



Hybrid Solutions Become an Increasingly Critical Part of Analog-to-IP Migration

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by Derek Rice

Lower camera costs, greatly increased quality and other factors have combined to make it no longer a matter of if, but when — and how — end users will convert from analog to IP.

This transition requires careful planning and a clear path to migration to manage costs and performance requirements. Integrators play a key role in helping end users determine the best migration strategy that will fit within their budgets, meet their needs and move them toward all the benefits IP infrastructure offers.

“Although the wholesale switch to IP has been in progress for more than a few years now, there are still many CCTV systems that use analog equipment, which is not at the end of its operational life and can be used as a hybrid bridge to an IP system,” says Skip Haight, vice president of marketing for Danbury, Conn.-based ComNet.

For the vast majority of end users, a rip-and-replace conversion is too costly, too inconvenient or in some cases, completely unnecessary. That’s where hybrid solutions come in.

“A complete retrofit of a facility is expensive,” says Todd Robinson, recorder product manager for March Networks, Ottawa. “With hybrid solutions, you replace the head end — the recorder itself — with a hybrid box that can utilize the existing infrastructure.”

So rather than abandoning what might have been an expensive system at the time, end users get to keep some of those components while upgrading their video system in a way that works for them.

“Hybrid technologies really help to protect existing analog equipment investments,” says Matt Powers, vice president, global technology marketing, Anixter, Woburn, Mass. “By using hybrid solutions, customers can scale their existing system without performing a forklift upgrade and starting over.”

In addition to the flexibility to leverage at least part of their investment in existing analog technologies, hybrid solutions also provide end users with future flexibility.

“The degree to which you migrate using hybrid hardware really depends on the future needs of the customer, and there are all kinds of existing technologies available to do minimal migration all the way to a much more comprehensive and future-proof solution,” says Jason Spielfogal, director of analog and accessory products for Clovis, Calif.-based Pelco by Schneider Electric.

System design is critical, but the system on paper is often different from the actual completed system. A gradual approach accounts for this by enabling real-world testing and review of the system throughout the process.

“Using a phased hybrid solution lets the integrator and end user learn from the initial installation and analyze the quality of video they are achieving,” says Ronnie Pennington, national accounts manager, Altronix, Brooklyn, N.Y. “Any differences between the expectations and the reality of the results can be points for improvement in later phases.”

Where to Begin

When considering hybrid solutions for migrating customers to IP, the first step is to evaluate current equipment, including hardware, software and infrastructure, taking inventory of the existing system hardware and the age of its components.

“Start by gaining a complete understanding of a customer’s current state environment: what legacy technology has been deployed, the status of the equipment, how they use the technology and the application gaps that currently exist,” Powers says.

The next step is to identify and define the problems the customer needs to solve. Keep in mind that that they don’t always know what they need. It’s up to the integrator to ask questions to guide customers toward the best solutions and migration plan. (See “Questions to Consider” below.)

For example, if end users need the advanced capabilities of HD or megapixel cameras in only certain areas, then they may leave the remainder of their analog cameras in place.

“A clear definition of the problem will help the integrator determine the best approach to a hybrid solution, so that should always be the focus of the first discussions,” says Jessica DeCotis, regional marketing manager, Bosch Security Systems, Fairport, N.Y.

Should it Stay or Should it Go?

When migrating a system from analog to IP, some existing components can remain in place while others can’t. But in nearly every migration project, the first thing that needs to be upgraded is the recording solution.

“Typically the only equipment being immediately upgraded in a hybrid deployment is the head end or recording equipment,” says Brian Carle, director of product strategy, Salient Systems, Austin, Texas.

Another component that may need an upgrade is the network, which in many cases isn’t able to handle the data generated by high-resolution video.

“In a typical retail application, for example, the network has mainly been used for POS data and maybe alarm monitoring,” Robinson says. “You can’t just drop in IP cameras and expect that 256k data pipe to work.”

The fate of most equipment is decided by the specifics of a particular customer or installation, with infrastructure being the top factor.

