Choosing a Network Camera

The Top 10 Factors
for Making the Right Choice

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The Verdict is In: The Future is Network Cameras

A number of prominent market research firms including IMS research, Frost and Sullivan, J.P. Freeman and Co., and even IT analysts such as IDC all paint a very similar picture. The tipping point when network camera sales will surpass those of analog cameras will occur sometime between 2007 and 2009.   So after "When," the next question we should be asking is "Who?"

By who we mean, Which company will be leading the transition to network camera technology? The "Who" question is complicated because different skill sets for a different technology are required and new companies have entered the market, changing the competitive landscape. Cameras are on the verge of a leap in technology akin to what we experienced when music went from 8-track to cassette to CD and then…to Digital MP3 players! When everything changes, we need to look at the newly available options with new eyes and new evaluation criteria.

It's Decided, but Which Network Camera?

So, if everyone agrees that the network camera is the future, you can be certain that a lot of vendors have entered and will continue to enter this attractive market. Some are coming from the analog world, seeking to innovate to retain market share. Some, as mentioned, are new players with new technologies and strategies. This means there are an increasing number of choices out there, accompanied by a lot of often confusing or contradictory information. When evaluating what network camera to buy, how do you make a good, informed decision?

Following is a set of guidelines, 10 important factors to think about when you decide to join the quickly growing ranks of end users adding network cameras to their security operation.

(1)   High image quality

Image quality is clearly one of the most important features of any camera, if not the most important. This is particularly so in video surveillance and monitoring applications, where lives and property are often at stake. If you do not have good image quality, then all the other factors and features really don't matter. Superior image quality enables the user to more closely follow details and changes in images, making for better and faster decisions to more effectively safeguard people and property. It also ensures greater accuracy for automated analysis and alarm tools, such as motion detection and other built-in intelligence functions.

When assessing a network camera's image quality, be sure to research these questions: What is the light sensitivity? Level of image clarity? Does it have a high quality lens? And what is the image quality when there is motion in the image? A datasheet tells part of the story, but make sure to field test a few of the camera choices to make the datasheet information real for your application.

(2)   Part of a wide product portfolio

A network camera includes a lot more functionality than an analog camera – built-in compression, motion detection, networking features, event and alarm management to name a few. When the time comes to expand, you want to maintain the same functionality throughout the system. To do this, it's best to work with as few camera vendors as possible. When choosing these vendors, go with those who maintain a full product line including fixed cameras, fixed domes, and PTZ dome cameras. This way, one or two companies can satisfy your needs now and well into the future when you're ready to expand and to upgrade functionality to megapixel, wireless and/or audio. If you have analog cameras to upgrade, make sure that your chosen company's product portfolio also includes video servers (encoders), video decoders, housings, and other related equipment.

(3)   Extensive application support and ease of integration

Is the network camera you are looking at part of a closed system where you have limited or possibly only one choice of video management software? Not only is the security industry moving to network cameras, it's also moving to opens systems and open platforms. Make sure to select a network camera that has open interfaces (an Application Programming Interface or API) and multiple software applications from which to choose. Certain leading companies have hundreds of such alliances. Your choice of network camera should never limit your options or functionalities. Open, multi vendor systems will always prevail in the long run. Look at how the Intel processor with a Microsoft operating system in DELL, HP and IBM PCs fared against proprietary operating systems.

(4)   Compression fully compliant with JPEG and MPEG4 standards

Make certain the camera follows JPEG and MPEG-4 standards 100%. You would be surprised to find that many vendors, who claim compliance with a standard, do not yet adhere 100% to that standard. 99% compliance means no compliance. Full adherence ensures the flexibility to use video for many different applications. It also guarantees that you can view the video 10 years from now or longer. If a camera uses one company's proprietary compression technology and that company goes out of business, the end user could be out of luck. Following a standard ensures that you will have long-term access. Also, if a company is following the MPEG-4 standard, ask if the licensing fees are paid, and how many licenses are included with each product. If fees are not paid by the vendor, either the compression is not following the standard, or you will need to pay for licenses after the purchase.

