

## **The Value of an Open Platform for Video Surveillance**

The advantages of an open platform IP video surveillance management solution in improving security operations.

**Milestone White Paper**

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## Introduction

IP network cameras (also known as digital cameras) and IP networking are transforming video surveillance. According to ABI Research, the video surveillance industry is at a key inflection point between analog and digital technologies and could expand from USD 13.5 billion in sales in 2006 to USD 46 billion in 2013.<sup>1</sup> But the biggest force propelling this transformation is neither IP network cameras nor IP networking. It's the opportunity to leave proprietary video surveillance solutions behind and instead develop future-proof, value-adding total security solutions based on an open platform.

An open platform is a software system with published external programming interfaces that enable its use – without modification to the source code – in ways other than the original programmers intended. Open platforms allow other companies and developers to develop products that add additional functionality and versatility to a solution such as IP video surveillance. These solutions often enable the platform to both meet more specialized needs and serve a wider variety of purposes.

You might compare an open platform to the telephone. When the phone was first invented, there was no way to dial a number. You had to lift the earpiece and talk to an operator. Today, the telephone has proven to be an excellent open platform, enabling a wide variety of features to be added, such as touch-tone dialing, caller ID, voicemail, conferencing, videophone systems, dial-up Internet service (and all that entails, from surfing the web to email and instant messaging), and much more. Everything we take for granted today was added to what basically started as a line to a switchboard.

With open platforms, video surveillance is no longer just about cameras and monitors. It's about total security – centralizing an organization's surveillance and integrating it with other security solutions for a complete system. In fact, with an open platform, the human imagination is practically the only limitation to what can be achieved to enhance security systems and "video-enable" an organization's operations.

Other advantages of an open platform solution for video surveillance include:

- Gives greater freedom of choice in components
- Keeps up with the ever-quickenning speed of innovation in the video surveillance industry
- Reduces total cost of ownership (TCO)
- Protects against obsolescence

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<sup>1</sup> "Video Surveillance Systems: Explosive Market Growth and New Market Opportunities," ABIResearch, 2008

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Obviously, with so much riding on an open platform, it's important to choose the right one. This paper will more deeply explore the many advantages of an open platform solution for your video surveillance operations and help you identify what constitutes a true open platform. It also includes a brief case study of the kind of seamless integration Cernium, a video analytics software company, was able to do in developing its latest video analytics software for operation with Milestone XProtect™, the industry's leading open platform IP video surveillance solution.

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Jens Bo Berthelsen, Product Marketing Manager, Milestone Systems A/S.

## Bust out of proprietary jail

For years the paradigm in video surveillance has been proprietary analog systems. You bought a solution developed by a single manufacturer and you were basically stuck with that solution. To expand your system, you had to continue buying their products. If something better came along from another manufacturer, you couldn't add it to your system because it wouldn't work with your system's hardware or software.

This is similar to how the personal computer market began. You may remember there were computers from companies like Atari and other manufacturers that had their own operating system and other proprietary software bundled with the system. If the manufacturer of one of these computers ceased to exist, the buyers of that particular computer line were at a distinct disadvantage in terms of buying more systems and getting support. What's more, they couldn't take advantage of new features and performance gains offered by other manufacturers. The IBM PC with DOS changed this paradigm, providing an open platform. With its introduction, the industry exploded as prices dropped, performance increased, volume grew rapidly, and innovation sped up at a phenomenal rate.

This is a perfect example of how open platforms enable you to break out of "proprietary jail" and enjoy the benefits and cost savings of freedom of choice.

In the video surveillance industry, vendors still selling analog solutions are typically vertically integrated – they make everything from cameras to storage systems. Once you buy into them, you're stuck with them. If they don't make something, such as a retail solution that integrates video with cash register transaction data, then you simply can't get it – unless you install a different system. Then you have to deal with the nightmare and inefficiencies of operating and maintaining two different systems.

With open platform IP video surveillance systems, the video surveillance industry is beginning to enable customers to bust out of this proprietary jail and leverage all the benefits IP networking has brought to information technology (IT) infrastructure. Users of open platform IP video surveillance solutions using IP network cameras can look forward to the following advantages.

