GANZ CORTROL
VIDEO MANAGEMENT SYSTEM

SOLVING KEY PROBLEMS IN VIDEO SURVEILLANCE WITH ANALYTICS & A VIDEO MANAGEMENT SYSTEM (VMS)

A Ganz Security Whitepaper | August 2023

Abstract

This white paper analyzes common challenges in video surveillance and how they can be resolved by using a comprehensive video management system.

This document explores essential system features, benefits, architecture, deployment options, and integration capabilities. Moreover, it discusses the potential use cases and industries that can benefit from implementing the right system. By the end of this paper, readers will have a comprehensive understanding of the type of security system best suited for their video surveillance requirements.

Purpose of the White Paper

This white paper aims to solve key problems in video surveillance with comprehensive solutions meant for entire surveillance systems, from smaller businesses up to enterprise level, with thousands of cameras and integrations. By examining the Ganz CORTROL VMS, this white paper aims to provide readers with the necessary information to make informed decisions about implementing the system within their video surveillance infrastructure. The comprehensive analysis of features, benefits, deployment options, and integration capabilities will enable organizations to evaluate the suitability of Ganz CORTROL VMS for their specific requirements.

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Introduction: Common Video Surveillance Difficulties

Some common video surveillance difficulties include:

1. **Poor image quality:** Low-resolution cameras or inadequate lighting can result in blurry or grainy footage, making it difficult to identify individuals or details.
2. **Limited field of view:** Cameras with a narrow field of view may not capture the entire area of interest, leaving blind spots that intruders can exploit.
3. **False alarms:** Motion detection systems can be triggered by non-threatening movements, such as small animals or swaying trees, leading to frequent false alarms, and wasting time for security personnel.
4. **Lack of scalability:** Outdated analog surveillance systems may have limitations in adding more cameras or expanding coverage, making it challenging to adapt to changing security needs.
5. **Data storage and retrieval:** Managing large volumes of video data requires significant storage capacity and efficient retrieval methods. Locating specific footage from extensive archives can be time-consuming.
6. **Privacy concerns:** Video surveillance can raise privacy concerns, especially in public areas or workplaces. Striking a balance between security and privacy can be a challenge.
7. **Vulnerability to hacking:** Poorly secured video surveillance systems can be vulnerable to hacking, potentially allowing unauthorized access to live feeds or recorded footage.
8. **Maintenance and reliability:** Regular maintenance is necessary to ensure cameras and other equipment function properly. Failures or downtime can compromise security and require prompt repairs.
9. **Cost:** Implementing and maintaining a comprehensive video surveillance system can be costly, including expenses for cameras, storage devices, installation, and ongoing maintenance.
10. **Legal and regulatory compliance:** Depending on the jurisdiction, there may be specific regulations and legal requirements regarding video surveillance, such as obtaining consent or ensuring data protection, which can pose challenges for organizations.

Scope and Limitations of Video Management Systems (VMS)

While Video Management Systems (VMS) offer numerous benefits, they also have some limitations to consider:

1. **Cost:** Implementing a VMS can involve significant upfront costs, including hardware, software licenses, and installation.

Additionally, ongoing maintenance and updates may require additional expenses. The cost can be a limiting factor for smaller businesses or organizations with budget constraints.

2. **System Complexity:** VMS software can be complex, especially for users unfamiliar with video surveillance systems. Setting up and

configuring the system may require technical expertise, and training may be necessary for operators to fully utilize all the features and functionalities.

3. **Bandwidth and Storage Requirements:** Video surveillance systems generate large amounts of data, requiring substantial bandwidth and storage resources. High-resolution cameras and continuous recording can strain network bandwidth and storage capacity. Organizations may need to invest in robust infrastructure to support the demands of the VMS.

4. **Dependence on Network Infrastructure:** A VMS relies heavily on the network infrastructure for video transmission and access. If the network experiences downtime or bandwidth limitations, this can impact the system's performance and accessibility. Redundancy measures and network monitoring are necessary to minimize disruptions.

5. **Compatibility and Integration Challenges:** Integrating a VMS with existing security systems, such as access control or alarms, can present compatibility challenges. Ensuring seamless integration and proper communication between different systems may require additional configuration or customization.

