

50^{YEARS} ENGINEERING
THE FUTURE.



Lawo
compact
2021



Latest Products

We enable world class content production by leading innovation in media infrastructure, cloud and workflow solutions.



VIDEO PROCESSING, MULTIVIEWING & CORE INFRASTRUCTURE

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PROUDLY SUPPORTING



vm_udx

4K/HDR Format Converter App for the V__matrix Platform

Get the complete
V__matrix brochure here.



KEY FEATURES

4 instances of Up/Down/Cross conversion between SD/HD/4K
(1 instance when converting to/from 4K)

Additional 4 instances available with the +4UDX option

HDR <-> SDR conversion with the +HDR option

Audio mono matrix with full audio embedding/de-embedding and shuffling
between SDI/IP, IP/IP and SDI/SDI with SMPTE2110-30/RAVENNA/AES67

Includes framesync and RGB/YUV color correction

4K 12G-SDI single-link inputs/outputs when combined with the io_bnc rear-plates

Built-in programming, configuration and streaming telemetry capabilities

Integrated management and control through Lawo vsmStudio provides
baseband-like operation with all benefits of an IP system

+++ NEW FEATURES +++ NEW FEATURES ++

NEW: +HDR Option

The new +HDR option adds professional quality High Dynamic Range (HDR) to Standard-Dynamic Range (SDR) conversion using 3D LUTs for both HLG and PQ formats to the vm_udx app.

What is it?

Virtual module (app) for the V__matrix eco-system providing format conversion between SD, HD and 4K/UHD formats with audio embedding/de-embedding, frame-sync, HDR to SDR color space conversion and color correction.

What does it do?

The vm_udx app provides four independent paths of format conversion between SD, HD and 4K/UHD for IP and/or SDI signals. Conversion between SD and HD formats use one path while conversion to/from 4K uses four paths. Each path provides video framesync and audio sample rate conversion as well as audio delay functionality. Every path also has full audio embedding/de-embedding capabilities with audio gain and shuffling. Broadcast quality RGB and YUV color correction is provided for every processing path.

With the +HDR option the vm_udx app gets 4 instances of SDR<->HDR color space conversion using 3D LUTs. A large selection of LUTs developed by the BBC especially for live production are included and users are able to upload their own custom LUTs as well. The included LUTs allow for conversion between SDR and HDR in HLG and PQ.

Fundamentally designed with IP networking in mind vm_udx natively supports both ST2022-6 and ST2110-20 IP video as well as ST2110-30/AES67 and RAVENNA IP audio streams. Conversion between IP video and IP audio standards is also possible, e.g. ST2022 to ST2110. To ensure high availability ST2022-7 seamless protection switching (SPS) is natively supported. With the available io_bnc rear-plates vm_udx allows for legacy connection to SD-, HD- and 4K-SDI. Both single-link 12G-SDI as well as quad-link (2SI) is supported as is the ability to convert between single-link and quad-link.

With the +4UDX license option an additional four independent paths can be added, bringing the total amount of Up/Down/Cross processing per C100 up to eight.

vm_dmv

4K/HDR Flexibly Expandable True IP Multiviewer

Get the complete V__matrix brochure here.



What is it?

Lawo's vm_dmv is a virtual module app (VM) for Lawo's V__matrix IP routing & processing platform, complementing the existing vm_mv16-4, vm_mv18-4 and vm_mv24-4 multiviewer line-up. It turns the V__matrix C100 software-defined processing blade into a distributed, infinitely expandable, true IP multiviewer.

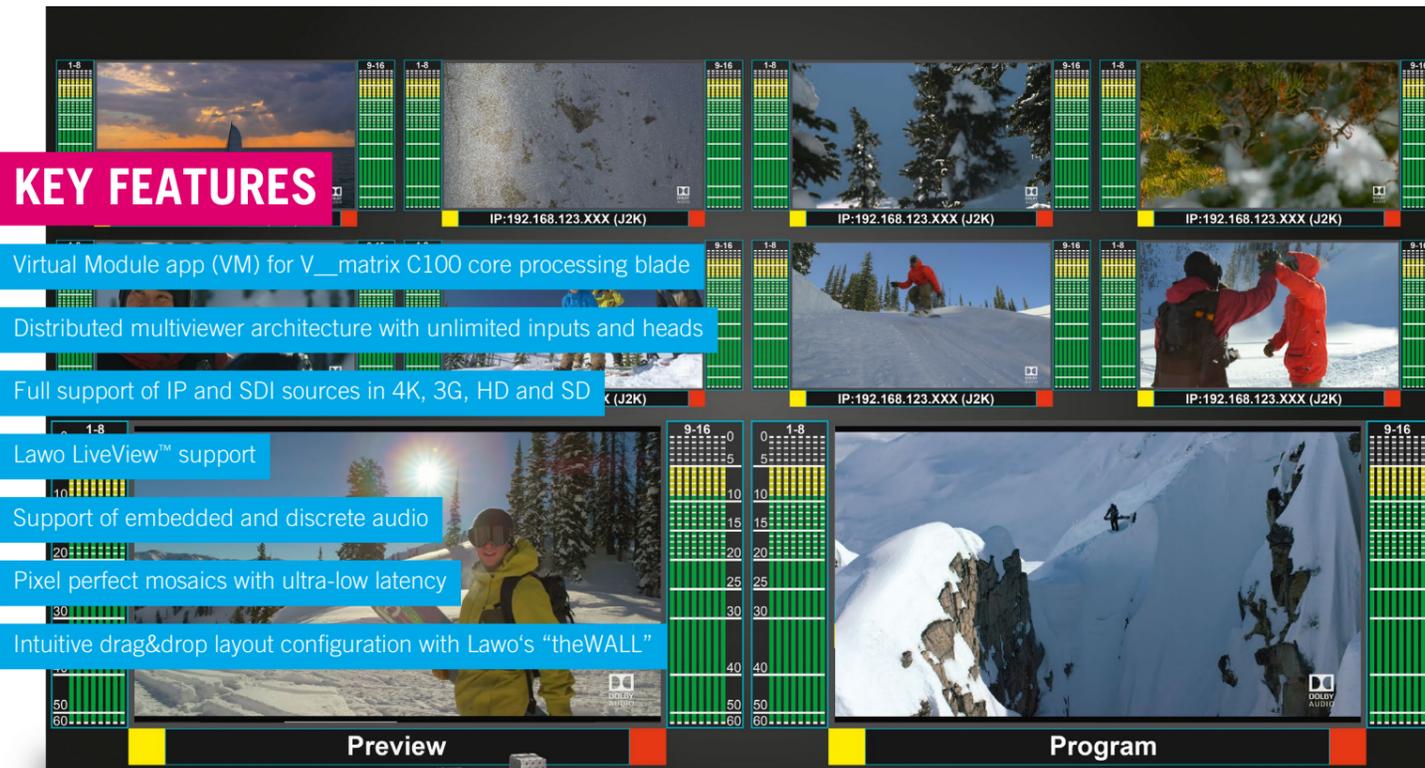
What does it do?

The vm_dmv is based on a distributed architecture where multiple modules network together. These modules could be hosted together in the same V__matrix frame, in different frames or even at different geographical locations. Basically anywhere as long as they are networked together via IP.

Every vm_dmv has an input stage capable of receiving up to 24 sources of any combination of 4K/3G/HD/SD which is limited only by the physical (up to 18 SDI inputs) or network (2x 40GbE) I/O. These sources are downscaled by the vm_dmv and returned to the network as Lawo LiveView™ IP streams.

In parallel to the input stage, every vm_dmv also features an output stage capable of creating up to eight 3G mosaics (or two 4K mosaics) with up to 64 sources/PIPs each (128 each in 4K). The output stage compiles a mosaic from the appropriate LiveView™ streams needed, automatically taking into account the size the user requests for the PIPs. The output stage can both use LiveView™ streams that it has generated by its own input stage or by subscribing to other LiveView™ streams from the network.

