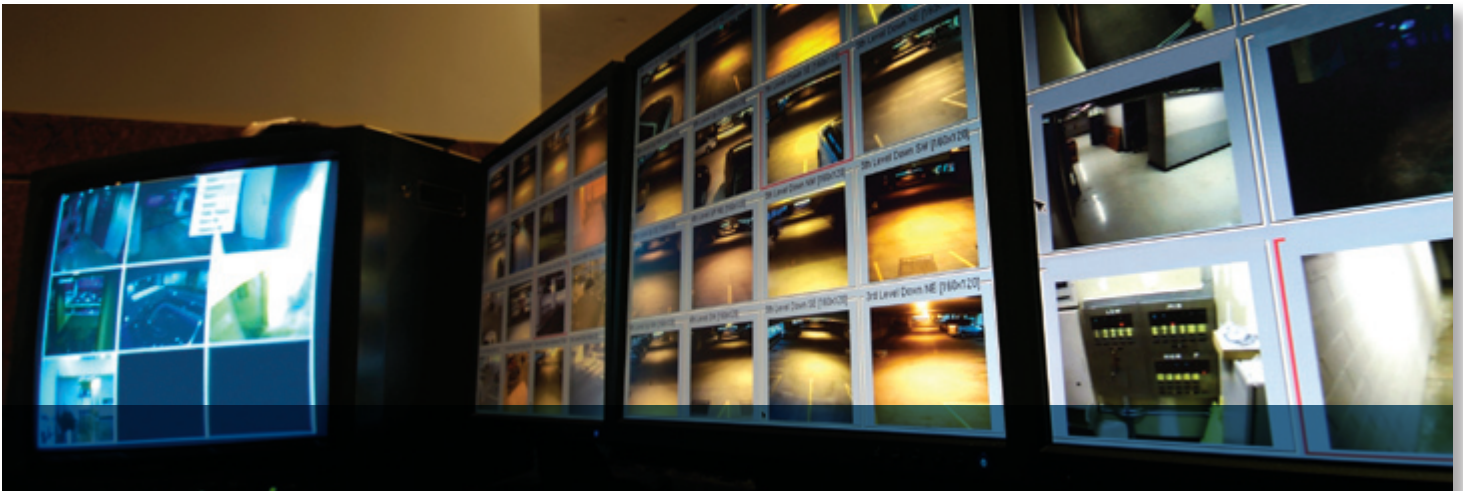




Video Surveillance in Focus:

Selecting the right system to meet your organization's needs





Video surveillance systems are helping municipalities, businesses and public safety organizations across the globe protect their citizens, protect their property and put criminals behind bars. But given the wide variety of technology choices for video surveillance, selecting the right system can seem like a daunting task.

Fortunately, it doesn't have to be. Organizations that wish to install, add to or upgrade a video surveillance system can ask just three powerful questions to guide them in selecting the optimal video system.

Planning with the Future In Mind

QUESTION 1:
How will this organization use a video surveillance system and what might it use the system for in the future?

The first question organizations should ask is: How will this organization use a video surveillance system and what might it use the system for in the future?

The question sounds obvious, but surprisingly, many organizations do not consider the second half of this question before making a purchase decision. The second part of the question is the most critical, because an organization's use of its video surveillance system can change significantly over time.

For instance, when video surveillance systems first became popular, many municipalities simply installed

cameras as a deterrent to crime. But today, even if an organization installs a video system for a specific purpose – such as simply to monitor activity in a high crime area – that same organization might find itself using that video for much more.

It might be used in a courtroom to help prosecute a crime. Or the video could be sent to first responders when they are on the way to a crime scene so they are better prepared to handle the situation when they arrive.

Today, many private and public safety organizations are also sharing video from their systems with other organizations in emergency situations. This means that video from many disparate systems needs to be piped to and accessed by many different command centers, such as the police department's command center, the fire department's command center or the Department of Transportation's (DOT's) command center.

The Easiest Way to Share Video

Getting the different organizations' video and command systems – which often use very different technology – to talk to one another can be a challenge. Fortunately, this challenge can be solved using software called physical security information management (PSIM). This software neutralizes the incompatibilities between different video systems and allows them to easily communicate with each other.

Using PSIM software, an organization can easily access and manage the video from disparate surveillance system – even if they have no idea what camera, compression or transmission technology that system uses. Using PSIM software, organizations can even easily track movement across many different types of cameras and video systems owned by many organizations.

For instance, PSIM software can facilitate the tracking of suspects as they move from a private parking lot onto the street. Or the police dispatch center can quickly tap into and view video from the Department of Transportation's cameras no matter what technology the DOT system uses.