6. **Privacy Concerns:** Video surveillance systems, including VMS, raise privacy concerns. Organizations must adhere to applicable privacy laws and regulations, ensuring that the system is used responsibly and in compliance with privacy guidelines. Proper policies and procedures should be in place to address privacy concerns and protect individuals' rights.

It is essential to consider these limitations and address them appropriately during the planning and implementation of a VMS to ensure a successful and effective video surveillance solution.


Why would a business need a VMS?

A Video Management System (VMS) is essential for several reasons:

1. **Centralized Control and Management:** A VMS allows users to control and manage their video surveillance system. It provides a unified platform to monitor multiple cameras, recording devices, access control, and other integrated systems at multiple locations from a single interface. This streamlines operations, simplifies video retrieval, and enhances overall system efficiency.

2. **Enhanced Security and Safety:** A VMS can offer advanced features such as video analytics, motion detection, and facial recognition. These capabilities enable proactive monitoring, real-time alerts, and event-driven responses. It enhances security and safety by detecting and alerting suspicious activities or potential threats.

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3. **Evidence Collection and Investigation:** In the event of an incident or crime, a VMS plays a crucial role in evidence collection and investigation. It allows users to easily search and retrieve recorded video footage, helping law enforcement or security personnel identify suspects, gather evidence, and support legal proceedings.

4. **Scalability and Flexibility:** A VMS is designed to accommodate the growth and expansion of a video surveillance system. It can support many cameras and locations, making it suitable for small-scale and enterprise-level applications. Additionally, a VMS can integrate with other security systems, such as access control or alarms, providing a comprehensive and integrated security solution.

5. **Remote Monitoring and Accessibility:** With remote access capabilities, a VMS enables users to monitor their video surveillance system from anywhere using a computer, smartphone, or tablet. This flexibility allows for real-time monitoring, quick response to incidents, and staying connected and informed even when off-site.
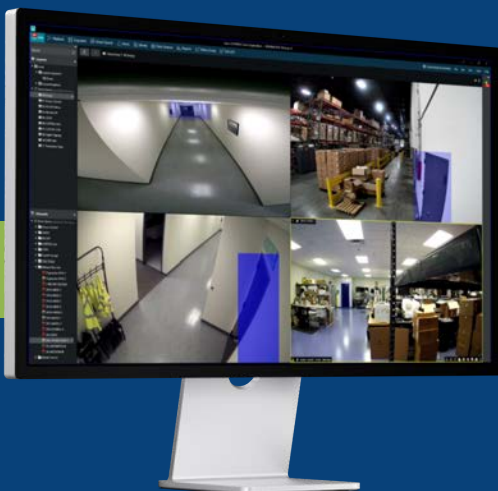
A VMS is crucial for effective video surveillance management, providing centralized control, enhanced security, evidence collection, scalability, and remote accessibility. It helps organizations improve their security posture, streamline operations, and ensure the safety of people and assets.

Overview of Ganz CORTROL VMS

Ganz CORTROL VMS is a comprehensive video management system. It provides centralized management, control, and monitoring of video surveillance systems. The software lets users easily manage and view live and recorded video from multiple cameras and locations through a user-friendly interface. It offers advanced video analytics capabilities, seamless integration with third-party devices and systems, and scalability for various applications. Additionally, Ganz CORTROL VMS supports remote access, enabling users to monitor their surveillance system from anywhere using a computer or mobile device. It is a robust and flexible solution for efficient video surveillance management.

Key Features and Functionality

1. **Video management:** It allows users to manage and view live and recorded video from multiple cameras and locations through a unified interface.

2. **Scalability:** There are two options for business owners: CORTROL Premier is designed to support up to ninety-six (96) channels, whereas CORTROL Global can support unlimited channels, making it suitable for systems of all sizes.

3. **Intelligent video analytics:** CORTROL VMS may offer various video analytics features such as motion detection, object tracking, people counting, and facial recognition to enhance security and situational awareness. The software supports versatile camera-side video

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analytics, allowing the listing of more VA types and taking the load off the server hardware, which optimizes the system resources.

