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Migrating from Analog to IP-based CCTV

Solution Brief

Executive Summary

IP CCTV opens up a whole new world of opportunities for the Security Director, the IT Manager and the Operator. And in the process of embracing these new technologies it is critical to develop a strategic migration strategy that both smooths the transition for a successful introduction and eases the demand on the security budget in order to drive up the return on existing assets.

This Solution Brief is an executive level summary explaining Bosch's seamless and cost-effective Hybrid IP migration strategy available to Allegiant™ users. The solution gives operators complete transparency – they have no idea whether they are looking at an Allegiant camera or one of the 'new' IP cameras as they use their familiar CCTV keyboard and analog monitors. The migration from one to the other is totally seamless.

"The best migration strategies are executed unnoticed by the user."

[Dr. Bob Banerjee, 2005]

Background

While every CCTV system has three major parts — cameras, video management workstations and video storage — at the heart resides switching technology that enables operators to select from all the available cameras. For decades the CCTV industry has relied on analog matrix switchers to perform this vital function and for good reasons — they are cheap, reliable and, by now, everyone knows how they work. They're compatible with just about every fixed and PTZ camera, and every VCR and DVR. The analog switch is a perfect example of a successful, mature product and its near-commodity status is a natural consequence of multiple generations of improvement.

Many manufacturers offer such analog switches; Bosch Security Systems offers the Allegiant™ line of matrix switchers, ranging from 8 camera inputs to over 4,000. Technological innovations are causing a ripple effect through the CCTV marketplace and, recently, they are coming through thick and fast. In the digital storage realm, the CCTV market is benefiting enormously from plunging costs and ever-rising reliability of hard drive storage compared to VCRs. From the operator's viewpoint, the commoditized and pervasive PC workstations and even laptops for the more mobile users have opened up new, flexible and powerful observation workstation opportunities.

Arguably, the most significant leap forward during the last few years is to replace the analog matrix switcher with an IP network-based video system. This is analogous to the major carriers that no longer lay down specialized communication back-bones. Everything is converted to IP and treated as digital data, including voice, video, alarms, relays and PTZ control signals. IP CCTV, or Video over IP, is heading down the well-established path carved out by Voice over IP with the main difference being the degree of simplification when one considers the cable-intensive infrastructure of CCTV.

The most common reasons for adopting an IP-based CCTV system are:

- Convenience and advanced playback functionality of digital recording
- Reduced cost of infrastructure cabling
- Acceptability to an IT department that is now responsible for installing, configuring and maintaining the infrastructure
- Flexibility to easily move the camera and observation workstation
- Ability to rapidly respond to emergencies by dynamically relocating cameras, monitoring stations and storage systems anywhere on the network, including the use of temporary wireless, laser-based and microwave-based connections to extend the reach

So, analog CCTV was perfect for its time, but advances in technology have changed the game significantly. Digital (recording) and ultimately IP CCTV offer many advantages over the older analog technology, but here's the challenge: Do the advantages justify ripping out the existing analog switch and paying for a complete replacement? Is it acceptable to have the old and new system sitting side-by-side on the operator's desktop? Do the advantages outweigh the cost of retraining security and surveillance operators to become familiar with PC technologies such as PC keyboards and mice? And finally, since you already have a proven, reliable analog system, do you really have to introduce more risk than absolutely necessary by bringing in so much new technology?