Hassle-free Video System Management

In addition, if an organization finds that the video surveillance system it installed several years ago does not meet its current needs and decides to upgrade just part of its system, PSIM software can help the organization easily manage both the old and the new system. For instance, this software can be used to neutralize the differences between an "old" analog and a "new" IP-based video system. This allows organizations to operate and manage the two different video networks as one integrated system using one user interface. This reduces training costs as well as video storage and retrieval headaches.

Quality, Frame Rate, Cost and Bandwidth: Finding the Right Balance

QUESTION 2:

What level of video quality is needed – and how does this affect bandwidth needs?

The second question that organizations need to ask is: What level of video quality is needed – and how does this affect bandwidth needs? First, an organization must determine how much detail it needs in its video recordings.

For instance, security guards at an organization might use a video surveillance system to simply track the movements of someone who has entered a restricted area. There might not be any need to recognize the identity of that individual. But in a courtroom, jurors must be capable of recognizing a face or reading a license plate from a video.

Picture quality is determined by resolution, and the primary measurement for resolution is pixels per foot (PPF). As a rule of thumb, the minimum pixel measurement needed to recognize a face is 40 by 40 or 1600 pixels. To read a license plate, a minimum of 80 by 80 or 6400 pixels is required.

Another feature to consider is frame rate. Generally, video being viewed live should support frame rates of 24 to 30 frames per second (fps) – which are the lowest speeds that the eye perceives as actual motion – to avoid eye strain. Depending on how the video is supported, however, some security operations may find 10 to 15 fps acceptable today for basic video capture.

In contrast, for video that is being reviewed after it is recorded, a higher resolution is often more important than a high frame rate. The higher resolution allows individuals to be recognized and license plates to be read more easily.

It is critical to realize that video systems that support better resolution and faster frame rates require higher bandwidth capabilities and thus cost more. Fortunately, using compression techniques, one can maintain a higher image quality while reducing bandwidth needs – and cost. But here again, organizations must be willing to make choices.

For instance, using a compression technique that is too aggressive results in anomalies that can damage the video's credibility in court. Once again, an organization must first determine how it wants to use its video system both now and in the future to make the right choices in this area.





The Importance of Scalability

QUESTION 3:
How much storage do I need for my video system?

The third question to consider is: How much storage do I need for my video system? Unfortunately, video storage is often just an afterthought with many organiza-

tions, and this can lead to problems in the future.

In fact, even when an organization starts with a small video system, it is critical to select a system that can easily scale because the storage requirements for video surveillance systems are extremely large – and expand very quickly.

For example, just one megapixel camera (1280 x 1024 pixels) will generate 80 kilobits of data per frame at 30 frames per second. In total, it will generate 207 gigabytes of data each 24-hour day. Even if motion analytics is used to record only when motion is detected, the camera will generate 20.7 gigabytes of data per day (assuming motion 10 percent of the time).

Even if the camera records only when motion is detected, one year's worth of video for just two cameras would generate 15 terabytes of data. And a law enforcement organization using that data as evidence in a trial might be required to store that data for at least five years.

The Cost of Storing Video

Once an organization's storage needs reach 10 terabytes of data or higher, storing video using traditional systems – where data is backed up via tapes or hard drives – can become very costly. Why? As the amount of stored data grows, more back-up copies of that data are needed. This not only leads to exponential increases in costs, it also leads to security concerns because the data is now located in many different facilities.

Even when multiple back-up copies of data are made, the traditional data backup system is not that reliable, given that between one and five percent of hard drives fail every year and between 10 and 20 percent of tapes fail.

Fortunately, there is an alternative way to store data using a technique called Information Dispersal. This technique stores slices of information on a network of servers – and then reassembles it when it is needed. In addition, a file can be reassembled even if all the slices are not available, so if one server fails, the data can still be retrieved intact.

The cost of a dispersed system is significantly less as well. With a large-scale storage system, where a company might need three back-up copies of the data using a traditional storage model, a dispersed storage system can cost one-fifth to one-half as much as a traditional storage system. Plus the dispersed back-up system will consume one-eighth the power and require much lower bandwidth.

The bottom line is that once an organization understands how it wants to use its video surveillance system – and what it might use that system for in the future – it can more easily choose the right video system. By asking just three key questions, an organization will be well on its way to selecting a video surveillance system that meets its unique needs – both today and in the future.

Investigate Further

As with any technology solution, wireless video surveillance networks are evolving and improving rapidly. That's why it's important to partner with a provider that knows wireless technology inside and out. For nearly 80 years, Motorola has been recognized as the leading provider of wireless communications, networks, devices and services. To learn more about how Motorola can help government and public safety agencies develop and deploy intelligent wireless video solutions that will provide immediate benefits and position your organization to take fast advantage of future innovation, please visit us at www.motorola.com/videosurveillance.



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