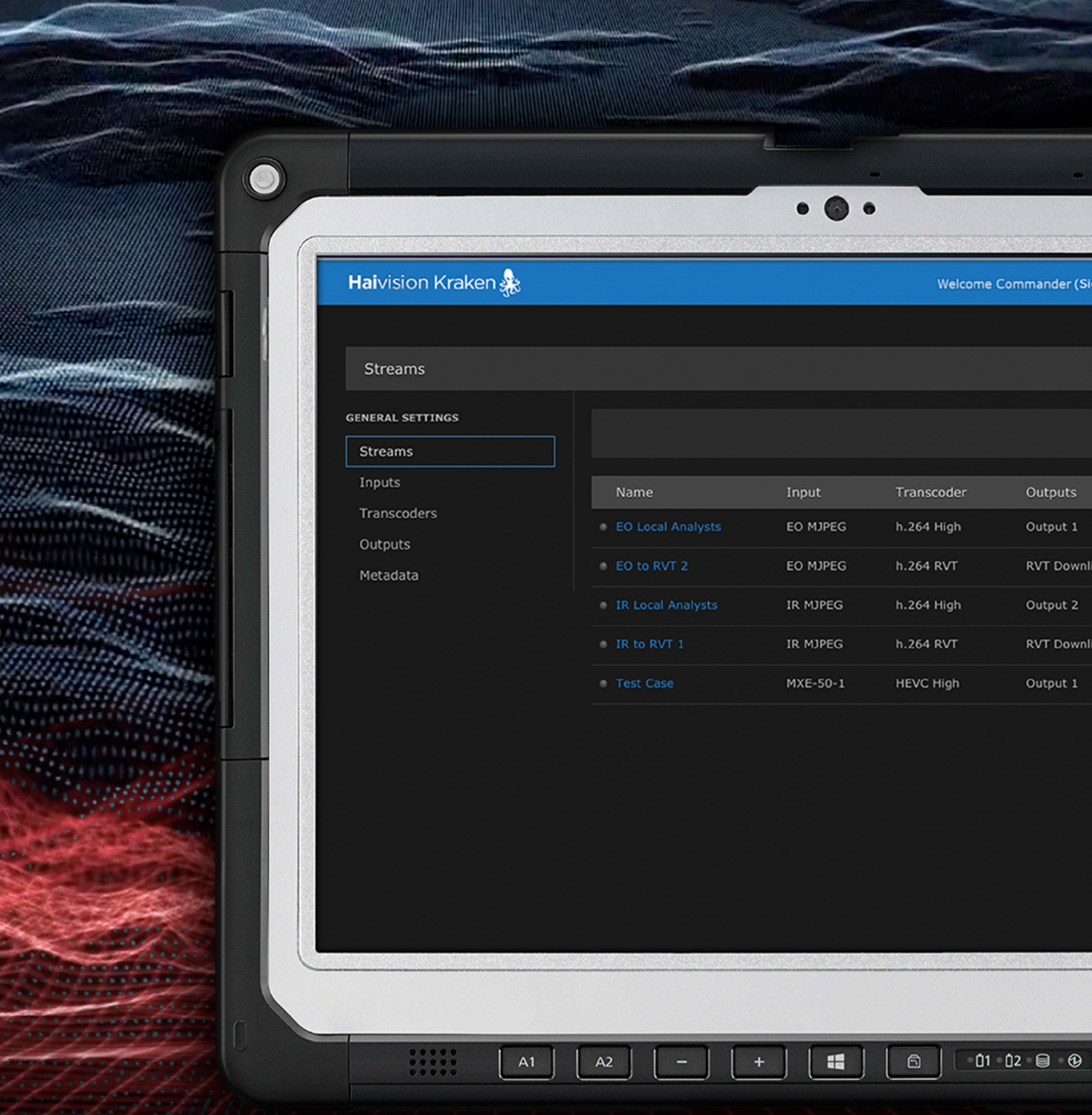

Haivision

Kraken

The Most Powerful Transcoder for Mission-Critical Video

All-in-One Video Encoding, Transcoding and Routing for ISR Communications

Kraken is a video transcoder for ISR, situational awareness, and field monitoring applications that optimizes video networks by transcoding full motion video using the latest compression standards for the highest possible quality, even in environments where network bandwidth is unpredictable or limited. With Kraken, send the highest quality video and ensure streams meet your target network capacity.

A major challenge in ISR workflows is to optimize video quality over varying datalinks between the sensor and each viewer without introducing unreasonable delays or sacrificing the integrity of the associated key-length-value (KLV) metadata. Kraken preserves and aggregates MISB and STANAG-compliant KLV metadata, while filtering out unnecessary fields to make the most of available bandwidth. Kraken provides the lowest latency, highest quality real-time video stream transmission while assuring compatibility with downstream processing, exploitation, dissemination systems.

