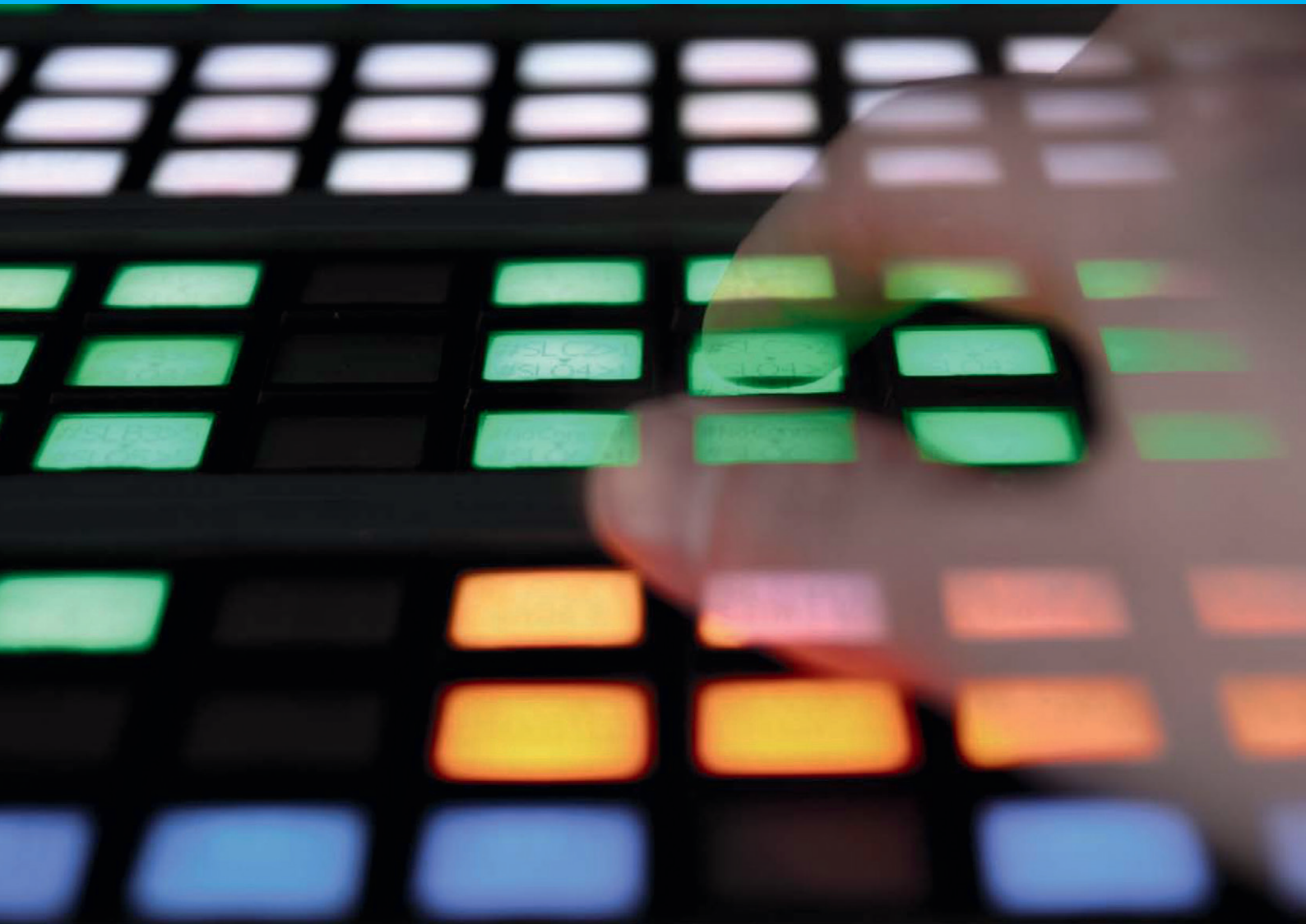


# VSM



IP BROADCAST  
CONTROL AND MONITORING  
SYSTEM



MARKET LEADING  
**WORKFLOW OPTIMIZING**  
FREEDOM OF CONTROL

VSM



- MOBILE PRODUCTION**  
**HANDLING FAST CHANGING ENVIRONMENTS**
- Unbeatable speed and flexibility for changing environments
  - Integrated Tally system
  - On-the-fly panel layout changes



- STUDIO LIVE PRODUCTION**  
**SIGNAL MANAGAMENT & MONITORING**
- Fast and simple
  - Always real-time, always online
  - Maximizing hardware resources



- TV MASTER CONTROL ROOM**  
**DISASTER RECOVERY & PREPARATION**
- Virtualizing environments
  - Strong redundancy concepts designed for 24/7/365 non-stop operation
  - SNMP and alarm management



- RADIO MASTER CONTROL ROOM**  
**FACILITY-WIDE CONTROL & SCHEDULING**
- Resource management
  - Remote control
  - Emergency switching

VSM

INTRODUCTION

Making the most out of available budgets, technology and personnel resources are hot topics for both engineers and management in today’s modern broadcast environment. With technology advancing so fast, protecting investments in professional broadcast hardware over the long term becomes a harder challenge day by day.

Combine this with the need to simplify operational tasks and workflows to increase efficiency, without compromising on-air quality and security, and the importance of investing in flexible core infrastructures becomes even more apparent. The key to addressing all these topics revolves around a single sophisticated layer of control throughout an entire system.

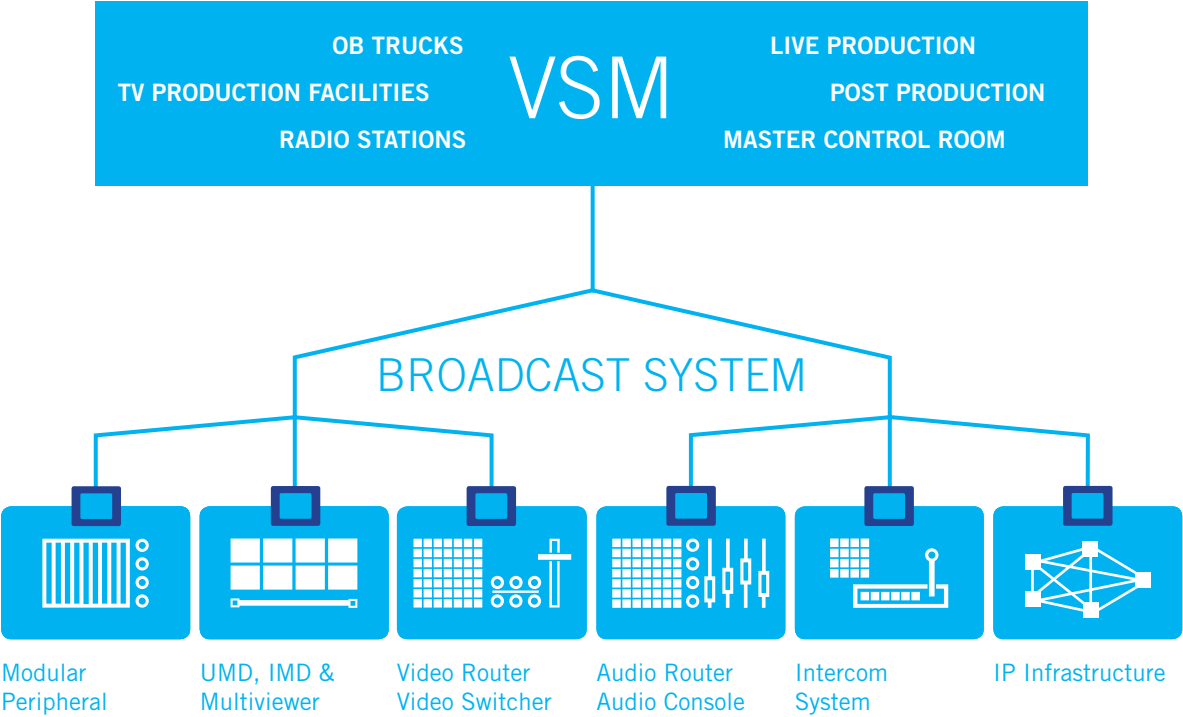
Imagine having an independent control and monitoring system that allows operation, configuration and system integration of your chosen broadcast equipment and third-party devices.

The concept separates hardware technology decisions from the operational control requirements, therefore allowing core hardware components to be freely exchanged without changing interfaces or workflows for operational and technical staff. Training costs and time can be saved due to a single control system administrative interface that handles the control and setup of numerous devices.