4. Integration: It can integrate with various third-party devices and systems, such as IP cameras, access control systems, and alarms, to provide a comprehensive security solution.

5. **User-friendly interface:** The software typically offers an intuitive and user-friendly interface, allowing users to navigate and manage their video surveillance system easily. The software is also foolproof, as users and administrators have two different interfaces with different access permissions, and it is impossible for the operators to modify the server configuration, even by mistake.

6. **Remote access:** CORTROL VMS may provide remote access capabilities, enabling users to view live or recorded video from anywhere using a computer, smartphone, or tablet.

7. **15,000+ Supported Devices:** CORTROL supports over 15,000 models of network cameras and network video servers from over 190+ manufacturers. Find out if your cameras are supported <u>here</u>.

Deployment Options

A. On-Premises Deployment

In deploying Ganz CORTROL VMS onsite:

1. Assess and plan the surveillance requirements and infrastructure.
2. Install the necessary hardware components, such as servers and storage devices.
3. Install the Ganz CORTROL VMS software on the designated server.
4. Configure and connect the cameras to the system.
5. Configure the network settings for proper communication.

6. Set up user accounts and access management.
7. Test the system for proper functionality and optimize performance.
8. Provide training to system administrators and operators.
9. Document the system configuration and procedures for future reference.

B. Cloud-Based Deployment

1. Assess surveillance requirements and choose a cloud provider.
2. Set up the cloud infrastructure, including virtual servers and storage.
3. Install Ganz CORTROL VMS software on the virtual servers.
4. Configure and connect the cameras to the cloud-based system.
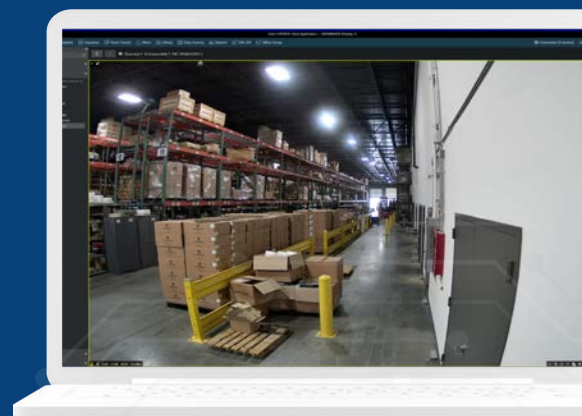5. Configure the network settings for proper communication.
6. Set up user accounts and access management.
7. Configure cloud storage and backup options.
8. Test the system for functionality and optimize performance.
9. Provide training to system administrators and operators.
10. Document the system configuration and procedures for future reference.

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C. Hybrid Deployment

1. Assess surveillance requirements and plan the deployment.
2. Set up on-premises hardware components and network infrastructure.
3. Install Ganz CORTROL VMS software on the on-premises server.
4. Connect cameras to the on-premises system and configure camera settings.
5. Configure network settings for communication between cameras, server, and clients.
6. Integrate the on-premises system with cloud components.
7. Set up user accounts and access controls for both on-premises and cloud access.
8. Configure storage options for on-premises and cloud storage.
9. Test and optimize the hybrid deployment for functionality and performance.
10. Provide training and document the system configuration and procedures.

Key Benefits of CORTROL

1. **Enhanced Security and Surveillance Management:** Ganz CORTROL offers enhanced security via Microsoft Data Protection API, AES 128/256Bit via OpenSSL toolkit, and RSA 2048bit for key exchange.

- The latest software versions also include OAuth 2.0 support, so SSO (single sign-on) is supported.
- CrossLink is a front-end integration with any third-party system, be it another VMS or others.
- AES 128/256Bit encryption applies to communications and data storage.
- Further information is provided via a cyber security status reporting system, guiding the admin toward 25 various levels of securing the overall system.
- User authentication security can be addressed via standard ID/PW authentication, resource assignment-based authentication, two-factor authentication, and CIAM, along with password policy restrictions
- Surveillance management is handled via the CORTROL Client, offering live playback, various search functions, Access Control management, robust export functionality, and an advanced notification system.