- Lower installation and maintenance costs
- Lower Total Cost of Ownership (TCO)
- Better video quality
- Enhanced functionality
- Greater and more flexible scalability
- Easier manageability
- Simpler integration with other security systems
- Faster search capabilities
- Improved storage capabilities
- Unlimited upgradeability (both hardware and software)

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The IT industry is a couple of decades ahead of the physical security industry in terms of embracing open platform solutions. They've fought the wars and Microsoft® Windows™ has become the de facto standard for most business computers and their applications. Today, because of the sheer number of applications written to run on Windows, the value of Windows to an organization has increased dramatically over the years.

History has shown that the more independent companies work together around an open platform, the better and more varied the solutions that get brought to market. This is somewhat analogous to Metcalfe's law, a law originally formulated by Robert Metcalfe in regard to Ethernet. Metcalfe's law states that the value of a telecommunications network is proportional to the square of the number of users of the system. One could easily say that the value of an open platform rises in direct proportion to the increasing number of applications for it. We're seeing this now in the video surveillance industry with Milestone XProtect™.

## **Why IP alone doesn't make products "interoperable"**

While it's very true that IP networking makes it easy to connect IP network cameras and other IP video surveillance components, IP doesn't guarantee interoperability. IP doesn't translate into "open platform." It simply means that products designed to run on IP networks will be able to use the Internet protocol (IP) to exchange data. Just because two products are IP-based doesn't mean they will "plug and play" and will instantly be useful working together. Many manufacturers of video surveillance hardware encode the equipment to only work with their system or software. In essence, they lock you in.

A proprietary IP video surveillance system can be just as difficult, if not impossible, to integrate with your current computer network as an analog video surveillance system. Proprietary solutions can make it difficult to scale your video surveillance system to include solutions from other vendors like access control, intrusion detection, and video analytics. They also keep you from being able to buy the best-of-breed components at the lowest price. Instead you're left buying from a single vendor because "that's what works."

For an IP video surveillance system, a host of components beyond IP network cameras are required – such as network routers, switches, wiring, servers, backup power supplies, management and recording software. By choosing an IP-based open platform video surveillance management solution, you ensure the greatest amount of choice in selecting these components and the least amount of trouble in connecting and integrating them with other network and security resources.

## Open platform means open integration

Software-based open platforms provide a management layer that decouples software from hardware and opens an all-important connection point for value-adding options. The result is all kinds of opportunities for integration with a wide variety of innovative solutions, greater freedom of choice in hardware components, significant cost advantages, and ultimately a superior system.

Let's look at an example. Say you want to reduce manpower by making maximum use of video analytics. (Video analytics is the ability to mathematically detect, recognize and analyze objects and events using digitized video.) By starting with an open platform IP video surveillance management software solution like Milestone XProtect, you lay the perfect foundation for integrating and managing a wide variety of video analytics solutions under one interface. This is important because most video analytics systems offer one, or at most two, types of detections per camera, and the same one or two detections for all cameras in the system. Thus, to build a flexible system capable of detecting many types of security threats or collecting a variety of types of business intelligence, you need an open platform IP video surveillance management system that gives you a central console for controlling, operating and collecting data from all your video analytics solutions.

That's just the start, too, because an open platform IP video surveillance management solution enables greater integration between a wide range of security and other business systems. In the above example, for instance, you could also integrate an access control card reader so that one of your video analytics solutions watches your entrances. This goes beyond reducing manpower and actually increases accuracy. How? By reducing human error. Video analytics solutions don't get bored. They can watch and watch and watch – and not miss anything. Should two people gain access by one card (tailgating), a properly designed and implemented video analytics solution will catch it every time.

The fact is, each manufacturer of a component of a security system – whether it's an intelligent IP network camera, video analytics software, access control system, or whatever – is good at producing their component, but the overall value of each of these systems increases by being incorporated in one converged system. A central interface enables the user to unlock all the power of using these devices together as one comprehensive solution. That's the role of the open platform.

