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Prismon Audio / Video Content Monitoring and Multiviewer

Convergent next generation solution for broadcast and streaming services

Prismon Monitoring Solutions

Prismon Multiviewer Solutions

Product Brochure | Version 18.00

AT A GLANCE

In a rapidly evolving world of ever-growing and fast-moving standards and formats for media content transport and encoding, flexibility and cost are winning factors. Prismon is designed from the ground up to allow broadcast and media service providers to successfully solve these challenges.

Prismon is an innovative and versatile software based solution for monitoring and multiviewing of audio/video content.

It is designed to support the present and future plethora of standards for content transport and media formats, both in legacy and modern IP based environments. In addi-tion to supporting classic and IP based SDI signals, it also offers a comprehensive set of protocols for OTT/ streaming scenarios.

With its comprehensive protocol stack and rich feature set, Prismon offers broadcast and media service providers a single platform for convergent monitoring and multiviewing - from channel playout and contribution networks to distribution environments (e.g. terrestrial transmitter sites, satellite up-/downlink stations, IPTV backbone hubs, CDNs).

Prismon is designed from the ground up as a software defined solution. Its modular software frame-work ensures future-proof extensibility to new transport protocols and media formats in a fast and cost-effective manner, protecting the investment of broadcast and media service providers.

The solutions operate either on a scalable selection of COTS server platforms and cloud based environments. Both hardware and cloud based deployments of Prismon enjoy the same set of powerful capabilities and features.

Key facts

- Multistandard/multiprotocol support for unmatched versatility (e.g. ASI, (3G-)SDI, SMPTE2022-1/2, SMPTE2022-6/7, SMPTE 2110-20/21/30/40, AMWA NMOS, OTT multiprotocol suite, DVB, NDI®, SRT)
- Multi-application approach for A/V monitoring in playout/ contribution and distribution environments on a single platform
- Fully software defined solution for future-proof extensibility
- Cloud-enabled platform and orchestration-ready design for dynamic and flexible allocation of monitoring capacity

BENEFITS AND KEY FEATURES

Unmatched versatility in transport protocols and standards

- Support for IP based signal types (SMPTE2022-1/2, SMPTE2022-6/7, SMPTE2110-20/30/31/40, AIMS, AMWA NMOS IS-04/05, NDI®, SRT)
- Support for classic signal types (SDI, ASI)
- Multiprotocol stack for OTT/streaming (CDN download/upload, VoD download)
- DVB
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Unmatched versatility in media formats and standards

- Support for video services with resolutions up to UHD
- Comprehensive set of video codecs (MPEG-2, H.264/AVC, H.265/HEVC, J2K, TICO)
- Comprehensive set of audio codecs (MPEG-1/2 audio layer II, AAC, HE-AAC, ATSC A/52 (AC-3), Dolby Digital™, Dolby Digital Plus™, Dolby E™, VORBIS)
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Cost-effective, convergent monitoring of playout/contribution and distribution environments

- Multi-application approach with unified software framework
- Flexible choice of computing platforms (industry-standard IT server or hypervisor)
- Scalable signal input and decoding through distributed multiviewer function
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Comprehensive and extendable set of functions for signal analysis and content monitoring

- Continuous decoding and analysis of audio services
- Continuous/periodic decoding and analysis of video services
- T2-MI decoding for TSoIP/TS ASI
- ETSI TR101290 monitoring
- Video live quality measurement (LiveQM)
- Video content compare
- Incident recording
- Penalty box screen
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Comprehensive set of functions for system administration

- Web based GUI/RESTful API for remote configuration and administration
- Email and SNMP based notification in case of alerts and alarms
- API for interworking in AMWA NMOS scenarios
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Powerful multiviewer video wall

- Flexible layout with built-in editor
- Resolution up to UHD
- IP based remote output (SMPTE2022-1/2, SMPTE2022-6/7, SMPTE2110-20/21/30 and OTT)
- Overlay display of supplementary monitoring and analysis information
- page 9

Versatile multiviewer control center (MCC)

- Central management and control of screen layouts
- Central orchestration and deployment of scenarios
- Scalability and multihead support
- Enhanced screen layout and tile editor
- Detailed control of user privileges
- Flexible deployment options
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Future-proof extensibility

- Fully software defined solution
- Modular software framework
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Dynamic and flexible allocation of monitoring capacity in the cloud

- Support for operation in the cloud
- Support for major hypervisor types
- License server with dynamic allocation of floating licenses
- Orchestration-ready design
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UNMATCHED VERSATILITY IN TRANSPORT PROTOCOLS AND STANDARDS

Prismon monitors content transport in both legacy and modern IP based environments. In addition to all relevant protocols and standards for classic and IP based transport of SDI signals, it supports a comprehensive set of protocols for OTT/streaming scenarios.

Support for IP based signal types

Transport of content in the future will dominantly be over IP based networks. Prismon supports IP based transport for transport streams (SMPTE2022-1/2) as well as all relevant approaches to transport of SDI signals over IP (SMPTE2022-6/7 and SMPTE2110-20/30/40).