As any vm_dmv can use any LiveView™ stream from any other vm_dmv on the network it scales linearly with each vm_dmv app that is added to the network which results in an "infinitely" expandable and distributed multiviewer.



KEY FEATURES

- Virtual Module app (VM) for V__matrix C100 core processing blade
- Distributed multiviewer architecture with unlimited inputs and heads
- Full support of IP and SDI sources in 4K, 3G, HD and SD
- Lawo LiveView™ support
- Support of embedded and discrete audio
- Pixel perfect mosaics with ultra-low latency
- Intuitive drag&drop layout configuration with Lawo's "theWALL"



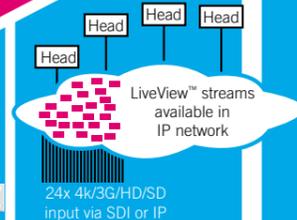
The result is not only the world's first 1st flexibly expandable multiviewer, it's also a solution that significantly reduces rack-space, weight and power-consumption. In addition, Lawo's V__matrix platform is already renowned for its software-defined functionality where C100 blades can be changed at run-time by loading different virtual modules.

+++ NEW FEATURES +++ NEW FEATURES ++

NEW: LiveView™ Decoding Engine

This server-based solution enables the V__matrix vm_dmv multiviewer to show both production (ST2110/ST2022-6) and transmission (MPEG/OTT) formats on the same screen for complete end-to-end visibility. The LiveView™ Decoding Engine integrates full frame rate MPEG-2/H.264/HEVC decoding for any Lawo LiveView™ enabled product.

Flexibly expandable: If you need to add more heads or more sources, just add another C100 with a vm_dmv app installed...



V__matrix

V__matrix Silent Frame: Whisper-quiet IP Streaming, Processing & Multi-viewing

Get the complete
V__matrix brochure here.



What is it?

Ultra low-noise frame for V__matrix C100 processing blade.

What does it do?

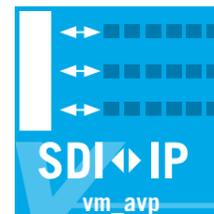
While the V__matrix C100 core processing unit was designed for data center and equipment room environments, there are applications where one might want to install some processing cores in noise-sensitive places such as control rooms or audio booths.

The new V__matrix Silent Frame addresses this types of applications

With two slots for standard C100 cores and any accompanying rear-plates the Silent Frame is so quiet that it might even impress an audio engineer. The unit's large, low-spinning fans are temperature controlled and provide the same front to rear cooling air flow as standard V__matrix frames – but whisper-silent.

As the V__matrix Silent Frame houses the same C100 processing blades like all other V__matrix frames, it has immediate access to any of the V__matrix apps already available including vm_streaming, vm_dmv and vm_udx.

The current line-up of V__matrix Virtual Modules includes the following apps and options:



HOME

IP Infrastructure Management Platform

NEW

What is it?

“You connect everything, you push a button and it configures itself.” HOME is a management platform for IP-based media infrastructures. It is designed to connect, manage and secure all aspects and instances of live production environments. HOME provides the tools and centralized services for swift and effective interaction of engineers with their tools.

What does it do?

HOME is cloud-native by design and ready to run anywhere, irrespective of the system's size. With HOME, the cloud starts on your campus, private and locally. It turns an array of devices, setups, sites, hubs and data centers into a powerful, agile network — quickly and in a perfectly secure way.

Inside HOME, discovery of devices is automatic, while registering and admitting them to the network is only a button press away. It addresses all pressing issues real-world operators face today and tomorrow. In one place and via a single, platform-agnostic, intuitive user interface.

Compatible devices are registered in one central location with their name, location, status and type. This inventory list acts as the entry point into device-specific configurations. It applies to both Lawo and third-party solutions, the latter via NMOS IS-04*.

Devices unknown to HOME get quarantined when they appear on the network, to guard the network against undesirable effects.

In today's hectic live broadcast environments, operators are reliant on a speedy, unified device configuration routine, especially when it comes to setting generic device parameters or configuring senders and receivers. Possibilities to save and recall configurations are highly welcome, too.

Based on its cloud-native architecture, HOME becomes the mission control for these processes. It provides fast access to device parameters through a unified user interface made for easy

* Availability: Q4/2021



Watch the HOME presentation video here.



KEY FEATURES

Connects, secures and manages IP networks

Discovery & registration

Protects the network and your content

System-spanning user authentication

Device management

Operability: device parameter control via intuitive UI

Agility

Cloud-native by design, scalability in its genomes

SPECS

Network segmentation following IEEE802.1X routines

LDAP-based user authentication either locally or via your corporate IT infrastructure, e.g. Microsoft® Active Director

Well-established IT security mechanisms: HTTPS, RADIUS, MACsec and IPsec.

Built-in DHCP server

Built-in DNS

Definition of address ranges for device IP addresses and automatic assignment

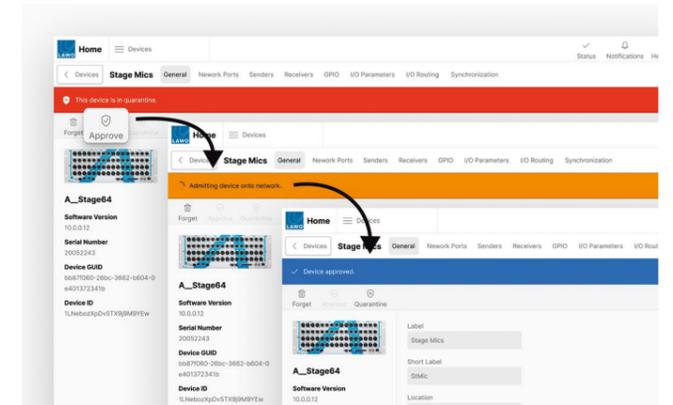
Automatic VLAN port allocation based on port function

Supports OpenConfig

Retrieval of network configuration information

Supports: SMPTE 2110, RAVENNA, AES67

Designed to run in clustered setups (concurrent active instances, no master/slave redundancy)



tweaking, irrespective of the end point being controlled. HOME does not replace the broadcast controller: it complements it and helps to speed up configuration and operation. The extensive array of aspects that can be edited within HOME includes settings on the routing page, audio parameter control, connecting virtual mixers to physical surfaces, channel mapping and stream parameterization, labeling, and license management. Other applications, like the creation of snapshots and multiviewer control, will follow as HOME's feature set evolves. While a robust security system needs to cover all aspects of media infrastructure and content creation, the key lies in its simplicity, its initial design and deployment as well as in its on-going maintenance and support. Security starts on-premise by protecting the operational network from undesired collateral damage. HOME's architecture is prepared for managing services such as transport layer security for user interfaces, control data and media essences. The HOME platform is built on functional blocks of microservices, which are self-contained and supply functionality to operators or other services. On top of this architecture, HOME provides the corporate user interfaces to manage the infrastructure. Whenever a system is required to scale, either in size or geographically, HOME automatically scales with the system. Additional instances of the required resources can easily be added. In a multi-location setup, more HOME instances can be added and networked with each other to ensure that all resources can be accessed from anywhere.

VSM

Virtual Studio Manager

What is it?

IP Broadcast Control and Workflow Solution

What does it do?