2. **Intelligent Video Analytics**

- Ganz CORTROL Video Analytics (CVA) is a real-time video analytics engine that utilizes neural networks to turn video into actionable intelligence. The CVA engine is seamlessly built into the Ganz CORTROL software and is part of the unified Ganz CORTROL licensing

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system. At the product's core is a state-of-the-art object-tracking engine that detects and classifies objects and continually tracks moving and stationary targets. The tracking engine features built-in robustness to environmental nuisance conditions such as changing illumination, precipitation, moving foliage, rippling water, etc.

Ganz CORTROL analytic modules (CVA) offer:

- Object detection and classification (both generic and professional classification engines)
- Object detection events for the CORTROL Event & Action rules
- Unique object counting using built-in software counters
- Zones and Lines with counters
- Rule triggering
- Personal Protective Equipment detector

The intuitive interface makes it possible to quickly and easily define the rules that generate real-time alerts when triggered.

CORTROL CVA modules are add-on licenses for the CORTROL Solutions Platform, therefore:

- CVA is installed together with CORTROL Premier & Global, no additional installation is required
- CVA cannot operate on its own without Ganz CORTROL Premier or Global channels
- Triggered rules can be used in the Event & Action scenarios in CORTROL Premier and Global to create complex and flexible automated behavior patterns
- CVA metadata overlay is present in the Ganz CORTROL Client for the user to see the tracked objects in both Liveview and Playback
- CVA supports offloading to Nvidia Technologies based GPU's (GTX 10 series+)

3. Centralized Monitoring and Control: CORTROL Global is an enterprise solution offering multi-server deployment architecture with centralized monitoring and control of surveillance configuration, notification, and maintenance. Ganz CORTROL Premier is a complete, stand-alone VMS solution for small to mid-size businesses.

Current Integrations with Third-Party Systems:

1. Continental Access Control: Integration of video pull to Continental
2. Feenics Keep: Integration of Door Controls, Events, and People
3. Gallagher: Integration of Door Controls, Events, and People
4. GSF Corporation Visual Access Systems: Integration of Door Controls, Events, and People
5. Keri Systems Doors.NET: Integration of Door Controls, Events, and People
6. Paxton: Integration of Door Controls, Events, and People
7. NEDAP AEOS: Integration of Door Controls, Events, and People
8. Roger RACS 5: Integration of Door Controls, Events, and People
9. Satel Integra ETHM-1 Access Control Device: Alarm panel

4. **Cost-Effectiveness and Return on Investment:** CORTROL offers various built-in technologies designed to provide cost-effective functionality. Technologies include but are not limited to Video Wall support, a Body Cam feature, POS, agnostic device support, technical support for Ganz hardware, and a convenient license renewal structure.
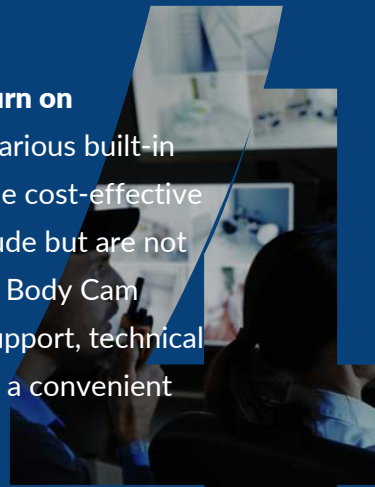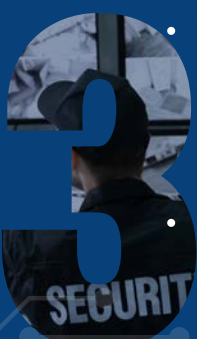
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Case Studies

Ganz CORTROL VMS offers various use cases in multiple industries, including retail, transportation and logistics, critical infrastructure, education, healthcare facilities, and government and public safety. Here are some examples.

Transportation & Logistics

This case study implemented the GANZ CORTROL VMS system and CORTROL-CONNECT module in the POLO MARKET logistics center. This large warehouse needed a sizeable solution allowing 30+ operators to assess security footage simultaneously and a smooth transition into a platform that could manage analog and IP cameras and systems.

Solution:
Polo Market Logistics Center has implemented the Ganz CORTROL VMS system, consisting of Ganz IP cameras and an efficient server, allowing nearly 30 users to work simultaneously in live and video playback.