In particular for SDI signals, this allows Prismon to seamlessly fit into any existing installation and to success-fully interwork with systems of other vendors regardless of their respective preference for SDIoIP.

Support for classic signal types

For investment protection and smooth interworking with the installed base during the transitional period to 100% IP based transport, Prismon supports input of clas-sic (3G-)SDI and ASI signals.

Multiprotocol stack for OTT/streaming

The OTT/streaming environment is characterized by a plethora of competing and complementary protocols and standards posing challenges to service providers. The comprehensive Prismon protocol stack for OTT/streaming (HLS, MSS/HSS, DASH, CMAF, HDS, RTMP, HbbTV, IceCast) helps providers overcome these challenges. Prismon also features use cases for monitoring CDN download/upload and VoD download.

DVB

For investment protection and smooth interworking Prismon supports input of MPEG transport streams (ISO/IEC 13818-1, ITU-T Rec. H.222.0).

UNMATCHED VERSATILITY IN MEDIA FORMATS AND STANDARDS

Prismon monitors media content in audio and video services up to UHD resolution. As well as relevant classic video formats and standards, it also supports modern mezzanine formats.

Support for video services with resolutions up to UHD

Video services are monitored and analyzed in SD, HD or UHD resolutions at various frame rates. For full situational awareness, a mixture of different input resolutions and frame rates can be combined into a single overall multi-viewer video wall on the output side.

Comprehensive set of video codecs

Prismon supports many relevant established video formats and standards such as MPEG-2, H.264/AVC and H.265/HEVC. In line with recent approaches, e.g. SMPTE2110/AMWA NMOS, it also handles modern mez-zanine formats such as J2K and TICO.
Extension to further codecs is possible due to the inherent modular software framework of Prismon.

Comprehensive set of audio codecs

Prismon supports a comprehensive set of audio codecs such as MPEG-1/2 audio layer II, AAC, HE-AAC, ATSC A/52 (AC-3), Dolby Digital™, Dolby Digital Plus™, Dolby E™ and VORBIS. Extension to further codecs is possible due to the inherent modular software framework of Prismon.

COST-EFFECTIVE, CONVERGENT MONITORING OF PLAYOUT/CONTRIBUTION AND DISTRIBUTION ENVIRONMENTS

In a convergent approach to monitoring, broadcast and media service providers benefit from CAPEX/OPEX savings in procurement, training and maintenance of their related infrastructure.

Multi-application approach with unified software framework

Prismon is designed as a single overall solution with a multi-application approach for monitoring playout/contribution and distribution scenarios. The system utilizes a unified software framework for convergent monitoring of both playout/contribution and distribution input signals: a single shared software functional block uniformly handles monitoring and analysis of all types of input signals. Generation of the respective set of output signals is also handled uniformly as illustrated in the figure below.

Operating personnel and technicians can rely on the same powerful tool set regardless of whether they want to monitor and analyze classic SDI/ASI or TSoIP, SDIoIP and OTT/streaming input signals and the media content therein. They will also appreciate the identical easy-to-use graphical interface in each application scenario. The immediate benefit of this convergent approach for broad-cast and media service providers is increased productivity and CAPEX/OPEX savings in procurement/training.

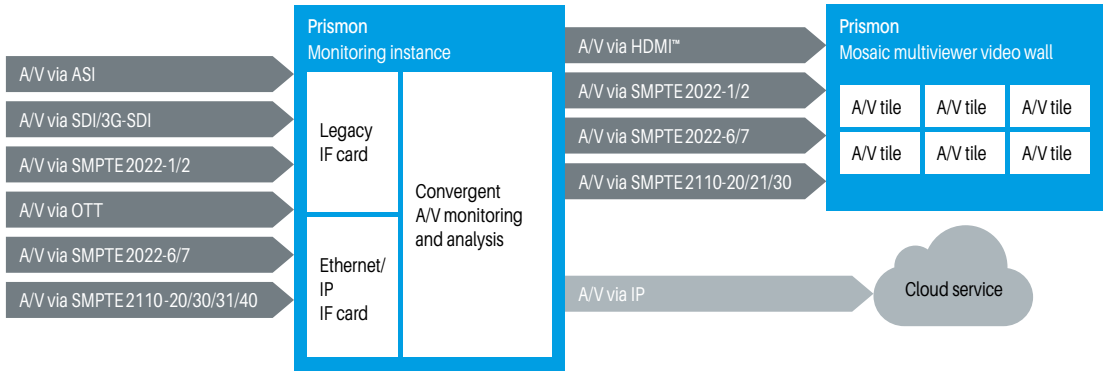
Flexible choice of computing platforms

From the user perspective, the Prismon application software operates identically on all underlying computing platforms. Users can choose among several COTS hardware platforms to meet their individual performance requirements.

Scalable signal input and decoding through distributed multiviewer function

This scalability option enables users to display a mosaic view on a particular Prismon system with input services decoded on any other Prismon system within the same proxy IP network. This allows, for example, rendering a view with multiple UHD inputs – beyond the decoding capacity of a single system. In addition, it helps overcome the fact that only a limited number of physical ASI and SDI interfaces are available on a single system.