VSM (Virtual Studio Manager) is a vendor independent Broadcast Control System and custom workflow solution that runs on an IP backbone and integrates easily with the majority of the most popular broadcast equipment on the market. These include IP edge devices and network infrastructures as well as traditional video routers, video switchers, audio routers, audio consoles, multiviewers, intercoms, modular equipment and other third-party devices. Equipment from different manufacturers can be seamlessly “glued” together, giving unmatched recall and logic control possibilities on top of a scalable TCP/IP backbone with a strong redundancy concept. Operators can control their production facility intuitively through highly customizable touchscreen-optimized software panels and a wide range of hardware LCD button panels, giving them the freedom of individual workflows. Advanced features such as dynamic resource management (pooling), Tally management (vsmTally), Boxing, dynamic timeline management, virtual devices and lots more set the benchmark for IP broadcast control systems.

KEY FEATURES

- Control System to be used in all areas of broadcasting
- Integrates with the majority of the most popular equipment
- Based on a IP backbone using standard IT hardware
- A single control interface for numerous devices
- Third-party hardware manufacturer-independent
- Dynamic router timeline management that includes transparent Tally logic
- Strong redundancy architecture designed for 24/7 non-stop operation
- Control complete broadcast facilities with LCD button panels or custom designed configurable GUIs
- Users can easily deploy their individual workflows and production setups



Get the complete VSM brochure here.



+++ NEW FEATURES +++ NEW FEATURES ++

NEW: Panel Inheritance in vsmStudio

Experience the new efficiency of panel creation. With panel inheritance, panel layouts and functionalities are derived within a panel hierarchy. Panel editing is concentrating on master panels and individual adaptations. You will get the job done faster, and changing layouts whenever necessary becomes a breeze.

NEW: HTML 5 UI for vsmGadgetServer

Make use of HTML5-capable web-browsers to configure a broad range of control connections of vsmGadgetserver from any host and any device without the need for installing and maintaining specific software.

NEW: Ember+ Gateway in vsmStudio

Provide any set of parameters to other instances of vsmStudio using Ember+ and start building your own VSM control cloud. Share essential parameters of your installation and access them anywhere: facility-wide, country-wide, world-wide – the network is the limit.

vsmSOUL

Seamless Orchestration & Unification Layer

What is it?

Lawo's vsmSOUL Seamless Orchestration and Unification Layer is adding an overarching orchestration service for IP-based production environments to the VSM control system.

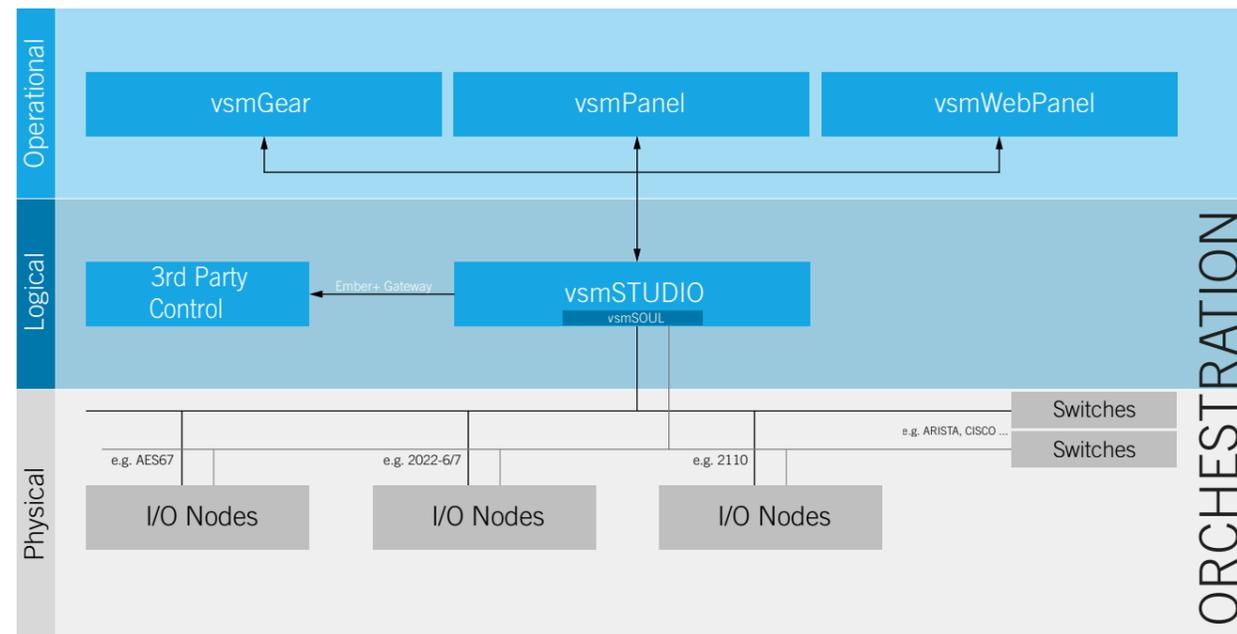
What does it do?

vsmSOUL is aware of, and handles, information from all system components. It manages the generation and routing of audio and video streams in any multi-vendor IP setup, and is compatible across individual interfaces and technical solutions. vsmSOUL provides a single point of control for any network size and any network topology, seamlessly integrated into vsmStudio and vsmGadgetServer.

vsmSOUL provides the central service for stream routing and resource management across single-switch, spine-leaf, or mesh network infrastructures. Through vsmStudio, it provides a unified northbound matrix representation of the network towards an overall control system. Using standardized or vendor-specific APIs, vsmSOUL accesses switches and network components, including encoding and decoding devices, cameras, multiviewers, processors, switchers, consoles, etc, to directly control the generation, registration, routing and monitoring of streams.



Get the complete VSM brochure here.



KEY BENEFITS

- Vendor neutrality for network nodes and IT switches
- Designed for multi-vendor employment
- Unified northbound matrix representation of the network through vsmStudio
- Capable of Hitless Merge
- Sophisticated system redundancy
- Broadest third-party control capabilities in combination with VSM
- Highest operational UI flexibility using VSM hardware and software panels
- No workflow changes for the operator

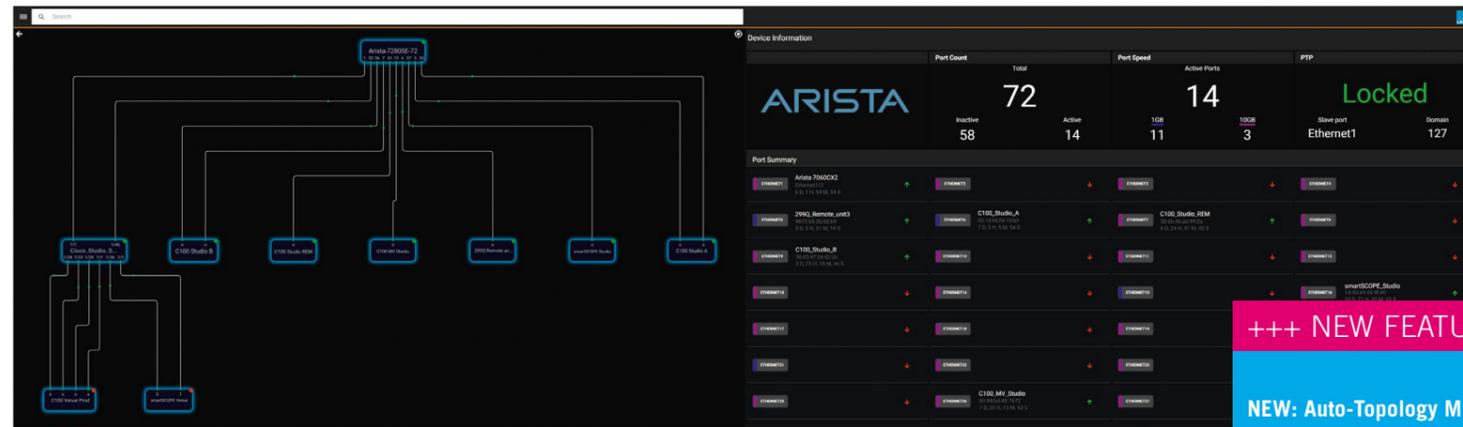
SPECS

- Northbound abstraction of the network through vsmStudio
- Switch-API support southbound, with access to multicast routing and native switch functionality
- Full Layer 3 compatibility
- Agnostic to various switching mechanisms. Supported switching modes: Patching, Make-before-break, Break-before-make...
- Compatible with NMOS IS-04, IS-05, SMPTE 2022-6/-7, 2110, AES67, RAVENNA
- Well known user interface for configuration and operation

smartDASH

System Monitoring & Realtime Telemetry

Get the complete SMART brochure here.