“If the cable is good and you use either HD analog or IP cameras with the proper adaptors, then the cable can remain, saving all of that expensive labor,” says Gary Perlin, vice president, strategic sourcing, TRI-ED Distribution, Woodbury, N.Y.

Given the abundance of available options, it’s rare that an end user’s infrastructure should need to be replaced all at once.

“There are many strategies to leverage existing analog infrastructures and end users appreciate integrators that can offer them choices instead of an ‘all or nothing’ approach,” says Charles McCready, senior product specialist, Panasonic System Corporation, Newark, N.J.

But while reducing costs plays an important role in migrating to IP, that doesn’t mean integrators should salvage everything.

“Make sure to keep the parts and pieces that make sense,” says Jammy DeSousa, product manager, American Dynamics, part of Tyco Security Products, Westford, Mass. “Just because you can leverage old technology as part of the new system does not mean that you should.”

Paths to Migration

DeCotis says there are two main approaches to migration. The first is to deploy a hybrid recording device, which she says can limit users' ability to take advantage of future advancements, especially encoding technologies.

"When you consider that there have been five new compression technologies introduced in our industry within the last 10 years, this needs to be a serious consideration," she says.

A software-centric approach employs a traditional NVR and analog cameras connected to encoders to make them "look" like IP cameras.

Tom Cook, vice president of sales, North America, Samsung Techwin America, Ridgefield Park, N.J., adds a third methodology for migration is emerging, which is being driven by manufacturers who have built processing power into IP cameras to support dual streaming of analog and IP video.

"When you're converting from analog to IP, this allows you to replace an analog camera with an IP camera but still use analog methodology until you can change to NVRs and IP infrastructure," Cook says.

For more on migration methodologies, see "Art or Science?" online at SDMmag.com.

What to Look for in Solutions

The best way to evaluate products is to test them in real-world conditions, and many manufacturers are happy to loan integrators evaluation equipment. However, it's important to test everything.

"Be sure to include not only IP cameras and recorders, but also every element of your typical systems — coax cable, connectors, IP over coax adapters too — because they will contribute to overall system performance," Pennington says.

To know what to look for, education is key. Distributors, manufacturers, associations and standards bodies provide seminars on products and technologies.

"If you don't know something, lean on manufacturers in your area and local distributors for courses. There are plenty, including online video training, manufacturer-specific or generic," Cook says.

Sometimes a hybrid solution is not only the bridge for migration but may actually be the perfect fit for the installation.

"You may only want two or three channels to be in HD and the rest of the channels can be in lower resolution due to budget or bandwidth limitations," says Zin Thu, product manager, Speco Technologies, Amityville, N.Y.

Open standards like ONVIF and PSIA that allow systems to be built using components from multiple manufacturers have made interoperability an important factor in selecting hybrid solutions.

"The industry has shifted from a single-manufacturer environment to a multi-manufacturer environment that depends on product interoperability to build customer solutions," Powers says.

Whether analog camera licensing can be reused for IP cameras is another important consideration when evaluating hybrid systems.

"If that is not the case, the result can be that the consumer pays for a camera position two times — once when the system is initially deployed and licensed then a second time when an analog camera is replaced by an IP camera, ultimately increasing the total cost of ownership," Carle says.

Although budgets have a major impact on the components and how they are installed, it's important not to select product on price alone.

“The best product for the solution is not always the one at the lowest price,” says Jeff Karnes, senior vice president, marketing and operations, 3VR, San Francisco. “It’s also best to field test a variety of products because it’s difficult to compare actual performance based on datasheets alone. Even products with similar specifications may perform quite differently when deployed in a real-life system.”

With the flexibility to allow end users to take advantage of the latest HD and megapixel IP cameras without scrapping their existing infrastructure, hybrid solutions have become critical parts of the migration process from analog to IP. Additionally, hybrid systems can make it possible to manage multiple systems through a single video surveillance interface. The ability to convert analog solutions to IP video in phases delivers tremendous cost savings and other advantages that reduce up-front investment costs while improving both operations and security by making the most of existing analog equipment. Integrators who take the time to learn about and investigate the concepts, products and technologies involved in building hybrid systems are well-positioned to help their customers adapt to the future without breaking their budgets.

