TECHSAVVY

Analog to IP: Discover the Truth about Video Migration

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Truth #1: It is Cost Effective.

In today's world of technology, balancing the performance of a video system with budget constraints has been a challenge that has kept many systems in the analog realm. The lower cost and performance of analog video may allow Loss Prevention Managers to put more cameras in more stores, but with the declining costs associated with current IP cameras, higher resolutions and system flexibility with open architected network video recorders, the case to move from analog to IP is a strong one. While some retailers can make the jump to IP with complete replacements of existing video infrastructure, most find that a migration path from analog to IP is done in stages and proper planning for the future. Consider the following key components regarding your present video system and make the move towards an IP video system.

Truth #2: Cabling is Key.

The first item to consider is what is the current cabling infrastructure, coaxial cable with a power wire? Or structured cabling, Category 3, 5, 5e, 6 or other? If you are still installing analog video systems with coaxial cable, then at the very minimum, you need to move into Ethernet standard Category 5e or 6 (Unshielded Twisted Pair – UTP) using baluns to transmit analog video, power and data (for PTZ's) as soon as possible. Baluns are small transceivers that live at each end of a UTP run to convert the analog signal and transmit over Cat5e/6. Different baluns are used for varying run lengths, but It is important to know for future IP considerations that Ethernet standards have a maximum run distance of 100M (328') between IP devices (switch, PC, IP Camera). If you are installing analog today with baluns, to be ready for IP in the future, the Cat5e/6 cabling must adhere to TIA Ethernet standards of 100M or less, or include proper intermediate junctions and proper Ethernet terminations.

If you have an existing coaxial infrastructure, you can use Ethernet over Coax (EOC) adapters on one coax to communicate with multiple IP devices at distances greater than the 100M standard. This approach with associated cost works very well for a migration to a hybrid (mix of analog and IP) video system with the IP cameras going into strategic LP shots. Regarding the installation of Ethernet cabling and whether to go with Cat5e or Cat6, even though Cat5e has more than enough data handling capability with 100MHz, Cat6 is the standard to provide future readiness with 250MHz.

Truth #3: Good Integrators Do the Hard Work for You.

Often times we hear LP Managers say that their IT Department will never let them put IP cameras on the company network. While this may be true, it is important to know that when competent system integrators install an IP camera system, they almost always are creating a private IP network (LAN) for the IP cameras with one network adapter on the recorder, and that the IP camera data traffic does not impact their company network connection until they connect to the recorder remotely through the second network adapter on the recorder, very similar to the remote connection they were used to with their analog DVR. The primary difference is that with higher resolution IP cameras, pulling back video will require greater bandwidth.

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Truth #4: IP is the Flexibility of the Future.

So whether you have analog cameras with coax or UTP/baluns, your head end recording options are to move into a hybrid recorder and keep the analog video feeds, or move into a network video recorder (NVR) with IP only recording, but utilizing video encoders to take the analog signals and

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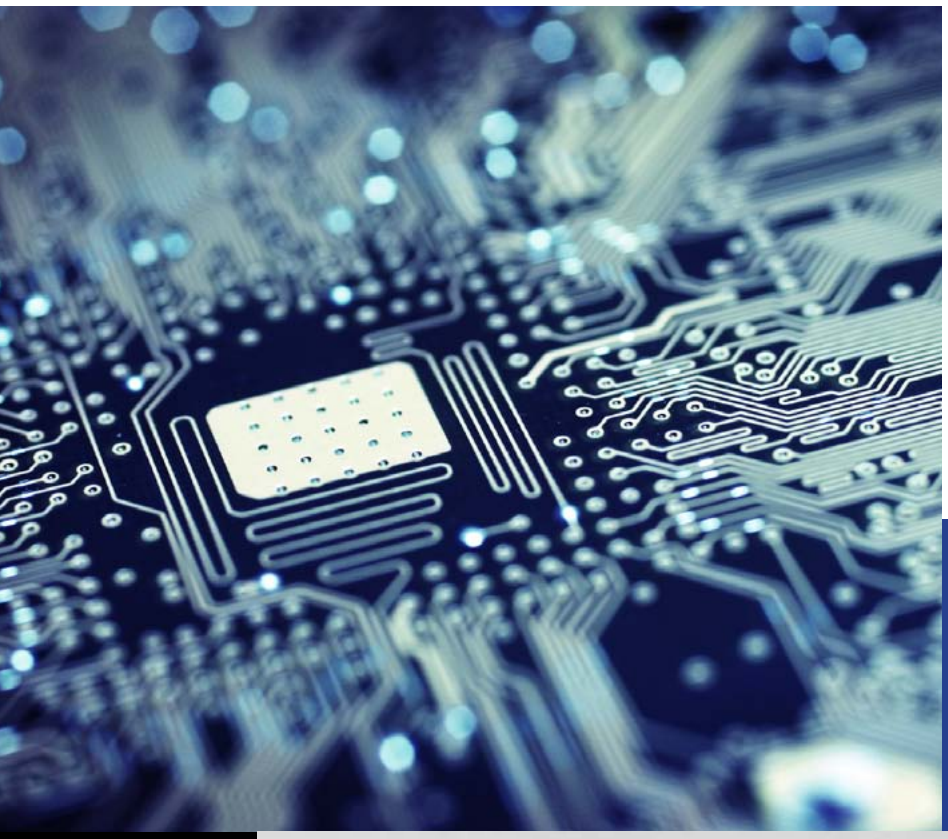
convert them to an IP stream for recording. Either way, the resolution of the recording of an analog camera is limited to camera's specifications and the DVR or encoder capabilities of CIF (352x240), 2CIF (704x240) or 4CIF (704x480) resolutions and their associated frame rates. Keep in mind that where analog video resolution ends, IP resolution begins and goes up much higher.

When looking at recording platforms, it is important to keep in mind open platforms and compatibility. Unlike a DVR that works with any analog video signal, IP recording platforms must integrate with an IP camera to get all the functionality available from the camera. Therefore, as IP camera companies like Axis and Sony release new camera models, the recorder companies must test and verify that their software will work fully with the camera, or write new integration to support the camera. Some Video Management System (VMS) companies might have their own line of IP cameras and encoders, and will limit the integrations with other 3rd party IP devices. While this approach of using the VMS and their cameras can offer some cost advantages, be careful that the IP cameras will work with other VMS's in the event that you ever want to change recording platforms. The IP integration standard that is most prevalent today is called ONVIF (Open Network Video Interface Forum) and while many manufacture's say they are ONVIF compliant, there are different levels of compliance which will affect the performance of IP device with the recorder, and may impact any future migration options. It is best to design your system to best fit your video system needs, while keeping the architecture as open as possible for future flexibility.



THE TRUTH OF BALUNS:

- **Small transceivers**
- **Each on the end of a UTP run**
- **Convert the analog signal**
- **Transmit over Cat5e/6**
- **Vary in length**