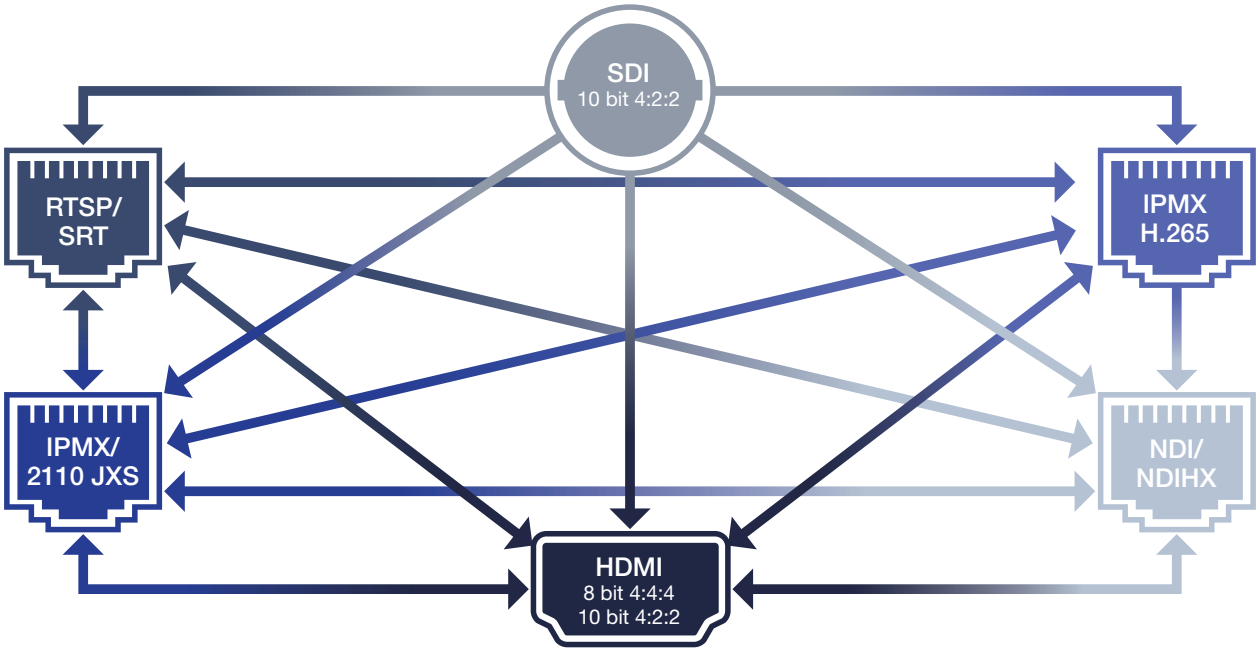
Matrox® **Vion**

Your IP video bridge.

Matrox Vion is a compact, multi-channel 4K capable IP video gateway for media processing and conversion. Vion provides flexible, low-latency multi-channel encoding, decoding, transcoding, and cross-conversion of IP video formats and codecs like H.264, HEVC, JPEG-XS and NDI. The video gateway supports protocols like ST 2110-22, IPMX, SRT, RTSP, RTP, and MPEG-2 TS for flexible routing workflows, such as transcoding an NDI source for delivery over the web using SRT.

With support for 4:2:2 10 bit and 4:4:4 10 bit codecs and optional HDMI 2.0 and 12G-SDI Inputs, Vion can maintain both desktop and broadcast video content details, manages color space conversions, streaming protocols and bitrates, and transmits multiple concurrent streams making it ideal for live production, collaboration, and local/cloud IP workflows.

Encode, decode, transcode your content.



Key features and benefits.

IP signal protocol conversion
Efficiently convert, transcode, transmux, transrate, and transceive compressed IP signals to ensure seamless media distribution. With Vion, you can facilitate NDI media and protocol conversion, including seamless conversion between NDI and SRT, as well as NDI and IPMX.