Abstracting the control parameters of many devices into a single control layer provides a platform to freely create workflows and user interfaces specifically optimized to simplify operational tasks without reference to the hardware behind. The VSM control system offers an extensive system integration toolbox that allows the customer to easily change interfaces without manufacturer support, giving peace of mind that the system will be able to adapt and grow as needs and requirements change over time.



BROADCAST CONTROL  
AND MONITORING SYSTEM



VSM  
CONCEPT

CONCEPT & VISION

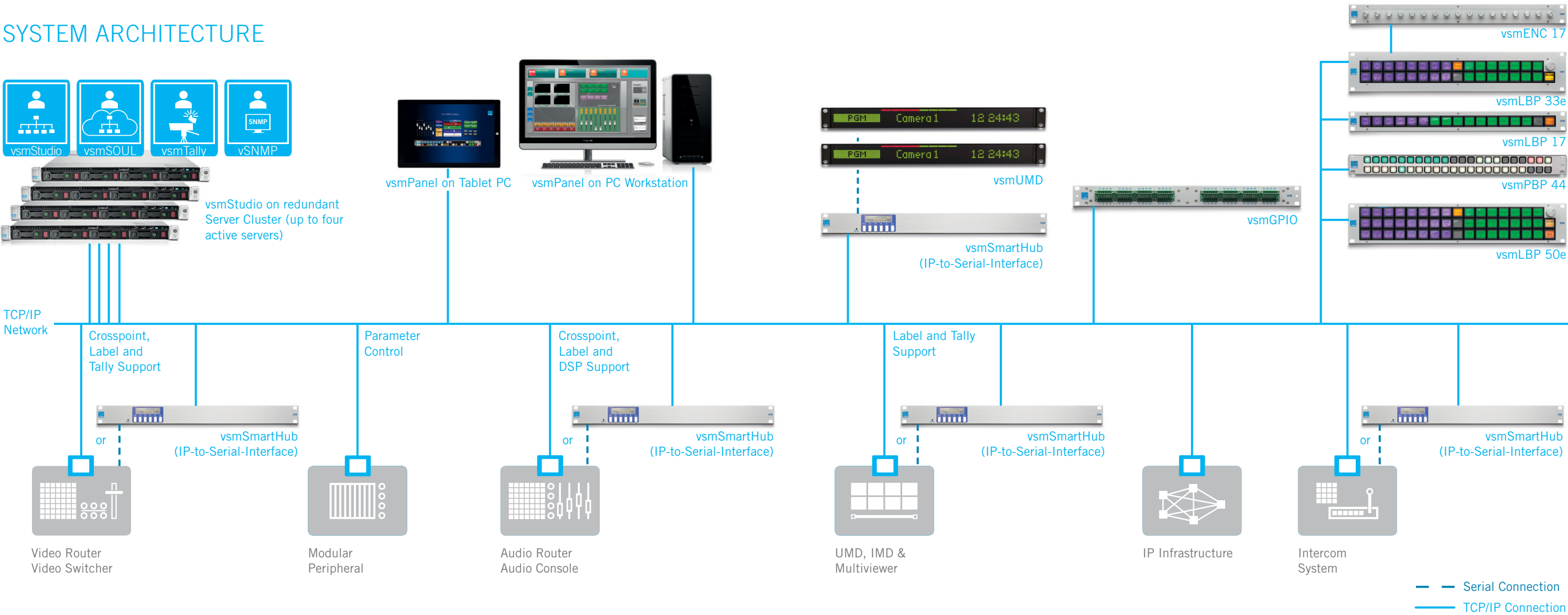
- Be the most open and sophisticated broadcast control system on the market!
- Supply the best system integration and control interfaces to all essential broadcast equipment!
- Remain third-party hardware manufacturer independent to offer free choice based on the best technology available!
- Protect the investment of our customers by a commitment to continual protocol implementation!
- Provide unique logic solutions to simplify operational user interfaces and workflows!
- Offer a simple to operate yet powerful tool box allowing configuration changes, system expansion and workflow changes without manufacturer support!

# VSM

## SYSTEM ARCHITECTURE

# VSM

## SYSTEM ARCHITECTURE



With hundreds of different protocols implemented and growing by the day, VSM already seamlessly integrates with the majority of the most popular broadcast equipment on the market. These include video routers, video switchers, audio routers, audio consoles, multi-viewers, intercoms, modular equipment and many special third-party devices. By talking native protocols where possible, equipment from different manufacturers can be seamlessly

“glued” together, giving unmatched recall and logic control possibilities system-wide. With a modern TCP/IP backbone, VSM utilizes standard IT hardware but enhances reliability and redundancy with sophisticated software redundancy concepts. VSM also provides interfaces to connect serially controlled devices, again freeing you to decide on the best hardware technology, no matter the format of the physical control interface.

VSM servers are the heart of the control system. Running vsmStudio software, all administration and configuration is both programmed and saved runtime in intuitive and easy to use software. Control interfaces in the form of a wide range of hardware LCD button panels and software panel clients allow simplified operation from highly flexible and custom designed configurable GUIs.

Additional VSM hardware includes GPIO interfaces, UMDs for dynamic labelling, and SmartHubs, which convert control signals to and from serial to TCP/IP. SNMP Monitoring capabilities are realized via the vSNMP editor software tool which runs on a separate server. VSM is the ultimate control system integration solution.



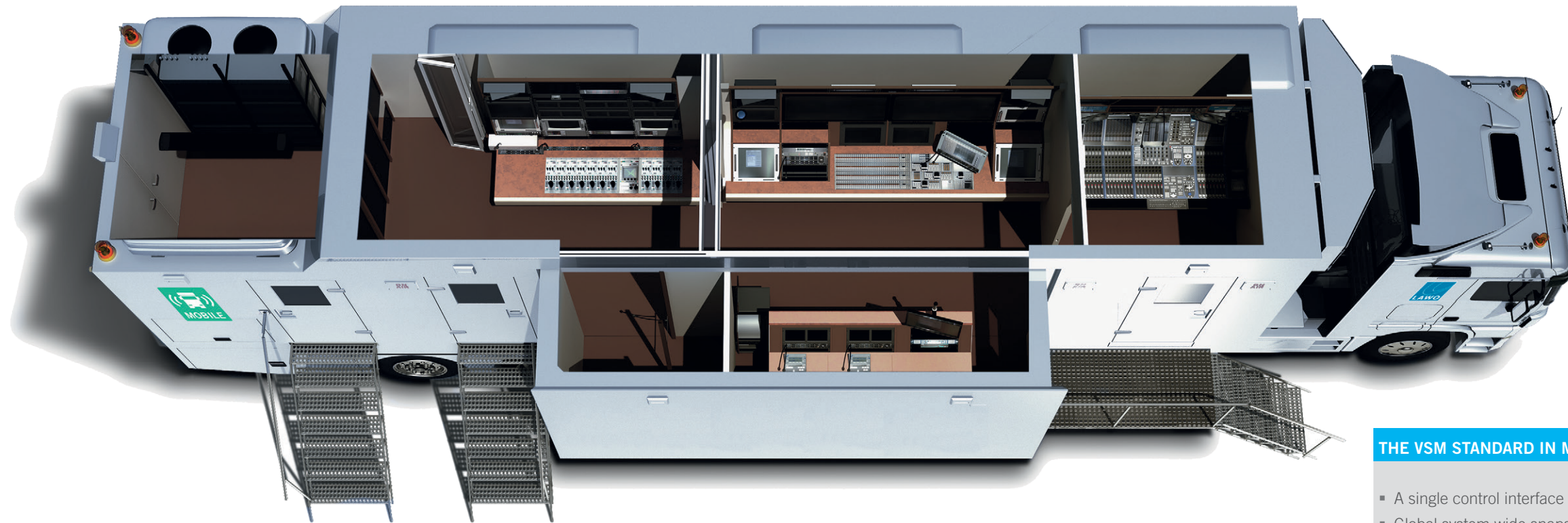


## Mobile Production

SETTING THE STANDARD FOR UNIFIED CONTROL

“VSM brings a level of automation to the complex setup process not previously attainable.”

George Hoover, Chief Technology Officer, NEP



Flexibility, efficiency and fast reaction: the essential requirements for today's and tomorrow's mobile environment. Situations can change very quickly in the high pressure mobile truck environment, even on a daily basis. A host of new challenges are being presented to the technical teams on location as 3D, 4K and 5.1 surround sound become the norm rather than the

exception. Short setup times and fast reaction to production staff demands on location are essential for smooth and stress-free mobile productions. Any tools and functions in the hands of mobile engineers that simplify and speed up the setup of the production environment are hugely beneficial. This is where VSM comes into its own.