Optimized Video for Each Network Segment Kraken can encode or transcode motion imagery streams to optimize the quality of video transmissions over constrained network segments, including line of sight (LOS) and satellite data networks. As a transcoder, Kraken ingests compressed video data in a broad range of common streaming formats and converts that video stream to the most efficient standards-based formats (H.264 or HEVC) with streaming settings suitable for downstream networks or system environments. Kraken addresses the inherent bandwidth limitations of mission critical network links, while maintaining real-time low latency transmission of vital video and metadata.

Improved Image Quality Kraken delivers substantially increased FMV quality over satellite and other constrained networks. With the efficiency of Kraken's HEVC implementation when compared to H.264, more streams can be added to existing links while retaining the same image quality, or video image quality can be improved using the same bandwidth. By leveraging Kraken to optimize the backhaul of ISR video, viewers see an increase in the quality of intelligence derived from the improved imagery that Kraken delivers.

FEATURES	BENEFITS
Low-Latency Encoding and Transcoding	Kraken ingests video for encoding or transcoding at lower bitrates for onward distribution over bandwidth-constrained networks.
Bandwidth Optimization with HEVC	Control bandwidth consumption to get the most from your existing network links. With HEVC compression, optimize picture quality compared to H.264 while reducing bandwidth consumption by up to 50%.
STANAG and MISB Compliant KLV Metadata	KLV metadata is aggregated and preserved in a format that adheres to defense standards.
KLV Metadata Filtering	When bandwidth is at a premium, selectively filter and decimate KLV metadata to prioritize video.
Downstream Compatibility	Convert streams between video codecs (H.264, H.265, MPEG-4 Part 2, and MPEG-2) and transport protocols (SRT, UDP, RTSP, RTMP) to ensure interoperability with downstream systems.
Flexible Deployment Options	Available as compact small form factor appliance, rack-mount server, virtual machine (VM) or cloud option BYOL on Microsoft Azure and Amazon Web Services.

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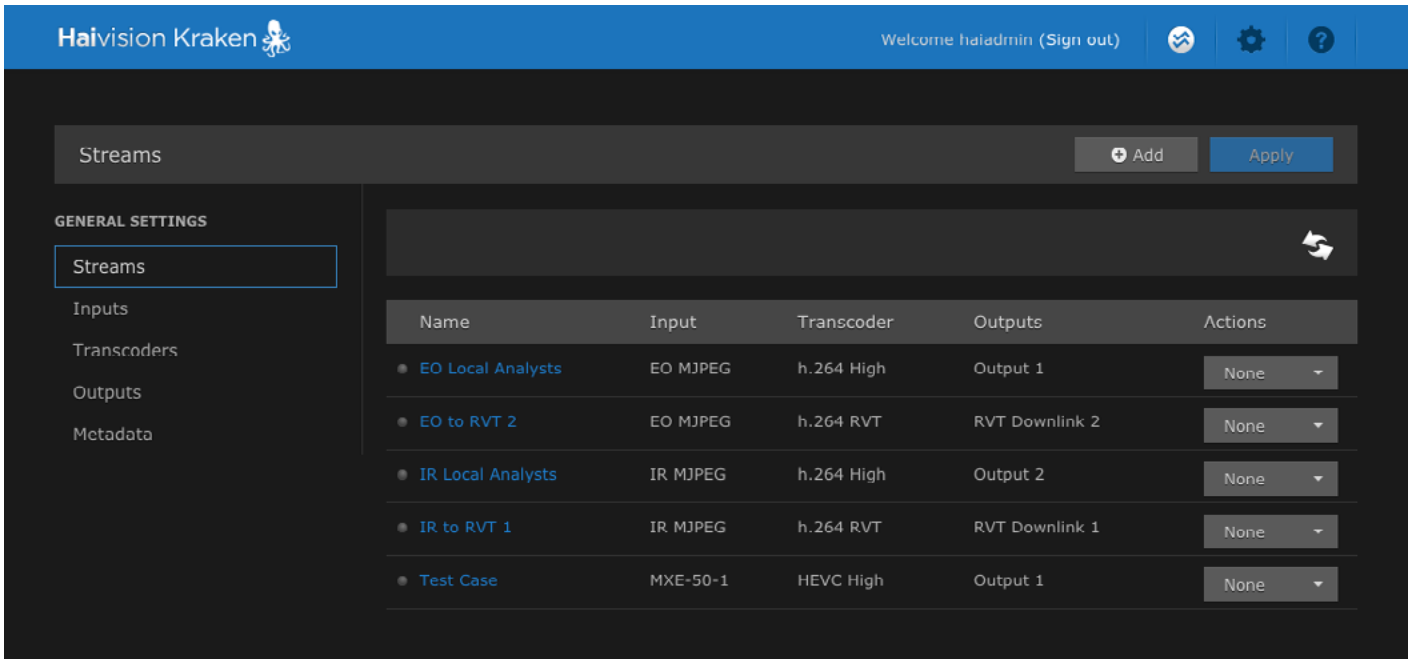