The system ensures the people's and property's safety, handles complaints' verification and monitors access control passes, control barriers, and alarms from critical zones. The integration with Alarm System and Access Control allows visualization of the monitored facility on maps, controlling barriers and tripods, and automatic reading of license number plates (LPR).

On top of that, CORTROL-Connect optimizes and accelerates the processes of handling and verification of complaints in distribution and deliveries. Additionally, it has humidity control in specific zones, monitoring of the operation status of refrigeration devices and previewing lighting, and integration of existing analog systems and IP cameras into one advanced software platform.

The new logistics center is a significant investment for the company. Ganz CORTROL VMS system is used for monitoring and handling complaints and deliveries.


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Education

"The Carabinieri of the Operations Unit of the Company of Rome Piazza Dante, coordinated by The Prosecutor of the Republic of Rome, arrested two people aged 33 and 41, suspected of aggravated theft inside a school. The facts date back to the evening of last 30 October when the military intervened at a school complex in the square Balsamo Crivelli, following a report, reached 112. Once on the spot, they identified the two subjects inside the perimeter fence of the institute, intent on removing a blackboard didactic value of about 2,000 euros. The two tried to escape arrest, but the Carabinieri stopped them after a short foot chase. The military inspection allowed them to ascertain the forcing of an emergency door located at the rear of the school building. The two arrests were validated, and now they are accused of aggravated theft in competition" (Lazio TGR of 7 November 2022).

Educational facilities require monitoring and protection to combat theft, robbery, and vandalism.

Solution:
- Monitor the campus perimeter and report any events
- Activate a voice message via IP audio horn to deter intruders
- Send direct alerts to campus security and the police
- Quickly initiate action to prevent a further incident or apprehend the intruder

The solution ensures reliable and complete IP video surveillance, guaranteeing precise and timely control of the school. The simple software interface allows the remote management and monitoring of all areas for a prompt intervention by the police. The active deterrence system will enable administrators to enjoy an enhanced sense of security.
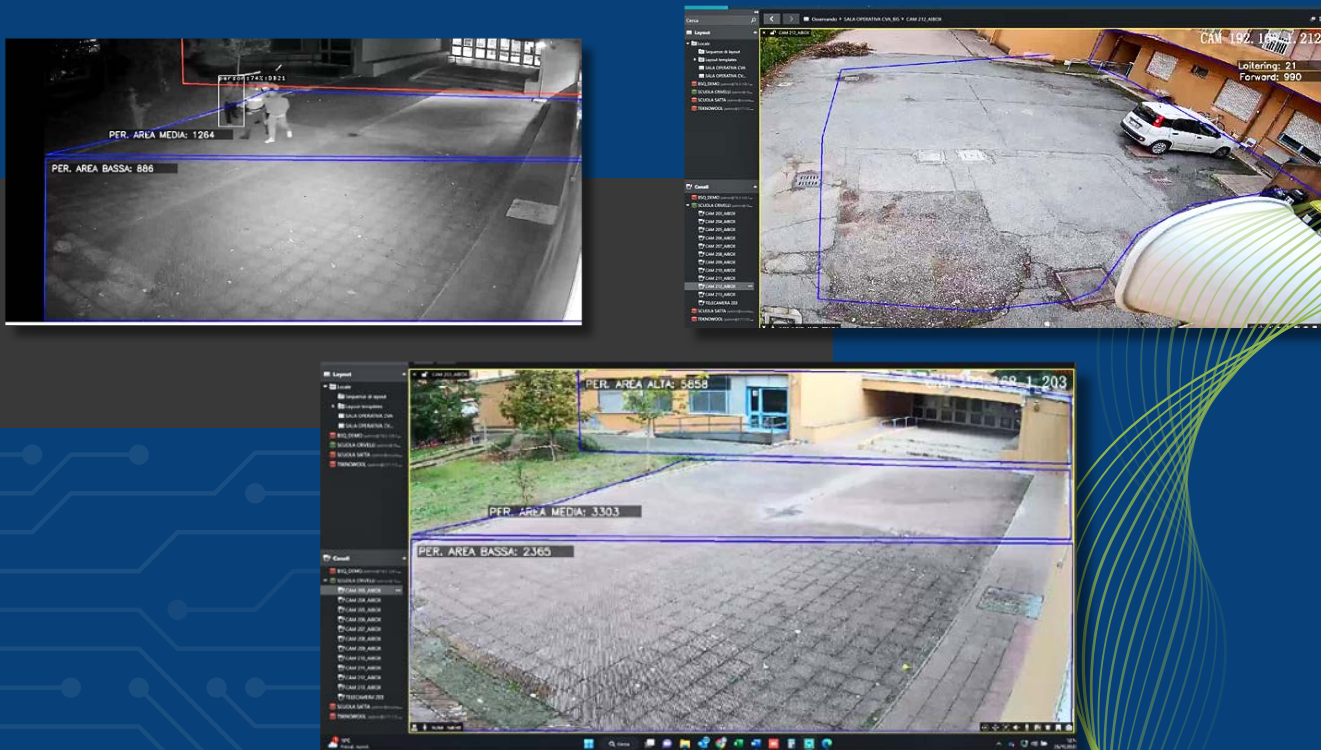
Healthcare

