

To go IP or not go IP? That is the question...

Is an IP-based surveillance system right for your facility? The answer lies in how to make the right assessment of your needs

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This article addresses a question which port and terminal managers are likely to ask themselves at the beginning of the process of specifying a surveillance system: Should the system architecture be based on a pure video over an IP network-based system, or is conventional analogue technology still able to deliver all that a port or terminal is likely to need from its surveillance system?

Understandably, you are likely to have an inclination to want to buy a solution that is based on the very latest technology. A major investment in a surveillance system is not something you would wish to repeat on a regular basis. You would therefore want to purchase a solution that is not just fit for today's purposes, but also is future-proof in terms of its expandability and its ability to integrate with new technology that may become available in the future.

More questions than answers

The most common question that I and my colleagues are regularly asked is, "What is the break-even point where the number of cameras to be installed makes it cost effective to consider an IP network solution, instead of a system connected by a conventional analogue infrastructure?" Some people quote this as 20 cameras, some at 30, but there is in fact no simple answer to this question as there are so many factors that have to be taken into consideration, many of which will be affected by your operational requirements.

This article is therefore intended to suggest a wide ranging number of questions that your system designer needs to address before a decision can be made as to whether or not to go for an IP network-based system. These are:

- Do you intend to have one or more operators watching the live video around the clock, and if so, will all the operators be located in a single control room?
- Other than security personnel located in your control room, do you have other colleagues who, if authorised to do so, would wish to have remote access to the live or recorded video?
- Will the surveillance system be used for purposes other than security, e.g. health & safety compliance or management information, footfall management, parking control, etc?
- Will the surveillance system be expected to interact with other security systems, e.g. access control?



The SRD-1670 is a 16 channel H.264 digital video recorder.

- Except when there is an incident that needs to be more closely observed, do you wish to be able to capture very high-resolution recognition or even identification-grade images of all activity in the field-of-view of the cameras? Alternatively, will image quality, which enables an operator to just verify that an incident is taking place, be sufficient?
- Do you need every second of video from all the cameras to be recorded 24/7?
- Will you want to store recorded video for one week, one month, or even longer?
- What is the bandwidth capacity of your existing network?
- Will your network manager allow the surveillance system to share the available bandwidth with whatever else is being transmitted around the network?

When you have the answers to these questions, and perhaps some others that are specific to your port or terminal, your system designer should be able to make some recommendations on how your system should be structured to match your requirements. He or she should, of course, take on board the advice of your chosen installer or system integrator. There are also manufacturers like Samsung who offer a free system design service and, while these manufacturers will quite rightly want to promote their own products, in the main you should be able to expect a high degree of objectivity when it comes to providing advice on the design of the system's architecture.

Solutions

The key advantages of an IP-based surveillance system are:

- Substantial savings can be made on cabling installation costs because an existing network can be used, instead of installing totally new cables. A single network cable is also able to carry video, audio and data, as well as provide telemetry and PoE (Power over Ethernet).
- The opportunity to control and monitor the system from anywhere on the network.
- Resilience – Mission-critical video recordings can be stored at any location on the network and retrieved from any PC by an authorised user. A high level of redundancy can therefore be introduced by choosing to simultaneously record and store video at multiple locations.
- IP-based surveillance systems allow users to gain maximum benefit from the latest generation of high-definition cameras. These cameras can deliver so much more than conventional analogue CCTV cameras, which typically generate images comprising of just 0.4m pixels. A 1.3-megapixel camera, depending on the field of view, can do the job of several analogue cameras as it can cover a wide area and then zoom in very close when required to a distant object without 'pixelation' appearing in the image.



The SNB-5000 is a 1.3Megapixel HD network camera.

The recent availability of multi-megapixel cameras offers the possibility of even higher definition images. While analogue cabling can connect these high definition cameras, the full benefits of the technology built-into the cameras are best achieved within an IP-based system. The much higher recording requirements of these impressive cameras needs, however, to be taken into consideration at the system design stage.

More often than not, the most cost effective and fit for purpose solution for port or terminal projects is likely to be a 'hybrid' system, where the best of both technologies are deployed. A hybrid system allows both IP and analogue cameras to be controlled from the same device, and additional cameras can be added at any time without the need for new long cable runs.

The recent advances in both cameras and digital video recording technology favour a hybrid approach. The WiseNet1 DSP chipset, for example, which has been incorporated into a large number of widely available analogue cameras and domes, provides technology that is ideal for a 'hybrid' surveillance system. This includes a practical time and cost-saving feature, such as BNC and Ethernet outputs, so that video can be transmitted via coaxial cabling as well as over a network.

Coaxial control offers convenience as well as cost savings, allowing both video and telemetry control to be transmitted via conventional analogue coaxial cabling. This gives users full control of camera functions, as well as access to set-up menus via a digital video recorder from the convenience of a control room. As well as a reduction in cabling costs, there is also the opportunity for existing equipment to be upgraded quickly and easily.

The H.264, MPEG4, MJPEG and JPEG compression methods incorporated into the WiseNet1 DSP provides users with the ability to simultaneously transmit images to multiple locations at various frame rates and at different resolutions including 1.3-megapixel (1,280 x 1,024), 16.9 HD (1,280 x 720), QVGA (320 x 240), SVGA (800 x 600) and VGA (640 x 480).

With such a wide range of compression methods and resolutions to choose from, a number of different users, if authorized, will be able to simultaneously monitor live images at one location, record video evidence at another or view live and recorded images on a Smartphone. At the same time, JPEG images of an incident can be attached to an alarm email notification with the additional facility of storing pre- and post-alarm images on a camera's internal SD memory card.

One of the most impressive features of the WiseNet1 DSP is its Intelligent Video Analytics capability, which includes



The SND-5080 is a 1.3 Megapixel HD network dome camera.

Disappearing, Appearing, Cross-Line and Enter/Exit detection. It also has a Scene Change tampering function, which creates an alert if, for example, paint is sprayed on a camera lens or there is an unauthorized manual change of a camera angle.

The cameras and domes that incorporate the WiseNet1 DSP chipset are also likely to utilise a 1/3" Progressive Scan Mega CMOS. Progressive Scan prevents motion artefacts spoiling the quality of video of fast-moving objects, which can occur with standard CCTV cameras using the traditional 'interlacing' method of processing video frames.

Full duplex bi-directional audio provides the option of interactive communication between a camera's location and a control room.

Hybrid network friendly digital recording

The latest generation of DVR and NVRs, both of which can sit very effectively within a hybrid surveillance solution, capitalise on high-level H.264 compression to ensure superb picture quality, whilst minimising hard drive space and bandwidth requirements.

A wide choice of four, eight and sixteen channel models are available, each offering a long list of installer and operator-friendly features, making it possible to pick the perfect unit for the application at hand. For example, data from ATM, POS or access control devices can be captured with the text data saved, along with associated images to be played back if required at a later date.

Dual codec operation delivers different streams for both high-performance recording and optimised transmission, whilst a built-in web server allows live and playback viewing options, with the ability to back up incidents via a web browser.

ABOUT THE AUTHOR



Simon Shawley is General Manager of the UK and Ireland for Samsung Techwin Europe Ltd. He has worked within the security industry for over 17 years and is the driving force behind a team of seasoned professionals who have been instrumental in Samsung becoming Europe's fastest growing security brands.

ABOUT THE COMPANY

Samsung's massive commitment to research and development has resulted in the company establishing an enviable reputation as a technology leader. During 2010 Samsung will be launching over 170 new products including over 40 IP network-based devices.

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