What is it?

The Lawo System Monitoring And Realtime Telemetry Dashboard (aka smartDASH) is a vendor-agnostic enterprise software suite designed to provide full network and media visibility across an all IP, all SDI or hybrid WAN/LAN broadcast infrastructure.

What does it do?

Strategically positioned to bridge the gap between IT and Video engineering, smartDASH straddles both sides of the operation to provide a comprehensive view of what the network is doing and how the media streams flowing across the network are behaving. Based on a LINUX OS, this software defined networking solution incorporates a powerful and robust database to document and rapidly search any aspect of the operation, from a simple cable ID number to seeking the journey of a multicast across a transnational multi-hop WAN. Additionally, by leveraging a vast library of hardware communication protocols, the system automatically interrogates live and dormant path connections to create the most intuitive and data rich presentation layers of a COTS-hybrid infrastructure. With its award winning deep packet inspection microservices, smartDASH supports monitoring and decoding a wide range of media formats, from low bitrate OTT/ABR streams to uncompressed ST2110 studio production flows, in addition to characterizing the packet pacing off the delivery network. This unique approach brings a deeper dimension of operational visibility by unifying network telemetry and mixed media flow into a single glass view. smartDASH users have a zero-footprint installation and can be deployed on-prem, private or public cloud with HTTP accessibility from a browser or mobile device. This vendor-agnostic state-of-the-art software solution is an essential component to the conscious operation of any IP-based broadcast installation.

KEY FEATURES

Scalable enterprise software providing data from every corner of your network

Effortlessly document all aspects of your media network and infrastructure

Keep track of device inventory, including warm and cold spares

Account for CAPEX and OPEX KPIs to manage total cost of ownership

Visualize connectivity and bandwidth usage with precision

Discover and trace live media flows from origination to destination

Convert network and media data points into actionable intelligence

Advanced telemetry agents provide in-service and out-of-service alarm generation and reporting

Real-time communication and telemetry from COTS platforms to third party purpose build equipment

High performance deep packet inspection of mixed media flows

Comprehensive and unified presentation layer dashboards

Improve your revenue through awareness, speed of data

+++ NEW FEATURES +++ NEW FEATURES +++

NEW: Auto-Topology Microservice

This new feature automatically discovers, registers and documents the IP network topology by leveraging OPENCONFIG, a vendor-neutral model-driven communication protocol, to present device status in real time. If it's on the network, the Auto-Topology's inter/intra-facility discovery functionality will find it, analyze it and present it in smartDASH's topology view with clarity.

NEW: PTP Monitoring Microservice

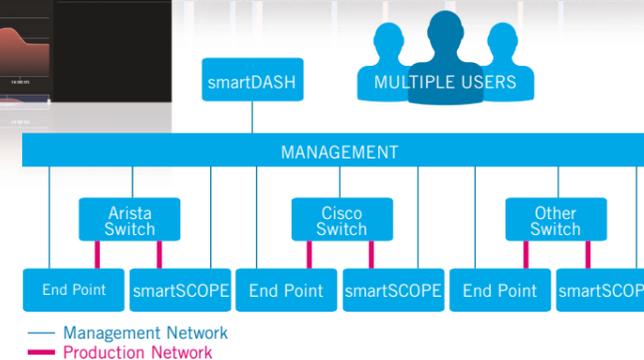
This new feature detects, classifies and analyzes PTP at the network layer, and acts as a referenced, locked receiver for essential timing measurements for video, audio and data streams. New features include auto detection of PTP, type modes, histograms, slave ports and lock state.

NEW: Cloud-enabled

smartDASH can now run on virtual machines and in the cloud for running network device analysis of cloud-based application, e.g. virtualized playout channels. smartDASH supports solutions based on AWS, Google, VM Networks and others.

NEW: smartDS

smartDS is a complementary data storage solution to smartDASH, allowing smartDASH users to log and store months of alarm and data logs for a historical record of everything from network bandwidth to signal loss. smartDASH's reports feature can access and analyze the smartDS data to create rich data reports for operations, engineering and management tiers within the organization. The smartDS software can run on a dedicated hardware server or in virtualized or cloud-based environments.



smartSCOPE

Deep Packet Media Inspection & Network Analyzer

Get the complete
SMART brochure here.



What is it?

smartSCOPE is a media-agnostic, high density 24/7 analysis platform for IP flows in live production and delivery networks.

What does it do?

IP flows can frequently suffer from packet loss, jitter, encoding impairments and transport violations, to name a few. Having the right monitoring and visualization technologies in place to proactively identify impairments and service disruption is imperative to the success of the operation. The smartSCOPE incorporates the essential analysis and decoding processing necessary to alert the operation tiers of service and packet transport related impairments for ST2110/ST2022 production flows, linear MPEG services and over-the-top adaptive bitrate (OTT/ABR) defined streams. At the heart of the smartSCOPE, packets are processed for service compliance with also the unique ability to analyze the conditions of the delivery network. This dual focused analysis approach provides a clear demarcation between video delivery and video processing thereby drastically reducing the mean time to repair (MTTR) and eliminating finger pointing between transport and processing departments.



+++ NEW FEATURES +++ NEW FEATURES ++

NEW: Support of live production formats

In addition to existing transmission format support, smartSCOPE now also supports SMPTE ST2110-20/21/30/40 and ST2022-6/7 live production video formats. As a result, smartSCOPE allows integrated monitoring of both compressed and uncompressed streams in high capacity hybrid systems. This new approach to signal and network probing provides full confidence and precision analysis for operations and engineering over managed and unmanaged networks. Scalable to over 100 services in a single instance, it supplies a much-needed solution to broadcasters leveraging COTS server architectures.

KEY FEATURES

Acquires, decodes and analyzes media flows across multiple high capacity IP interfaces

Supported compressed formats: MPEG-2 TS, H.264, HEVC

Supported production formats: ST2022-6/7, ST2110-20/30/40, PTP

Supported OTT formats: HLS, HDS, RTMP, DASH

Supported audio formats: AES67, PCM, MP1-L1, AAC, HE-AAC, A-52

SPECS

Stand-alone application or seamlessly integrated with smartDASH

Available on HW / SW / VM / cloud platforms

mc²36

SMALL FOOTPRINT BIG PERFORMANCE

NEW

What is it?

All-round, all-in-one audio mixing console with A__UHD Core technology at its heart.

What does it do?

The new mc²36 doubles down on Lawo's desire to shrink the console footprint while seriously boosting its feature set. Amazingly compact, it is as powerful as its larger siblings. In addition to 256 DSP channels, built-in A__UHD Core technology, Waves® plug-in integration, and premium local I/O, it offers Lawo's unrivaled microphone pre-amps. Plus, native IP connectivity with amazingly intuitive IP Easy™/HOME plug & play management and point-to-point stagebox connections without additional networking hardware.

Handle any kind of remote application with ease and leverage swift deployment in on-site scenarios. Say hello to a sleek and stunning all-rounder with a stellar feature set for theater, house of worship, corporate, live and broadcast audio applications.



Watch the mc²36 product video here.



Get the complete mc²36 brochure here.