And that’s the kind of service that turns a one-time installation into a customer for life.

SIDEBAR: Questions to Consider

- What equipment is already installed?
- What are the end user’s reasons for migrating to IP?
- What are the primary security needs?
- Where does the customer need video coverage most?
- How long will video be retained?
- What quality of video is required?
- What are the expectations for the security solution in three to five years?
- How many locations will the system cover, and are new or expanded facilities anticipated?
- How much bandwidth is available at the site?
- What is the timeline for migrating to IP?
- What is the budget?

SIDEBAR: Defining ‘Hybrid’

Another layer of the conversation about hybrid solutions is the question of what, exactly, the term “hybrid” means.

“There are a few definitions of a hybrid system, but to most, a hybrid system is combining current existing analog CCTV with and over an IP network,” says ComNet’s Skip Haight.

A true hybrid solution, says Todd Robinson of March Networks, is one that can remain in place after a system has been fully converted to IP.

“There’s a lot of marketing out there, but a true hybrid recorder solution is one that enables full migration from full-analog to full-IP, as opposed to a solution that offers 16 analog channels and four IP channels, for example. Those kinds of recorders are capable of handling both but are not true hybrids,” he says.

In some cases, however, “hybrid” isn’t even the right term to use and has become outdated, says Gary Perlin of TRI-ED Distribution.

“Remember that when we say hybrid today, we’re talking about the integration of IP, legacy analog and the new HD analog-type cameras that are becoming available,” he says. “The term hybrid is actually being replaced by ‘tribrid,’ which allows all three types of products to be recorded at the same time on the same machine.”

SIDEBAR: Art or Science?

Although there are multiple methodologies for migrating from analog to IP video, there are some tried-and-true methods that go into most, if not all projects.

“When migrating in phases, the science says that a general path to migration is to upgrade the recording solution and then cameras as needed,” says Ronnie Pennington of Altronix, Brooklyn, N.Y. “The art of an excellent upgrade project is to implement good judgment with the choices that are made — appropriate camera resolutions and locations, recording frame rates, and priorities — to balance the customer’s budget, integrator profitability, and the resulting safety and security of the monitored area.”

So is migration a science or an art? That depends on who you ask.

“Successful integrators will always look at it as a science,” says Mark Espenschied, director of marketing, Digital Watchdog, Tampa, Fla. “There are calculations to be made to assure adequate resolution for the application.”

Jason Spielfogal of Pelco by Schneider Electric, however, falls on the art side.

“It’s more of an art than a science. While the specific technologies to perform the different types of migration are very mature and well understood, the type of hybrid product used and the timeline in which it is used varies widely from customer to customer,” he says.

Another line of thought says it’s neither.

“I think it’s more of taking an educated assessment of what needs to be accomplished, what’s in place and whether it can offer the performance required,” says Danbury, Conn.-based ComNet’s Skip Haight. “For example, if a quality analog camera is in place, can it deliver adequate video versus the quality an IP megapixel HD camera can deliver, and is that acceptable to the customer? Keeping the analog camera and adding an encoder might be more cost-effective, but it might never match the HD camera for picture quality. It’s those types of decisions that make the migration more of a rough outline versus a prescribed formula.”

The prevailing thought, however, is that the two are not mutually exclusive.

“Let’s just say it’s both art and science,” says Charles McCready, senior product specialist, Panasonic System Corporation, Newark, N.J. “There’s the art of evaluating what’s currently installed and its usefulness, and the science of knowing what new products or devices might be added to the mix to foster ease of migration while enabling some of the benefits of IP such as system scalability and enhanced functionality. A systems integrator must be well versed in the different paths that can be taken and how to help the end user achieve their security goals. It’s all about working with the customer to find the best solution that meets their specific needs.”

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