Multi-channel processing
Deliver multiple concurrent and bi-directional streams with advanced multi-channel encoding, decoding, transcoding, and cross-conversion.

4:4:4 color precision
Matrox Vion Series supports 4:4:4-capable codecs (HEVC and JPEG XS) to provide maximum image quality and maximum equipment compatibility. HEVC 4:4:4 ensures low-bitrate transmission of high-quality desktop content over IP, making it ideal for applications that require color accuracy, compression efficiency, and high performance.

Encode from baseband inputs
When looking to process more than IP only sources, acquire video and audio baseband signals from two SDI, two HDMI, and a balanced analog input with Vion EX.

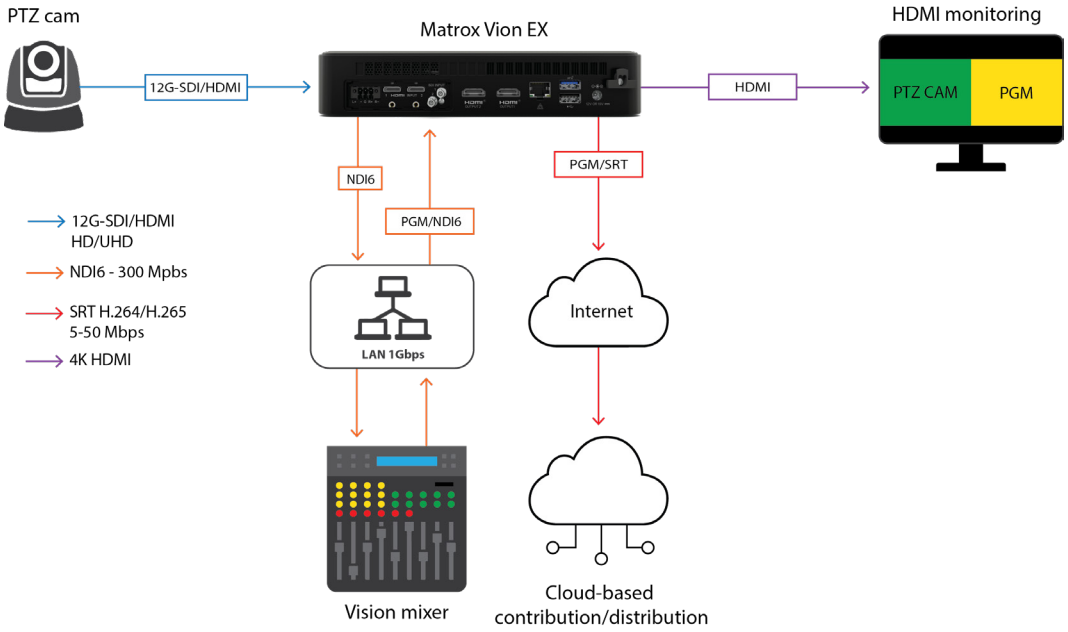
Open standards
Compatible with the IPMX and 2110 suite of open standards and specifications, along with protocols like RTSP, RTP, and MPEG-2 TS, Vion is ideal for connecting these protocols with other popular streaming formats such as NDI and SRT.

Content preview I/O options
Preview and monitor your video inputs/outputs as side by side, quad-split compositions on your HDMI output, as well as an additional IP preview streams.

Workflow examples.