Monitoring of multiple input signal types with the Prismon solution.



COMPREHENSIVE AND EXTENDABLE SET OF FUNCTIONS FOR SIGNAL ANALYSIS AND CONTENT MONITORING

Prismon provides both basic and enhanced analysis of audio and video services, including rich supplementary information. It also supports monitoring of T2-MI or ETSI TR 101290 parameters for transport streams and monitoring functions performed on the actual content of the service.

Continuous decoding and analysis of audio services

This function receives the demultiplexed data for one service. The data is decoded and the audio stream is continuously analyzed for content errors such as audio lost and audio silence. In enhanced mode, further checks and information such as audio codec, audio overload and constant audio are available.

Continuous/periodic decoding and analysis of video services

This function receives the demultiplexed data for one service. The data is decoded and the video stream is continu-ously or periodically (thumbnail, round robin) analyzed for content errors such as video lost and still image errors. In enhanced mode, further checks and information such as teletext error, subtitle error, video black, video deviation, video codec, video resolution, parental control and run-ning state are available.

T2-MI decoding for TSoIP/TS ASI

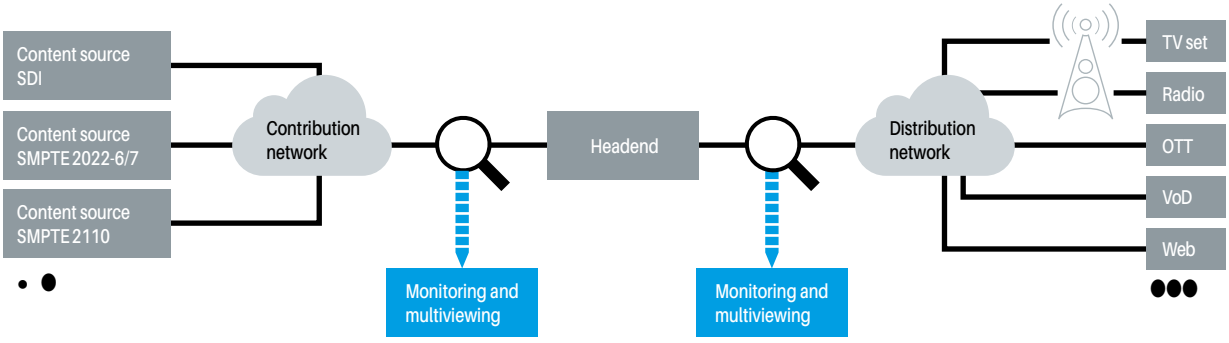
This function monitors the transport stream on the interface to a modulator for a second generation terrestrial television system (DVB-T2). Primary parameters monitored are the load and bit rate of the transport stream. Enhanced monitoring data such as the total number of continuity count errors within the transport stream or packet statistics is also available.

ETSI TR 101290 monitoring

This function monitors DVB transport based on ETSI TR 101 290 guidelines to verify signal accuracy and content integrity. All measurements[1] specified in the ETSI TR101290 measurement guidelinesunder priorities 1, 2 and 3 are carried out simultaneously for every component of all transport streams being moni-tored. Detected faults are presented in the form oferror counters, time series plots and log entries with detailed error information. Configuration supports editing of limits and muting of measurements to relax constraints if desired.

1)Except buffer-related measurements.

Convergent content monitoring in a multidimensional, diverse world of media and broadcast services.



Video live quality measurement (LiveQM)

This function provides live quality comparison of a signal video stream to a reference video stream having match-ing resolution, frame rate and field type. Using innova-tive technology, Prismon can automatically synchronize between two video streams, regardless of the delay between the streams. Synchronization is fully auto-matic and requires no user intervention to compensate for the latency between the streams. Once synchronized, Prismon is able to perform a full reference based PSNR, SSIM or MOS-V measurement on a frame-by-frame, pixel-by-pixel basis. While recording hundreds of measurements per second to enable complex post processing, Prismon also displays a heat map of the areas most affected by compression artifacts or noise for a quick and easy visual interpretation.

Video content compare

This function automates monitoring of the content of an outgoing channel against a known good channel in order to prevent delivery of the wrong content to the wrong platform (e.g. in case of age-rated or DRM-controlled content). Using innovative technology, Prismon can automatically synchronize between two video streams, largely independent of the delay between the streams. The synchronization process is fully automatic and requires no user intervention to compensate for the latency between the streams. The sample and reference video stream may have different resolutions and frame rates. After the initial synchronization of the streams, the real-time comparison of the two streams uses criteria such as moving objects, scene cuts and luminance levels to generate codec- and resolution-agnostic fingerprints of each received and decoded video stream. The fingerprints are then used to compare the streams. One example could be ensuring that identical content is being transmitted on a low resolution service compared with a premium high-definition service. Based on the result of the comparison, an alarm can be raised to trigger the user to investigate and take corrective action.

Incident recording

This function provides event-triggered recording of TS or OTT media streams to the system's hard disk. A sliding window moves virtually across the monitored stream. In case of an event, the current sliding window is captured. The size of the sliding window and the type of events trig-gering the capture can be customized by the user. The captured media stream in combination with the system's detailed error/alarm-log entries can be used to quickly and conveniently identify the root cause of operational incidents.

Penalty box screen

On a dedicated multiviewer screen, this function provides a compact visualization of all channels currently in an error/alarm state. In a pop-up fashion, the penalty box screen is dynamically filled with audio/video tiles for affected services. These pop-up tiles either stay as long as the error/alarm is active or until the event is acknowledged by the operator. Operators benefit from convenient and prompt notification about problematic services that need extra attention.

COMPREHENSIVE SET OF FUNCTIONS FOR SYSTEM ADMINISTRATION

Prismon supports standard system administration by operators as well as options for automated operation and alarm notification.

Web based GUI/RESTful API for remote configuration and administration

Prismon is configured and administered centrally via a web based GUI. The GUI is intuitive and easy to use, since its layout resembles the monitoring workflow from input to output. Access is over a local or remote network connection using modern web browsers. Following successful authorization, different access levels with corresponding levels of administrative capabilities exist. Additionally, a RESTful API is available for remote control and automation. In addition, Prismon provides all monitoring and configuration values via MQTT.

Email based notification and sending of SNMP traps in case of alerts and alarms

Prismon can send out emails to a configurable list of recipients and/or send out SNMP traps in case of alerts and alarms. Triggers can be either system events or from real-time content monitoring and analyzing processes.

API for interworking in AMWA NMOS scenarios

Prismon provides an AMWA NMOS IS-04 (discovery and registration) node API. This API allows the SMPTE2110 and SMPTE 2022-6/7 receivers and send-ers of Prismon to be discovered by an NMOS registration server in the network. AMWA NMOS IS-05 is supported for modern IP based device connection management.

Intuitive and easy-to-use web based GUI for Prismon configuration and administration.

POWERFUL MULTIVIEWER VIDEO WALL

Prismon offers operating personnel and technicians a UHD multiviewer octal video wall. Situational awareness of broadcast and media services is further enhanced by the optional on-screen display of supplementary information about monitored audio and video services.

Flexible layout with built-in editor

With Prismon, tiles for audio and video services are freely positionable in the layout of the multiviewer video wall. Multiple tile sizes for video and audio services are supported. Tile presets for video, teletext, audio, quality, waveform, status and studio exist for the convenience of the user. The easy-to-use, built-in layout editor of the Prismon administrative GUI enables flexible layout of the generated multiviewer video wall (e.g. changing the position and size of a tile).

IP based remote output

Besides local HDMI™/mDP based output, the generated multiviewer video wall can optionally also be sent via SMPTE2022-1/2, SMPTE 2022-6/7, SMPTE2110-20/21/30SRT and OTT over the network to remote output units (e.g. PCs) in variable resolutions up to UHD.

Overlay display of supplementary monitoring and analysis information

Besides the actual tiles for audio or video services, supplementary on-screen elements such as audio meters with peak indication, clocks, log files, static text boxes and UMD/tally information can be displayed, enriching the multiviewer screen with additional information to further enhance the situational awareness of the operating personnel and technicians.

Sample screenshot showing the freely positionable tiles; Prismon supports multiple tile sizes.

VERSATILE MULTIVIEWER CONTROL CENTER (MCC)

The Prismon multiviewer control center (MCC) enables central control of screen layouts and orchestration of deployment scenarios for large IP-multiviewer installations in studio/production environments. Users benefit from increased productivity and operational flexibility as well as time and cost savings.

Central management and control of screen layouts

The MCC function enables central and efficient control of all multiviewer screen settings created by Prismon, including screen layouts, tile inputs and tally configurations. This is especially useful for installations comprising large Prismon IP-multiviewer sets in studio/production environments.

Central scenario orchestration and deployment

The MCC function introduces a powerful 'Rooms & Scenarios' operational concept (see figure below), enabling orchestrated operation of all managed Prismon units. Users benefit from fast and flexible deployment of complex operational multiviewer scenarios. This includes simultaneous switching from screen layouts for e.g. live sports broadcasts to layouts for news programs on all multiviewer screens of a production facility with a single button press in the MCC. Scenario switching can also be automated via an integrated RESTful API.

Scalability and multihead support

If combined with the Prismon software option PRM-KSDMV scalable distributed multiviewer, the MCC function provides independent, linear I/O scalability and multihead support, bringing I/O scalability and availability of SDI/matrix switch based multiviewers into the IP domain.

Enhanced screen layout and tile editor

The central MCC function further enhances the built-in local screen layout and tile editing capabilities of standard Prismon units. If installed locally, this feature can also leverage standalone Prismon units such as pure monitoring solutions with local multiviewer output.

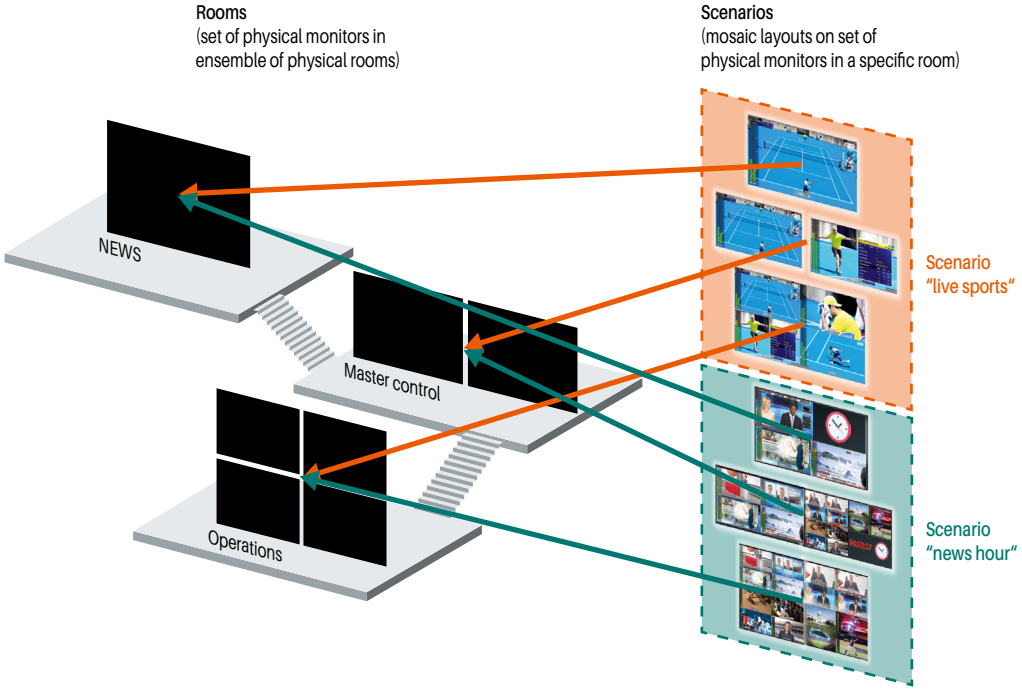
Detailed control of user privileges

Depending on their operational tasks and responsibilities, dedicated privileges can be granted to different MCC users (e.g. add/remove/edit/deploy layouts and scenarios).

Flexible deployment options

The MCC function is an optional, add-on software application for controlling Prismon multiviewer devices in an IP network. The frontend GUI is web based. The backend can be hosted on a dedicated server or co-located on any existing Prismon unit in the network, e.g. a (redundant) license server, if available.

The MCC enables fast and flexible deployment of highly variable multiviewer setups using the powerful 'Rooms & Scenarios' operational concept.



FUTURE-PROOF EXTENSIBILITY

In a world of ever growing and fast moving standards and formats, the ability to adapt and extend is key. The software defined solution architecture of Prismon makes the system a future-proof choice for broadcast and media service providers.

Fully software defined solution

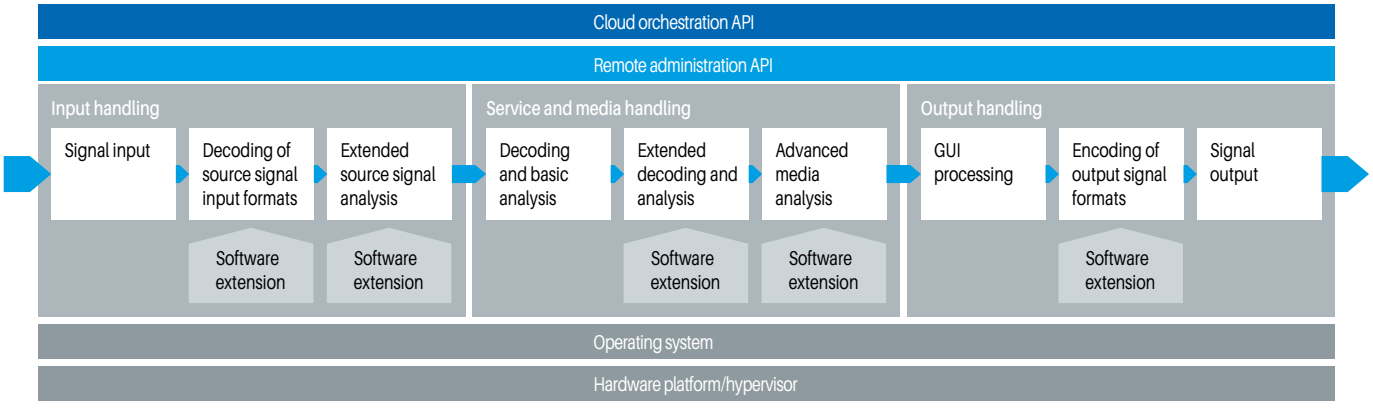
To the greatest possible extent, all Prismon functionality and intelligence is implemented in software, utilizing the latest technologies in software engineering, development and testing. Hardware-oriented parts of the solution are limited to the handling of classic input signals such as SDI or ASI in the form of I/O cards. This software defined solution architecture allows Prismon to quickly and flexibly address any future requirements that arise in the general broadcast and media market or in user- specific projects.

