true or false

The Truth about Megapixel Network Camera Technology

Separating the facts from fiction in the industry.

In the last few years, demand for digital megapixel cameras has exploded. The trend started in the late 1990s with consumer digital still cameras and started to gain traction in the surveillance industry in 2002 with megapixel IP network cameras. Today, millions of consumer digital still cameras and tens of thousands of megapixel network cameras are being used every day.

Digital Convenience and More
Initially, digital cameras, both consumer and security IP network cameras, were adopted because of their convenience. For the consumer market, it meant no more fumbling with film and the home PC made sharing pictures with family and friends quick and easy. With security cameras, the convenience of plugging a camera into your existing IP network and viewing it from anywhere in the world within minutes was immediately compelling. Interestingly though, the evolution of the consumer and security markets differ substantially when it comes to image quality.

In the consumer market, picture quality was not a marketable advantage for digital over film because film cameras already had excellent resolution. In the security industry however, megapixel network cameras had a clear-cut image quality advantage from the start, since traditional coaxial-based CCTV cameras are limited to PAL/NTSC resolution.

Megapixel IP Cameras' Image Quality Advantage
The picture quality advantages of megapixel network cameras benefited end-users in a couple of ways. In some applications, a mega-pixel network camera could cover the same area as a CCTV camera with an im-proved level of picture quality so you could actually identify people. We are all too familiar with images captured by CCTV systems where the quality was so poor little could be learned and often no positive identification possible. Megapixel network cameras solved this major disadvantage.

CCTV Quality

Megapixel Quality

For other applications, megapixel meant covering a much wider area than CCTV cameras. Comparing apples-to-apples, a one megapixel network camera can cover more than four times the area of a CCTV camera with the same resolution. This means you can replace four CCTV cameras with a single megapixel camera, or 10 CCTV cameras with one 3.1 megapixel camera. End-users embraced this new power and efficiency immediately and the migration from CCTV to megapixel network cameras has predictably accelerated.

With no legitimate way to combat loss of market share and still remain profitable, some began misrepresenting megapixel cameras to discourage the rapid migration away from their technology.

Do you know the real story?

True or False? Megapixel network cameras can be less costly than CCTV cameras.

TRUE! There have been misrepresentations that megapixel network cameras cost more than CCTV cameras. The initial cost of a professional quality megapixel network camera may be higher than a CCTV camera. However, in a large majority of applications, the total cost of installing a system using megapixel network cameras is substantially lower, sometimes as much as 50% lower. If you are considering using a megapixel network camera as a one-for-one replacement of a CCTV camera, and there is no established IP network, mega-pixel may be more expensive than CCTV. But the only reason to even consider swapping one-for-one is because the CCTV camera cannot deliver the image quality you need. Put another way, a tricycle is indeed cheaper than a Ferrari, but if you need to go 200 mph, try doing it on that nice cheap tricycle.

True or False? Megapixel network cameras use more bandwidth and storage than CCTV cameras.

FALSE! Of course megapixel images are larger than CCTV images, but once again this is not an accurate or helpful comparison. If you want to replace CCTV cameras one-for-one with megapixel cameras, it is because the CCTV camera cannot deliver the image quality you demand, period! A more instructive and fair analysis is to compare the files sizes of four 704 x 480 CCTV cameras against a single 1280 x 1024 megapixel image. If all cameras are configured the same, with the same compression, and are looking at the same scene at the same time you will find that a megapixel network camera actually uses less bandwidth and storage than the CCTV cameras combined.

(see images next page)

MEGAPIXEL NETWORK CAMERA TECHNOLOGY

true or false

Four CCTV Cameras = 182KB

True or false? A CCTV camera with a good zoom lens will deliver the same level of detail you get from a megapixel camera.

FALSE! There is no delicate way to state it: this statement is absolutely, unequivocally **false, false, false, false, false!**

1.3 Megapixel IQeye Network Camera = 118KB

The area you can cover with reasonable detail *(enough to recognize a face or license plate)* does not depend on the lens, it depends on the number of pixels covering the scene. The best CCTV cameras have, at most, 704 x 480 pixels. As a general rule, 30 pixels/foot lets you recognize a face or read a license plate. So, the best CCTV camera can cover an area 23 feet wide (704/30) and 16 feet high (640/30), for a total of 368 ft^2. Knowing that, you would need to select a lens that gives you, at most, a 23' wide field of view to get enough detail. Putting a wider lens on the camera will simply blur the image and putting a telephoto lens on the camera will get you a sharper picture but a much smaller coverage area. Alternatively, a 1280 x 1024 megapixel camera lets you cover a 43' x 34' area or 1462 ft^2 (4x the coverage of the CCTV camera). A 3.1 megapixel camera, at 2048 x 1536, can cover 3450 ft^2, or almost 10x the coverage of the CCTV camera. The lens simply determines how far away you want that level of detail. A wide angle lens can get the detail very close to the camera and a telephoto lens can get the detail at a great distance from the camera, but neither gets you megapixel quality and area of coverage.

What's the Right Technology for You?
So, how do you choose the right components to make sure you never miss a thing?

First, determine how wide an area you want to cover. For instance, if you want to cover a 10,000 ft^2 parking lot with license plate and/or facial detail, your choices are: 28 CCTV cameras, seven 1.3 megapixel cameras, or three 3.1 megapixel cameras.

Next, determine the camera to object distance. This is critical for the selecting the right lens. Remember the lens does not increase the resolution of the camera, it simply defines where you are focusing. Once you select the right focal length of the lens make sure the lens matches the camera quality. A lens does not increase the resolution of a camera but the wrong lens can absolutely hurt the resolution of the camera so while a plastic lens may suffice for a CCTV camera, a megapixel camera needs a mega-pixel quality lens.

Finally, make sure to record at the image quality you want. Be careful of those who may show you a high resolution image to close the deal, but actually record images at a lower resolution to save on the amount of storage they have to provide. A simple way to avoid this is to have the integrator submit actual reference images as part of the proposal. Avoid the technical mumbo-jumbo about compression algorithms and techniques—get them to show you the image quality! Have them set up a system, walk across the parking lot and have them capture an actual image of you based on what they are proposing, and make that image part of their proposal. This will ensure you get what you pay for.

We've covered three very prevalent misrepresentations about megapixel technology that have clouded decision-making and prevented end-users from understanding megapixel's potential and cost-effectiveness. The best way to judge for yourself is to see it for yourself, compare a megapixel camera to the others, and then you will see the real picture.

For more information on IQinVision, please go to:
www.iqeye.com

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3005 S. El Camino Real
San Clemente, CA 92672 USA
phone 1.949.369.8100
fax 1.949.369.8105