

# ProStream<sup>®</sup> X

VIDEO ENGINE for CableOS



## ProStream<sup>®</sup> X video engine complements Harmonic's CableOS<sup>®</sup> cable access solution, leveraging advances in IT infrastructure to provide high-performance video processing and encryption.

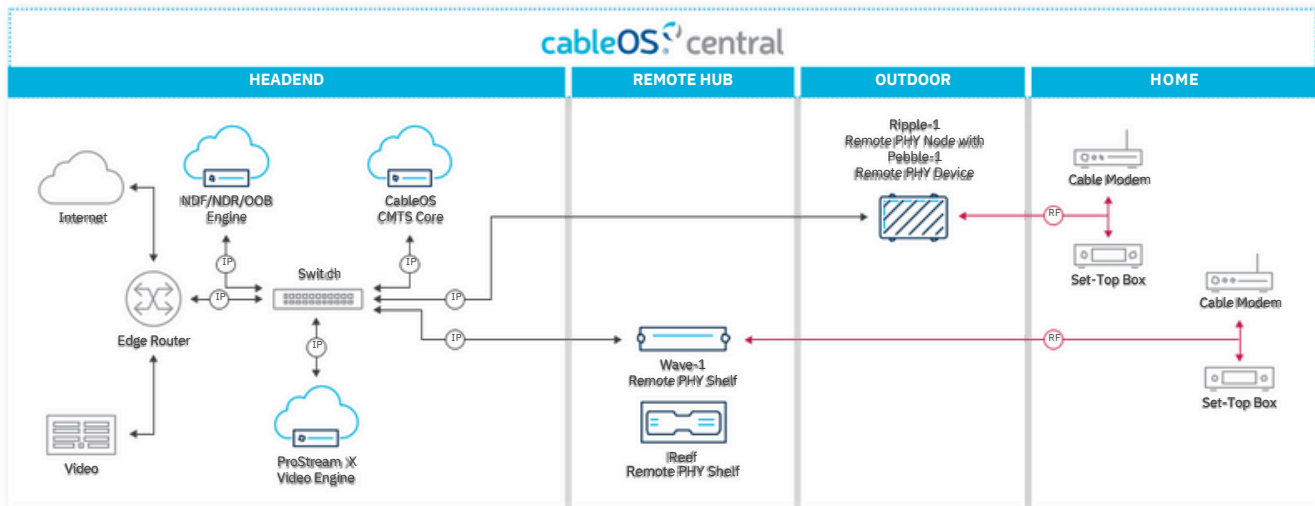
As the latest generation of Harmonic's market-leading line of stream processing platforms, the software-based ProStream X system allows Cable-TV operators to leverage the versatility and agility of software-based infrastructure for reliable delivery of high-throughput video services. The platform integrates 10-Gbps throughput and accurate PTP clocking with a variety of advanced video processing applications, including VoD, broadcast multiplexing, and DVB CSA encryption.

ProStream X runs on a 1-RU COTS Intel<sup>®</sup> server, and fits perfectly into Harmonic's software-based CableOS cable access solution. Its high-density architecture reduces the amount of rack space required to serve CCAP video processing needs, and allows excellent flexibility in scaling the solution to meet the desired video streaming capacity while keeping CAPEX and OPEX to a minimum.

SD, HD and UHD formats, and MPEG-2, MPEG-4 AVC and HEVC codecs are all supported on ProStream X.

**Leveraging Harmonic's years of expertise and leadership in the video processing and encryption domains, ProStream X is an ideal all-in-one IP video engine.**

### CableOS System with ProStream X Video Engine



#### HIGHLIGHTS

- High-throughput 10-Gbps video gateway
- L2TPv3 output encapsulation and accurate PTP (IEEE 1588) clocking, compliant with CableLabs R-PHY specifications
- Advanced broadcast multiplexing capabilities
- High-capacity VoD processing, integrated with leading VoD back-office systems
- Powerful DVB CSA encryption engine for broadcast and VoD content, supporting both tier-based and session-based encryption