### THE VSM STANDARD IN MOBILE PRODUCTION

- A single control interface for numerous devices – learn one not many
- Global system wide snapshots for complete recall of recurring show setups
- No need for an external Tally system – VSM has built-in sophisticated Tally and signalization logic
- Centralized labelling simplifies and speeds up operation
- Virtual signal paths provide unbeatable speed and flexibility for a constantly changing environment
- Bundle different signal types together logically to route multiple signals from a device at the press of a button
- Simple and flexible control panel design to adapt to or optimize existing production workflows
- Real-time changes to panel layouts without the need for an upload
- Touchscreen operational GUIs for simplified and efficient control
- Wireless tablet support for portable control panels incorporating control of numerous devices

# Studio Production

## MAXIMUM RESOURCE FLEXIBILITY – VSM HAS IT UNDER CONTROL

Modern TV production facilities are looking to maximize the flexibility of available resources to get the most out of hardware and real estate investments. Centralizing routers, intercom systems, modular gear and other hardware devices to be accessible in all studios brings both operational flexibility and studio redundancy features. Administering the availability of these resources to the various studios needs careful management and logic. Shifting a production from one control room to another in an emergency is only sensible if

all aspects of the original production (signals, labels, panels, multiviewers, Tally, etc.) can be quickly established and setup. The advantage of a system that has control over all major equipment is clearly to understand. VSM offers unique functionality to handle both the resource management and studio switching requirements in fast and simple operational steps – maximizing your hardware investments!



“We like the ease of use and got accustomed to it very quickly. It fulfils our needs perfectly and in fact we cannot do without it anymore.”

Sjaak Vreeburg, Manager Resources at Endemol

### VSM SIMPLIFIES OPERATION IN MULTI-STUDIO ENVIRONMENTS

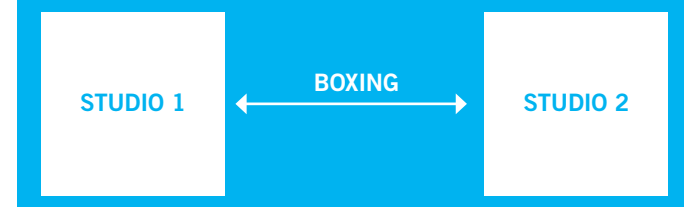
- Dynamic router tieline management that includes transparent Tally logic
- “Boxing” complete studios for fast switching to emergency backup studios on the fly
- Prepare a production offline and recall to any free studio/control room combination
- Automatic resource management with administration and user rights
- Global system wide snapshots for recalling and scheduling recurring show setups
- Complete Tally management across multiple studios and facilities
- Working side by side with news automation systems to maximize available resources
- Combine hardware and software control interfaces for simplified control

### VSM HIGHLIGHTS: BOXING TREATING PRODUCTION STUDIOS AS BOXES

As resources become centralized, system capabilities dramatically increase in size, thus becoming difficult to manage. Virtualizing temporary setups of resources, which can then be recalled to any studio environment in a preset, simplifies resource management even for the largest of systems. “Boxing” the resources into virtual environments means moving complete productions from one studio to another is as simple as one button push – workflow optimization at its best!

Any available studio now becomes a backup for a production even if equipment is different – the ultimate disaster/recovery solution. In addition, an available studio can be used to prepare a production which can then be recalled to any other in the studio cluster with the single push of a button!

- Maximizing the use of broadcast system resources
- Disaster/recovery solution with a single button push
- Maximum resource flexibility
- Simplification of operation in multiple studio environments







# TV Master Control Room (MCR)

## YOUR MISSION-CRITICAL CONTROL IS IN SAFE HANDS

Any system to be utilized in the mission-critical MCR application for TV must offer sophisticated redundancy features to ensure 24/7 operation without critical failures under any circumstances. In addition, control requirements are based around pre-programmed transmission switching, switching control from third-party automation systems, signal monitoring and alarms with automatic routing based on specific alarm status or logic detection. Quick operational reaction to failed devices is essential to ensure transmission lines never go “dead”.

Signal path overviews and automatic handling of different signal types and formats are also essential requirements for a unified control system designed for this use. With VSM's unique “Pooling” function, customers can easily manage their signals through the whole MCR by automatically inserting free “pooled” devices dynamically and automatically setting the device so that the signal arrives in the right format. If one of the devices fails, VSM will automatically re-route the signal to another spare device without user intervention.



### VSM IS TRUSTED IN THE MOST CRITICAL OF APPLICATIONS – TV MCR

- Strong redundancy concepts designed for 24/7 non-stop operation
- Built-in scheduler for pre-programmed routing and system-wide parameter changes
- Control and integration with third-party automation and scheduling systems
- Automatic signal routing to simplify the handling of different signal formats
- Manual override control possibilities of “Channel in a box” solutions
- Sophisticated SNMP and alarm management to avoid problems before they become critical

### VSM HIGHLIGHTS: POOLING SIMPLIFYING AND AUTOMATING SIGNAL MANAGEMENT

VSM simplifies and automates operation by automatically inserting a free ‘pooled’ device dynamically (such as a frame synchronizer) and automatically setting the device so that the signal arrives at the target in the correct format. As MCR operations are mission critical, if one of the currently used pooled devices should fail, VSM will automatically re-route the signal to another spare device without user intervention.

The failed device is then tagged as failed and any subsequent insertions will no longer utilize this device until the administrator clears the tag. This unique functionality simplifies operation and ensures continuous error-free transmission.

- Automatic signal routing to simplify the handling of different signal formats
- Ensures 24/7 operation without critical failures
- Manages your signals through the whole MCR
- Automated device management

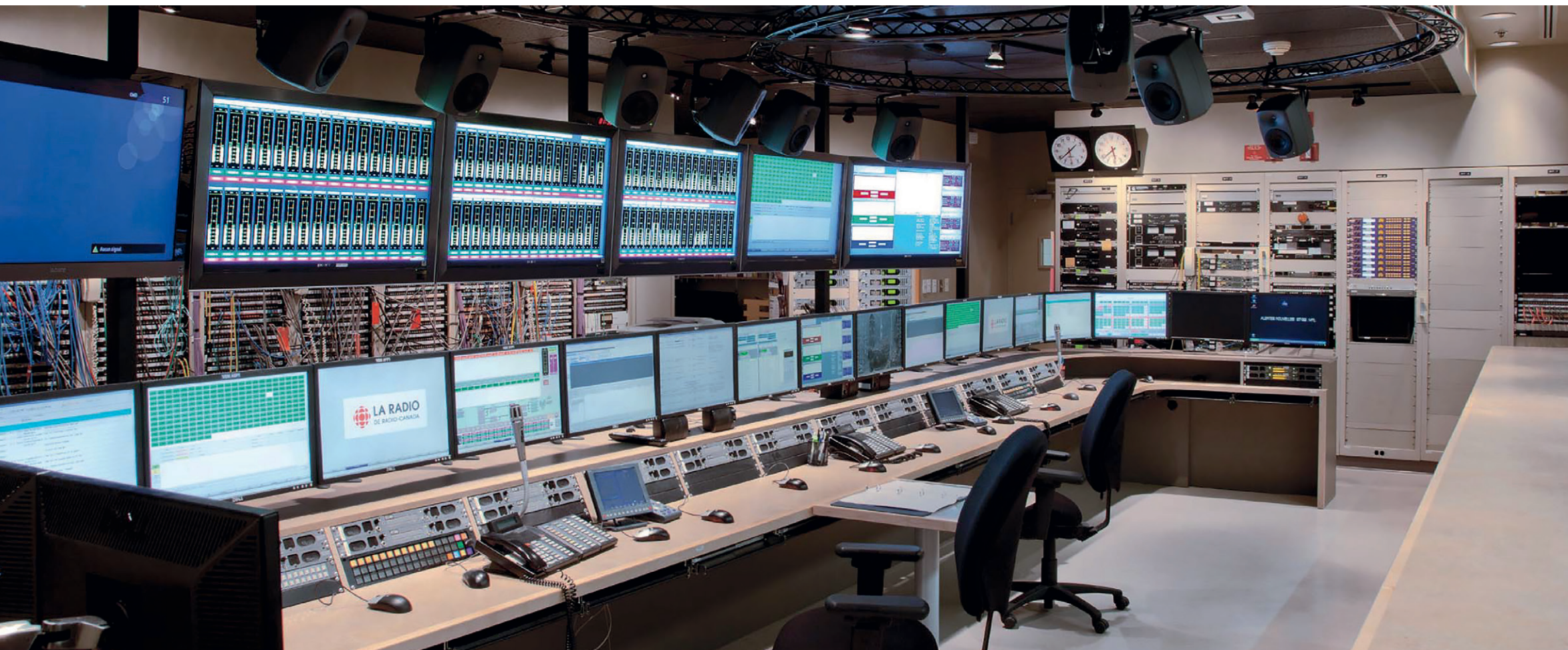


# Radio Master Control Room (MCR)

## PERFECT MONITORING AND CONTROL WHILE BEING ON-AIR

Already installed in numerous MCRs across the world, VSM is your trusted partner to handle even the largest and most sophisticated system requirements. The VSM system takes into account the unique requirements of a Radio MCR, thus providing special functions for radio applications. For instance, in combination with appropriate audio routers, silence detection is managed easily. A rule management system, that can be defined freely, assists in the automatic change of transmission lines, audio sources, peripheral equipment or can trigger emergency switchings. The handy apology rules editor helps to manage even complex fall back and backup scenarios.