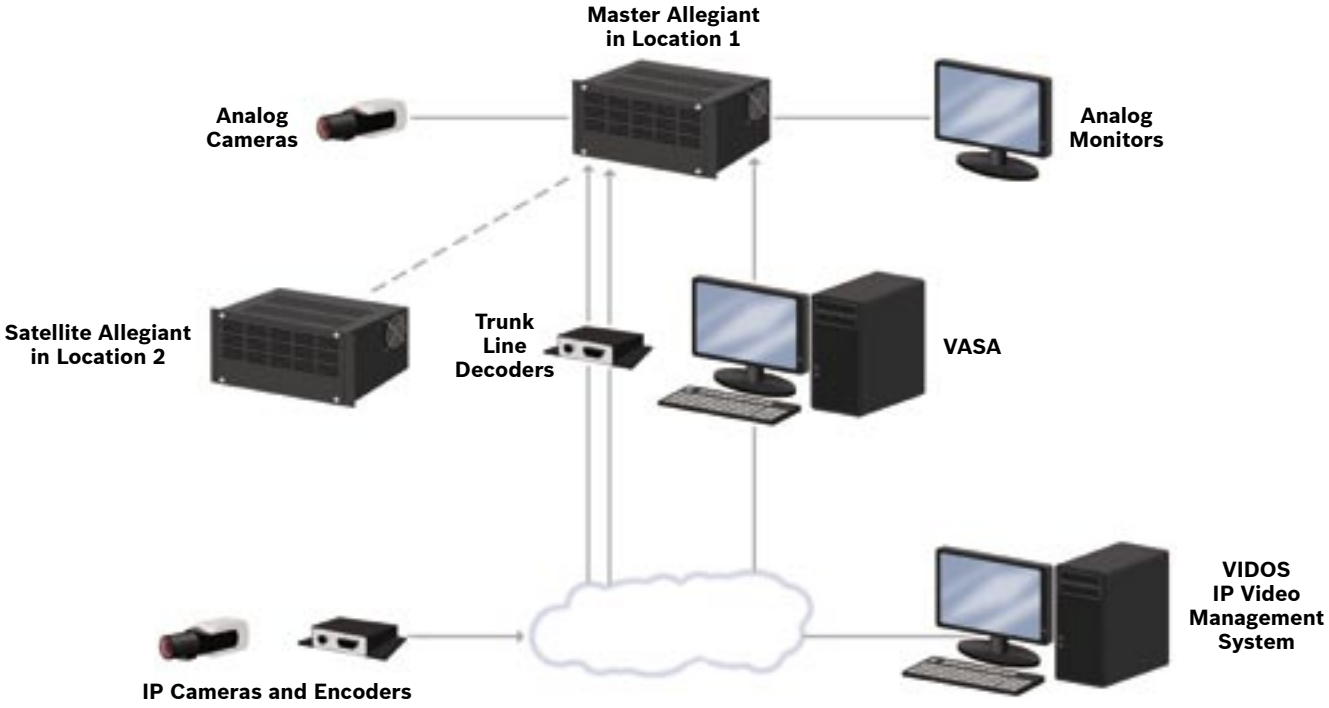
Before embracing change, successful organizations plan for it, and the same is true for CCTV. It seems like common sense: understand where you are today, identify where you want to be, evaluate the gap and explore the options to close the gap.

If you have an existing Allegiant, rather than an 'all-at-once' approach, it is more likely that your migration strategy involves incremental investment where you add new technology on top of old instead of substituting it overnight. If executed correctly, this can result in the added benefit of zero operator retraining since it is possible for the new technology to be seamlessly integrated with the existing technology. The Hybrid IP CCTV portfolio from Bosch Security Systems is specifically designed to make this transition as effective as possible.

Hybrid IP CCTV Portfolio

The Hybrid IP CCTV Portfolio is an expanding set of solutions that enables organizations with existing investments in analog technology to progressively embrace IP. One exciting solution in the portfolio is Virtual Allegiant Satellite Application (VASA), a PC-based software application that connects a pure IP solution from Bosch, including VIP and VideoJet encoders and decoders, to an existing Bosch Allegiant matrix switcher.