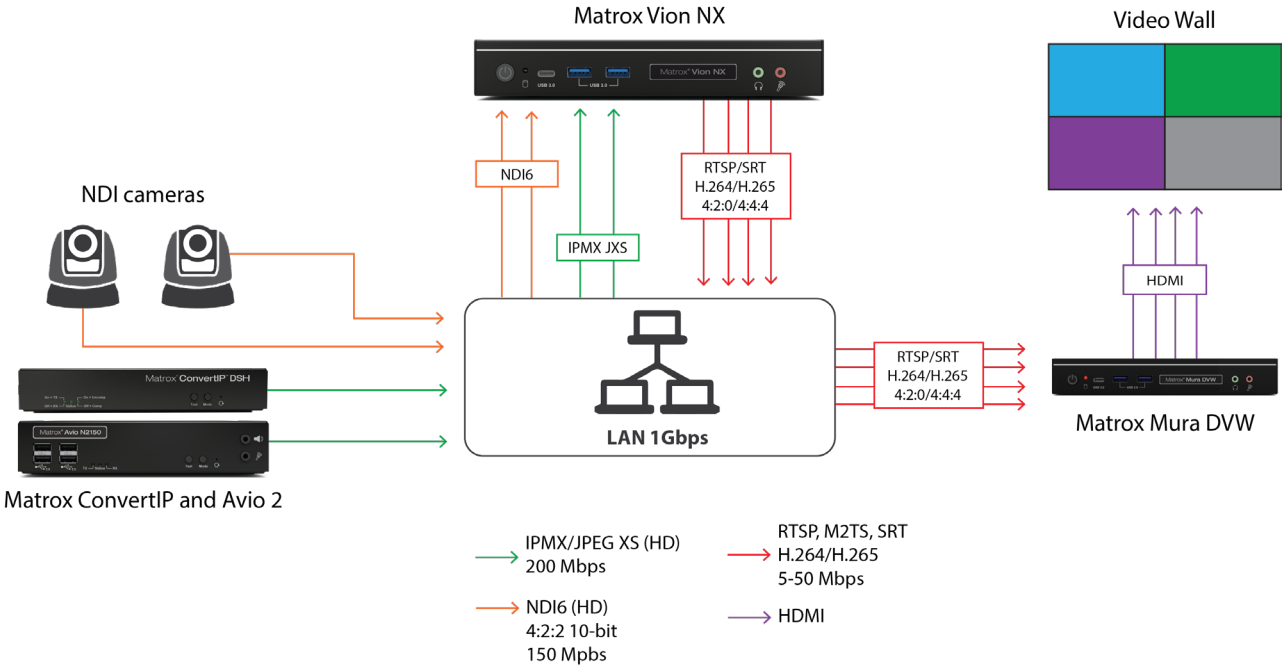
NDI contribution and SRT distribution

Users can convert their baseband SDI and HDMI signals to 4:2:2 10-bit NDI (full) streams that can then be fed to their NDI vision mixer. The NDI program output of the vision mixer can also be sent to Matrox Vion EX for encoding to a high compression, web friendly format like SRT.



NDI and IPMX conversion to high compression distributed display walls

Users can convert low compression, IPMX, and NDI feeds to high compression RTSP streams for decode and display on a distributed display wall system.



Why choose Matrox Video for video IP gateways?

Uncompressed to/from compressed
Network flexibility • IPMX to/from ST 2110
Compressed-to-compressed

Appliance overview

Matrox Vion EX (front/back view)

Matrox Vion NX (front/back view)