### An example

The Shops at Atlas Park, a retail, office and leisure complex that sprang out of a former warehousing and light manufacturing facility in 2005 in Glendale, New York discovered firsthand the value of an open platform as an integrator of security system. Their security system was designed from the ground up to integrate both an access control system and a telecom system under Milestone XProtect™ Enterprise

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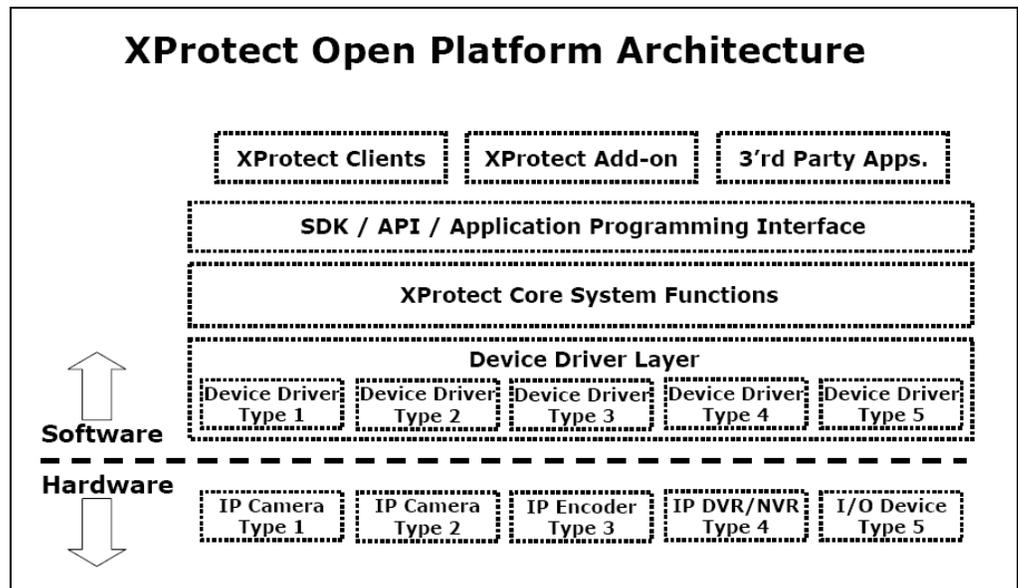
video surveillance management software managing over 100 network cameras.

Ted Leighton, the Fire Systems Inc. project manager and technician for Atlas Park explains: "Using the input/output module drivers within the Milestone XProtect software, we triggered both the intercom and access control inputs to be linked to the camera settings in the software to control the PTZ capabilities in the Sony cameras."

The cameras record all the time, and when anyone goes through a door, the system triggers a response in the access control that "talks" to the Milestone software and tells it to swing the camera patrolling to view that door. These views are able to be pre-set in the XProtect Enterprise, so if someone unwarranted enters a door, the guards can see it immediately and act fast in response.

## What puts the “open” in open platform

As defined in the Introduction, an open platform is a software system that has published external programming interfaces that enable use of the software – without modification to the source code – in ways other than the original programmers intended. Open platforms provide all this versatility by taking available common external programming interfaces such as application programming interfaces (APIs). APIs are source code interfaces that an operating system, management software product, library, or service provides to support requests made by computer programs. By providing a well-documented Software Development Kit (SDK) and using APIs that support the most common programming languages, a company like Milestone enables vendors to integrate their products with video surveillance systems to add new capabilities and video-enable other business operations.



**Figure 1.** By providing a well-documented Software Development Kit (SDK) and using APIs that support the most common programming languages, Milestone XProtect enables companies to integrate their products with the video surveillance operations to add new capabilities and video-enable other business operations.

Here are five hallmarks of a true open platform.

- **Use and availability of common external programming interfaces, such as APIs.** Open platforms provide these and make them readily available to partners and end users.
- **Published documentation (such as a SDK).** This is extremely important because it's one thing to offer APIs and quite another to go the extra mile and provide the tools, libraries and documentation that make them easy to use.

- **Availability of training for programmers on how to use the API.** This is often the ultimate differentiator between a true open platform and one with merely the aspects of an open platform. Providing training to third-party programmers enables other vendors to more efficiently and effectively use the SDK and write to the APIs to integrate their products to the platform and provide a truly seamless user experience.
- **Availability of project consulting.** A manufacturer who is genuinely interested in providing an open platform will provide the engineering help to ensure quality integrations with other vendors' products.
- **Walking the talk.** In an age where everyone is claiming to provide an open platform, it's important to do business only with the ones who really follow through on all the factors that make an open platform a solid foundation for integration. After all, you're making more than an investment in today. You're investing in the future.

