



Best Practices in IP surveillance

The world of surveillance is undergoing a disruptive transformation. Fuelled by the investments SMBs have already made on network infrastructure, IP-based surveillance is quickly displacing traditional analog CCTV solutions in the market.

In the face of ever-tightening budgets, businesses of all sizes are turning to IP surveillance solutions to do more with less, simplify connectivity and centralize security management tasks. At the same time, IP cameras provide embedded features and high resolution images that can be more useful when responding to crime.

For many SMBs still recovering from the global recession, the most important benefit to IP surveillance solutions is being able to efficiently leverage the bandwidth and storage investments already made. With those advantages, IP surveillance becomes a “no brainer” for most businesses. However, some familiarity and considerations are needed to make the most of this exciting technology.

This paper introduces the many benefits of IP surveillance and best practices for implementing an IP surveillance system in a small or mid-sized business. With these solutions and best practices in place, SMBs will be ready to take best advantage of the features and opportunities IP surveillance can bring.

Benefits of IP surveillance

While IP cameras are not new, they have over the past decade continued to become smarter, less expensive and more efficient.

Multi-megapixel image quality: IP cameras commonly have resolutions vastly exceeding those of traditional CCTV cameras—in fact up to nine times the resolution and quality. This higher resolution allows for a greater degree of digital zoom, and allows single cameras to cover a larger area and capture details, like facial images, that analog cameras miss. In addition to its role in crime prevention, the high resolutions offered by IP cameras today can provide details so fine they can capture ID badges for security or license plate capture for warehouse load verification.





Audio capabilities: Unlike CCTV cameras, IP surveillance can stream audio as well as video. Combined with high-resolution video, this improved functionality allows better incident analysis, litigation support and safety compliance assessments.

Power-over-Ethernet: One of the most important innovations to impact IP surveillance, the 15 watts of power provided by Power-over-Ethernet (PoE) is an ample supply for most IP cameras available today. In fact, many of today's cameras use as little as 2 watts to reduce power consumption. Cameras with higher power needs (to support features like pan, tilt and zoom (PTZ) or heaters and blowers) can rely on PoE+ for up to 25 watts of power.

Cost reduction: While initially IP cameras may seem to have a premium cost when compared with CCTV products, this is misleading. With its higher resolution and built-in functionality, a single megapixel camera can replace the need for two or three analog cameras. In addition, through PoE, a single Ethernet cable supports video, data and power, lowering costs and increasing ease associated with installation.

Built-in security capabilities: A CCTV camera is typically a dumb end device, with intelligence found in the central DVR (digital video recorder) being used to record and store video captured. Costly DVRs might have some comparable features but, once locked into particular DVR, upgrade can be difficult and costly. IP cameras, on the other hand, have their features embedded in end device. Because of this, rich features—like real-time search, people counting or motion detection—become immediately available from any attached PC, laptop or even tablet.

Scalability: IP surveillance systems are scalable. An exhausted CCTV will require new DVR hardware to be purchased, whereas for a business deploying IP surveillance, typically all that is required (in addition to another camera) is simply another software license for their surveillance software. This further drives down the Total Cost of Ownership (TCO) of an IP surveillance system to be highly competitive with analog solutions.



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IP surveillance best practices

With its many benefits, an IP surveillance solution is with little doubt the right security solution for many organizations—especially SMBs who often have limited capital and few staff to dedicate to security. Still, it is not to be deployed without some important considerations.

The entire solution and its impact on the network should be considered. While some switch hardware with embedded intelligence can instantly recognize an IP camera on the network and adjust traffic accordingly, in other cases higher bandwidth needs might need to be accounted for.

In addition, it's important to note that an IP surveillance solution will often find itself managed by IT rather than security or facilities teams typically overseeing security. In the very least, with its potential impact on the network, IT must take an active role in any IP surveillance deployment. Key elements like hardware, management, traffic control, infrastructure needs and wireless options must be considered by IT.



Hardware capabilities: Today's IP cameras can have countless features. Although each should be weighed based on its application, a few that should be considered include:

- User-selectable compression codecs including H.264
- Full two-way audio support for complete records of incidents
- Security encryption
- Low-light sensitivity to record at night or dimly lit areas
- Web-based remote access
- Weather-resistant outdoor enclosures
- Broad Video Management Software (VMS) support
- Integrated infrared illumination
- Onvif compliance
- SD card slot for local event-driven recording
- Motorized pan/tilt/zoom for flexible viewing angles in manned surveillance settings

Centralized management: One of the benefits of IP surveillance is the ability to access cameras from anywhere on the network. Still, IT departments should consider managing the cameras centrally. This will enable them to set usage policies that improve security, and also better control features like automated snapshots, alarms and motion detection.

Quality of Service (QoS): The need to see video surveillance in real time makes QoS critically important. It is especially crucial if your network also supports Voice-over-IP (VoIP), in which case IP cameras and phones should be set up on their own VLANs, or even separate LANs, and QoS should be set to prioritize functions so that mission-critical voice doesn't become overwhelmed by video traffic.

Storage and bandwidth: Network bandwidth and storage capabilities should be improved, if required, to meet increased demands from adding IP video. For example, 1080p resolution video encoded with in MPEG-4 AVC (H.264) requires approximately four to 12 Mbps depending on the quality desired.

Research firm Global Information Inc. expect the demand for storage used for video surveillance is expected to exceed 3.2 exabytes of capacity within the next three years. This demand will primarily be met by iSCSI SANs solutions.

Wi-Fi capabilities: For businesses needing surveillance in hard-to-wire locations like the far end of a parking lot or the edge of a property line, the wireless capabilities available in some of today's IP cameras are a significant boon. Cameras that use 802.11n, the latest (and fastest) IEEE standard for wireless Ethernet should be used, since it will allow transfers of up to 660 Mbps at ranges of up to 300 feet. Wireless bandwidth should be managed for the entire network, while compression should be used to reduce the burden placed on the network infrastructure.

Conclusion

The impact IP surveillance will have on the network is not one to be taken lightly. Still, an intelligent network, coupled with IP cameras and systems with the right capabilities can reduce the burden, as can continuously-improving video compression techniques. Also not to be discounted is the transition of responsibilities between facilities management and IT. In the years ahead, IT will continue to play an even bigger role in surveillance systems.

For SMBs, migrating to IP surveillance has become an obvious choice. It brings to smaller businesses many features previously too costly or resource intensive. Even large enterprises can find significant advantages to IP surveillance systems, since they offer numerous features unavailable in traditional CCTV systems. These factors will continue to increase what is already strong market interest, and will inevitably continue to decrease costs and drive innovation forward.



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