KEY FEATURES

All-in-one console powered by A__UHD Core technology

Lawo 100mm high-performance faders with permanent input meters

HD TFT with PCT precision-capacity sensing technology

LiveView™ video thumbnails for ultra-intuitive channel identification (standard labeling also available)

IP Easy™/HOME: Analog-style, intuitive IP setup

256 DSP channels (160 inputs and 96 summing buses)

Up to 32 Automix groups and 32 Surround channels

Parallel "New York" Compression

Comprehensive Local I/O: MADI, AES3, internal SMPTE2022-7 I/O redundancy

Automated mixing assistants incl. Automix, Audio-follows-Video, Downmix, AMBIT Upmix and KICK 2.0

Integrated EBU R128 and ATSC A/85 loudness metering

Convenient data portability among mc²-series consoles

SPECS

Frames with 16, 32, 48 faders (dual fader arrangement)

I/O capacity: 864 channels

48kHz & 96kHz* operation

Up to 96 AUX buses, 96 Groups, 96 Main Sums, 32 Automix groups, 128 VCA groups, 256 GP channels

Rapid channel/bus switching to mono/stereo/Surround

ST2110-30/-31/AES67/RAVENNA, GPIO, MIDI, DANTE® (via PowerCore GATEWAY/RP)

*future upgrade

mc²96 Xtra Fader

Grand Production Console Xtra Fader Version

What is it?

mc²96 Grand Production Console with increased fader count

What does it do?

The new Xtra Fader Version of Lawo's mc²96 Grand Production Console features an increased fader count in the Central Control Section. 16 instead of eight faders in the Sweet Spot provide direct access to the double number of channels in the ideal listening position. Audio engineers enjoy an enhanced freedom for a more convenient and flexible workflow in fine-tuning their audio production settings. The mc²96 console's Xtra Fader Version is dedicated to demanding studio and OB truck applications with a need for maximum number of faders on a small footprint: The mc²96 Xtra Fader Version allows to apply a 112-fader frame that fits into a mere 2,350 millimetres (92.52 inches) width for the installation in standard-sized OB vans (truck crosswise).

KEY FEATURES

Lawo Premium-Fader

21.5" full hd touch-screens, color-TFTs in channel strips and touch-sensitive color-coded encoders

Extended free controls with direct access to six parameters in addition to gain

Designed for multi-user operation

LiveView™ Video Labels

IP-Share™ Gain Compensation

Parallel "New York" Compression

Superb tools for surround and 3D/immersive sound mixing

Automated mixing assistants incl. Automix, Audio-follow-Video, Downmix, AMBIT Upmix and KICK 2.0

Integrated Loudness Metering

IP Easy™/HOME: Analog-style, intuitive IP setup

Integrated RTW TM9 Goniometer

Comprehensive Local I/O

Fanless design

GATESERVER

Gateserver retrofit for mc²56 MkII, MkIII and mc²96 consoles available for flexible control over audio production resources anywhere in the world.

SPECS

Frames with 32 to 208 faders

Up to 1,024 DSP channels

Up to 256 summing buses

Up to 128 aux buses

48 – 96 kHz* operation

Designed for IP-based infrastructures with support for all relevant IP standards: ST2110-30/-31, AES67, RAVENNA and DANTE®



Get the complete mc²96 brochure here.

A_UHD Core Phase 2

Ultra-high Density Next-Gen IP Audio Engine

NEW

What is it?

The A_UHD Core is a network-based, software-defined audio DSP engine with unparalleled processing density and flexible, environment-conscious console core functionality.

What does it do?

The A_UHD Core is the next-generation audio engine for Lawo's mc² audio production consoles. Designed as a network-based, software-defined IP DSP engine, it catapults mc²56 and mc²96 consoles into the next dimension.

Its ultra-high processing density translates into 1,024 mc²-grade DSP channels, which can either be utilized by a single mc² console – to cope with even the most challenging productions – or be shared among multiple consoles for effective and space-efficient resource pooling.

A flexible licensing model makes the A_UHD Core ideal for both mobile applications and facility use. Its scalable DSP performance with temporary licenses is a clever way to turn CAPEX into OPEX. Resource pooling and flexible allocation of DSP resources to multiple physical and GUI-based mixing surfaces maximizes ROI for your audio infrastructure.

The A_UHD Core features low-noise cooling and is set to meet and exceed exacting demands regarding production quality and reliability. Eight independent 10/1 GbE* network interfaces enable the use of redundant networks via ST2022-7 Class C seamless protection switching (SPS) in both LAN and WAN environments.

Full hardware redundancy can be achieved using a second hot-spare unit.

In addition to its pristine DSP processing, the A_UHD Core features Lawo's IP Easy™/HOME functionality, which makes IP setups for Lawo mc² consoles as simple as analog.

Best of all: the A_UHD Core is a future-proof investment with a feature-set that is designed to expand.

KEY FEATURES

1,024 Lawo-grade DSP channels on 1RU (512 channels in 96kHz mode)

Designed as the console core and DSP powerhouse for mc²56 and mc²96 consoles

Remarkably space, weight and power efficient

IP network processor based on open standards (ST2110-30/-31, AES67, RAVENNA)

Full redundancy: SPS stream redundancy (ST2022-7) with 8x 10/1GbE-capable independent SFP network interfaces plus hardware redundancy via hot-spare redundancy unit

Sub-millisecond network latency via special high-performance RAVENNA profile

DSP resources shareable among multiple consoles

Scalable DSP performance via flexible (permanent and temporary) licensing system

Futureproof, software-defined hardware – more stellar features to come...

IP Easy™/HOME: Analog-style, intuitive IP setup



SPECS

Dimensions (H x W x D): 44mm (1RU) x 483 mm (19") x 353mm (13.9")
Weight: 7.4kg (16.3lb)

Connectivity: 8x 10/1GbE ports via SFP (switchable, RJ45 or fiber options)
2x 1GbE ports via RJ45 (management)



Get the complete A_UHD Core brochure here.

Power Core GATEWAY

Modular IP Audio I/O Node for mc² Consoles

What is it?

The Power Core^{GATEWAY} is a modular, networked I/O node for Lawo mc² audio consoles that accommodates all audio formats found in modern production environments.

What does it do?

Lawo's Power Core^{GATEWAY} is designed to integrate seamlessly with mc² audio production consoles. In its standard form, it accommodates 64 channels of MAD I audio via its front-panel port, yet its I/O count can easily be expanded via the eight rear-panel slots using MIC, Line, AES3 and GPIO cards in any combination, for a total I/O capacity of up to 128 channels.

Designed for mission-critical applications, the Power Core^{GATEWAY} includes ST2022-7 seamless protection switching compliance for network redundancy and Class-C jitter/network latency robustness. Its IP interface complies with the ST2110-30/-31, AES67 and RAVENNA networking standards to deliver maximum interoperability within your production workflow. Full remote control of adjustable parameters, such as MIC preamp gain and other settings, is afforded directly from the mc² control surface.

To accommodate the most sophisticated workflows, the Power Core^{GATEWAY} includes a unique, flexible licensing system that allows you to easily upgrade to the popular Power Core^{RP} feature set, thereby adding powerful DSP audio shaping tools and elevating the unit from a purely I/O device to a full-featured remote production solution for mc² consoles that supports WAN communication.



Get the complete Power Core^{GATEWAY} information here.



SPECS

19" / 1RU

Software-defined hardware

Standards-based ST2110 / AES67 / RAVENNA IP-Audio networking

ST2022-7 network redundancy with SPS

Modular I/O concept with 8 slots for MIC, Line, AES3 and DANTE connectivity

KEY FEATURES

64 MAD I I/O channels, standard

Up to 128 I/O channels using optional expansion cards (incl. DANTE[®] support)

8x expansion slots for MIC, Line and AES3 conversion, plus GPIO

Redundant ST2022-7 Class-C connection to console cores (ST2110-30/-31, AES67, RAVENNA)

MIC preamp settings remotely controllable from mc² consoles

A__line A__stage

WAN-capable Audio-over-IP Nodes

What is it?