Milestone meets all five of these criteria. Using the Milestone SDK, our training, and our engineering help for instance, developers can enable:

- A card entry security system that incorporates surveillance video to enable live viewing, playback of recorded activities, time and motion searches, and synchronization.
- An automated parking garage gate that reads license plates of monthly users, then uses input and output support to enable activation of the gate and send alerts in case of a violation.
- A video analytics product that integrates with the video surveillance system to enable object identification, inventory control, vehicle license recognition, loiterer detection, traffic monitoring, and much more.
- A retail transaction product that links video surveillance with transaction data from each cash register. (Milestone makes a product, XProtect Retail, for instance, that integrates with Microsoft Business Solutions ERP system to allow searching and analysis by product item, location or individual employee transaction activities.)

Over 100 companies around the world have already developed such integrated solutions based on the Milestone IP video software platform. (For a list of integrations, see:

[www.milestonesys.com/solutions/integrations/milestone\\_solutions\\_database.](http://www.milestonesys.com/solutions/integrations/milestone_solutions_database.))

## Advantages of open platforms

Open platforms give you three tremendous advantages. First, they give you hardware and software independence (freedom of choice), so you can use best-of-breed components to build a solution that truly meets your needs. Second, they enable you to take advantage of future advances as they become available – even advances you couldn't have anticipated when you invested in your video surveillance solution – and thus future proof your solution. And third, through a wealth of integration opportunities, they enable you to video-enable your business.

### Freedom of choice

An open platform IP video surveillance solution opens an enormous marketplace of choices.

- It enables you to buy commercial off-the-shelf (COTS) network components. This includes servers, storage, switches, IP cameras, video servers, and other devices.
- It assures you of being able to shop for the best products and pricing to implement your video surveillance system now, as well as each time you need to expand it. This lowers your total cost of ownership (TCO) and provides greater flexibility in meeting your evolving security or other surveillance needs.

A good example again is Milestone XProtect. Milestone multi-server solutions support more than 400 camera and encoder models. More are being added all the time through use of the Milestone's SDK. This gives you the ability to mix and match to more effectively handle every situation. You can put less expensive cameras in low priority locations, infrared cameras in low light areas, pan-tilt-zoom (PTZ) cameras in locations where you need to be able to control the camera. By mixing and matching you achieve optimal performance for your needs throughout your system.

### Future proofing

Nothing is worse than buying a solution and later finding it's a dead end because of: a) limitations or shortcomings in the technology, or b) the company that makes it has gone out of business. Open platforms enable you to future proof your investment.

- Instead of being dependent on one company's product map, you're able to take advantage of an entire industry's innovation. Why risk the inability to add an important new technology in the future if the video surveillance system you've chosen doesn't go in that direction or is slow to react?
- A flexible open platform solution enables you to keep up with the speed of innovation (a real concern right now in the IP video surveillance industry).
- It enables you to continually keep your options open and get the best return on your investment over time.

## **Video enabling**

Open platforms enable limitless integration possibilities that allow you to video-enable your business. With an open platform you can:

- Integrate previously independent security and business systems into one interactive solution for greater efficiency and improved functionality.
- Use surveillance video for many value-adding purposes, such as training, quality assurance in production control or logistics, delivery checking, insurance claims, employee procedures, environmental hazard monitoring, etc.
- Better leverage your video surveillance investment by enabling greater synergy with other departments in your organization that could also profit from the video that's being recorded and stored throughout your operations.

Examples of video-enabling with open platform solutions:

- Companies are adding video analytics systems to collect information about customer behavior in banks, retail stores, grocery stores, gasoline stations, and other locations.
- Retailers are installing new products that use video to track traffic patterns, measure the effectiveness of displays and other merchandising strategies, and devise ways to increase sales or visits.
- Governmental bodies, hotels and retailers are adding people-counting programs to monitor everything from crowd sizes to when to assign more staff to reservation desks, teller windows, or point of sales (POS) locations.

This is just the tip of the iceberg. In fact, Milestone believes that by 2012, video enabling will cause the volume of video traffic on the Internet to outpace all other traffic from voice and other data. A lot of this new traffic will be from video surveillance cameras deployed for strategic applications throughout the organization.

