



Alcatel-Lucent Enterprise Video Surveillance Solution

Simple, secure, reliable, with seamless integration

Overview

Security surveillance systems are used globally across industries, including governments, enterprises, financial institutions, hospitality, transportation, education and healthcare. All of these organisations are expected, and often required, to have a certain level of security and monitoring measures in place. As a result, there has been a dramatic increase in the demand for security applications such as video surveillance to monitor and record activities at borders, ports, transportation infrastructures, corporate buildings, educational institutions, public places, and buildings. This increase in demand is driving the video surveillance market growth globally. According to Gartner Research¹, the commercial monitoring camera market is expected to grow at a 6% CAGR from 2022-32. In that same decade, the outdoor surveillance camera market is expected to grow at a 6.6% CAGR.

¹ Forecast: Internet of Things, Endpoints and Communications, Worldwide, 2022-2032, 1Q23 Update

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Digital transformation for video surveillance

Digital transformation impacts all aspects of business, including video surveillance. In the early days, video systems consisted of simple analogue encoders and cameras. Today, video systems include advanced multi-sensor, multi-focal, 360-degree cameras that are now IP-based.

High bandwidth is fundamental to any video surveillance solution. Quality-of-service (QoS) is critical in a converged environment where voice, video, and data traverse the same network infrastructure. From CCTV cameras to the network, video surveillance traffic is sensitive to packet loss, delay, and delay variation (jitter) in the network.

Additionally, the velocity of the subject must also be considered. Cameras observing a person jogging or riding a bicycle may require higher frame rates than a person walking. As well, more bandwidth is required to increase the image quality in harsh lighting conditions, including backlit scenes or indoor/outdoor areas such as loading docks or stadiums.

It is also important to ensure that video surveillance networks are as painless as possible to deploy and maintain. Adding or swapping out components such as cameras must not affect the performance of the network, much less, take it down. An auto-configuration tool can ensure video surveillance network components can be deployed in minutes, reducing IT costs and increasing productivity. As well, repetitive tasks and onsite support visits can be minimised.

IP-based CCTV deployments

Advanced, sophisticated video surveillance networks offer a couple of models for IP-based CCTV deployments – the more traditional 2-layer deployment and the hierarchical network deployment. The design decision depends on the complexity and the size of the video surveillance network. However, whichever model is deployed it must deliver:

- **High availability:** Avoid single points of failure, ensure fast, predictable convergence times
- **Scalability:** Support the addition of new services without major infrastructure changes
- **Simplicity:** Ease of deployment and management with predictable failover and traffic paths

Smaller buildings typically consist of a 2-layer network architecture with an access and a core layer. In more complex deployments a hierarchical design would include a multilayer approach that combines Layer 2 and Layer 3 switching. This can typically be found in large environments such as casinos, large buildings or multi-tower facilities where a distribution layer is required to interconnect buildings or key site areas. Following are the primary layers of a hierarchical design:

- **Core layer:** Provides high-speed transport between distribution-layer devices and core resources to create the network backbone
- **Distribution layer:** Implements policies and provides connectivity to wiring closets; provides first-hop redundancy such as Hot Standby Router Protocol (HSRP) and Gateway Load Balancing Protocol (GLBP)
- **Access layer:** User and workgroup access to the network; security and QoS can be defined at this layer and propagated to higher layers

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Simple

Complex network setup and deployment and ongoing operational costs are driving the need for a simpler, more cost-effective approach to video surveillance.

With **easy self-provisioning**, the ALE video surveillance solution makes installing a surveillance system or adding or removing cameras on the network simple. This is done by creating device profiles for the cameras and assigning a set of provisioning policies to each camera type or model. The [ALE Autonomous Network](#) can detect new devices and **automatically provisions them on the network**. No touch provisioning simplifies configuration, eliminates manual errors and **decreases operational costs**.

Secure

The ALE Video Surveillance solution **provides secure access** for authorised users and applications. [The Alcatel-Lucent Internet of Things \(IoT\) Containment](#) solution creates virtual network segmentations known as ‘containers’. A container dedicated to the video surveillance network can be set up to reduce potential security breaches from other parts of the network. The network automatically discovers and **assigns unique security parameters** to video devices when they are added to the network. Only authorized users and/or applications are assigned a video user network profile to **ensure secure access and protection from tampering**. This is important for organisations who do not want their video footage made public or to prohibit unauthorised individuals from gaining access to building controls.

Reliable

ALE video surveillance delivers the **highest video quality** even during network outages or peak data usage, which is essential for mission-critical operations. In a traditional spanning tree-based network, a device failure could cause substantial video loss due to the video management triage, as well as the time it takes to fix the problem.

ALE uses [Shortest Path Bridging \(SPB\)](#) with minimal convergence times (sub-100 milliseconds) to **eliminate blurry video** and lapses in footage. Moreover, when combined with ALE’s [Intelligent Fabric \(iFab\)](#) the solution provides auto-rerouting to other available links. SPB dynamically uses all network resources to reduce or eliminate network bottlenecks, ensuring that redundant links are always available.

Multicast video streams enable superior network performance, resulting in premium grade video. Replication and distribution of packets is done by the network rather than the server, making this a highly-scalable solution that allows organisations to designate recipients by packet or send packet traffic to multiple recipients subscribed to the same stream. A server needs to send each packet only once to reach all of the recipients.

