

CCTV and IP surveillance

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The security industry has long been synonymous with the term Closed Circuit Television (CCTV), but in fact the CCTV industry has been anything but 'closed circuit' for many years. For a long time now, analogue systems that use coaxial or twisted pair cable for transmission have benefitted from the ability to connect to networks via control equipment. Even with the most cost effective equipment, full viewing, control and administration of such a security system is possible via a PC connected to the Internet. However, the trend of plugging a surveillance camera directly into the network is one that continues to gather pace. As a result, IP and network security products are now the single largest contributors to the growth of the physical security market as new installations take full advantage of the benefits that operating over the network brings.

IP based surveillance systems allow users to gain maximum benefit from the latest generation of high resolution cameras that can deliver so much more than conventional analogue CCTV cameras, which typically generate images comprising of just 0.4m pixels. For example, depending on the field of view, a 1.3 megapixel camera can do the job of several analogue cameras as it can cover a wide area and then zoom in very close, to a distant object, without 'pixilation' appearing in the image.

It is perhaps worth defining the difference between the different types of high definition cameras. A megapixel camera is simply a camera capable of capturing an image at a resolution of 1 million pixels or more. 1.3 megapixel cameras are amongst the most common on the market and this figure equates to a resolution of 1280 by 1024 pixels. However, even though a camera may be able to capture images of 1 million pixels, it cannot be described as a true HD camera unless it complies with the widely accepted HD standard. This requires the camera to output resolutions of either 1920 by 1080 or 1280 by 720. Unlike standard CCTV cameras, an HD camera displays images in 16:9 format (widescreen) and has to be able to output images in real-time at 25 images per second. The 16:9 aspect ratio allows users to see a much wider field of view compared to the traditional 4:3

aspect ratio. In summary therefore, all HD cameras are megapixel but not all megapixel cameras can be described as HD.

HD megapixel

HD megapixel cameras offer a lot more than just remarkable 'evidence' quality images and a helpful display aspect ratio. They also come with a range of other features which equip operators to respond more effectively to any suspicious activity or emergency. