Sphere Com Services
Pvt. Ltd.

Thinux
MediaSystem

VMS

Sphere Com Services Pvt.,Ltd

Introduction to ThinuxMediaSystem (VMS)

ThinuxMediaSystem (VMS) is a comprehensive video management system designed for monitoring, managing, and analyzing video from surveillance cameras. This system provides a powerful and flexible solution for live video surveillance, video storage, image data analysis, and management of IP cameras from various vendors. ThinuxMediaSystem (VMS) supports multiple video streaming protocols, including RTSP, WebRTC, and other streaming protocols, offering remote connection and monitoring capabilities in any situation.

Key Features

	Detailed Description
ONVIF Standard Support and Camera Variety	▪ **ONVIF Compatibility:** Supports connecting and monitoring IP cameras from various vendors that comply with the ONVIF standard. ▪ **Camera Variety:** Compatible with various camera types, including PTZ (Pan-Tilt-Zoom) cameras, smart IP cameras, and network video recorders (NVRs).
Comprehensive Camera Management	▪ **Add/Edit/Delete Cameras:** Users can easily manage (add, configure, edit and delete) cameras or camera categories from the management interface. ▪ **Remote Camera Management:** Supports remote camera management, control and monitor through web or mobile. ▪ **Camera Status Monitoring:** Allows checking the operational status of cameras and receiving notifications for errors or disconnections.
Real-Time Video Transmission and Display (View)	▪ **Video Streaming Protocols:** Supports RTSP, WebRTC, HTTP, UDP, TCP, RTMP, SRT protocols for high-quality, low-latency video streaming from cameras to monitoring devices. ▪ **Custom Display Modes:** Offers flexible video display modes such as full-screen viewing, grid screen splits, or simultaneous display of multiple cameras. ▪ **High Video Quality:** Supports 1080p, 4K, and other high resolutions to ensure clear image quality.
Image Data Storage and Management	▪ **Scheduled Storage:** Automatically stores video according to specified schedules (e.g., daily, weekly). ▪ **External Storage Support:** Supports storing video on NAS, SAN, or USB, portable (HDD, SSD) devices for expanded storage capacity. ▪ **Easy Data Retrieval:** Provides search tools to quickly extract video based on time or camera.
High-Level Security Features	▪ **Two-Factor Authentication (2FA):** Provides two-factor authentication to protect user accounts from unauthorized access. ▪ **Data Encryption:** Encrypts video data during storage and transmission between devices, ensuring data security throughout processing and storage. ▪ **User Access Control:** Clear user role management for groups like Admin, User with flexible access rights and high control.
System Integration and Remote Monitoring	▪ **Remote Management:** The system can monitor and control cameras remotely via web browsers, applications, or central management interfaces. ▪ **Integration with NVR/Cloud:** ThinuxMediaSystem (VMS) integrates with NVRs, VMS, and Cloud platforms to provide a comprehensive surveillance solution.
Flexible and Scalable Features	▪ **System Scalability:** ThinuxMediaSystem (VMS) can scale to support thousands of IP cameras and other monitoring devices, making it suitable for large organizations. ▪ **Peripheral Device Integration:** Integrates with peripheral devices like motion sensors, video doorbells, or other security systems to enhance monitoring capabilities.
Supported Languages	English, Vietnamese

Video Transmission Capabilities

ThinuxMediaSystem (VMS) supports multiple video transmission protocols, providing flexibility for streaming video from cameras to users or monitoring devices:

Feature	Detailed Description
Support for Video Streaming Protocols	▪ **RTSP (Real-Time Streaming Protocol):** RTSP is a standard protocol for low-latency live video streaming, allowing users to view video from IP cameras or recording devices. ▪ **WebRTC (Web Real-Time Communication):** Supports WebRTC for streaming video directly through web browsers without plugins, reducing latency and improving the online video viewing experience. ▪ **RTMP (Real-Time Messaging Protocol):** RTMP is commonly used for live streaming video to platforms such as YouTube and Facebook, ensuring good compatibility with online video streaming services. ▪ **SRT (Secure Reliable Transport):** SRT allows video transmission with high reliability, even when the network connection has high latency or instability, ensuring video quality and packet loss prevention. ▪ **UDP/TCP (User Datagram Protocol/Transmission Control Protocol):** Supports video transmission over both UDP and TCP, ensuring stable and flexible streaming for various network conditions.
Low Video Transmission Latency	▪ **Optimized Latency:** ThinuxMediaSystem supports very low-latency video transmission, allowing users to view live video from cameras without interruptions or lag. ▪ **Optimized for Live Streaming:** Protocols like WebRTC and RTSP are optimized to minimize latency, making them suitable for real-time surveillance or live broadcasting applications.
High Video Quality	▪ **High Resolution Support:** ThinuxMediaSystem supports video resolutions from SD (Standard Definition) to 4K, ensuring sharp and clear video quality in all lighting conditions. ▪ **No Video Quality Degradation:** Ensures that video is transmitted without quality loss due to strong compression protocols and optimized bitrate. ▪ **Support for H.265/H.264 Video Compression:** The system supports advanced video compression standards like H.264 and H.265, reducing transmission bandwidth while maintaining high image quality. Additionally, the system supports video compression standards like M-JPEG and MPEG-4. ▪ **Support for Common Audio Formats:** Supports common audio formats like AAC, G711, Opus, and PCM.
Multi-Stream Video Transmission	▪ **Multi-streaming:** The system supports multi-stream video transmission, allowing multiple streams from a single camera (e.g., one stream for high quality and another for low quality). ▪ **Camera Synchronization:** The system can synchronize video from multiple cameras, forming a linked monitoring system, which simplifies managing and monitoring multiple video streams simultaneously.
Live Viewing and Recording Modes	▪ **Live Video Viewing:** Provides live video viewing from cameras, enabling real-time monitoring through web interfaces or mobile apps. ▪ **Simultaneous Recording:** ThinuxMediaSystem can record video while also displaying live footage, allowing real-time video storage without interrupting live surveillance. ▪ **Scheduled Recording:** Videos can be recorded and stored on a schedule, helping save storage space and ensuring that no important footage is missed during surveillance.
Video Integration with Other Devices	▪ **IP Camera Integration:** The system supports integrating IP cameras from various manufacturers through supported protocols. ▪ **Compatibility with NVR/DVR Systems:** The system can integrate with Network Video Recorders (NVRs) and Digital Video Recorders (DVRs) to extend surveillance and video storage capabilities. ▪ **Compatibility with External Storage Devices:** ThinuxMediaSystem supports video storage on external devices such as NAS, SAN, or USB, offering flexible storage expansion options.
Flexible Video Display Modes	▪ **Flexible Display Modes:** Users can customize video display modes according to their needs, such as split-screen viewing of multiple video streams or full-screen mode for a single camera. ▪ **Simultaneous Viewing Mode:** ThinuxMediaSystem supports simultaneous viewing of video from cameras in different areas, enabling users to monitor key points in their surveillance system.

User Management

Feature	Detailed Description
User Role Management	ThinuxMediaSystem provides flexible user role management, allowing the easy allocation and control of access rights to different features of the system.
User Groups	▪ **Admin:** Full access and control over all system settings, including camera management, system configuration, user role management, and security. ▪ **User:** Restricted access rights, typically limited to viewing video and reports (access can be customized based on specific user groups).
User Group Management	The system allows the creation and management of user groups, with the ability to assign specific permissions to each group. Groups can be created for departments, units, or other specific purposes within the organization.
Access Control by Camera and Area	Access rights can be assigned based on specific cameras or areas, making it easier to manage access and ensuring that only authorized users can view sensitive locations.

Network Security and Connectivity

Feature	Detailed Description
Firewall and Vulnerability Checking	ThinuxMediaSystem (VMS) integrates with firewall systems to monitor and prevent external attacks. These security features help maintain the integrity and safety of the system in a network environment.

Data Security

Feature	Detailed Description
Two-Factor Authentication (2FA)	• The two-factor authentication (2FA) feature enhances user account security by requiring an additional authentication step, helping prevent unauthorized access to the system. • Authentication Method: Users are provided with a code sent via email for login verification. • By default, this feature is not enabled in systems operating on an internal network.
Connection Security	Encryption and authentication during login, combined with 2FA, strengthen security for remote access to devices and software.
Data Encryption	• **Data in Transit:** All data transmitted between the system and users is encrypted using TLS/SSL protocols, protecting against man-in-the-middle attacks. • **Data at Rest:** Data stored on the system (including video and user information) can also be encrypted, ensuring that even if unauthorized access occurs, the data remains secure and unreadable.
Protection Against Unauthorized Copying and Distribution	• **Prevention of Unauthorized Copying:** ThinuxMediaSystem applies mechanisms to prevent the illegal copying of video files and information, including detailed access control and data encryption measures. • **Access Control:** The system controls access to storage devices and video content, ensuring that only authorized users can copy, export, or share video data.
Audit and History Logging	ThinuxMediaSystem logs all user activities, including login attempts, permission changes, backups, and other actions. The system generates access and activity history reports, helping easily detect abnormal activities.

System Requirements

Feature	Detailed Description
Supported Operating Systems	• **Windows:** Windows 10, 11, server • **Linux:** Ubuntu
Minimum Hardware Requirements	• **CPU:** >= 4 cores, clock speed >= 2.0 GHz. • **RAM:** Minimum 2 GB. • **Storage:** USB/Portable HDD, SSD, NAS, SAN (SSD or NAS/SAN recommended for optimal performance). • **Network:** 1Gbps Ethernet or high-speed Wi-Fi connection.

Scalability Features

Feature	Detailed Description
Camera Scalability	• ThinuxMediaSystem supports scaling up to thousands of IP cameras and surveillance devices, including IP cameras, NVRs, and other monitoring devices. • The system features flexible scalability through a distributed architecture and modular design, allowing for the connection of multiple servers and cameras over Ethernet or Wi-Fi.
Storage Scalability	• The system supports various storage expansion methods, including connection to NAS and SAN devices, allowing for high-capacity video data storage and virtually unlimited scalability. • Integration with external storage systems and cloud storage ensures flexibility and unlimited storage capacity expansion.
User and Device Scalability	• ThinuxMediaSystem can support multiple simultaneous user accesses, meeting the surveillance needs of large organizations, factories, or extensive infrastructures.
Load Balancing and Backup	• The system supports load balancing across servers, improving performance and optimizing hardware resources when deploying large-scale surveillance systems. • Flexible backup and recovery features ensure stability in the event of system failures or infrastructure changes.

ThinuxMediaSystem (VMS) offers a comprehensive, easily deployable solution for video surveillance and camera management, with powerful features, compatibility with a variety of video transmission protocols, and advanced security options.

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