A__stage AoIP nodes are compact devices capable of streaming uncompressed broadcast-quality audio to Layer 3 networks in real time via both WAN and LAN connections.

What does it do?

The A__stage nodes effortlessly convert audio – mic, line-level, AES3 and even digitally-encoded baseband MADI – to audio-over-IP streaming traffic. Like any A__line device the nodes use open-standard SMPTE 2110-30/31, AES67 and RAVENNA protocols to transport uncompressed audio in real-time on Layer 3 IP networks; IP audio streaming is managed using either the open-source Ember+ control API, or standards-based RAVENNA advertising and discovery.

A__line nodes sync to both PTPv2 and wordclock reference, and can even convert between them. Two redundant network interfaces utilize ST2022-7 Seamless Protection Switching (SPS) using two discrete network paths to ensure error-free stream delivery. With ample receive buffer capacity to meet ST2022-7 class C, redundant path differentials of up to 150ms are supported for WAN applications.

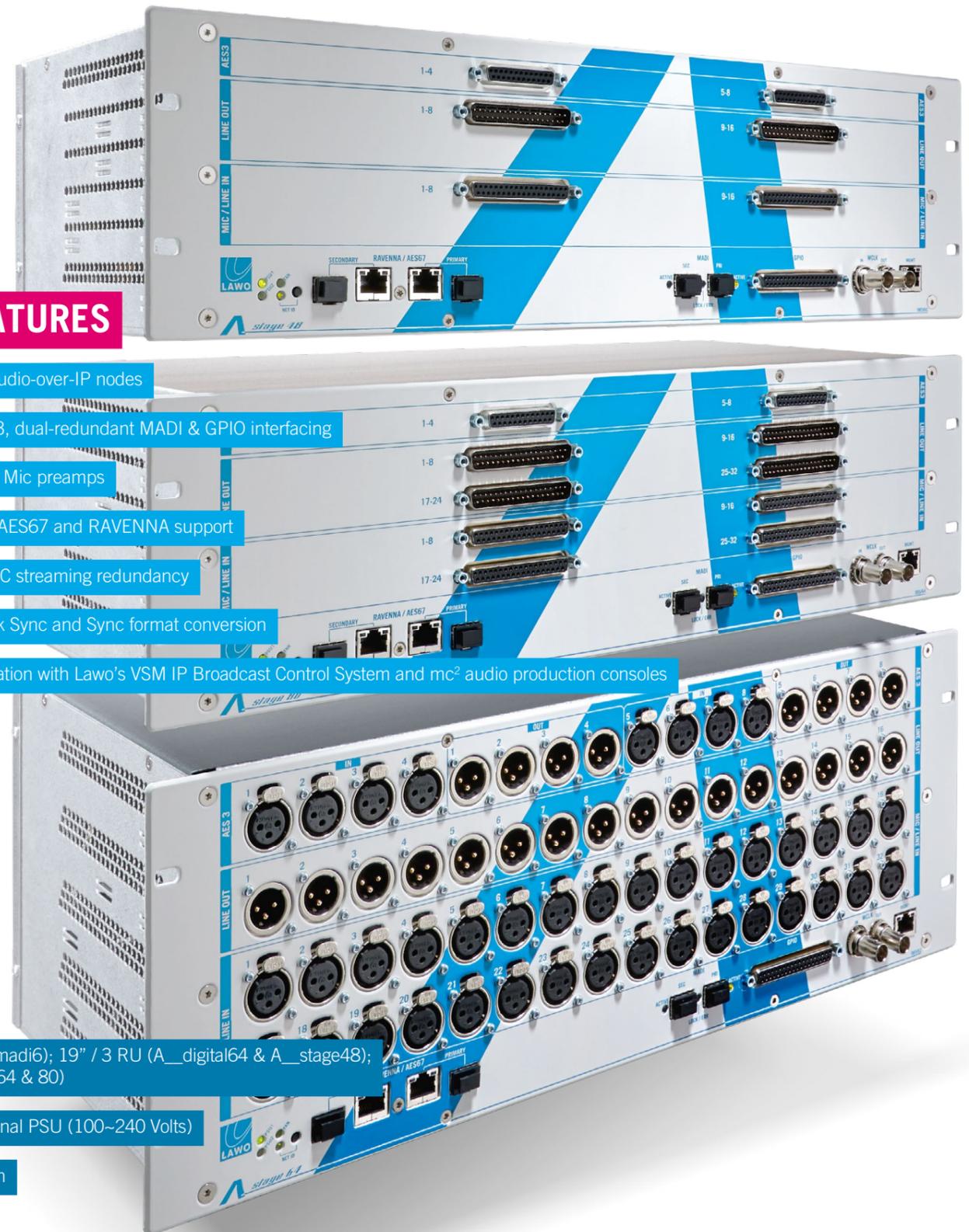
Additionally, the A__stage boxes provide true flexibility through a non-blocking routing matrix that allows any input to be routed to any output. In networked infrastructures they simplify level control by supplying ppm metering for all Analog and AES3 interfaces. The units integrate tightly with Lawo's VSM IP Broadcast Control System and are designed to serve as IP audio stageboxes for mc² consoles, audio extensions for the V__matrix ecosystem, or as stand-alone IP audio gateways.

KEY FEATURES

- WAN-capable Audio-over-IP nodes
- MIC, LINE, AES3, dual-redundant MADI & GPIO interfacing
- Discrete Class A Mic preamps
- ST2110-30/31, AES67 and RAVENNA support
- ST2022-7 class C streaming redundancy
- PTP / WordClock Sync and Sync format conversion
- Seamless integration with Lawo's VSM IP Broadcast Control System and mc² audio production consoles

SPECS

- 19" / 1RU (A__madi6); 19" / 3 RU (A__digital64 & A__stage48); 4 RU (A__stage64 & 80)
- Redundant internal PSU (100~240 Volts)
- Low noise design



+++ NEW PRODUCTS +++ NEW PRODUCTS +++

New A__line Audio-over-IP Nodes

A__madi6 and A__digital64 join Lawo's A__line series of WAN-capable Audio-over-IP nodes.



A__madi6 bundles three independent MADI-IP bridges onto a single RU, powered by an A__line default redundant power supply. Each bridge features two bi-directional MADI ports on SFP and two Dual Media Ethernet ports for streaming and control.



A__digital64 node supports 32 AES inputs, including Sample Rate Conversion and 32 AES outputs in a 3RU footprint. An additional redundant pair of MADI ports and two Dual Media streaming ports with support for WAN-compatible ST 2022-7 class C seamless protection switching complete the audio IO. With ST2110-10 compliant PTP clocking support, additional wordclock I/O, GPIO and a dedicated management port, the A__digital64 integrates seamlessly into both hybrid and IP-centric broadcast installations.

Get the complete A__line brochure here.



ruby

Radio never looked so good.

What is it?

The streamlined, intuitive AoIP mixing console optimized for today's monitor-centric studio workflows.

What does it do?

Ruby pairs physical mixing controls with an intuitive, context-sensitive GUI that gives instant access to more advanced functions when needed. With familiar faders and switches close at hand, and the power of advanced DSP tools and routing tools only a screen's tap away, ruby gives your talent the tools they need to create easily, naturally, effortlessly — in the way that suits them best.