Technical specifications

Product	Vion EX	Vion NX
Part number	· VION-EXY-NA · VION-EXY-EU · VION-EXY-UA	· VION-NXY-NA · VION-NXY-EU · VION-NXY-UA
Connectivity		
Input connections	· HDMI - 2x mini-HDMI (Type C) with retention screw · SDI - 2x HD BNC 12G-SDI per SMPTE ST 2082. Level A mapping only when 1080p60 input - (2x HDBNC to BNC adapter provided) - 8 channels of embedded audio per input - Max number of baseband inputs available at a time limited to two · Audio - 1x balanced stereo input via Phoenix connector - 1x unbalanced input via 3.5mm (1/8)" TRS connectors	
Output connections	· 2x full size HDMI (Type A) · 8 channel of embedded audio per output · 1x unbalanced output via 3.5mm (1/8") TRS connectors	
Network	· Lan 1: 100/1000 Base-T RJ45 · Lan 2: 1000/2500 Base-T RJ45	· Lan 1: 1000/2500 Base-T RJ45 · Lan 2: 100/1000 Base-T RJ45
Other	· USB - 3x USB3 type A[1] - 1x USB2 type A[1] - 1x USB2 type B[1]	· USB - 5x USB3 type A - 1x USB-C
Baseband video input formats		
SDI	· Resolutions - 4096x2160 progressive[1], 23.98, 24, 25, 29.97, 30, 50, 59.94, 59 fps - 3840x2160 progressive, 23.98[1], 24[1], 25[1], 29.97[1], 30[1], 50, 59.94, 60 fps - 1920x1080 progressive, 23.98[1], 24[1], 25, 29.97, 30, 50, 59.94,60 fps - 1920x1080 Interlaced, 25, 29.97,30 fps - 1280x720 progressive, 50, 59.94, 60 fps · Color sampling - YCrCb 4:2:2 10-bit	
HDMI	· Resolutions - 3840x2160 progressive, 23.98[1], 24[1], 25[1], 29.97[1], 30[1], 50, 59.94, 60 fps - 2560x1440 progressive, 30, 60 fps - 1920x1080 interlaced, 25, 29.97,30 fps - 1920x1080 progressive, 23.98[1], 24[1], 25, 29.97, 30, 50, 59.94,60 fps - 1280x720 progressive, 25, 29.97,30 fps - 1024x768, 30,60 fps - 800x600, 30,60 fps - 640x480, 30,60 fps - A number of other non 16:9 resolution can be supported · Color sampling - YCrCb 4:2:2 10-bit, sRGB 4:4:4 8/10-bit	
Supported codecs		
Codecs	· H264/MPEG-4 part 10 (AVC): 4:2:0 8-bit up to 100 Mbps · H265 (HEVC), 4:2:0 8/10-bit: 4:2:2 8/10-bit, 4:4:4: 8/10-bit up to 100 Mbps · JPEG XS: 4:2:2 8/10-bit, 4:4:4: 8/10-bit up to 2000 Mbps · NDI6 - [SpeedHQ]: 4:2:2 8/10-bit up to 300 Mbps · NDIHX3 [H264/H265]: 4:2:0 8/10-bit up to 100 Mbps · Uncompressed audio: for IPMX/2110 and NDI streaming formats · AAC - LC/HE: 32 to 256 Kbps per stereo pair	
Supported streaming formats		
Streaming formats	· RTP/RTSP: Using H264 and H265 codec only · SRT [caller, sender and rendez-vous]: Using H264 and H265 codec only · MPEG-2 TS: Using H264 and H265 codec only · NDI6: Using SpeedHQ · NDIHX3: Using H264 or H265 · IPMX: With JPEG XS codec · SMPTE ST-2110 – 22: With JPEG XS codec	

