

## **The Problems With IP Cameras - by Allen Spears – Rugged CCTV**

As you may have already heard, Rugged CCTV is coming out with a new “Hybrid” DVR at the beginning of the year. Why Hybrid? Because there are still quite a few problems associated with IP cameras right now. The technology is maturing at a fast rate, but it's still not quite where it needs to be.

The Hybrid solution gives our customers a great way to start adding IP cameras to their current systems without having to completely re-tool for a dedicated IP-only system. Our Hybrid DVR will feature 16 channels of standard cameras, while adding 4 additional channels for the addition of IP-based cameras. It's a great way to start migrating early on, but doesn't require re-wiring your network for Gigabit performance, or installing VPN (Virtual Private Network) switches to keep the high bandwidth traffic from interfering with your normal work-related traffic on your existing network.

Why is everybody pushing IP-based security cameras? Because there will be a lot of advantages to handling purely digital streams. The whole world is creating internet enabled devices of all kinds at a frenetic pace, and IP cameras will be able to integrate directly into that world almost seamlessly.

The problems we are running into with IP cameras though, is that the resulting bandwidth and file sizes are huge. A 3 or 5 megapixel camera produces huge pictures that not only cover a wide area, but will allow “zooming in” multiple times without blurring and pixelating the picture. But since each captured image will result in large file sizes, the resulting bandwidth and storage will create problems. As you add more IP cameras, bandwidth will quickly start to slow your network down, and will fill up your hard drives many times faster than standard cameras.

We can safely move the data from just a few IP cameras over your existing CAT-5 cables, and can add another hard drive or two to handle the additional data, but beyond that will require either separating the IP camera traffic from your normal network traffic, (such as a VPN), or, more likely, re-wiring your network infrastructure to gigabit wiring and equipment.

One of the other glaring problems with the technology right now, is that the preferred compression method – H.264, is not yet to the point where it can give us high resolution at high frame rates. Surprisingly, MJPEG and JPEG2000 methodologies are much better at either processing or moving high megapixel video over smaller data pipes than H.264 currently is. It takes a lot of processing power to run H.264, but the resulting picture quality and smaller file sizes are the “Holy Grail” that manufacturers are after. The technology is developing rapidly and is maturing at a fast clip, but it is still not quite where it should be in order to outshine other methods.

We have been spoiled by our standard cameras that have smaller file sizes and speedy processing, and thus we are recording at “Real Time” rates. Most IP cameras are not yet able to handle that many frames per second at megapixel resolutions. H.264 cameras especially, seem to be moving backwards in performance. Manufacturers are introducing higher and higher resolutions, but due to increased processing requirements, are sliding backwards when it comes to frames per second. Thus, most people running the current crop of H.264 IP cameras, are finding it difficult to record at more than 5 or 6 frames per second, and as you know, you can miss all sorts of movements and actions when recording that slowly.

So, the technology is getting there – but it's not there yet. Not in price, and not in performance. That is the reason we are moving slowly when manufacturing and introducing IP cameras and recorders. We always try to be on the cutting edge – just not on the “bleeding edge”.