Client: York Teaching Hospital NHS Foundation Trust

York Teaching Hospital NHS Foundation Trust provides a comprehensive range of acute hospital and specialist healthcare services for approximately 800,000 people living in and around York and North Yorkshire, which covers 3,400 square miles. The eight hospital sites have an inpatient capacity of 1,100 beds and a workforce of over 8,500 staff.

Solution:

- Monitor the campus perimeter and report any events
- Activate a voice message via IP audio horn to deter intruders
- Send direct alerts to campus security and the police
- Quickly initiate action to prevent a further incident or apprehend the intruder

With the implementation of CBCs' IP video management system - Cortrol Global, the Trust can combine their CCTV infrastructure in a secure platform, enabling robust, effective use of CCTV in line with their systems' stated purpose—crime detection and public safety. The VMS is proving a key attribute for live incident management, providing seamless instant replay with multiple server connections to over 140 IP cameras. Cortrol replay sequencing option has also proven to cut down physical person-hours spent reviewing footage, with effective results.

CBC has been a technology partner to the NHS for the past six years and continues to work with the trust, providing cutting-edge solutions to maximize efficiencies.
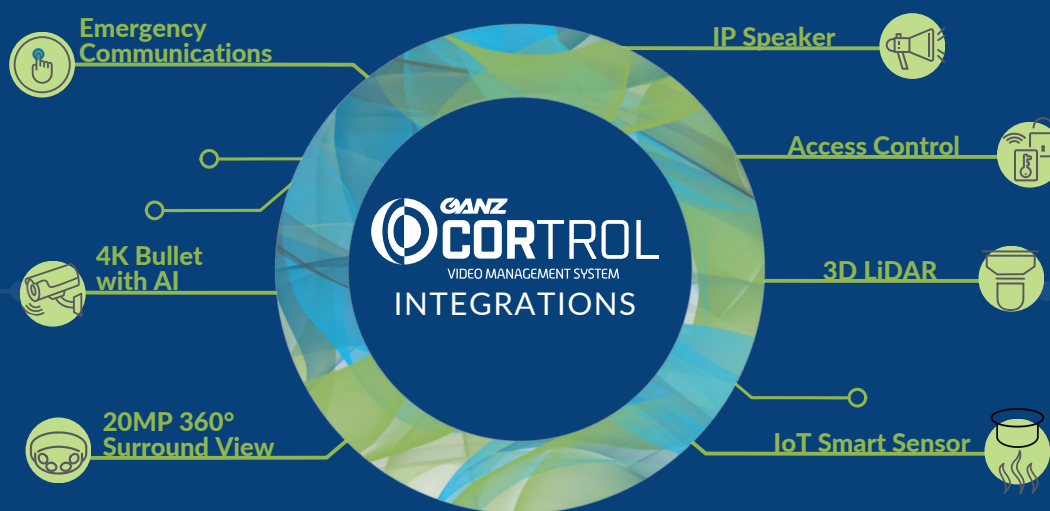

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Integration Capabilities

Access Control Systems

Ganz CORTROL Video Management Software (VMS) is the security system's core command center engineered to unify video surveillance, access control, video analytics, IoT sensors (vaping sensor, bullying, and gunshot detectors), license plate recognition, cloud deep learning, intercom communications, biometrics, and other IP systems to provide real-time situational awareness. With intelligent network systems deployed, incidents are quickly detected and prevented. Emergency response times are shortened, enabling the detection of dangerous and urgent events before they happen.