Ruby is fine-tuned to match the pace of today's radio workplace, with physical and virtual controls that complement each other naturally. Multi-touch enabled, context-sensitive information displays let operators adjust settings quickly and easily; then instantly dock them to free screen space for other production tools. You can even create your own customized screens with amazingly powerful VisTool Unlimited GUI-builder software (optional). Motorized faders assume preset positions silently, while advanced automated functions, like AutoMix hands-free mixing and one-touch AutoGain mic gain control, leave talent free to create instead of fussing with faders.

ruby was designed from the ground up as a standards-based mixing console. There are hundreds of AES67 / RAVENNA and MADI channels built into its Power Core mixing engine. It's also ST2110-30 compliant, for seamless interoperability in combined radio & TV facilities. And ST2022-7 Seamless Protection Switching protects against network interruptions. ruby is the ideal console for today — and for the future.

Get the complete ruby brochure here.



KEY FEATURES

Flexible, intuitive design lets operators choose between physical and on-screen controls

Windows™-based VisTool GUI builder lets you design custom multi-touch control screens

Single-frame or split-frame, flush or counter-top mountings

Standards-based AES67 / RAVENNA IP-Audio Networking, ST2022-7 network redundancy

EZConfig setup wizard helps speed installation

Dual-mode SmartSnap snapshots switch quickly between On-air and Production modes

Stereo, mono and 5.1 mix outputs

AutoMix hands-free mixing rides gain on multiple channels automatically

One-button AutoGain optimizes microphone levels while talent talks

SPECS

4-fader to 16-fader frame sizes can combine for consoles of up to 60 faders

Smooth 100mm motorized faders

96 input channels with full Lawo DSP capabilities

Snapshots support up to 120 virtual faders

80 summing busses

Works with Power Core AoIP mixing engine & modular I/O system

Power Core MAX

AES67 Mixing Engine & I/O Gateway

What is it?

Power Core MAX is the AES67 mixing engine that can support up to four independent Lawo mixing surfaces. It leverages the capabilities of Power Core, the world's most power-packed DSP mixing engine, to pack more capability, flexibility and value into 1RU than ever before.

What does it do?

Power Core may be the most potent audio signal processor ever made for broadcast. So powerful, in fact, that a single Power Core can support as many as 96 faders, 96 DSP channels, 80 summing busses and much more. The new Power Core MAX lets you take advantage of these amazing resources to support multiple mixers – two, three, or even four mixers (depending upon intended use) – a unique ability perfectly suited to today's multi-studio radio facilities.

All of Power Core's advanced features are available: EQ, de-essing, dynamics, AutoMix, even delay synchronization. Used with Lawo's mixing controllers, like the award-winning ruby control surface, or VisTool virtual mixer, it's a powerful mixing and routing engine.

And, thanks to its audio signal density, the ability to handle diverse audio types and expandable audio capacity, broadcasters have also found Power Core to be the ideal gateway between legacy audio formats and standards-based AES67 IP media networks. Standard front-panel I/O includes dual-redundant SFP Ethernet (128 bi-directional AES67 streams), and 4 dual-redundant MADI ports (128 audio channels) — perfect for native MADI-to-AES67 AoIP conversion.

Even more I/O can quickly be added via 8 rear-panel expansion slots: analog, AES3, MADI and DANTE® I/O modules are available. ST2110-30 compliance assures seamless workflow in combined

radio & TV facilities, while autoswitching, dual-redundant power and ST2022-7 Seamless Protection Switching help ensure continuous uptime.

In addition to the new MAX package, Power Core customers can choose from three other license packages, tailored to a variety of operational needs and price points

+++ NEW FEATURES +++ NEW FEATURES ++

NEW: MAX package supports two, three or even four mixing surfaces per Power Core

NEW: DANTE® I/O Card with sample rate conversion and dual-redundant DANTE ports with 64 channels



NEW: ST2110-30/-31 compliance for audio interchange compatibility with video networks

NEW: ST2022-7 Seamless Protection Switching (SPS) provides network link redundancy for mission-critical applications.

KEY FEATURES

Supports up to 4 independent Lawo mixing surfaces

Standards-based AES67 / RAVENNA IP-Audio networking, ST2022-7 network redundancy

Compact 1RU design conserves rack space

AES67 and MADI I/O standard, expandable with multiple analog and digital I/O options

80 summing buses, configurable as Program, Record, Aux, Group, Mix-Minus (clean feed) or General Purpose. A full DSP channel with EQ, Dynamics and Delay functions may be applied to any of these buses (up to 16 stereo or 32 mono buses)

96 Signal Processing input channels, each with gain, signal presence indicator, direct out, Insert, fader, Aux send with Pre / Post switching, pan / balance, AutoGain for each mic input

Dynamics suite with gate, expander, compressor, limiter

Up to 32 instances of AutoMix and / or De-Essing

SPECS

19" / 1RU

Up to 1,960 x 1,960 routing matrix

4x MADI (each 64 channels I/O) with SFP cages (MADI ports 1/2 and 3/4 can be grouped as dual-redundant interfaces)

2x AES67 / RAVENNA with SFP cages (each 64 channels I/O; incl. redundancy)

Eight expansion slots for additional 8x Mic/Line In, 8x Line In, 8x Line Out, 4x AES3 In/Out, 2x MADI, 2x DANTE interface cards, or unique Studio I/O card with 2x Mic in, 2x HP out, 2X speaker out



Get the complete Power Core information as part of the ruby brochure here.

AES67 MONITOR

AES67 Stream Monitor

What is it?

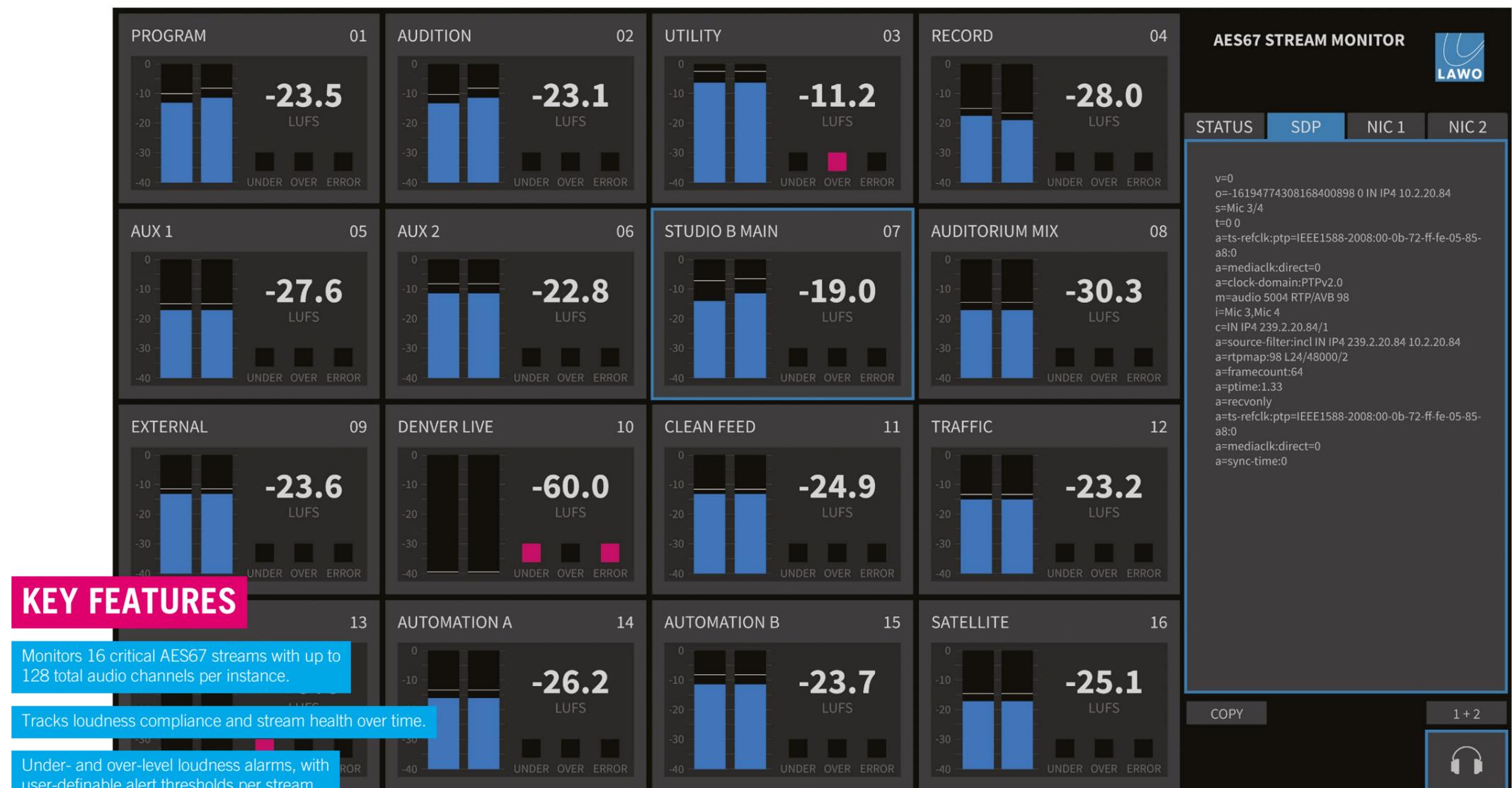
The world's first true AES67 monitoring & inspection tool.