Transmission line and audio source management is also easy to handle – with continuous signal flow control. With the use of VSM's tieline management functionalities even decentralized broadcast facilities are easy to control. With VSM, satellite downlinks and ISDN codecs can be implemented seamlessly and simply coordinate the original source and final destination. In daily operations, recurring studio swaps can be the normal and with VSM these automatic actions are easy to implement. With the use of VSM's timers and routing management, operators and editors are supported significantly, so that they can concentrate on the creative part of the job.



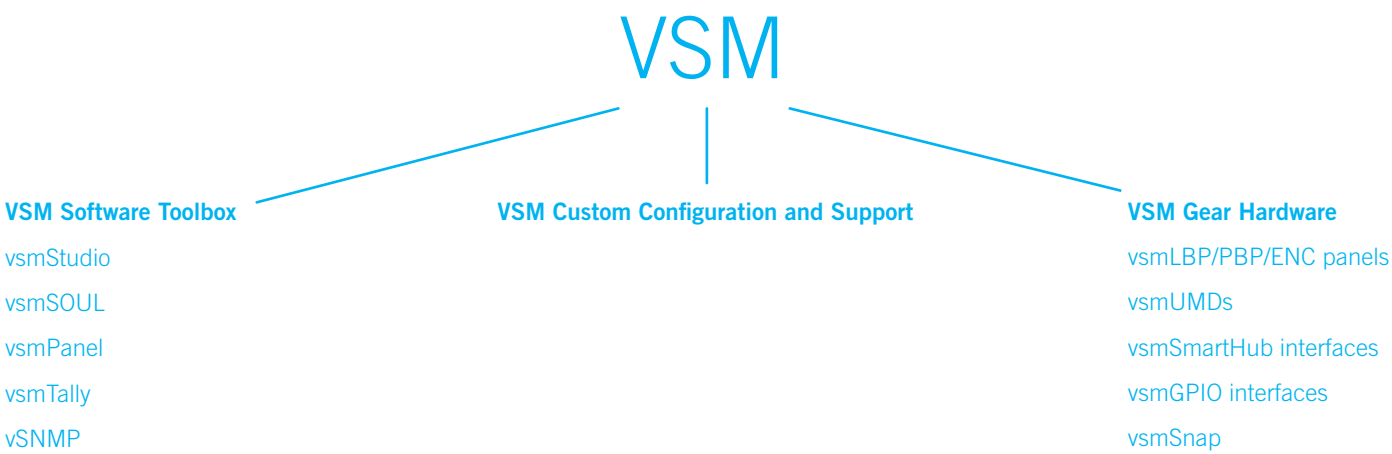
### VSM IS TRUSTED IN THE MOST CRITICAL OF APPLICATIONS – RADIO MCR

- Strong redundancy concepts designed for 24/7 non-stop operation
- Built-in scheduler for pre-programmed routing and system-wide parameter changes
- Silence detection implemented easily
- Easy integration with third-party automation and scheduling systems via standard crosspoint protocols
- Remote control of complete facilities and even remotely located facilities
- Easy overview about signal sources and destinations – facility-wide or between different facilities



VSM Components

THE HIGHEST FLEXIBILITY COMES FROM THREE PARTS



vsmStudio

POWER AND CONFIGURABILITY IN YOUR HANDS



vsmStudio software is the heart of the VSM system and the main administration and configuration tool that runs continuously on all VSM servers in the system. From here, an easy-to-use GUI provides all the functions, tools and setup wizards to control and customize your

VSM system to your specific application and workflow needs. Additionally, all connected hardware settings and statuses are shown in real-time, with instant control and feedback.

After initial assistance and factory support with custom configuration to mold the product into the project specific requirements, the customer is trained on the toolbox so that changes to all parts of the system can be handled without further factory support. As your needs change, the full power and configurability of VSM is in your hands. In addition, technical staff need only learn one system interface to control numerous devices, saving time and money in training.

vsmSTUDIO OVERVIEW

- Heart of the VSM family of products
- User-friendly software to handle all configuration, administration and central control
- Configuration changes occur in real-time with no download or need for the system to be offline
- Offline configuration possible
- Remote access, control and support with standard secure IT solutions
- Multiple server redundancy synchronization and seamless change-over
- True real-time status monitoring of attached devices
- Virtual matrix view allows all router layers to be combined, organized and controlled in custom XY views
- Redundant 3rd party driver connection engine for peace of mind
- Monitoring and control can be combined into a single workflow maximizing response times



## vsmStudio

### MAKE IT YOUR WAY – FEATURES AND OPTIONS

#### INTEGRATED FEATURES (Full Licence Version)

- vsmTALLY: Generates Tally, combines it with external triggers and sends Tally to external consumers. Replaces stand-alone tally systems.
- GPI: Provides a powerful logic toolset to create custom workflows.
- GADGETS: Controls an unlimited amount of external device parameters.

- META GADGETS: Allow to “link” any parameter to a source or destination for direct access.

- VIRTUAL SIGNALS: Creates „re-entries“ without using physical resources of a router.
- VIRTUAL LAYERS: Provides a crosspoint matrix via control protocol (e.g. SW-P08) to the outside to be remote controlled by automation systems.
- STORAGE GROUPS: Create, load and save your preset incl. Labels, Crosspoints, GPO states, Parameters and Panel layouts using the Mimic Button.

- PSEUDO DEVICES: Link Video/Audio/TC/RS-422 signals into a switchable overall bundle, e.g. to create Audio follows Video rules, Stereo switching rules.
- EVENT SCHEDULER: Enables time based switching of events, e.g. crosspoint salvos.

- APOLOGY: Alarms can trigger an automatic recovery to Backup conditions.
- ALARMS: Collect and process alarms coming via SNMP, GPIO or native protocol.
- TIMERS: Configurable up/down timers with multiple triggers to run actions.

#### OPTIONAL FEATURES

- BOXING: Disaster recovery and Studio switchover by a single button push.
- POOLING: Automatic management and insertion of pooled processing paths into your signal chain.
- SDP STREAM PATCHING: Enables basic SDP transfer for multicast stream patching.
- EMBER+ GATEWAY: Functionality to provide vsmStudio internal parameters to 3rd party controllers.
- vSNMP ADD-ON: Master Licence to monitor SNMP messages within VSM.

## vsmSOUL

### SEAMLESS ORCHESTRATION & UNIFICATION LAYER



**IP ORCHESTRATION AND CONTROL – WHY?**  
Orchestration and control play an essential role in IP-based audio and video infrastructures used for live broadcast production, where the demand for predictable system behavior is essential.

When migrating infrastructures to IP, system reliability can only be achieved by a comprehensive orchestration service, which seamlessly handles information from all system components within the network.

Why is this so important? A maximum of efficiency and flexibility in an IP infrastructure is achieved when all data, video, audio, and metadata, use the same transportation network. Nodes from various vendors share the resources of the underlying network infrastructure, while control requires unification and simplification. To achieve this, a central management layer is necessary which orchestrates all networked components in daily operation. Such control layer, which is aware of all 3rd party control specifics, makes IP-based audio and video infrastructures reliable and deterministic – in keeping with legacy broadcast environments.



vsmSOUL

SEAMLESS ORCHESTRATION & UNIFICATION LAYER

LAWO GIVES SOUL TO YOUR NETWORK

Lawo’s Seamless Orchestration and Unification Layer (SOUL) is adding an overarching orchestration service for IP-based production environments to the VSM control system. 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. It follows industry specifications like NMOS to utilize devices. In addition, proprietary interfaces and methods are used to achieve the most versatile control over edge devices.