Modular software framework

In Prismon, this software-defined architecture is implemented through a modular framework, as shown below.

In between the input and output handling of signals, the actual operation of monitoring and analyzing the signal and its content is broken down into a modular chain of functional building blocks. Each building block performs a specific task/service and is fully implemented in software. Future modifications/extensions of the solution can be implemented by inserting a new modular functional building block or an extension to an existing module following a system-internal plug-in-like concept.

Key functional components of the Prismon solution providing convergent audio/video content monitoring.



DYNAMIC AND FLEXIBLE ALLOCATION OF MONITORING CAPACITY IN THE CLOUD

Prismon offers a clear migration path into the cloud and features an orchestration-ready design. With cloud based dynamic, on-demand resource allocation and workflow definition, broadcast and media service providers can benefit from resulting CAPEX/OPEX savings and strengthen their competitive position.

Support for operation in the cloud

As a fully software defined solution, Prismon application software operates practically agnostically to the underlying computing platform. This provides a clear migration path from hardware based to cloud based platforms while keeping the same functional capabilities and preserving any purchased software licenses. Capacity and performance of the cloud based deployment can be dynamically and flexibly controlled by proper (de)allocation of the performance of the underlying cloud platform.

Support for major hypervisor types

Prismon is available for VMware, KVM and other major hypervisors on request. Provision is in the format of OVF images, ensuring maximum portability and compat-ibility as well as ease of deployment.

License server with dynamic allocation of floating licenses

The type and number of services and media formats that can be monitored and analyzed with Prismon is controlled by the type and number of matching software licenses active on a particular instance of Prismon.

With Prismon, a networked ensemble of Prismon instances can be served by a common license server. Individual instances dynamically request and return licenses from the license server according to their current operational needs. The license server centrally tracks and dynamically grants available individual licenses from a license pool that is shared across the complete ensemble of Prismon instances. This license server approach allows broadcast and media service providers to optimize CAPEX. The support of a license server concept with dynamic allocation of floating licenses becomes a mandatory prerequisite for any deployment of monitoring solutions in the cloud. As a cloud-enabled solution, Prismon fully supports this mandatory requirement.

Orchestration-ready design

In broadcast and media scenarios, virtualization and orchestration means that classic physical cable connections between physical devices are replaced by (networked, preferably open) software APIs between virtualized software instances. This makes it possible to allocate resources dynamically and on-demand and to define broadcast and media workflows, which eventually results in CAPEX and OPEX savings for service providers. The figure on page 6 illustrates that the design of the modular software framework of Prismon already foresees the inclusion of a corresponding building block of a software API for cloud orchestration.

USE CASE EXAMPLES

Prismon provides 24/7 service for a broad range of applications in playout/contribution and distribution environments. Possible use cases range from convergent audio/video content monitoring to video quality assurance and measurements.

USE CASE: CONVERGENT SERVICE-CENTRIC CONTENT MONITORING ACROSS MULTIPLE NETWORK TYPES

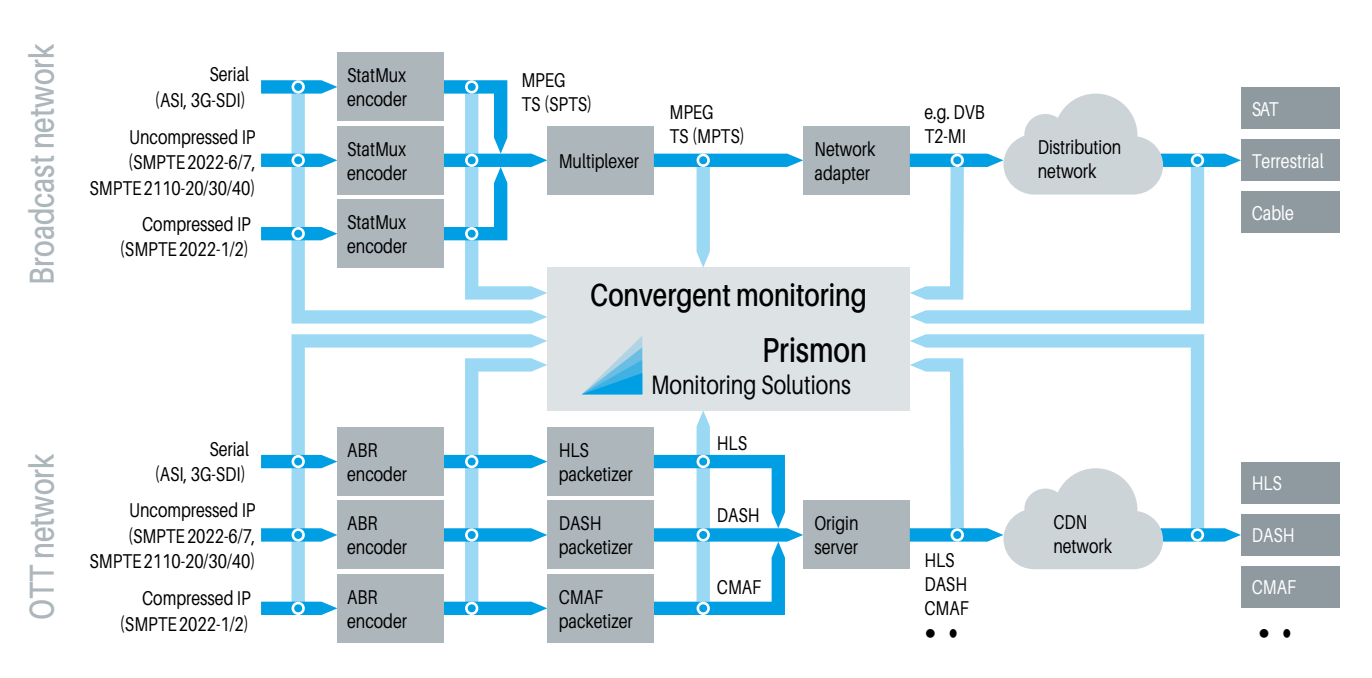
For years, broadcasters and network operators have faced the challenge of increasing signal and protocol diver-sity. The number of different monitoring tools has been increasing accordingly.