Alarm and Intrusion Detection Systems

Ganz CORTROL may utilize both internal and external alarm and Intrusion detection systems. The software features a built-in MQTT client, which makes it a gateway to the IoT and IIoT worlds. Internally, Ganz CORTROL may rely on an advanced notification system to drive alarms based on various potential event triggers.

Emergency Communications · **IP Speaker** · **Access Control** · **4K Bullet with AI** · **3D LiDAR** · **20MP 360° Surround View** · **IoT Smart Sensor**

GANZ CORTROL VIDEO MANAGEMENT SYSTEM INTEGRATIONS

Video Analytics and Artificial Intelligence

CORTROL utilizes a computational neural network engine for built-in video analytics. The computational neural network engine offers support for CPU as well as GPU. Ganz CORTROL's external service architecture supports external 3rd party video analytic engines.

Video Wall and Command Center Integration

The Ganz CORTROL Video Wall offers improved configuration options, functionality, and the ability to manage large-display installations easily. This is vital for operating large-scale video surveillance systems, especially when the ability to easily examine the area and quickly react to alarm events is essential. The Client software has a special mode for remote video wall management, which allows defining the contents of any video walls of any complexity from virtually anywhere on Earth.
Video wall setup with CORTROL is straightforward and similar to layout template creation: templates are constructed via CORTROL Console and then assigned an actual layout/channel view from CORTROL Client.

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Conclusions

In summary, this whitepaper highlights how Ganz CORTROL VMS offers solutions to address critical challenges in video surveillance. By leveraging advanced technologies and innovative features, CORTROL enhances security, improves operational efficiency, and reduces organizational costs. Its intelligent video analytics, centralized management, and seamless integration capabilities provide a holistic solution to challenges such as inadequate coverage, limited situational awareness, and inefficient video data management.

Implementing CORTROL empowers organizations to achieve enhanced security, improved decision-making, and streamlined operations. Its scalability and flexibility allow it to adapt to evolving security needs and seamlessly integrate with future technologies. Ganz CORTROL VMS is a leading solution in the video surveillance industry, offering comprehensive features that effectively solve critical problems and deliver tangible benefits for organizations.

Future Developments

CORTROL is a powerful video management system that continues to evolve to meet the changing needs of the video surveillance industry. Some future developments for CORTROL may include:

1. **Enhanced Artificial Intelligence (AI) and Video Analytics:** CORTROL may incorporate advanced AI algorithms and video analytics capabilities to enable more accurate and intelligent detection of events, objects, and behaviors. This can enhance the system's ability to identify potential threats and provide proactive alerts to security personnel.
2. **Cloud Integration and Remote Accessibility:** CORTROL may further integrate with cloud-based services, allowing users to store and access video footage remotely. This can provide greater flexibility and accessibility, enabling users to monitor their surveillance systems from anywhere, at any time, and on any device.
3. **Improved Cybersecurity Measures:** As cybersecurity threats evolve, CORTROL may introduce enhanced security measures to protect against unauthorized access, data breaches, and other cyber threats. This may include advanced encryption protocols, multi-factor authentication, and regular security updates to ensure the system remains secure.
4. **Integration with IoT Devices:** CORTROL may expand its compatibility with the Internet of Things (IoT) devices, allowing seamless integration with a broader range of cameras, sensors, and other IoT devices. This can enable users to create a more comprehensive and interconnected security ecosystem.
5. **Advanced Data Management and Analytics:** CORTROL may introduce improved data management and analytics capabilities, allowing users to extract valuable insights from video data. This may include predictive analytics, trend analysis, and data visualization tools to help organizations make informed decisions and optimize their operations.

Ganz CORTROL VMS is expected to continue evolving by incorporating cutting-edge technologies and features to provide users with an advanced and comprehensive video management solution.

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