SOUL AND HEART – THE NATIVE SYMBIOSIS WITH VSM

The combination of VSM and vsmSOUL provides an unmatched feature set, and promises maximum flexibility for controlling a network. VSM adds the highest level of monitoring capabilities, and operational and workflow customization on top of the network infrastructure.

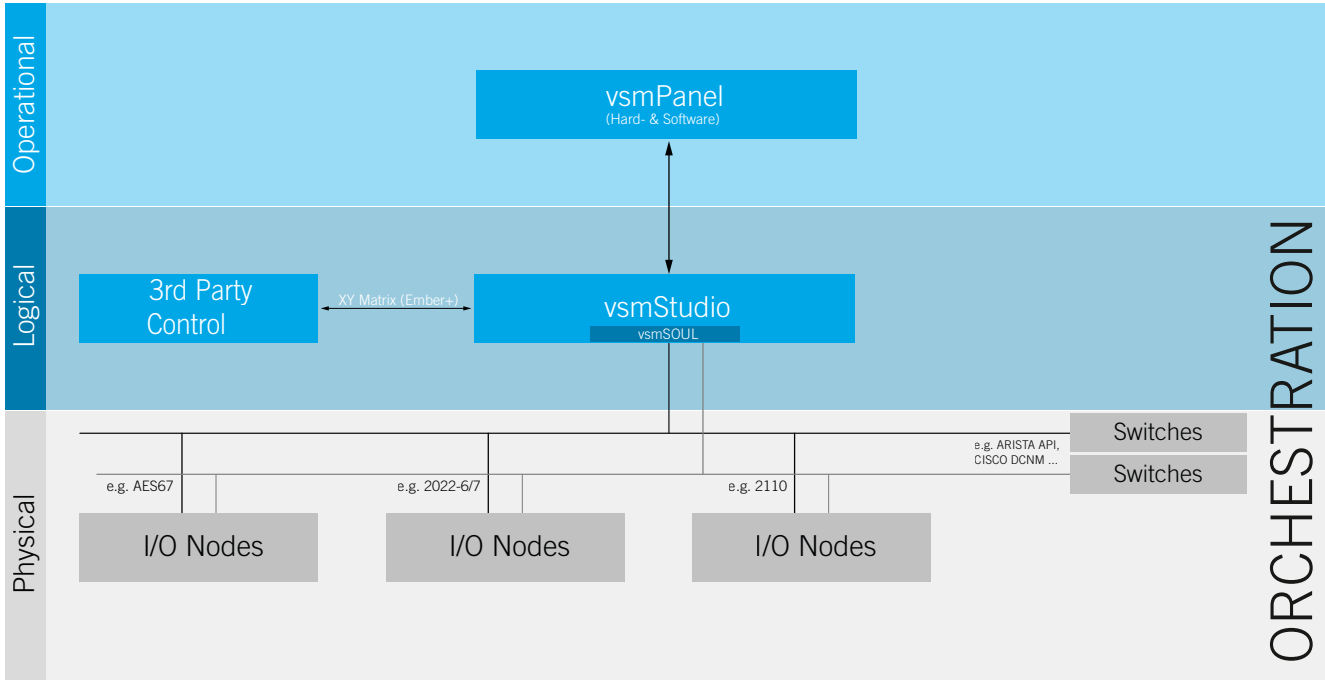
VSM’s widely accepted and renowned customizable user interface seamlessly integrates with any vsmSOUL-controlled network infrastructure, and makes it “feel the same” as a legacy broadcast environment. Your operators will appreciate, that it is not necessary to change established workflows, but it is good to know that they could be changed at any time.

HITLESS MERGE

A network with vsmSOUL guarantees Hitless Merge (SMPTE 2022-7). This requires that a signal is packaged in two different streams and travels two separated networks, with vsmSOUL acknowledging both branches and stream addresses. Operationally, it appears that a single crosspoint is presented, but with two alarms, two sources and two multicast addresses. Flows are also managed in networks from different manufacturers and techniques.

SOPHISTICATED REDUNDANCY

vsmStudio’s active-active redundancy in a cluster with up to four servers brings highest operational security into 24/7 operation, meaning that two systems run in parallel with the secondary (third, fourth) system actively monitoring all system status live. The monitoring systems are always ready to seamlessly assume control.



KEY FEATURES	KEY BENEFITS
<ul style="list-style-type: none"><li>▪ Northbound abstraction of the network through vsmStudio.</li><li>▪ Switch-API support southbound, with access to multicast routing and native switch functionality.</li><li>▪ Full Layer 3 compatibility.</li><li>▪ Agnostic to various switching mechanisms. Supported switching modes: Patching, Destination (make-before-break, break-before-make...) and Source Timed Switching (hardware dependent, e.g. Lawo V__matrix).</li><li>▪ Compatible with NMOS 1.0 (and higher), SMPTE 2022-6, 2022-7, 2110, AES67, RAVENNA.</li><li>▪ Well known user interface for configuration and operation</li></ul>	<ul style="list-style-type: none"><li>▪ Vendor neutrality for network nodes and IT switches.</li><li>▪ Designed for multi-vendor employment.</li><li>▪ Unified northbound matrix representation of the network through vsmStudio.</li><li>▪ Broadest third-party control capabilities in combination with VSM.</li><li>▪ Highest operational UI flexibility using VSM hardware and software panels.</li><li>▪ No workflow changes for the operator.</li></ul>

## vsmTally

### MULTI-STUDIO TALLY MANAGEMENT SYSTEM



vsmTally is a proven, feature-complete tally system, which is seamlessly integrated into vsmStudio and is affordable for any budget. When operating a VSM control system, there is no separate tally system need. vsmTally provides 32 independent tally paths,

including common tally colors plus a variety of customizable colors and usages. The large amount of independent tally channels allows to allocate channels for indication of other VSM status information, like e.g. silence detection or alarms.

The configuration of vsmTally is very easily done within the primary matrix view of vsmStudio, where a live tally status is also indicated. For interfacing with vision mixers, multi-viewer systems and other 3rd party systems, vsmTally provides a wide range of control protocols, including TSL (3.1, 4.0 or 5.0), ImageVideo and classic GP-I/O.

#### vsmTally OVERVIEW

- Feature-complete Tally system, fully integrated into vsmStudio
- Maximum Tally functionality with minimal configuration effort
- 32 independent tally paths, including red, green, yellow and blue tally
- Straight forward 3rd party interfacing using common protocols (TSL 3.1, 4.0, 5.0, ImageVideo, ... ) and GPI
- Live tally visualization within vsmStudio's primary matrix view
- Enhanced usage possible, e.g. in combination with internal alarm management



## vSNMP

### SNMP AND ALARM MANAGEMENT SYSTEM



The world of control and monitoring is brought together with an easy-to-use SNMP Manager. As broadcast facilities grow in size and complexity from individual buildings to multiple locations, there is a greater need to monitor the system in its totality from a central

location. vSNMP is a powerful option which not only provides monitoring for broadcast equipment but also accounts for standard IT devices such as routers and servers to give an overall facility monitoring solution. vSNMP allows the user to manage, control and monitor all compliant SNMP devices on a network.

Many equipment manufacturers are incorporating SNMP as a basis to configuring and monitoring their devices. Equipment supporting SNMP enables broadcasters to monitor large infrastructures through one centralized system. To ease engineering workload, isolate faults, stay proactive in the management of the system and reduce down time SNMP is a key tool to manage and monitor a system.

#### vSNMP OVERVIEW

- **SERVICE:** The vSNMP service provides an Ember+ backend which vsmStudio connects to, allowing full monitoring and control of your broadcast system.
- **DEVICE CLASS CREATION & DEVICE DISCOVERY:** vSNMP allows the user to create, connect and add new SNMP supported equipment giving a clear user-defined list of devices. vSNMP also scans the network for SNMP enabled devices which can be connected to the manager.
- **MIB FILE UPLOAD MIB FILE BROWSER:** vSNMP contains a standard MIB library of over 300 MIB modules. To access custom functionality from manufactures vSNMP allows the user to upload third-party MIB files with ease. The user can browse the MIB library in a clearly displayed expandable MIB Tree.
- **POLLING GET & SET:** If a value of an object changes vSNMP can be configured to poll the object entry. Different time increments can be set to ensure a device is polled at user defined time intervals. From the vSNMP Editor the user can manually GET an object value or SET a value which has been configured.



## VSM System Redundancy

RELIABLE OPERATION IS OUR DAILY BUSINESS

With hundreds of VSM systems installed across the world in daily live production and MCR environments, VSM was built from the ground up with redundancy and rock solid reliability at its heart. vsmStudio software can be installed on up to four servers and uniquely run without a master/slave server cluster logic. With VSM's sophisticated proprietary software logic, the system automatically load-balances all connected devices amongst the servers to optimize system performance. Should a server from the cluster fail, the connected hardware devices automatically and seamlessly connect to an alternate server in the cluster without loss of operation or performance – peace of mind, safe and secure!