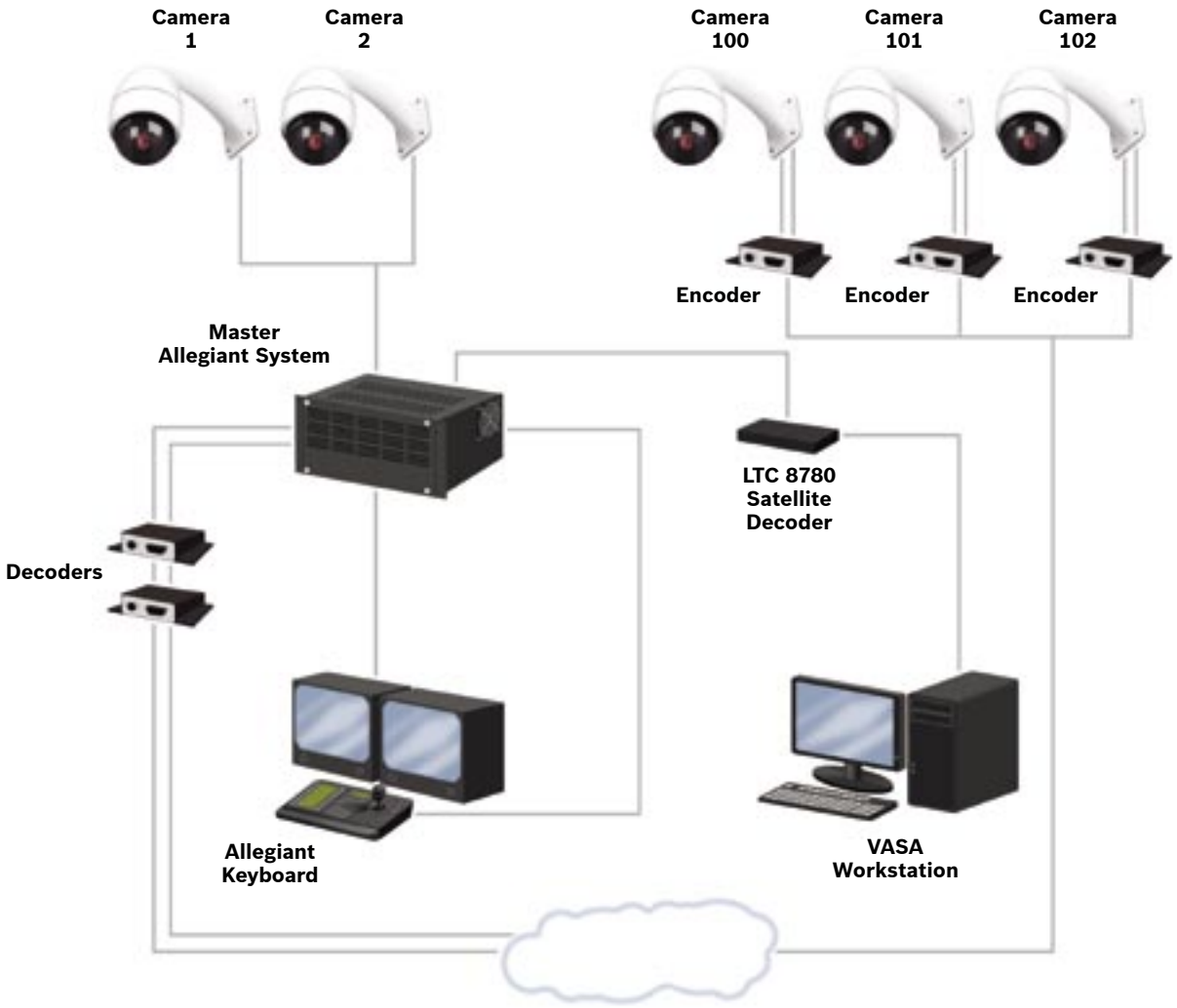
Virtual Allegiant Satellite Application (VASA) software



Conceptual schematic showing VASA as the integration software that connects Master Allegiant users to an IP CCTV Satellite system.

The schematic above illustrates the master-satellite concept of how users at Location 1 using the Master Allegiant have access to a conventional Satellite Allegiant (Location 2). Additionally, Location 1 users transparently use VASA (software running on a relatively low-power PC) to make the IP CCTV system (in the lower half of the picture) appear as just another satellite system. In this configuration IP decoders act as trunk lines to convert the IP video stream from the network back into analog video and feed it back into an input on the Master Allegiant where the user can view it. Additionally, a VIDOS PC is shown as a reminder that the IP CCTV system is also a fully functional self-contained CCTV system.

Existing Allegiant users who are already familiar with IntuiKey CCTV keyboards and rows of analog monitors should not have to compromise their high quality, highly reliable CCTV experience. VASA treats the IP solution just like a remote Allegiant system, also known as a Satellite Allegiant. This means that the new IP-based system cameras can be switched and controlled in the same manner as the existing analog cameras. Every IP camera is just another camera number accessible from the keyboard and the video appears just where it is expected – on the analog monitor and not a PC screen. This architecture is particularly attractive because it reuses the Allegiant's extensive security features developed over decades. Because everything goes through the 'master' Allegiant it governs your access privileges to the IP cameras as well as the analog cameras.



Network diagram showing how the analog and IP components are connected together, and how CCTV keyboard commands are relayed through the Allegiant via the satellite decoder to the VASA server for conversion into IP commands meaningful to the encoders and decoders.

A Note about 'Hybrid'

Hybrid means different things to different people. Some manufacturers position their IP encoders as offering a hybrid migration strategy because they allow you to swap out everything except your analog cameras. Others position their IP decoders in the same way – you can re-use your existing analog monitors. However, these are just small parts of a true hybrid migration strategy.

As described in detail above, Bosch defines its hybrid IP strategy to mean that *a complete and pure IP CCTV solution can be deployed in parallel with an existing analog matrix switcher.* With the Bosch solution, the existing Allegiant users don't change the way they operate, the equipment they see in front of them remains the same and they see no perceptible difference between viewing analog cameras connected directly to the Allegiant or IP cameras connected as a satellite IP system.

The best migration strategies are executed unnoticed to the user. This is Bosch's Hybrid IP strategy – a comprehensive definition and one that promotes complete transparency to the end user operator.

For more information on the Hybrid IP CCTV portfolio, visit www.boschsecurity.us or contact Bosch at 800.289.0096.