(5)   Tools for managing large deployments

Like all intelligent network devices, network cameras have an IP address and built-in firmware. Many vendors provide upgrades free of charge. When making a purchase decision, you have to consider the cost to set IP addresses and eventually update all the cameras in the facility. The network camera maker should have tools to manage these processes and their estimates for cost and downtime should be clear and measurable upfront. Among the maker's tools should also be the capability to automatically locate all network video devices and monitor the status of those devices.

(6)   Extensive networking functionality and security

In the same way that high image quality is essential, a camera's networking functionality is just as important. Plugging into an Ethernet connection with an IP address is only a basic functionality; all network cameras can boast the same. You need to consider other factors: What about DHCP (Dynamic Host Configuration Protocol), used by many organizations to manage IP addresses? Furthermore, what about security in the form of encryption or HTTPS? Also, an important litmus test is the attitude of your IT department. Are they happy with putting a particular network camera on the network? They are the experts. They'll be able to determine if the camera provides adequate network functionality and security.

(7)   Progressive Scan sensor

Progressive scan capability is found only in network cameras, but not all network cameras have this functionality. Progressive scan involves exposing and capturing the entire image simultaneously, as opposed to analog interlaced scanning, which captures only half of the lines in the image and then the other half 17 milliseconds later. With analog cameras, if an object is moving the image will become blurry. In a progressive scan image there is virtually no "flickering" effect, no jagged edges or blurring. In a video surveillance application, this is critical to enabling the user to view detail within a moving image such as a person running away. Progressive scanning consistently produces the best results in clarity and recognizing important details. Consider: when you press "pause" on a DVD, why is the picture quality better than a paused VHS tape? That's right: progressive scan.

(8)   Power over Ethernet (PoE)

This might seem like a small check-off item on the feature list, but think of it this way: Wouldn't you like to save up to $300 per camera? That's the approximate cost to install power to a single camera location. Even for an installation with 50 or 100 cameras that's a considerable savings. For end users with hundreds of cameras, this translates to a lot of money. Make sure the camera's Power over Ethernet feature is in accordance with the IEEE 802.3af standard. This will give you the freedom to select from a wide array of network switches from companies such as Cisco, Nortel, NetGear, and others. Additionally, PoE gives you the capability to power the surveillance system, including the cameras, from the server room and to use UPS (Uninterruptible Power Supply), keeping it operational even during power outages.

(9)   Distributed Intelligence

Intelligent video has become a hot buzzword. The technology will evolve and improve greatly over the next few years, but it only becomes scalable if the intelligence is located at the camera. The reason is that video intelligence requires a large amount of processing power, and if that power is not in the camera, just a few cameras will quickly overload the PC servers. When intelligence is located in an edge device like the camera, the camera is able to decide when to send and therefore process the video. A good network camera should act as an intelligent gatekeeper and allow for the deployment of more cameras that utilize intelligent video. By definition, a network camera is intelligent because it includes processing power and has functions such as motion detection, I/O ports and event handling.

(10)   Vendor history and focus

As we've discussed, it is important to make network camera decisions based on the assumption of future growth and the need for added features and functionality. This means your network camera manufacturer is going to be a partner for a long time. It's very important to choose a solid partner. So, what do you look for?

Consider:
What is the makers installed base of network cameras and other networking products? Is the company profitable? Does the company focus just on network camera technology, or are network cameras only a fraction of the company's business? What about local representation and support? Is the company a global player and does it demonstrate proficiency in a number of languages? How about reference installs? You want to choose a camera from a market leader to ensure that innovation, support, upgrades, and a product path are going to be there for the long term. Don't sacrifice future security just to save a little money upfront.

In the Final Analysis

Whether it's this year or 2008, just about every end user will be facing a network camera buy decision. Just like with analog cameras, not all network cameras are created equal. Far from it. The differences between network cameras are greater and more significant than buyers have experienced with analog technology. The end user has to be smart. Vendors will tell a lot of great sounding stories, but the user has to prepare a solid list of evaluation criteria and test the different choices to understand the differences between the available products and make a good informed decision.

In this article, we've reviewed 10 important factors to consider in order to make the right network camera choice. All of these recommendations are important, but some are more important than others. In the final analysis, be absolutely certain to choose a camera and company that offers excellent image quality; a wide, consistent product portfolio; open interfaces; extensive networking capability; and the potential for a long and beneficial partnership.