Prismon dramatically reduces the number of different monitoring devices and enables a true convergent, service-centric monitoring workflow (see figure below).

This results in the following advantages and benefits for this use case:

- Combined monitoring and status information for a service transmitted over various distribution networks, in different resolutions and various codecs
- Less monitoring equipment to be handled by operators
- Consumes less multiviewer screen space by avoiding duplicates
- SNMP and MQTT interfaces for easy NMS integration
- Re-usable licenses for migration scenarios

Convergent service-centric content monitoring across multiple network types.



USE CASE: VIDEO QUALITY ASSURANCE AND MEASUREMENTS

Video quality measurements are complex, expensive and time-consuming, yet indispensable for broadcast and media service providers to keep their customers satisfied. Delivering high-quality content to customers while optimizing bandwidth needs per channel is key for the commercial success of any service provider. Prismon makes objective video quality measurements on video feeds an easy and quickly achievable task – both in the lab and in live network environments. It supports several parallel measurements using quasi-standard metrics such as PSNR and SSIM. These measurements can be used to benchmark video encoders, monitor and assure video quality as well as to analyze and optimize video production and transmission.

Clear visualization makes results easier to understand

Besides providing the measured video quality as a numeric value, Prismon also generates a graphical video representation in real time – clearly highlighting areas and intensity of poor video quality. This allows users to quickly identify any encoding artifacts or other variances – even if they only affect small areas. Graphically presenting the measured video quality also allows users to quickly interpret the results – even for non-specialists who do not deal with video quality measurements on a daily basis.

Easy setup and fully automatic signal synchronization

Prismon enables full double-ended difference measurements of live video signals – both encoded and baseband signals. The system automatically calculates the temporal and spatial offset of two video sequences and perfectly aligns them on a frame-by-frame basis. Once synchronization is achieved, the system starts measuring picture differences and outputs the results on a PSNR, SSIM or MOS scale. The system detects and handles any dropped frames and reacts intelligently – synchronization is retained even for 24/7 measurements.

All this makes video quality measurements incomparably easy and consequently more efficient.

Parallel measurements for time-saving testing and benchmarking

Prismon can perform video quality measurements in parallel. Corresponding results can be viewed side-by-side on a single screen. This makes sequential, one-by-one encoder benchmarking obsolete, dramatically reducing the time and effort for operating personnel and technicians to improve overall video quality.

Sample screenshot showing video live quality measurement (LiveQM) with Prismon (© video image content: Sveriges Television AB)

SPECIFICATIONS IN BRIEF

Specifications in brief		
Input		
Input protocols	IP based input	► SMPTE 2022-1/2 (TS over IP) ► SMPTE 2022-6/7 ► SMPTE 302M ► SMPTE 2110-20/30/31/40 ► AMWA NMOS IS-04/05 ► NDI® ► SRT (secure reliable transport) ► OTT protocol suite (HLS, MSS/HSS, DASH, CMAF, HDS, RTMP, HbbTV, IceCast)
	SDI input	► SD-SDI (SMPTE ST 259) ► HD-SDI (SMPTE ST 292) ► 3G-SDI (SMPTE ST 424) ► Quad-Link 3G-SDI
	ASI input	compressed A/V in a MPEG-2 transport stream with ancillary data
	DVB input	MPEG transport stream (ISO/IEC 13818-1, ITU-T Rec. H.222.0)
Video processing		
Video decoding	codecs	► MPEG-2 ► H.264/AVC ► H.265/HEVC ► J2K ► TICO
	resolutions (horizontal × vertical)	► up to 1920 × 1080 pixel for MPEG-2, H.264, J2K, TICO ► up to 3840 × 2160 pixel for HEVC
	frame/field rates	23.98/24/25/29.97/30/50/59.94/60
	decryption	► DASH: CENC ► Microsoft Smooth Streaming, HLS: Microsoft PlayReady™
Video analyzing	functions	► determination of video frames with no changes (video freeze) ► determination of video frames with low luminance level (video black) ► determination of lost video signal ► determination of content mismatch ► set-actual comparison for codec parameters (template monitoring)
Audio processing		
Audio decoding	codecs	► MPEG-1/2 audio layer II ► AAC ► HE-AAC ► ATSC A/52 (AC-3) ► Dolby Digital™ ► Dolby Digital Plus™ ► Dolby E™ ► Ogg Vorbis, Ogg Opus
Audio analyzing	functions	► determination of audio samples with low audio level (audio silence) ► determination of audio samples with high audio level (audio overload) ► determination of audio samples with constant audio level (audio constant) ► determination of lost audio signal ► loudness monitoring ► set-actual comparison for codec parameters (template monitoring)

