

ProStream® XVM

VIRTUALIZED STREAM PROCESSOR



The Harmonic ProStream® XVM virtualized stream processor leverages advances in IT infrastructure to provide a software-based solution for scrambling, multiplexing and statistical multiplexing of SD and HD MPEG video.

ProStream XVM is designed to run on common hardware platforms in IT data center environments. The system pairs with the Harmonic Electra™ XVM media processor to deliver a completely virtualized, broadcast-ready solution for scrambling, multiplexing, remultiplexing and statistical multiplexing.

Statistical Multiplexing over IP

ProStream XVM maximizes the efficiency of statistical multiplexing through tight integration with Electra XVM and the Harmonic DiviTrackIP™ statmux technology. Applicable for either LAN or distributed WAN environments, DiviTrackIP can support up to 300 ms of WAN round-trip delay, auto-adjust to IP network variations, and form MPEG transport streams.

In addition, ProStream XVM enhances statmux with DataTrack capability, which allows non-video PIDs (e.g: audio, ancillary data, teletext, subtitles) into the stat-mux pool. When not in use, the ProStream X stat-mux mechanism, frees up the bandwidth provisioned for these PIDs, allowing it to be reallocated to video to improve video quality. The DataTrack capability is valid also in CBR systems where no advanced allocation is required anymore for these occasional PIDs without risking of an overflow.

ProStream XVM also includes a unique Target Average Bitrate application, which provides the ability to apply the long-term average bitrate for each video based on the user configured bitrate. For operators that have multiple customers sharing channels in the same stat-mux pool, the feature will secure the average bitrate customers are paying for, over the long term, while maintaining high video quality.

Fully Virtualized

The software-based ProStream XVM system leverages the Moore's Law economics of IT infrastructure. The system can run on any approved blade server and supports VMware® ESXi bare-metal hypervisor v5.5 or later. Virtual machine instances of ProStream XVM can be turned up or down dynamically according to demand, and leverage data center MIPS capacity according to the mix of tasks performed. This flexibility is delivered with absolutely no compromise on video quality or system functionality.

HIGHLIGHTS

- Software-based control for Harmonic DiviTrackIP distributed statmux system and Electra XVM statmux pools
- DVB CSA2 and IPTV AES scrambling
- Emergency Alert System (EAS) compliance including SCTE-18 Trigger
- Advanced IP multiplexing of any service from any input to any output
- IP networking and mirroring of broadcast video
- MPEG-2 transport stream over RTP/UDP for IP output
- Slate insertion for service disruption message
- Control via NMX Digital Service Manager

Control and Management

Processing on ProStream XVM is easily configured and controlled with Harmonic's NMX™ Digital Service Manager video management system, a service-oriented solution for mass configuring, monitoring and automated redundancy in centralized or distributed architectures.

"Pay As You Grow" Scalability

As processing needs evolve, ProStream XVM makes it easy to incrementally add or upgrade firmware licenses, simplifying scalability and extending the solution's value. The joint Electra-ProStream solution can scale up or down based on required functions and number of services to accommodate peaks in demand across real-time broadcast services.

Conditional Access

The ProStream XVM processor's industry-leading SimulCrypt Synchronizer (SCS) core supports DVB CSA2 and IPTV AES encryption technologies, and allows for the simultaneous connection of up to 30 different CAS systems. AES support includes fixed key scrambling and descrambling.

Fully integrated with all leading CAS vendors and compliant with widely implemented industry protocols, ProStream scrambling technology is known in the industry for its stability and high performance. The ProStream XVM can scramble any format of video, audio and data elementary streams (e.g., MPEG-2, MPEG-4 AVC, HEVC, AC-3, AAC, HE-AAC), as well as multiplex MPEG TS. The solution easily integrates into existing architectures, and reduces cost and complexity by eliminating the need for multiple devices in distributed cable, satellite or telecom networks.

World-Class Service and Support

Harmonic stands behind the ProStream XVM system 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.

SPECIFICATIONS

INPUT/OUTPUT

Protocol	MPEG-2 TS via IP
IP Encapsulation	UDP/RTP/HRTP 1 to 7 TS/IP
MPEG Format	188 B per TS
Transport Stream Formats	MPTS and SPTS
I/O Addressing	Multicast
Communication Protocol	IGMPv2/v3

STATISTICAL MULTIPLEXING CONTROL

Codecs Supported	MPEG-2, MPEG-4 AVC, HEVC
Formats Supported	SD, HD, interlaced, progressive
Frame Rates Supported	PAL, NTSC

REMULTIPLEXING

Routing	Any input to any output
PID	Remapping, filtering, multicasting
PID Multicasting	Any input PID can be multicast to multiple TS outputs with different remapping and processing
PSI/SI	Extraction, injection, spooling, regeneration
PSIP	Extraction, parsing
Output Mirroring	IP to IP

SCRAMBLING

SCS	Internal
Standards	DVB common scrambling Open CAS DVB SCA1/2 AES-CBC, AES-EBC scrambling algorithms Fix Key scrambling and descrambling
CAS connections	Simultaneous connection to 30 different CAS
BISS Encryption	Mode 1

REDUNDANCY

Device	1:1 XVM redundancy, HOT: HOT or HOT: WARM
Internal	Any-to-any input TS TS output mirroring Triggers ETR 290 Input TS redundancy

SYSTEM MANAGEMENT

	NMX Digital Service Manager release 7.5 or later
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ORDERING INFORMATION

PLATFORM

Part Number	Description
PRM-XVM-FW	ProStream XVM firmware-only ATO model
FW-PRM-XVM-BASE	Firmware option for ProStream XVM base platform
FW-PRM-XVM-LAB	Firmware option for ProStream XVM lab license
FW-PRM-XVM-DEMO	Firmware option for ProStream XVM for all functions for 90-day demo usage; for non-commercial use only
FW-PRM-XVM-SPARE	Firmware for ProStream XVM cold spare for all ProStream functions; 30 days; one per XVM

MULTIPLEXING

Part Number	Description
FW-PRM-XVM-DT-POOL	ProStream XVM firmware license for statmux control; one DiviTrackIP license per pool
FW-PRM-XVM-SLATE-SRV	ProStream XVM firmware license for Slate Insertion; one per service required
FW-PRM-XVM-FEC-TS	ProStream XVM output FEC firmware license; one per transport stream required
FW-PRM-XVM-EAS-SRV	ProStream XVM firmware license for Emergency Alert System; one per service required
FW-PRM-XVM-DT-TARGET-BTR-SRV	ProStream XVM with Target Average bitrate algorithm; one per service required
FW-PRM-XVM-DATATRACK	ProStream XVM capability to add external Data/Audio pids to the DiviTrack statmux pool

SCRAMBLING

Part Number	Description
FW-PRM-XVM-CSA-CW	ProStream XVM DVB SCR firmware license; one per service required
FW-PRM-XVM-SCR-FIX-SRV	ProStream XVM fixed key firmware license; one per service required
FW-PRM-XVM-SELC-SCR	ProStream XVM selective encryption firmware license; one per service required
FW-PRM-XVM-SELC-EHP	ProStream XVM encryption hacking prevention scrambling firmware license; one per service required
FW-PRM-XVM-BISS-FIX-SRV	ProStream XVM BISS fixed key firmware license; one per service required
FW-PRM-XVM-AES-CW	ProStream XVM AES SCR firmware license; one per service required
FW-PRM-XVM-DES-FIX-SRV	ProStream X AES fixed key descrambling firmware license. One per service required.

SPLICING

Part Number	Description
FW-PRM-XVM-SRV-SUB	ProStream XVM Splicing Service Substitution firmware license; one per service required