and HDR workflows
- Studio and News production
- CiaB and integrated channel playout workflows
- SDI or IP I/O environments
- Ingest workflows
- Disaster recovery

Control of Spectrum X Plus can be performed manually with the Spectrum Media Studio suite of control tools, or with Polaris Play onboard automation, or with numerous other third-party automation and control applications.

## HIGHLIGHTS

- Easy-to-deploy ingest and playout system for baseband and IP workflows
- Up to two UHD or eight HD channels per server drives lower cost and efficiency
- HDR conversions using 3D LUTs
- On-board integrated features such as HTML5 graphics, audio processing, and proxy generation
- Leverages the Nvidia GPU for high-performance, high-bandwidth operations
- Open API architecture makes system control available to third-party manual control and automation systems
- Hardened Linux-based software for maximum IT security
- Spectrum Media Studio Live delivers manual control of channels while Spectrum Media Studio Ingest 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

<b>SD</b>	
MPEG-2 DV	3-24.9 Mbps LGOP; 25-50 Mbps I-frame DV 25, DVCPRO25, DVCPRO50
<b>HD 1.5 G (1080i 50/60, 720p 50/60)</b>	
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
VC-3 (SMPTE 2019-1) ProRes	120, 145, 220 Mbps 122, 147, 220 Mbps; SQ and HQ modes
<b>HD 3G (1080p 50/60)</b>	
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) ProRes	190, 220, 367, 440 Mbps, HQX mode 440 Mbps, LT mode
<b>UHD</b>	
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) ProRes	145-180 Mbps, LB mode 821 Mbps LT mode

\*Check Availability

### 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" 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
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### 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	Up to eight SD/HD channels Up to two UHD channels, 4x3G or 12G SDI
SDI Output	Up to four SD/HD channels Up to two UHD channels, 4x3G or 12G SDI Up to two simulcast outputs per channel Independently configurable
IP I/O	Optional 10GE ports for NDI® I/O* Optional 10GE ports for Ingest/Play from MediaGrid Optional 25GE ports for UHD/HD 2110 IP I/O
Connectors	Optional VITC card Optional RS-422 card Four 10GE ports for connection to the Server, SystemManager, file transfer or API control
Server Interface	1GE 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