Specifications in brief		
Service monitoring and analysis		
Data decoding and analysis	functions	▶ teletext decoding ▶ subtitle decoding ▶ determination of lost data signal ▶ closed caption decoding ▶ parental rating ▶ running state ▶ SCTE 35/SCTE 104 ▶ HDR monitoring
Video image quality monitoring	functions	▶ reference based video quality monitoring methods (max. resolution: UHD) ▶ reference-free video quality monitoring methods (resolution: 1080i50) ▶ side-by-side visualization ▶ A/V delay measurement
Video content monitoring	functions	▶ video content compare (max. resolution: HD) ▶ video freeze (max. resolution: UHD) ▶ video black (max. resolution: UHD) ▶ set-actual comparison for parameters of codec (template monitoring)
OTT source monitoring	functions	▶ multiprotocol download ▶ multiprotocol upload sniffing ▶ multiprotocol VoD download ▶ digital program insertion (SCTE 35)
DVB source monitoring	function	T2-MI decode for TS over IP/TS ASI
Transport layer monitoring	functions	▶ TR 101290 V1.2.1 – first/second/third priority ▶ digital program insertion (SCTE 35) ▶ adaptive transport stream – encoding boundary point (ATS-EBP)
Incident recording	function	event-triggered recording of sliding window audio/video segments for TS/OTT to hard disk
Multiviewer video wall		
Layout		▶ tile preset types: video, teletext, radio, quality, waveform, status, studio ▶ user customizable tile presets ▶ each tile freely positionable ▶ selectable predefined sizes per service tile
Video visualization	aspect ratio handling	▶ automatic scaling to correct aspect ratio ▶ support of dynamic aspect ratio changes
Audio visualization	functions	▶ audio meter scale ▶ peak indicator ▶ RMS indicator
Meta data visualization	functions	▶ display of meta data per tile ▶ dynamic system and description tiles ▶ display of UMD/tally information
HDMI™/mDP output	horizontal × vertical (frames/s)	▶ 1080p25/29.97/30/50/59.94/60 ▶ 2160p25, with mDP up to 4kp60
Streaming output	protocols/video codecs	▶ SMPTE 2022-2 (MPEG-2: 576p25/29.97/30/50/59.94/60; H.264/AVC: up to 1080p25/29.97/30/50/59.94/60) ▶ SMPTE 2022-6/7 (uncompressed: 1080p25/29.97/30/50) ▶ SMPTE 2110-20/21(type W)/30 (uncompressed: 1080p25/29.97/30/50/59.94/60, 2160p25/29.97/30) ▶ OTT (H.264: 240/576/720/1080p25) ▶ SRT (MPEG-2: 576p25/29.97/30/50/59.94/60; H.264/AVC: up to 1080p25/29.97/30/50/59.94/60)

ORDERING INFORMATION

Designation	Type
System	
Prismon system	PRM-SYSTEM
Software and options	
System software dongle	
Prismon system license dongle	PRM-DONGLE
Core software license	
Prismon software instance – extended core license	PRM-KXCORE
Input – source signal types and basic monitoring	
Broadcast IP source – instance license	PRM-KBIPS
OTT source – instance license	PRM-KOTTS
SDI/ASI – instance license	PRM-KSDIS
Scalable distributed multiviewer – instance license	PRM-KSDMV
Extended source signal monitoring and analysis	
Extended source signal monitoring and analysis – instance license	PRM-KEXSM
Processing – service decoding and basic analysis	
Video-thumbnail/pure-audio decoder and analysis – instance license	PRM-KVTAD
Video decoding and continuous analysis – single license	PRM-KSVDC
Extended service decoding	
TICO decoder – single license (1 stream)	PRM-KTICOS
Advanced service analysis	
Video live quality measurement (LiveQM) – instance license	PRM-KVLQM
Video content compare – instance license	PRM-KVCC
Incident recording – instance license	PRM-KIREC
Output – multiviewer formats	
VideoWall: multiviewer mosaic view output – single license	PRM-KVWMMO
Multiviewer control center (MCC)	
Multiviewer control center dashboard – instance license	PRM-KMCCD
Multiviewer control center output view – single license	PRM-KMCCV
Multiviewer control center extension image	software image
Virtualization/cloud/bare-metal options	
Hypervisor image	
Prismon hypervisor image for VMware	software only image
Prismon hypervisor image for KVM	software only image
Bare-metal image	
Prismon software deploying image	software only image

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