“The VSM toolbox provides us with the flexibility to make the necessary changes that are continually required to provide content 24/7/365.”

Shawn Fox, Senior Director Engineering, NPR

### VSM REDUNDANCY FEATURES

- Offers redundant connections to third-party devices with auto switchover where supported
- vsmStudio software can be installed on up to four servers in a cluster
- Sophisticated proprietary server cluster logic – master/master configuration
- Automatic load balancing of connected devices to cluster
- Background server synchronization of configuration data
- Redundant serial bus connections
- Any panel can act as a backup



## VSM Custom Configuration & Support

HELPING YOU UNLEASH THE FULL POTENTIAL OF VSM IN YOUR BROADCAST ENVIRONMENT, BOTH NOW AND IN THE FUTURE

Now that VSM is in your hands, we will empower and support you to maximize your investment. VSM is not just a control system, but a sophisticated toolbox which allows operational workflows and user GUIs to be custom created to match your specific needs. Our project engineers have experience in all broadcast applications, with hundreds of projects implemented with broadcasters large and small spread across the globe.

Using this vast experience, we partner with you during the project implementation stage to help mold and configure VSM to support your existing workflows and environments.

Our job is to better understand your daily challenges so that we can help to streamline and simplify your most complex tasks by utilizing VSM's unique concepts and features.

With Lawo's CARE<sup>4</sup> program a number of Service Level Agreement (SLA) options are available, offering peace of mind and a combination of rapid emergency support response times, extended warranty options and future software upgrades features. Standard or customized packages are available.

We run regular group or private training sessions at our training facility in Germany for both introduction and advanced courses. As your needs change, we are always on hand to advise and consult to ensure that you continually maximize and protect your investment.

### PRE-SALES

- Consulting and Design

### PROJECT REALIZATION

- Consulting and Configuration
- Onsite Commissioning and Configuration
- Training (“Train the Trainer”)

### ONGOING SUPPORT

- Technical Support
- Lawo CARE<sup>4</sup> Service Level Agreement (SLA)

# VSM Control Panels

IT'S NOT EASY BEING EASY, BUT WE HAVE THE DESIGN TOOLS TO MAKE YOUR OPERATIONAL WORKFLOWS AND USER INTERFACES JUST THAT!

### CONTROL INTERFACE POSSIBILITIES

For all the engineering benefits and flexibility that VSM brings to the broadcast environment, the accessibility and ease of control for operational personnel is paramount to the system design. A combination of hardware button panels and software or web-based control clients form the basis of this interaction. All panel configuration and design is handled directly in the vsmStudio software with no need for panel reboots or configuration downloads – changes are instantaneous!



## vsmPANEL

vsmPanel is software that runs on a network PC work- station client (Windows based) and, from a design and setup perspective, acts identical to a hardware panel. In fact, the administrator can control and view any hardware panel in the system directly from this client, if needed. Any number of client licenses are possible, each offering a different control interface if necessary. Normally operated in conjunction with a touchscreen for the most intuitive operation, vsmPanel allows free design and layout of an operational interface which can include pictures and images. Adding company logos and corporate design features to the panel design adds to the user experience and interaction. In addition, advanced control functions such as graphical faders, meters (meter data over protocol), alarm management, scheduling control, web browsers and media players can all be freely incorporated into a panel design. There are no limits to the number of control “pages” within a panel and with a large toolbox of button navigation possibilities, even the most complex workflows can be easily accommodated and, in most cases, simplified. Even complete signal path views can be created giving crucial feedback and routing status in complex applications.

## vsmLBP-SERIES

The LBP series of hardware control surfaces have fully configurable multi-color graphical LCD buttons which provide unmatched status display, control and monitoring possibilities. Each button has the ability to perform multiple functions from a single push, thus hugely increasing the operational flexibility of the panels. Hardware investments are protected by the fact that VSM control surfaces are not dedicated to any device or function – control and monitor what you need wherever you need it.



**vsmLBP 17**  
17 LCD Buttons RGB-Backlight, Ethernet / 1RU



**vsmLBP 16e**  
16 LCD Buttons RGB-Backlight + 1 Encoder, Ethernet / 1RU



**vsmLBP 34**  
34 LCD Buttons RGB-Backlight, Ethernet / 2RU



**vsmLBP 33e**  
33 LCD Buttons RGB-Backlight + 1 Encoder, Ethernet / 2RU



**vsmLBP 51**  
51 LCD Buttons RGB-Backlight, Ethernet / 2RU

### vsmLBP SERIES HIGHLIGHTS

- vsmLBP series of hardware control and monitoring panels have fully configurable multicolor graphical LCD buttons
- Buttons provide unmatched status display and control possibilities
- Each button can perform multiple functions with a single push, thus hugely increasing the operational flexibility of the panels.
- Every action initiated from a button is executed in real time and for operational safety and clarity, the button displays will only show the true and current status of crosspoint or parameter settings.
- Large toolbox of button navigation and function possibilities and no limits to the number of control “pages” within a panel
- Panels can be configured, maintained and controlled remotely
- All panels can be connected to vsmENC 17 (rotary incremental encoder panel)
- Several panels can be connected logically to work as one
- Direct Ethernet connectivity to the VSM network
- Each panel has two built-in GPIOs for free use
- Socketed buttons for easy replacement
- User access rights transfer via RFID tag reader



vsmLBP-SERIES



**vsmLBP 50e**  
50 LCD Buttons RGB-Backlight + 1 Encoder, Ethernet / 2RU



**vsmLBP 42**  
42 LCD Buttons RGB-Backlight, Ethernet / 1RU



**vsmLBP 41e**  
41 LCD Buttons RGB-Backlight + 1 Encoder, Ethernet / 1RU



**vsmLBP 84**  
84 LCD Buttons RGB-Backlight, Ethernet / 2RU



**vsmLBP 83e**  
83 LCD Buttons RGB-Backlight, Ethernet / 2 RU



**vsmLBP 32-DT**  
32 LCD Buttons RGB-Backlight, Ethernet



**vsmLBP 31e-DT**  
31 LCD Buttons RGB-Backlight + 1 Encoder, Ethernet



**vsmLBP 34V**  
34 LCD Buttons (E3)  
RGB Backlight  
Ethernet



**vsmLBP 51V**  
51 LCD Buttons (E3)  
RGB Buttons  
Ethernet



**vsmLBP 39ocp**  
39 LCD Buttons (E3)  
RGB Backlight  
Ethernet  
Dimensions match Camera RCP

vsmPBP & vsmENC SERIES

vsmPBP SERIES HIGHLIGHTS

- All control and monitoring functionalities in a cost-effective 44 button panel
- Full support of the available toolbox within VSM



**vsmPBP 44**  
44 Pushbuttons RG-Backlight, Ethernet / 1RU

vsmENC 17 SERIES HIGHLIGHTS

- 17 incremental encoders with RGB-Backlight
- Connectable to all vsmLBP surfaces for intuitive and precise parameter control



**vsmENC 17**  
17 Encoders, RS422 / 1RU

# VSM Monitors

## UNDER MONITOR DISPLAYS (UMD)

vsmUMD HIGHLIGHTS

- Graphical DOT display for source and tally information
- UMD layout is freely configurable
- Can also show timers, clocks, parameters and much more



**vsmUMD-SD 1/2 19"**  
80 x 7 pixels + 1 Line of red/green/yellow Tally RS422  
(Ethernet communication via SmartHub) / 1RU (9.5")



**vsmUMD-SD 19"**  
170 x 7 pixels + 1 Line of red/green/yellow Tally RS422 (Ethernet  
communication via SmartHub) / 1RU

# VSM Interfaces

## vsmSMARTHUB IP-TO-SERIAL INTERFACES

vsmSMARTHUB IP-TO-SERIAL HIGHLIGHTS

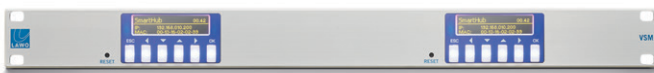
- Interfaces between Ethernet and RS422 / RS232
- Interface to connect the vsmUMDs
- Interface to connect Automation Systems via serial



