

## **A Million Good Reasons To Transition To IP Megapixel Video.**

*Megapixel Imaging Can Enrich The Functionality  
Of Surveillance Systems.*

The adoption rate of IP-based video systems (those using Internet protocol) has lagged in the United Kingdom behind other countries such as Denmark, Germany and the United States. This has been largely because analogue systems have done their job so well in a firmly established analogue CCTV industry, which has significantly outpaced the rest of the world over the past 40 years. In general the industry has been slow to embrace the new technology when, in many instances the analogue systems are still operating – and still meeting customer requirements.

Due to a number of reasons, that situation is changing, mainly driven by two aspects of IP systems that are not only new but demonstrably improved. The latest megapixel IP systems have impressive capabilities: better image quality made possible by megapixel camera technology and much improved transmission of video with the utilization of H.264 compression

Analogue cameras have had a predictable and dependable resolution based on the PAL standard (576 TV lines). However, megapixel cameras provide images in resolution detail that far surpasses what we have all been used to in the PAL world (roughly 704x576 pixels or D1 is the equivalent of 0.4 megapixel). A 1.3-megapixel camera can provide 1280x1024-pixel resolution, about three times the resolution of analogue cameras. A 2-megapixel camera provides 1600x1200-pixel high-definition resolution, about five times the resolution of analogue. A 3 megapixel camera offers 2048x1536-pixel images (eight times the resolution of analogue), and a 5 megapixel camera offers images with 2592x1944 pixels (12 times the resolution of analogue). When designing systems, the resulting images can be used to cover much larger areas with video quality that is comparable to analogue, thus enabling fewer cameras to be used. Alternatively, if the application calls for it, the cameras can be used to provide exquisite detail in images that far surpass anything we see in comparable views from analogue cameras.

And don't believe what you hear about the challenges of integrating megapixel

cameras; for example, that they use too much bandwidth or memory. As an early advocate of megapixel technology, I can tell you that these issues are easily managed, and the resulting system can take full advantage of the image quality improvements of megapixel technology. An increasing number of our satisfied customers will tell you the same thing.

### **Needed: Higher Image Quality**

There is nothing more frustrating, from the end user's perspective, than a video image of a face that is not recognizable because there is not enough detail. Megapixel cameras provide a usable image that can support prosecution in court. Police depend on the forensic detail of video data, as do schools and universities and other users seeking to ensure correct identification. Investigations in public areas and venues can certainly benefit from more-detailed video images. Capturing larger areas within a single image means that no action is being missed, as happens with an analogue camera that is panning when it should be tilting or zooming. Every little piece of a megapixel image can be magnified and examined in real-time, or users can go back to recorded images to use "virtual PTZ" after the fact. And while a user is looking at one corner of an image, they can be assured that they are not missing anything somewhere else. The camera catches everything and stores it for use right now or in the future.

Schools and universities have been early adopters of IP technology because of the opportunity to take advantage of their existing IP network infrastructures. However, a new breed of "CCTV installer" is emerging who has the skills to install, deploy and configure networks to be used specifically for video. These companies are skilled in the use of software and hardware, which support the new generation of IP based security systems. The expanding capabilities, coupled with the use of existing network infrastructure when appropriate, are removing barriers to megapixel cameras and the improved image quality they provide the end user.

### **Managing Bandwidth And Memory**

We at Norbain have been big believers in megapixel technology since we first saw the image quality and potential of the technology. We started working that year with Arecont Vision, an innovative supplier of a range of high quality megapixel

cameras at prices comparable to analogue technology. Arecont Vision's cameras range in image resolution from 1.3 to 10 megapixels, including dual-sensor day/night cameras, and the company even offers an 8-megapixel quad-sensor panoramic camera. The product line caters perfectly to the growing market demand for high-definition image capture for any video application.

Arecont Vision has an excellent implementation of the H.264 compression standard and a superior image processing technology, both working to solve issues related to bandwidth and storage for megapixel cameras. Using H.264 compression, Arecont Vision can provide 5 to 12 times greater compression efficiency on average compared to MJPEG or JPEG 2000. This provides users with the best of megapixel technology in terms of image size and resolution, along with manageable bandwidth and storage. Megapixel video now achieves the same real-time frame rates as VGA at near VGA bandwidth utilization. The result has been constant growth in the demand for their cameras, which is already increasing with Arecont Vision's introduction of the MegaDome™ series of integrated dome cameras earlier this year.

The implementation of H.264 means that the traditional challenges of the costs associated with bandwidth and storage have been significantly reduced. There is also an opportunity to reduce installation costs using power-over-Ethernet (PoE), which means connection to the camera is a single network cable that carries both the signal and the low-voltage power. As processing power and PC costs come down, the cost of a megapixel solution is no longer outside the scope of many budgets – in fact, in many instances, it is now seen as a far more cost-efficient solution than the analogue equivalent. The benefits and long-term future-proofing of the systems suggests that we can expect a rapid increase in demand from our customer base. In fact, we are already seeing it.

A misconception about H.264 is that the complexity of decoding the video stream translates into a need for additional computer server capacity to decompress multiple H.264 video streams for display of live video in a multi-camera security installation. In reality, the exact opposite is true. The H.264 streams encoded by Arecont Vision cameras require less server power to decompress than comparable

JPEG streams. Arecont Vision has optimized the encoder in the camera to avoid an increase in computational load on the decoder side.

### **Megapixel Video: The reason for switching to IP**

The potential of megapixel video is very high. It provides a compelling reason for users of analogue CCTV systems in Europe and throughout the world to transition their systems to high definition IP megapixel video systems.

I believe that megapixel cameras, and the multiple ways that they can make security systems better, is the main factor that will push IP video systems to the mainstream. In the coming years, the technology will set a new, higher industry standard for video image quality in surveillance systems throughout Europe, and throughout the world.

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