## When to move to an open platform IP video surveillance solution

Any time is the right time to move to an open platform IP video surveillance management solution. Even if you're well entrenched with an extensive analog video surveillance system, you can begin integrating your existing hardware elements – such as analog cameras (with video encoders), DVRs and NVRs – under an open platform solution as you have time and budget. In fact, adding an open platform video surveillance management solution helps you better leverage your existing investment and get the maximum value from your legacy equipment as you move into the future. It also allows you to make video surveillance more proactive in problem areas by deploying video analytics, megapixel and PTZ cameras, automatic alerts and other video surveillance innovations.

As the flexible core of a *hybrid* (analog and IP network) video surveillance system, open platform IP video surveillance management solutions give you all the advantages we've discussed in this paper. They enable you to:

- Bust out of proprietary jail
- Future-proof your investment
- Mix and match best-of-breed hardware and software components to build an optimal solution
- Shop for the best value as you expand your system
- Integrate your video surveillance system with other security systems
- Take advantage of new technologies as they become available
- Stay competitive by keeping up with the speed of innovation

Naturally, like any major investment you make, it pays to do your research upfront. Not all open platform IP video surveillance management solutions are as versatile, flexible or open as they claim. Be careful to compare before buying.

John Honovich, founder of IP Video Market Info, notes that there is a "dangerous and mass movement underway for video surveillance companies to sell you solutions" and that while "everyone is playing lip service to open platforms, the industry is clearly moving to more tightly bundled solutions." He defines these solutions as cameras, encoders and IP video management systems integrated as a optimized end-to-end solution. But he warns that many of these solutions are too general and "restrict flexibility and adaptability to different use cases." He also cautions that buying such a tightly bundled solution can either leave you with a market-lagging solution that locks you into its limitations, or a market-leading solution that ends up putting you at

the mercy of a single vendor who may not feel any need to accommodate your special needs.<sup>1</sup>

Chris Lee, the Director of Operations at Global SATCOM Technology notes:

“We implemented various Sony and Panasonic dome cameras, IR Cameras, and Pan/Tilt cameras through one software product that proved to be very unstable: a lot of data was never captured and the administration and support was very cumbersome. We then upgraded to another software product that was more stable – but the maturity of that interface (and what I believe should be basic features for any IP video system), as well as the ease of use was not as advanced as in the Milestone software we installed thereafter. Besides the reliability and performance the Milestone platform provides, it also offers more configurable options.”

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<sup>1</sup> For all of John Honovich’s comments, see his blog entry at: <http://ipvideomarket.info/reviews/show/171>

## **Case study: Seamless integration between XProtect and Cernium Perceptrak® video analytics**

**About Cernium:** Cernium is a leading developer of intelligent, video analytics-enabled products for physical security, business intelligence and video content distribution. The company's products are playing a critical role in changing the video surveillance paradigm to a proactive approach that uses video analytics to extract useful information from video for appropriate human assessment, action and response. Customers represent a range of industrial sectors.

### **1. The Challenge**

Many video surveillance systems are capable of simple integration. An example of simple integration would be the linking of a camera with an access control system so they can activate one another upon an alert or event. Such integrations are functional, but tend to be unwieldy, requiring the operator to use two (or more) application interfaces. Seamless integration, on the other hand, incorporates two or more systems (such as video surveillance and access) under a single management interface. The systems are combined so closely that a user considers them one. Seamless integration requires a truly open platform management solution designed to deliver such seamless solutions.

### **2. The Solution**

Through the use of Milestone's SDK, Cernium delivers a seamless integration with Milestone XProtect, providing full-spectrum analytics capabilities to enterprise-class IP video surveillance installations within the Milestone interface. The two work so closely, it appears to the user to be a single system. Cernium's Perceptrak software application enables a wide variety of behaviors to be detected on any camera, such as various kinds of human, vehicle or object movement. Within XProtect, it adapts to a wide range of environments and security policies for real-time, 24x7 monitoring. Perceptrak adds meta-tags to user-defined events of interest, enabling easy search and retrieval of relevant video from servers to support investigations, mitigate risk, enhance business operations, or other purposes.

### **3. The Advantages**

Both Milestone and Cernium use open standards that allow for such value-added integrated operability, running on commercial off-the-shelf (COTS) hardware with unlimited scalability for a flexible, future-proof solution. The Milestone XProtect platform is a robust IP video management solution designed for any size enterprise. It optimizes bandwidth usage and scales to handle any number of cameras. Reliable and easy to use, XProtect allows users to centrally, locally or remotely view live or recorded video to manage thousands of surveillance cameras from multiple locations simultaneously.