**vsmSmartHub 111**  
1 x RS422 + 1 x RS232 (configurable via vsmDiscover)  
Ethernet / 1RU



**vsmSmartHub 208**  
8 x RS422 (configurable via vsmDiscover)  
2 x Ethernet (1 x Ethernet per 4 RS422-ports) / 1RU



**vsmSmartHub 244**  
4x RS232 (DSub 9P) + 4x RS422 (RJ45) configurable via  
vsmDiscover, 2x Ethernet (1x Ethernet per 4 RS422-ports and 1x  
Ethernet per 4 RS232) / 1RU



**vsmSmartHub 280**  
8x RS232 configurable via vsmDiscover  
2x Ethernet (1x Ethernet per 4 RS232-ports) / 1RU

GP-I/O BOX INTERFACES

vsmGPI / vsmGPO / vsmGPI/O HIGHLIGHTS

- Connection of physical GPI/Os to the VSM system
- Compact in size and light weight
- Quick and easy connector access GPI/Os are freely configurable via vsmStudio software



**vsmGPI 64**  
64 galvanically isolated TTL-compatible inputs 1xEthernet, 1RU



**vsmGPO 64**  
64 dry relay-outputs, 1xEthernet, 1RU



**vsmGPI/O 32**  
32 galvanically isolated TTL-compatible inputs  
32 dry relay-outputs, 1xEthernet, 1RU

vsmLTC SYNC INTERFACES

vsmLTC SERIES HIGHLIGHTS

- Time synchronization for our VSM Server in time critical environments using the Event Scheduler



**vsmLTC Time Sync Dual**  
2x LTC longitudinal timecode-audio-signal according to SMPTE 12M (-1/-2), 2 USB / 1RU





# vsmSNAP

STAND-ALONE CROSSPOINT SWITCHING PANEL

# vsmSNAP

STAND-ALONE CROSSPOINT SWITCHING PANEL

vsmSNAP is a budget control option that concentrates around crosspoint control in a video router using a vsmSNAP pushbutton panel. vsmSNAP pushbutton panels can control 3rd party gear directly and without a VSM server involved, addressing small “crosspoint switching only” applications. When connected to a VSM server, each vsmSNAP panel acts as a regular VSM panel.

vsmSNAP panels are available as rack-mounted version with 17, 34 and 51 pushbuttons and as a 32 pushbutton desktop version. The panels talk router control protocols natively and are able to process simple router control logic without a VSM server involved. vsmSNAP panels are easily configured by the Windows-based vsmSNAP software. It is possible to run multiple vsmSNAP panels in the same network and connect them to the same 3rd party device. For control, vsmSNAP supports the most common control protocols natively, e.g. Leitch, Pro-Bel SW-P-08, or nVision.



**vsmLBP 17-SNAP**  
17 LCD Buttons RGB-Backlight, Ethernet / 1RU



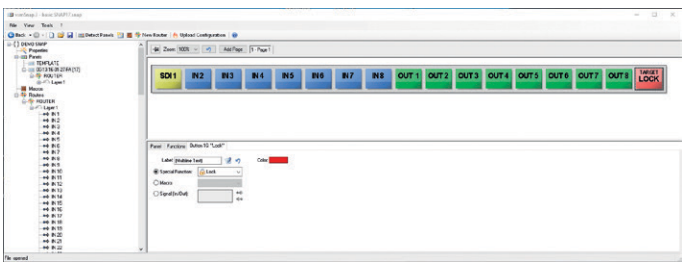
**vsmLBP 34-SNAP**  
34 LCD Buttons RGB-Backlight, Ethernet / 2RU



**vsmLBP 51-SNAP**  
51 LCD Buttons RGB-Backlight, Ethernet / 2RU

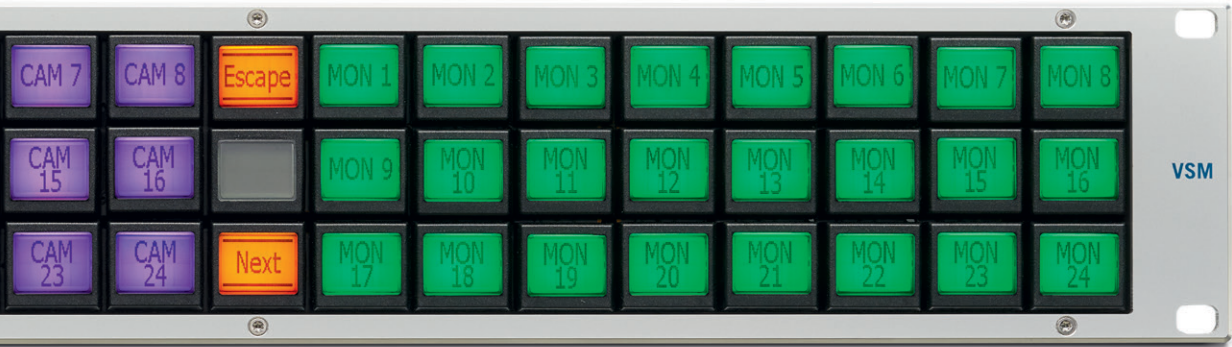


**vsmLBP 32-DT-SNAP**  
32 LCD Buttons RGB-Backlight, Ethernet / Desktop



**vsmSNAP Software**  
Windows-based Configuration Software for vsmSNAP panels

- vsmSNAP KEY FEATURES**
- Budget crosspoint control on a video router with a single hardware panel
  - Independent and autonomous control solution
  - No VSM Server needed
  - Works also as regular VSM panel when linked to a VSM server
  - Connect multiple panels to the same 3rd party device
  - vsmSNAP panels available in four different sizes
  - Supports the most common protocols



SPECIFICATIONS

vsmLBP 17 / vsmLBP 17-SNAP

- Number of buttons: 17 LCD Buttons [E3] RGB-Backlight
- Communication port: 1xEthernet
- Dimension (HxWxD): 44x483x53mm (1RUx19“x2.1“)
- Weight: 1.0kg (2.2lb.)
- Power Consumption: < 4.2W @12VDC/0.35A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 16e

- Number of buttons: 16 LCD Buttons [E3] RGB-Backlight + 1 Encoder
- Communication port: 1xEthernet
- Dimension (HxWxD): 44x483x68mm (1RUx19“x2.7“)
- Weight: 1.0kg (2.2lb.)
- Power Consumption: < 4.2W @12VDC/0.35A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 32-DT / vsmLBP 32-DT-SNAP

- Number of buttons: 32 LCD Buttons [E3] RGB-Backlight
- Communication port: 1xEthernet
- Dimension (HxWxD): 84x256x141mm (3.3“x10.1“x5.6“)
- Weight: 1.0kg (2.2lb.)
- Power Consumption: < 6W @12VDC/0.5A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 31e-DT

- Number of buttons: 31 LCD Buttons [E3] RGB-Backlight + 1 Encoder
- Communication port: 1xEthernet
- Dimension (HxWxD): 84x256x141mm (3.3“x10.1“x5.6“)
- Weight: 1.6kg (3.5lb.)
- Power Consumption: < 6W @12VDC/0.5A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 34 / vsmLBP 34-SNAP

- Number of buttons:34 LCD Buttons [E3] RGB-Backlight
- Communication port: 1xEthernet
- Dimension (HxWxD): 88x483x53mm (2RUx19“x2.1“)
- Weight: 1.0kg (3.1lb.)
- Power Consumption: < 6.5W @12VDC/0.54A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 33e

- Number of buttons: 33 LCD Buttons [E3] RGB-Backlight + 1 Encoder
- Communication port: 1xEthernet
- Dimension (HxWxD): 44x483x68mm (1RUx19“x2.7“)
- Weight: 1.0kg (3.1lb.)
- Power Consumption: < 6.5W @12VDC/0.54A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 51 / vsmLBP 51-SNAP

- Number of buttons: 51 LCD Buttons [E3] RGB-Backlight
- Communication port: 1xEthernet
- Dimension (HxWxD): 88x483x53mm (2RUx19“x2.1“)
- Weight: 1.7kg (3.7lb.)
- Power Consumption: < 8.5W @12VDC/0.71A max
- Working Environment 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 50e

- Number of buttons: 50 LCD Buttons [E3] RGB-Backlight + 1 Encoder
- Communication port: 1xEthernet
- Dimension (HxWxD): 88x483x68mm (2RUx19“x2.7“)
- Weight: 1.7kg (3.7lb.)
- Power Consumption: < 8.5W @12VDC/0.71A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 42

- Number of buttons: 42 LCD Buttons [NKK] RGB-Backlight
- Communication port: 1xEthernet
- Dimension (HxWxD): 44x483x53mm (1RUx19“x2.1“)
- Weight: 1.3kg (2.9lb.)
- Power Consumption: < 7.1W @12VDC/0.59A max
- Working-Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 41e