Seamless integration

Alcatel-Lucent OmniSwitch® plugins provide seamless integration with major VMS providers to boost operational efficiency and improve security of video surveillance system infrastructure. Enabling remote troubleshooting for common camera issues from the VMS, these service assurance solutions allow the operations team to remotely reset out-of-service cameras and quickly apply resolutions, eliminating the need for expensive on-site visits and vendor calls. Intuitive and easy to use, even staff with basic to no troubleshooting knowledge can detect and understand issues and apply quick fixes.

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Alcatel-Lucent Intelligent Fabric (iFab)

[ALE iFab](#) simplifies the design, deployment and operation of the network by automating many of the tasks that were previously done manually. It includes self-configuration during the installation process as well as self-attachment to connect access switches and servers and takes care of the necessary configurations at the core of the network. Third-party switches that use standard protocols can also be connected; iFab handles configurations needed on the ALE side of the network.

As new virtual machines are added, iFab dynamically detects them and creates the virtual network profile (VNP) and services across the fabric. iFab is simple to install and easy to maintain and operate. Expanding the network is simple with self-configuration, including service availability. As well, moves and changes are easy, for instance when Virtual Machines (VMs) move, the network dynamically detects and adjusts.

When the iFab builds the fabric it also includes self-healing capabilities to minimise or eliminate downtime. If a link or a node is down it automatically reroutes the traffic. If a faulty node needs to be replaced, the iFab will configure the new node without the need for manual configuration. The entire fabric is manageable and visible through the [Alcatel-Lucent OmniVista® 2500 Network Management System \(NMS\)](#), which also collects all network information needed to manage and generate meaningful analytics and business reports.



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Video surveillance across industries

Smart Cities

As cities and towns expand, security in common areas such as parks and downtown cores become increasingly important. In commercial districts cameras posted in high-traffic and risky areas can help encourage consumer traffic to stores and restaurants. Additionally, security cameras in public places can help reduce crime and vandalism and assist law enforcement in apprehending criminals. Benefits include:

- Increased business
- Reduced crime
- Improved public area

Healthcare

In healthcare facilities, 24/7 video surveillance coverage is an effective tool for increasing security, as well as controlling costs. Surveillance cameras can protect hospital employees and patients from security breaches, provide valuable visual evidence, increase productivity, and prevent dishonest claims. IP video technology provides added flexibility in hospital video surveillance installations, while offering benefits such as remote video monitoring. Benefits include:

- Increased safety
- Decrease theft of drugs, equipment and personal property
- Protection of personal data

Education

Maintaining tight security in school settings is of utmost importance to ensure the safety of students and staff. With violence in schools becoming a real threat, that can't

be ignored, video surveillance is crucial in schools, on campuses, and other learning institutions. Benefits include:

- Prevent trespassers from entering school property
- Deter criminal acts
- Allow for remote monitoring of school from smartphone or tablet

Transportation

Video surveillance systems are very important in the transportation industry. Robust security camera solutions for mass transit systems, ports, subways, city buses, and train stations helps ensure the safety and security of both passengers and goods. Benefits include:

- Help prevent crime and deter criminals
- Create safer environment for passengers
- Allow for remote viewing off-site from a smartphone or tablet

Hospitality and gaming

Video surveillance is required for the day-to-day security threats faced by gaming and hospitality businesses. Video solutions can help reduce threats such as theft, vandalism, crime, and more while also ensuring public safety. Benefits include:

- Better crowd control at high-traffic events providing patron and staff safety
- Effective tool for monitoring daily operations to prevent theft and vandalism
- Improved customer service

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Conclusion

Why choose ALE?

The [ALE Video Surveillance](#) solution takes the complexity out of network setup, providing security system integrators with management tools, and a streamlined deployment process for faster video surveillance equipment configuration. It includes:

- Easy provisioning with iFab and pre-deployment tested models
- Guaranteed quality images during peak high bandwidth and network outages
 - Using UDP multicast during high bandwidth peak usage ensuring quality imaging
 - Using SPB during network failures ensuring no data loss
- IoT segmentation to ensure authorised access and protect from unauthorised tampering
- Seamless integration with key video surveillance ecosystem players

The network core and aggregation include high-performance network switches that provide high port density and switching capacity. The ALE solution includes the [Alcatel-Lucent OmniSwitch® 6900 Stackable LAN Switch](#)

family which comes in a compact 1U form factor, the [OmniSwitch 6860 Stackable LAN Switch](#), the [OmniSwitch 6865 Hardened Ethernet Switch](#), and the versatile [OmniSwitch 9900 Modular LAN Chassis](#). The evolution of cameras and surveillance technology has increased the demand for networking infrastructure with more advanced options around device connectivity, bandwidth and power. Features like multi-gig ports, quiet or fanless switches for certain applications, and Power over Ethernet are available in ALE products such as the OmniSwitch 6360, 6560, and 6860. For harsh environments, products like the OmniSwitch 6465 and 6865 are ruggedised to provide greater durability.

The ALE solution combines SPB and Virtual Chassis (VC) technologies to create a friction-free network. This network enables faster, easier information sharing among organisations, departments, or branch offices allowing them to send and receive data without the constraints of traditional enterprise networks. Core products incorporate the award winning Intelligent Fabric (iFab) technology that offer a set of capabilities, including automation techniques that simplify installation, configuration, deployment, and operation of the network.

[Contact us](#) to learn more about how ALE can address your video surveillance solution needs.