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Perceptrak works seamlessly within this environment to offer powerful analytics capabilities that help achieve safety and security objectives.

According to Cernium Chief Technology Officer Dr. Nik Gagvani, Milestone was easy to develop for and its free software development kit enabled Cernium to bring a product to market in less than six months. “The XProtect platform offers great functionality, ease of use, and performance. The combination of Milestone’s best-in-class open platform for video surveillance and our best-in-class video analytics software provides a powerful solution that has proven quite popular with our customers.”



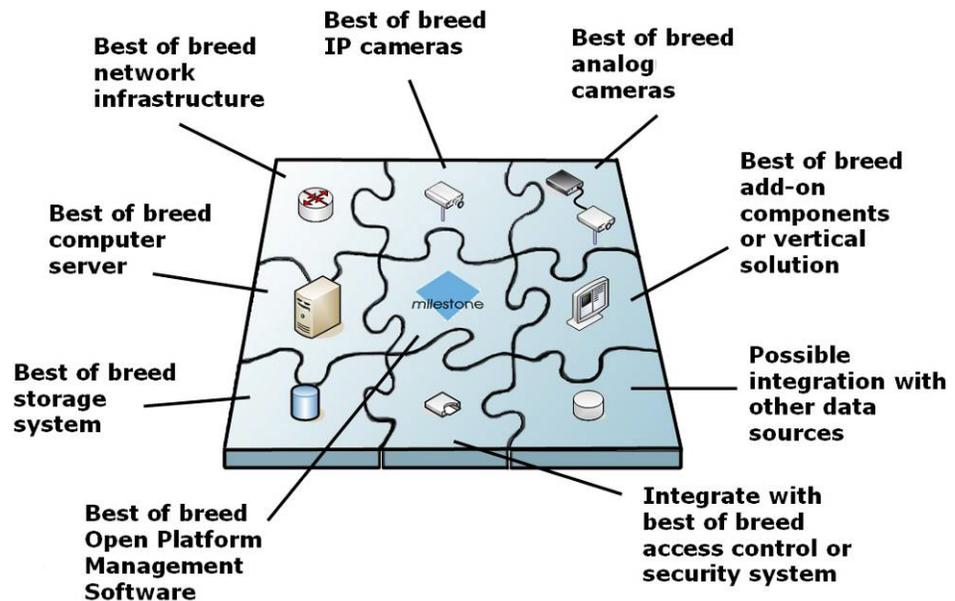
Milestone Smart Client showing live video as it is analyzed by Cernium Perceptrak.

## Milestone Systems

**Innovator.** Milestone Systems is internationally recognized as an innovator and thought leader in open platform IP video management software. Milestone's XProtect products operate as the core of surveillance systems: connecting, sharing and managing all devices through a single interface that is easy to learn and operate.

**Easy to use.** The XProtect platform is easy to use, proven in operation and scales to support unlimited devices. XProtect products support the widest choice of network video hardware and are designed with an Application Programming Interface (API) that integrates seamlessly with other manufacturers' systems.

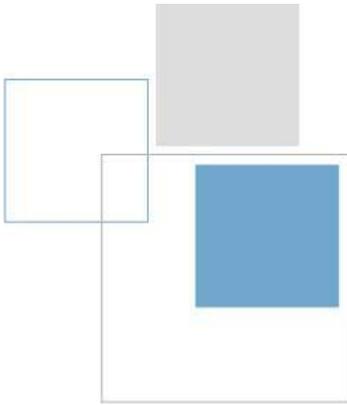
**Best-of-breed.** Using XProtect, you can build scalable, "best of breed" solutions to reduce cost, optimize processes, protect assets and ultimately increase value in a company's products and services.



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Milestone Systems is the industry leader in developing true open platform IP video management software. The XProtect™ platform gives users a powerful surveillance solution that is easy to manage, reliable and proven in more than 50,000 customer installations worldwide.

With support for the industry's widest choice in network hardware and integration with other systems, XProtect provides best-of-breed solutions to "video enable" organizations – reducing costs, optimizing processes, and protecting assets.

Milestone software is sold through authorized partners in over 90 countries.

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