- Number of buttons: 42 LCD Buttons [NKK] RGB-Backlight + 1 Encoder
- Communication port: 1xEthernet
- Dimension (HxWxD): 44x483x69mm (1RUx19“x2.7“)
- Weight: 1.3kg (2.9lb.)
- Power Consumption: < 7.1W @12VDC/0.59A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 84

- Number of buttons: 84 LCD Buttons [NKK] RGB-Backlight
- Communication port: 1xEthernet
- Dimension (HxWxD): 88x483x57mm (2RUx19“x2.2“)
- Weight: 1.7kg (3.7lb.)
- Power Consumption: < 12.3W @12VDC/1.02A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 83e

- Number of buttons: 83 LCD buttons [NKK] RGB-Backlight + 1 Encoder
- Communication port: 1xEthernet
- Dimension (HxWxD): 88x483x71mm (2RUx19“x2.8“)
- Weight: 1.7kg (3.7lb.)
- Power Consumption: < 12.3W @12VDC/1.02A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 34V (VERTICAL)

- Number of buttons: 34 LCD Buttons [E3] RGB-Backlight
- Communication port: 1xEthernet
- Dimension (HxWxD): 483x65x59mm (19“x2.6“x2.3“)
- Weight: 1.4kg (3.1lb.)
- Power Consumption: < 6.5W @12VDC/0.54A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 39V (VERTICAL)

- Number of buttons: 39 LCD Buttons [E3] RGB-Backlight
- Options: Communication port, 1xEthernet
- Dimension (HxWxD): 356x92x59mm (14“x3.6“x2.3“)
- Weight: 1.3kg (2.9lb.)
- Power Consumption: <7.2W @12VDC/0.6A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmLBP 51V (VERTICAL)

- Number of buttons: 51 LCD Buttons [E3] RGB-Backlight
- Communication port: 1xEthernet
- Dimension (HxWxD): 483x88x59mm (19“x2RUx2.3“)
- Weight: 1.7kg (3.7lb.)
- Power Consumption: < 8.5W @12VDC/0.71A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

vsmPBP 44

- Number of buttons: 44 Rubber Buttons R/G-Backlight
- Communication port: 1xEthernet
- Dimension (HxWxD): 483x43,7x41,6mm (19“x1RUx1.6“)
- Weight: 0.7kg (1.5lb.)
- Power Consumption: < 7W @12VDC/0,58A max
- Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity



SPECIFICATIONS

- vsmENC 17**
  - Number of Encoders: 17 incremental encoders with RGB backlights
  - Communication port: RS422 communication to LBP-panel only
  - Dimension (HxWxD): 44x483x67 mm (1RU x 19“ x 2.6“)
  - Weight: 1.0 kg (2.2 lb.)
  - Power Consumption: 3.5W @12VDC/0.29A max
  - Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

- vsmUMD-SD 19”**
  - Number of Pixels: 170x7 (X/Y) + 1 Line of red/green/yellow-Tally
  - Communication port: RS422 (Ethernet via SmartHub)
  - Dimension (HxWxD): 44x483x33 mm (1RU x 19“ x 1.3“)
  - Weight: 0.7 kg (1.5 lb.)
  - Power Consumption: < 5.8W @12VDC/0.48A max
  - Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

- vsmUMD-SD 1/2 19”**
  - Number of Pixels: 80x7 (X/Y) + 1 Line of red/green/yellow-Tally
  - Communication port: RS422(Ethernet via SmartHub)
  - Dimension (HxWxD): 44x260x33 mm (1RU x 9.5“ x 1.3“)
  - Weight: 0.4 kg (0.9 lb.)
  - Power Consumption: < 3.1W @12VDC/0.26A max
  - Working Environment: 0° to 50°C (+32° to +122°F) non-condensing humidity

- vsmSmartHub 111**
  - Number of serial ports: 1xRS422 + 1xRS232 configurable via vsmDiscover
  - Communication port: 1xEthernet
  - Dimension (HxWxD): 44x483x50 mm (1RU x 19“ x 2.0“)
  - Weight: 0.8 kg (1.8 lb.)
  - Power Consumption: < 2.3W @12VDC/0.19A max
  - Working Environment: 0° to 60°C (+32° to +140°F) non-condensing humidity

- vsmSmartHub 208**
  - Number of serial ports: 8xRS422 configurable via vsmDiscover
  - Communication port: 2xEthernet (1xEthernet per 4 RS422-ports)
  - Dimension (HxWxD): 44x483x50 mm (1RU x 19“ x 2.0“)
  - Weight: 1.0 kg (2.2 lb.)
  - Power Consumption: < 4.8W @12VDC/0.4A max per power-supply (2x)
  - Working Environment: 0° to 60°C (+32° to +140°F) non-condensing humidity

- vsmSmartHub 244**
  - Number of serial ports: 4xRS232 (DSub 9P) + 4xRS422 (RJ45) configurable via vsmDiscover
  - Communication port: 2xEthernet (1xEthernet per 4 RS422-ports and 1xEthernet per 4 RS422)
  - Dimension (HxWxD): 44x483x50 mm (1RU x 19“ x 2.0“)
  - Weight: 1.0 kg (2.2 lb.)
  - Power Consumption: < 4.8W @12VDC/0.4A max per power-supply (2x)
  - Working Environment: 0° to 60°C (+32° to +140°F) non-condensing humidity

- vsmSmartHub 280**
  - Number of serial ports: 8xRS232 configurable via vsmDiscover
  - Communication port: 2xEthernet (1xEthernet per 4 RS232-ports)
  - Dimension (HxWxD): 44x483x50 mm (1RU x 19“ x 2.0“)
  - Weight: 1.0 kg (2.2 lb.)
  - Power Consumption: < 4.8W @12VDC/0.4A max per power-supply (2x)
  - Working Environment: 0° to 60°C (+32° to +140°F) non-condensing humidity

- vsmGPI 64**
  - Number of ports: 64 galvanically isolated TTL-compatible inputs
  - Communication port: 1xEthernet
  - Dimension (HxWxD): 44x483x127 mm (1RU x 19“ x 5“)
  - Weight: 1.9 kg (4.2 lb.)
  - Power Consumption: < 7.5W @12VDC/0.62A max
  - Working Environment: 0° to 60°C (+32° to +140°F) non-condensing humidity

- vsmGPO 64**
  - Number of serial ports: 64 dry relay-outputs
  - Communication port: 1xEthernet
  - Dimension (HxWxD): 44x483x127 mm (1RU x 19“ x 5“)
  - Weight: 2.3 kg (5.1 lb.)
  - Power Consumption: < 22.7W @12VDC/1.89A max
  - Working Environment: 0° to 60°C (+32° to +140°F) non-condensing humidity

- vsmGPI/O 32**
  - Number of serial ports: 32 galvanically isolated TTL-compatible inputs
  - 32 dry relay-outputs
  - Communication port: 1xEthernet
  - Dimension (HxWxD): 44x483x127 mm (1RU x 19“ x 5“)
  - Weight: 2.1 kg (4.6 lb.)
  - Power Consumption: < 15.1W @12VDC/1.26A max
  - Working Environment: 0° to 60°C (+32° to +140°F) non-condensing humidity

- vsmLTC Time Sync Unit Dual**
  - Number of ports: 1 x LTC longitudinal timecode-audio-signal according to SMPTE 12M (-1/-2)
  - Communication port: 1xUSB
  - Dimension (HxWxD): 44x483x127 mm (1RU x 19“ x 5“)
  - Weight: 1.3 kg (2.9 lb.)
  - Power Consumption: <2.1W @12VDC/0.17A max
  - Working Environment: 0° to 60°C (+32° to +140°F) non-condensing humidity

- vsmServer standard**
  - Windows Server 2012R2 or 2016\*
  - HP DL360p Gen10, CPU min. Xeon E5 2620, RAM min. 4GB
  - RAID Controller min. Smart Array P440ar with 256MB Cache
  - HDD min. 100GB SATA or SAS

- vsmServer compact (for small installations)**
  - Windows Server 2012R2 or 2016\*
  - HP DL320e Gen10 (40cm depth), CPU min. Xeon E3 1220, RAM min. 4GB
  - RAID Controller min. Smart Array P222 with 256MB Cache
  - HDD min. 100GB SATA or SAS

- vsmPanel workstation**
  - Windows7, Windows8 or Windows10
  - CPU min. Intel Core i3 or higher (Intel Core i5 recommended)
  - RAM min. 4GB
  - Graphics min. Intel HD Graphics 4000 or higher

\* recommended

# VSM

## IP BROADCAST CONTROL AND MONITORING SYSTEM

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