Compliant Video with Metadata ISR systems are designed to collect, process, and disseminate information. Many FMV applications bundle additional information with video streams in the form of metadata, typically SMPTE compliant KLV in STANAG/MISB format. This metadata is critical to PED applications for combining information and video sources into context rich information displays, such as a common operating pictures (COP). Kraken is specifically built for the task of disseminating information in a format required by downstream networks, exploitation systems, and viewers, with the lowest possible delay, while preserving metadata with frame-accurate synchronization. Powerful metadata management tools allow Kraken to aggregate multiple sources as required to save valuable bandwidth while preserving geospatial context.

Flexible Deployment for Any Environment Kraken is a software-based solution designed to take advantage of Intel QSV and NVIDIA GPU hardware acceleration in order to maximize performance on a variety of platforms. Kraken is available as a rack mount server, small form factor appliance, or as a virtual machine instance, with custom channel configurations and expansions available upon request. When installed on third-party hardware as a virtual machine, Kraken can encode from 3G-SDI video inputs using SDI-SFP gateway connectors, or other industry standard PCI-based video capture devices. In addition, Kraken is available in the Microsoft Azure and Amazon AWS cloud marketplaces as a Bring Your Own License (BYOL) instance.

Kraken Server Kraken rack-mountable servers are performance tuned appliances available with redundant power supplies. Kraken Server supports stream routing and transcoding of IP-based network video and is available in Premium (2x HEVC/8x H.264) and Ultra (4x HEVC/16x H.264) channel configurations.

Kraken Edge Kraken Edge is a small form factor appliance, with baseband (HD-SDI, SD-SDI, 3G-SDI) and network stream inputs. The base version supports stream routing and KLV metadata. Kraken Edge can be upgraded through additional licenses to support transcoding through HEVC or H.264 channel licenses, as well as an SDI capture license to support baseband encoding.

Kraken VM Kraken Virtual Machine (VM) gives strategic partners the capability to deploy low latency encoding/transcoding on existing systems, from tactical communication kits to centralized data centers. Once integrated, the Kraken can easily be added alongside secure communications, networking, encryption, and other applications to groom streams for transmission on any network segment.

Kraken on Azure/AWS Cloud options for Kraken are made available on the Microsoft Azure and Amazon AWS Marketplaces and enabled with a license provided by Haivision, enabling real-time transcoding on cloud provider infrastructure. Kraken cloud instance capacity can be increased by using NVIDIA-based instances available from cloud providers.

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TRANSCODING INPUTS
Input H.265/HEVC:
SD/HD/UHD
Transport Stream, SRT or RTSP
CBR, VBR
Input H.264/AVC:
SD/HD/UHD
Transport Stream, SRT or RTSP
CBR, VBR
Input MPEG-2:
Transport Stream
CBR, VBR
Input MJPEG:
Validated against L3 Vortex
Input Audio:
MPEG1 layer 2
AAC 2 channel and 5.1

ENCODING INPUTS
(Supported by Kraken Edge and Kraken VM software with a compliant SDI-SFP adaptor)
Input Video:
SD-SDI SMPTE 259M
HD-SDI SMPTE 292M, 274M, 296M
3G-SDI SMPTE 424M (Level A Only), 425M
Composite NTSC/PAL/PAL-M is supported by Kraken VM when installed on hardware with Composite capture capabilities.
GigE Vision
Input Audio:
SD-SDI SMPTE 272M Embedded
HD/3G-SDI SMPTE 299M Embedded

ENCODING/TRANSCODING OUTPUTS
Output H.265/HEVC:
SD/HD/UHD
Transport Stream
Transport Stream Shaping, VBR
Output H.264/AVC:
SD/HD/UHD
Transport Stream
Transport Stream Shaping, VBR
Output MPEG-2 Video:
Transport Stream Shaping, VBR
Output AAC Audio:
AAC 2 channel
Audio Sync Preserved
Output MPEG-1 Audio:
2 Channel MPEG-1 Layer II
Audio Sync Preserved
Output MPEG-4 Part 2:
Transport Stream Shaping, VBR