What does it do?

Modern broadcasting facilities have embraced the AES67 standard for AoIP networking. Lawo AES67 Stream Monitor keeps you informed of the state of your most critical program streams with real-time confidence metering, LUFS metering, silence sense, audio level alerts and more – perfect for system diagnostics or Master Control monitoring.

AES67 Stream Monitor displays information at-a-glance for up to 16 streams containing multiple channels of audio. Average and peak bargraph meters for each channel are onscreen constantly, accompanied by a level readout in Loudness Units, and visual alarm indications for under-level, over-level and error states.

Clicking on any stream display populates multiple information tabs, enabling users to see statistics for stream jitter, packet loss and data errors, view loudness over time, and, if dual network connections (ST2022-7) are present, compare statistics from both NICs. A detailed SDP information tab allows SDP data to be copied and pasted into other system applications. You can even audition streams using your PC's built-in audio card. AES67 Stream Monitor is the AoIP diagnostic tool you've been waiting for.



KEY FEATURES

Monitors 16 critical AES67 streams with up to 128 total audio channels per instance.

Tracks loudness compliance and stream health over time.

Under- and over-level loudness alarms, with user-definable alert thresholds per stream.

Downloadable file-based error report.

ST2022-7 compatibility allows monitoring dual-redundant network connections.

Works on Windows® 10 PCs.

VMWare compatible for multi-instance deployment on virtual machines.

Essential tool for system installers, integrators, facility engineers.

SPECS

Runs on 64-bit Windows® 10 operating system.

16:9 monitor with full-HD screen resolution or better required.

1x Gigabit LAN connection required.

ST2022-7 monitoring requires second Gigabit NIC.

VIS TOOL SOLO

Touchscreen Talent Panel Software

What is it?

A toolkit for building custom tablet-based graphical control panels.

What does it do?

VisTool Solo is the lightweight GUI-builder software that turns Windows™ tablets into powerful touchscreen talent panels with beautiful vector graphics. Its toolkit is filled with buttons, meters, switches, faders, timers and more. Users can also import their own custom graphics. No more wired button panels; VisTool Solo gives talent an intuitive, context-sensitive control environment that helps shows run smoother.

Imagine the possibilities: custom panels for hosts, guests, producers and news stations, with all the tools they need most. Headphone source selectors. Mic on/off/mute buttons. Personal event timers and countdown clocks. Virtual faders. And with a Wi-Fi connection, you can take VisTool Solo controls anywhere on campus.

VisTool Solo is perfect for producers, studio guests, hosts and operators. Engineers love it too, for remote control of routing crosspoints, loudness meters, to silence notifications and more. For more complex applications, VisTool Solo Plus turns up the power with 4 times the number of custom screens and touch-sensitive controls.



KEY FEATURES

Works on common Windows-based touchscreen tablets

Design custom, single-page multi-touch control screens

Use supplied vector graphic library, or import your own custom graphics

Easily connects to AES67 studio network via LAN or Wi-Fi

Build personal control pages tailored to talent's unique workflows

Perfect for building confidence displays, meter panels or routing controllers

Two license options: VisTool Solo (2 screens per device); VisTool Solo Plus (8 screens per device)

SPECS

Runs on Windows tablets meeting these specs:

Intel Atom® x5 4-core CPU with benchmark of 1,250 points minimum (based on mobile CPU ratings from www.cpubenchmark.net)

16:9 full-HD screen resolution or better recommended

64-bit Windows® 10 operating system

4GB RAM or greater

64GB storage or greater

Network connection (LAN or Wi-Fi)

PRODUCTS

RADIO CONSOLES



crystal
Radio Broadcast Console

ruby
Radio Broadcast Console

sapphire
Radio Broadcast Console



RELAY VRX
PC-based Virtual Studio Console

AUDIO PRODUCTION CONSOLES

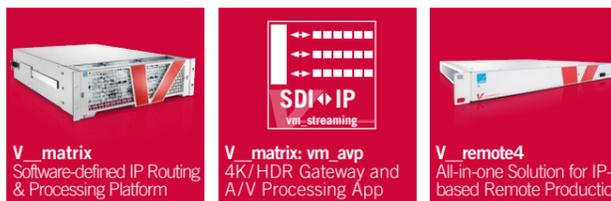


mc² 36
All-in-One Audio Production Console

mc² 56
Audio Production Console

mc² 96
Grand Production Console

IP VIDEO INFRASTRUCTURE



V_matrix
Software-defined IP Routing & Processing Platform

V_matrix: vm_avp
4K/HDR Gateway and A/V Processing App

V_remote4
All-in-one Solution for IP-based Remote Production

BROADCAST CONTROL & IP ORCHESTRATION



VSM
THE IP Broadcast Control System

vsmSOUL
Seamless Orchestration and Unification Layer

vsmTALLY
Multi-Studio Tally Management System

AUDIO PROCESSING, ROUTING & I/O



Power Core
High-density modular IP DSP Audio Node

Compact Engine
AES67 Audio Node with Onboard DSP

Nova17
Modular Audio Node with Onboard DSP

IP AUDIO AGGREGATION & PROCESSING



A_UHD Core
Ultra-high Density Network DSP Engine

Power Core RP
IP Audio I/O & DSP Node for Remote Production

MULTIVIEWERS



V_matrix
Software-defined IP Routing & Processing Platform

V_matrix: vm_mv
4K/HDR Multiviewer App

V_matrix: vm_dmv
4K/HDR Distributed Multiviewer App



theWALL
Drag&Drop Multiviewer Control Solution

IP BROADCAST MANAGEMENT & NETWORK MONITORING



HOME
IP Infrastructure Management Platform

smartDASH
Broadcast Network Monitoring System

smartSCOPE
Packet Inspector Media & Network Analyzer

RADIO SOFTWARE



VisTool
PC-based GUI Building Software

RELAY VPB
PC-based Virtual Audio DSP Engine

RELAY VSC
PC-based Virtual Sound Card

IP AUDIO I/O



A_line
WAN-capable Audio-to-IP Interfaces

Power Core GATEWAY
Modular IP Audio I/O Node for mc² Consoles

DALLIS
Modular I/O System

VIDEO PROCESSING



V_matrix
Software-defined IP Routing & Processing Platform

V_matrix: vm_udx
4K Up/Down/Cross Conversion App

V_pro8
8-Channel Audio/Video Processing Toolkit

COMMENTARY



LCU
IP-based Commentary Unit

LCC
Lawo Commentary Control Software

NETWORK. AUDIO. VIDEO. CONTROL.
smart IP live production infrastructure.



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