

SECURITY VIDEO

Understanding HD & Megapixel Cameras

The fastest growing segment of the security video market is the network or IP camera. And the fastest growing IP camera technologies are HD and megapixel. Therefore, it is important to understand the difference between standard definition (SD), high definition (HD), and megapixel cameras.

Analog (coax) camera resolution is measured in horizontal lines and is referred to as TV Lines (TVL). The typical high-resolution analog camera is 540 to 600 TVL. Many SD IP cameras are derived from these analog cameras and have the same resolution. However, IP camera performance is not measured by resolution, but rather, by pixel count.

A pixel is a picture element residing on the image sensor, either CCD or CMOS. The higher the pixel count the greater the density of pixels on the sensor. The pixel count is important in determining the correct camera for an application. The typical SD camera has about 400,000 pixels, whereas a megapixel camera has a minimum of 1,000,000 pixels. Multiplying the horizontal and vertical pixel count and dividing the result by 1,000,000 will yield the total pixel count expressed in megapixels. For example, a camera with 1600 (H) x 1200 (V) pixels equals 1,920,000 pixels, divided by 1,000,000 is 1.9. This is considered a 2 megapixel (2MP) camera.

Within this technology there are megapixel and HD. There are many similarities but also some differences between the two. For instance, all HD cameras are megapixel but not all megapixel cameras are HD. HD cameras are referenced as 720p (1MP) and 1080p (2MP). In HD technology 1080p is the greatest pixel density but megapixel is available as high as 16MP.

Another difference: HD has a 16:9 aspect ratio, which is a wide screen type view, whereas megapixel typically has a 4:3 aspect ratio. This is squarer, like an older TV screen. Also, HD has quality compli-

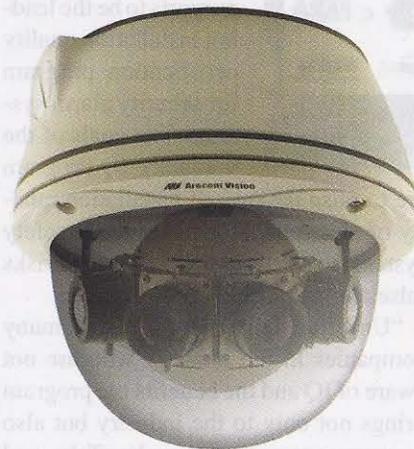


PHOTO COURTESY OF ARECONT VISION

Because fewer megapixel than standard-definition cameras can cover the same area, there can be a savings in equipment costs. This 8-megapixel camera from Arecont Vision, the H.264 Day/Night SurroundVideo®, provides a 180-deg. panoramic view.

ance standards to meet whereas megapixel simply specifies the number of pixels.

In the correct application HD and megapixel cameras can be of great advantage as well as cost effective. Because of the pixel density in this technology it is possible to look at large areas while maintaining the detail that would require multiple SD cameras.

To illustrate this, consider the application of wanting to view license plates within a scene. This typically requires 50 pixels per horizontal foot for a clear, readable image. With an SD camera the largest viewable area that maintains 50 pixels per foot is 10 ft. wide. Compare that with a 1.3MP or 720p camera at 25 ft., a 2MP or 1080p at 30 ft., 41 ft. with a 3MP and 51 ft. with a 5MP. In this example it is possible to replace as many as five SD cameras with one megapixel camera. Not only is this a savings on cameras but also cable, labor and any accessories needed for the camera installation.

The issue of bandwidth with HD and megapixel cameras is not what it once was. The introduction of H.264 compression has reduced the amount of bandwidth megapixel cameras use. Also, the ability to crop images and control frame transmission has contributed to the decrease in bandwidth these cameras require. And although they may use a bit more storage, storage is becoming less costly.

As HD and megapixel camera sales continue to increase, the cost of these cameras should continue to decrease. That and the ability to replace a number of SD cameras with fewer megapixel cameras can make this a very affordable technology. Consider a typical 16-camera installation using analog (coax) cameras. This example will have six cameras covering the parking lot, four in the warehouse and six in the office area. Included are the cameras, storage for 14 days (with camera licenses) and power. The material cost of the analog system comes to \$12,500. The SD IP camera solution, with a one-for-one camera comparison, is \$14,800. The megapixel system required only two 3MP cameras to cover the parking lot, two 2MP cameras in the warehouse and the six office cameras remained SD cameras, as megapixel was not required. As a result, the megapixel camera system price is \$14,100. The \$1,600 difference between the analog system and the megapixel system would be offset easily by the savings on cable and labor. To be fair, it is possible to get a good analog system using a less known manufacturer for a lower price, but that applies to the megapixel solution as well.

Proper deployment of megapixel technology allows you to provide a better performing system while maintaining cost competitive pricing. — **Contributed by Joe Essma**, director of Low Voltage Solutions at Acc u-Tech Corp. (www.accu-tech.com/security), a national distributor of security products and premise cabling solutions.