

NetProcessor™ 9030/40

MULTIPLEXER & VIDEO PROCESSOR



The NetProcessor™ 9030/40 from Harmonic is an advanced MPEG-2/MPEG-4 AVC SD/HD transport stream multiplexer and processor possessing powerful function integration capabilities.

Part of the NetProcessor family of video and network solutions for digital television applications, the NetProcessor 9030/40 is ideal for broadcasters, content owners and network operators looking to migrate from DVB ASI legacy environments to IP-based infrastructures, as well as for localizing or remodeling content. The platform's mission-critical capabilities include multiplexing, remultiplexing, PSI/SI processing, transrating, splicing, data injection, ad insertion, and the scrambling of hundreds of services received and delivered over DVB ASI and telecom interfaces. The NetProcessor 9030/40 can also function as a bandwidth manager, with the Harmonic Flexstream™ hybrid remote multiplexing technology providing the ability to combine local or geographically distributed encoders in the same pool with incoming transrated programs.

In addition to its remultiplexing capabilities, the NetProcessor 9030/40 can behave as a DVB-T2 gateway. The system can encapsulate a multiplex into a DVB T2-MI stream, providing signalization, transmission and synchronization parameters to DVB-T2 modulators, which offers a deterministic way of building the final broadcast signal in a DTTV SFN environment. Inversely, the NetProcessor can receive multiple T2-MI streams at the input, de-encapsulate each PLP, and make the resulting multiplexes available for processing.

NetProcessor also features Harmonic SingleFeed™ technology. Multiplexes can be built in DTH format and converted deterministically by the Harmonic RD1100 IRD into a T2-MI stream for DTT SFN transmission. SingleFeed is a very cost-effective solution, enabling multiplex generation to support both DVB-T2 and DTH distribution. This is of particular interest in countries with poor terrestrial coverage.

Complementing these functions is a range of interfaces, including ASI, Gigabit Ethernet/IP, PDH-SONET and SDH/ATM. These diverse I/O options allow the NetProcessor platform to replace multiple previous-generation multiplexers and network adaptors with a single device. With its combination of flexibility, scalability and serviceability, the NetProcessor 9030/40 can cope with almost any situation, even those involving a large number of streams, heterogeneous interfaces, or video/audio processing combined with scrambling or IP streaming.

World-Class Service and Support

Harmonic stands behind the NetProcessor 9030/40 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.

HIGHLIGHTS

- Up to 22 ASI inputs and outputs, up to 213 Mbps per interface
- Input and output telecom interfaces
- Multiplexing/remultiplexing of multiple transport streams received over ASI and telecom interfaces
- Embedded service redundancy and service substitution
- Splicing and/or transcoding of many tens of TV channels (hardware option)
- DVB-T2 multi-PLP and reverse gateways
- DTH/DVB-T2 SingleFeed functionality
- SCTE 35 and SCTE 30-compliant for ad/local program insertion (DPI)
- Advanced management of PSI/SI/PSIP tables, service filtering and remapping
- Opportunistic data insertion
- DVB common scrambling algorithm, simultaneous support of multiple CAS
- Support for Flexstream multiplexing of local/remote encoder pools with transrated turnaround channels
- Bandwidth monitoring and policing, advanced overflow prevention
- Embedded SFN adaptation on up to four generated TS for DTTV applications
- Error-free transmission over any network via IP and ATM forward error correction (FEC) and advanced clock recovery mechanisms
- Compact 1-RU chassis with dual power supplies

SPECIFICATIONS

AUDIO/VIDEO PROCESSING

Video Profiles	MPEG-2 MP @ ML MPEG-2 MP @ HL MPEG-4-AVC, Main and High profiles
Audio Profiles	MPEG-1 Layer II & III Dolby® Digital (AC-3), including 5.1 AAC LC/HE
Processing Options	Up to two optional video processing boards (can be ordered at time of initial purchase or through an on-site upgrade) Seamless splicing of SD/HD services (or selected components) Splice out after anchor (I or P), splice in before anchor (I) SCTE 30 and SCTE 35 support for digital program insertion Transrating of SD/HD services from CBR/VBR to CBR/VBR Flexstream hybrid remote statistical multiplexing pool of locally transrated services and remote/local encoders

DVB-ASI INTERFACES (OPTIONAL)