TRANSMUXING INPUTS
TS/UDP
TS/SRT
RTSP
RTMP

TRANSMUXING OUTPUTS
TS/UDP
TS/SRT
RTMP

METADATA HANDLING
KLV with support of both Asynchronous and Synchronous KLV
Insertion and KLV Edits
MISB ST0601.14 - UAS Datalink Set
MISB ST0604.2 - Time Stamping
STANAG 4609
SMPTE 336M-2007 Data Encoding Protocol
CoT to KLV Conversion
Closed Captioning (EIA-608 & EIA-708)
KLV Rate Decimation
KLV Filtering (MISB ST0601.10)

VIDEO PROCESSING
De-interlacing
Down Scaling
Aspect Ratio Preserved
Configurable Frame Rate

NETWORKING
Single Program Transport Stream (SPTS)
Unicast/Multicast (IGMPv3)
TS over UDP
SRT
RTSP (input only)
Session Announcement (SAP)

MANAGEMENT
Web User Interface
REST API
Console UI

OPERATING SYSTEM
Embedded Linux (CentOS 7)

KRAKEN VIRTUAL MACHINE (VM-KR-BASE)
VMWare ESXI version 6.7 and 7.0
Supports Intel Hardware Acceleration
Supports NVIDIA Hardware Acceleration

WKRAKEN SERVER PREMIUM SYSTEM (S-KR-PREMIUM-KLV)
Weight:
43.87 lbs / 19.9 kg
Dimensions without faceplate (1RU):
H: 1.68” (42.8 mm) W: 17.09” (434 mm) D: 23.9” (607 mm)
Power:
2 x Redundant 100-240 VAC 550 W Power Supplies
IP Interface:
2 x GigE Base-T NIC
2 x SFP+ (up to 10Gbps) Expansion Slots

KRAKEN SERVER ULTRA SYSTEM (S-KR-ULTRA-KLV)
Weight:
52.0 lbs / 23.6 kg
Dimensions without faceplate (1RU):
H: 1.68” (42.8 mm) W: 18.98” (482.3 mm) D: 27.6” (700.5 mm)
Power:
2x Redundant 100-240 VAC 750 W Power Supplies
IP Interface:
2 x GigE Base-T NIC
2 x SFP+ (up to 10Gbps) Expansion Slots

KRAKEN EDGE (S-KR-SFF-XC)
Weight:
3.04 lbs (1.38 kg)
Dimensions:
182.00 mm H x 36.00 mm W x 178.56 mm D
(7.16 in. H x 1.42 in. W x 7.03 in. D)
Power:
130 W, 4.5 mm (for 35 W CPU)
Temperature:
Operating: 10°C–35°C (50°F–95°F)
Non-Operating: -40ºC to 65ºC (-40ºF to 149ºF)
IP Interface:
1 x GigE Base T NIC

KRAKEN ON AZURE/AWS (MI-KR-AZU-BYOL/MI-KR-AWS-BYOL)
Supports NVIDIA Hardware Acceleration

Kraken Product Portfolio & Ordering Information**

Kraken VM	**VM-KR-BASE**	Kraken Base Transcoding System with KLV Metadata as a Virtual Machine (VM). Includes 1x stream license and KLV metadata support. Additional capacity is enabled with SWO-KR-STREAM transcoding channel licenses.
Kraken Edge	**S-KR-SFF-XC**	Kraken Edge Base Transcoding System with KLV Metadata Support. Includes 1xHEVC / 4xH.264 channels. Additional capacity is enabled with SWO-KR-H264 or SWO-KR-HEVC transcoding channel licenses. SDI capture up to 1080p60 is enabled with a S-KR-SFF-SDI license.
Kraken Server – Premium Configuration	**S-KR-PREMIUM-KLV**	Kraken Premium ISR Transcoding System - 2 HD HEVC or 8 HD H.264 encoding capacity, expandable. 1RU Server.
Kraken Server – Ultra Configuration	**S-KR-ULTRA-KLV**	Kraken Ultra ISR Transcoding System - 4 HD HEVC or 16 HD H.264 encoding capacity, expandable. 1RU Server.
Kraken on Azure/AWS	**MI-KR-AZU-BYOL** **MI-KR-AWS-BYOL**	Kraken Azure/AWS Cloud License - Base Transcoding System includes 1 stream and KLV metadata support. SWO-KR-STREAM-AZU-BYOL stream licenses can be added for additional streaming capacity. Bring Your Own License. Does NOT include service charges billed by Azure/AWS directly.

** For complete pricing and ordering, contact us at sales@haivision.com or your certified Haivision reseller.

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