Performance	Vion EX	Vion NX
Encode/decode	· JPEG XS: 1x 4Kp60 encode or decode, 4x 1080p60 encode or decode · NDI6[Full]: 1x 4Kp60 encode or decode, 4x 1080p60 encode or decode · H.264: 2x 4Kp60 encode or decode, 8x 1080p60 encode or decode · H.265 4:2:0 and 4:4:4 8/10-bit: 2x 4Kp60 encode or decode, 8x 1080p60 encode or decode · H.265 4:2:2 10-bit: 2x HD encode and decode Note that there are only two HDMI outputs that are enabled, output of more than two decodes will need to be viewed in composition mode.	
Transcode combinations	· JPEG XS<-->NDI, 1x 4Kp60 transcode, 3x 1080p60 transcodes · JPEG XS<-->H264, 1x 4Kp60 transcode, 4x 1080p60 transcodes · JPEG XS<-->H265, 4:2:0, 4:4:4, 1x 4Kp60 transcode, 4x 1080p60 transcodes · JPEG XS<-->H265, 4:2:2 10-bit, 2x 1080p60 transcodes · NDI6<-->H264, (including NDIHX3), 2x 4Kp60 transcode, 4x 1080p60 transcodes[1] · NDI6<-->H265, 420 or 444(Including NDIHX3), 2x 4Kp60 transcode, 4x 1080p60 transcodes[1] · NDI6<-->H265, 4:2:2 10-bit, 2x 1080p60 transcodes · H264<-->H265, 1x 4Kp60 transcode, 4x 1080p60 transcodes Many simultaneous encodes and transcodes possible. The above combinations provide guidelines as to what the limits might be. When resolutions and frame rates are further reduced to 1080i/25/30 or 720p50/60, even more operations can be done. NDI and JPEG XS codecs have a hard limit of 4 simultaneous opertions each. These limits are independent of each other. I.e., 4x NDI<-->JPEG XS transcodes are possible, however only 2x NDI6<-->NDIHX3 transcodes are possible.	
Scaling and color space conversion operations		
Color space conversion	· Input video format - YCrCb BT 709 (over SDI or HDMI): Convert from any baseband format to any codec format. - YCrCb BT 2020 (over SDI or HDMI) - sRGB (over HDMI) · Codec formats - YUV 4:2:0 8/10-bit: Convert from one codec format to the other - YUV 4:2:2 8/10-bit - RGB 4:4:4 8/10-bit	· Codec formats - YUV 4:2:0 8/10-bit: Convert from one codec format to the other - YUV 4:2:2 8/10-bit - RGB 4:4:4 8/10-bit
Scaling and frame rate conversion	· Upscaling/downscaling, anamorphic scaling to HD<-->4K · Deinterlacing, interlace to progressive conversion · Frame rate conversion, skip and repeat of frames	
General		
Physical	· Product dimensions: L: 190mm (7.48in) x W: 148mm (5.83in) x H: 30mm (1.18in) · Weight: Device only ~1.5 kg (3.3 lbs) · Operating conditions: 0 - 35 °C (32-95 °F) · Power supply: 120-240V, 120W · Power input: 19V - 5.5 amps max (4 amps typical)	· Product dimensions: L: 210mm (8.27in) x W: 175mm (6.89in) x H: 42mm (1.65in) · Weight: Device only ~1.0 kg (2.2 lbs) · Operating conditions: 0 - 35 °C (32-95 °F) · Power supply: 120-240V, 90W · Power input: 19V - 4.5 amps max
Regulatory	· CE(EU), FCC(US), ICES-003(Canada), KC(Korea), RCM(Aud/Nz) · REACH, EU ROHS, REACH · UL 60950 & UL 62368-1, CSA c22.2 No. 60950-1 % 62368-1, TUV EN-60950-1 & EN-62368-1 · GB9254-2008, GB4943-1-2011, GB17625.1-2012	
Hardware and software		
Hardware included	- Power supply: 120W power supply · Power cords - VION-EXY-NA NEMA 5-15 North Amercian power cord (North America) - VION-EXY-EU CEE 7/7 European Union power cord (European Union) - VION-EXY-UA (UK and AUS/Nz power cord) · Adapters - 2x 12” HDBNC to BNC cable adapters for SDI connectivity · Other - One mounting plate with screws	- Power supply: 90W power supply · Power cords - VION-NXY-NA NEMA 5-15 North Amercian power cord (North America) - VION-NXY-EU CEE 7/7 European Union power cord (European Union) - VION-NXY-UA (UK and AUS/Nz power cord) · Adapters - 2x 12” HDBNC to BNC cable adapters for SDI connectivity · Other - One mounting plate with screws
User interfaces	· Matrox Update Utility: Free application to find and update VION devices connected to network. · Web UI: Principal GUI to configuration and monitoring · NMOS IS-04 and IS-05 API: Discovery and routing of IPMX and ST-2110 signals	
Warranty	· Standard warranty: 2 years · Extended warranty: Contact a Matrox sales representative	
Accessories and options	· Rack Kit: Rack kit part number · ConductIP Media Routing Appliance: CDTCIP-MRA · HD BNC adapter cables: HDBNC/I	· Rack Kit: Rack kit part number · ConductIP Media Routing Appliance: CDTCIP-MRA

1. Future use.

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