Inputs/Outputs	Up to 22 ASI inputs Up to 10 ASI outputs
Throughput	Up to 213 Mbps per interface

GIGABIT ETHERNET/IP INTERFACES (OPTIONAL)

Two independent GbE ports, each providing 1000Base-T (twisted pair, RJ-45) and 1000Base-X (SFP)
10/100/1000Base-T auto-sensing
Half and full duplex
Video encapsulation over IP, compliant with Pro-MPEG Forum COP#3 rev2, including FEC
Unicast and multicast (IGMP v2 and v3)
VLAN 802.1p and 802.1q and IntServ/DiffServ ToS byte field tagging for quality-of-service support
Static and dynamic IP routing (RIP, OSPF)

PDH-SDH-SONET/ATM INTERFACES (OPTIONAL)

E3, DS3 (BNC connectors)
STM1/OC3 – electrical and optical (multimode and single mode)
PVC, full range of VPI/VCI, AAL1 with FEC
Traffic policing and shaping
Up to 10 input/output transport streams over ATM
IP data over ATM services, up to 50 Mbps per direction
VP crossover between the two ports, allowing add/drop/mux functions in the ATM layer and ring architectures

MPEG PROCESSING

[N to P] transport stream grooming and routing capability
Processing performance: up to 400 services
No signaling, ISO, DVB and ATSC signaling modes
Interfaces with external signaling manager
Advanced management of PSI/SI/PSIP tables, service, and component filtering and remapping
Compliant with DVB common scrambling and all major conditional access systems
Incoming bitrate monitoring and policing (component/service/transport stream)
Support for remote statistical multiplexing pool of encoders (extended Flexstream solution)
Embedded service redundancy mechanism
Support for time-shared service through service substitution
Visualization of MPEG stream structure (services, components, bitrates)
ETR 290 monitoring over all interfaces
Statistical multiplexing of data (FlexData)

IP DATA INJECTION

Up to 8 Mbps over a dedicated 100Base-T interface, supporting DVB simulcrypt, constant or opportunistic bitrate for optimum use of allocated bandwidth
Injection over any ASI, GbE or ATM interfaces

SFN ADAPTATION

Interface for external GPS receiver, 1 pps and 10 MHz, BNC connectors
MIP insertion, inserts synchronization marks in the DVB-T transport stream
Megaframe synchronization in 1+1 configuration of NetProcessors (nominal + backup)

DVB-T2 GATEWAY

Encapsulation of any generated multiplex into DVB-T2 frames
Generation of up to four DVB T2-MI streams over ASI or IP
Interface for external GPS receiver, 1 PPS and 10 MHz
Support of single and multi-PLP
Generation of composite T2-Lite/T2-Base transmission
DTH/DVB-T2 SingleFeed technology

DVB-T2 REVERSE GATEWAY

Pre-processing of up to two incoming multi PLP T2-MI streams
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MANAGEMENT

100Base-T for management over IP/Ethernet
Embedded web server for control and configuration
In-band and out-of-band management
SNMP v2 agent
Multiple configuration files stored in flash memory, activation via GUI and SNMP
Harmonic XMS network management system

SPECIFICATIONS

PHYSICAL

Dimensions (H x W x D)	1.75 in x 19 in x 24.4 in (1 RU) 4.45 cm x 48.4 cm x 62 cm
Weight	22 lbs/10 kg
Input Voltage	110-240 VAC -40 to -60 VDC optional
Power Supplies	Dual, hot-swappable

ENVIRONMENTAL

Operating Temperature	41° to 113° F 5° to 45° C
Storage Temperature	-13° to 158° F -25° to 70° C
Maximum Humidity	85%
Electromagnetic Compliance	CE and UL certifications

ORDERING INFORMATION

Part Number	Description
NP3040-1U-2AC-SCR-IP	NetProcessor 9030/40 chassis, (one or two NetRater boards can be added for video processing), dual swappable AC power supply, 1 RU, scrambling capability, two GbE ports for MPEG-over-IP transmissions, ASI module (optional)
NP3040-HW-ASI-10IO-GPS	Main ASI module with 10 ASI ports configurable as inputs or outputs, GPS inputs for SFN adaptation, and GPI I/O
NP3040-HW-1ST-NETR	Hardware option for additional first NetRater board, can be ordered with NetProcessor 9030 (N903BDxxAB) to get the video processing capabilities of the NetProcessor 9040, includes 16 transrater licenses