## SPECIFICATIONS

### STREAMING INTERFACES AND PROTOCOLS

1G/10G SFP+ (IEEE 802.3z)	Two ports, usable for ingress, egress or bi-directional traffic. An expansion module with two additional ports is available.
1000BaseT RJ45	Four ports, usable for ingress, egress or bi-directional traffic
In-band Management	Supported
MPEG TS over UDP/IP/MAC	Supported
MPEG Transport Streams MPTS and SPTS Multicast control	IGMP v2/v3
IEEE 802.Q VLAN tagging	Supported

### MANAGEMENT

1000BaseT RJ45	Two ports, typically used for management and CAS
User Interface	Web-based Graphical UI
Automation API	RESTful API
Access control	TACACS+
Monitoring interfaces	SNMP, Syslog
Tunneling protocols	L2TPv3 (DEPI), IPsec

### BROADCAST REMULTIPLEXING

Routing	Any input to any output Remapping,
PID	filtering, multicasting
Program	Remapping, filtering, multicasting
PSI/SI tables generation	PAT, PMT, CAT, SDT, NIT, EIT, TDT, TOT

### VIDEO ON DEMAND (VOD) PROCESSING

VOD Routing	UDP scheme (Standard 10/6, Custom)
-------------	------------------------------------

### VIDEO ENCRYPTION

Scrambling algorithm	DVB CSA2, DVB CSA3, AES-CBC, AES-NSA2
Protocols	SCS-EIS, ECMG-Mux, EMMG-Mux
Broadcast encryption	Supported
VOD encryption	Tier-based, Session-based
ECMG Redundancy	Supported

### R-PHY VIDEO STREAMING CAPACITY

L2TPv3 output "pseudo-QAMs"	144 per platform
Number of VOD sessions	2,000 per platform
Total video throughput	With real-time encryption: 4Gbps. Clear or pre-encrypted: 9Gbps

### PHYSICAL

Dimensions (W x H x D)	17.28 in x 1.7 in x 28 in (1 RU) 43.9 cm x 4.32 cm x 71.12 cm
Weight	28.7 lbs/13 kg

### POWER

Power Supply Units	Dual redundant, AC or DC
Voltage	90-132 VAC / 180-264 VAC / 44-52 VDC
AC Line Frequency	47-63 Hz

### ENVIRONMENTAL

Cooling	Six fans, hot-swappable
<b>Operating Temperature</b>	
ASHRAE Class A2	+50° to +95° F +10° to +35° C Continuous operation with max rate of change: 10° C/hr
ASHRAE Class A3 ASHRAE Class A4	Includes operation up to 40° C for up to 900 hrs/yr Includes operation up to 45° C for up to 90 hrs/yr
Storage	-40° to +158° F
Temperature	-40° to +70° C
Safety Compliance	UL60950-CSA 60950 (USA/Canada) EN60950 (Europe) IEC60950 (International) CB Certificate & Report, IEC60950 CE-Low Voltage Directive 2006/95/EC (Europe)
Electromagnetic Compliance (Class A)	FCC /ICES-003 -Emissions (USA/Canada) Verification CISPR 22 - Emissions (International) CISPR 24 - Immunity (International) EN55022 - Emissions (Europe) EN55024 - Immunity (Europe) CE-EMC Directive 2004/108 EC (Europe) AS/NZS 3548 Emissions (Australia/New Zealand) BSMI CNS 13438 Emissions (Taiwan) KC Certification (Korea)

## ORDERING INFORMATION

### PLATFORM

Part Number	Description
PRM-X-21-AC-FF	ProStream X G2 stream processing platform with AC dual PSU
PRM-X-21-DC-FF	ProStream X G2 stream processing platform with DC dual PSU
PRM-X-DUAL-10GBE	ProStream X G2 stream processing platform with dual-port 10-Gbe optical NIC with SFP+
FW-PRM-X-BASE	ProStream X base license
FW-PRM-X-LAB	ProStream X firmware license for lab license
FW-PRM-X-DEMO	ProStream X firmware license for all functions for 90-day demo usage; for none commercial use only
FW-PRM-X-DEVICE-REDUNDANCY	ProStream X stand-alone device redundancy firmware license; one per chassis required
FW-PRM-X-DVB-VOD-CHS	ProStream X firmware license for VOD Encryption (1 per platform)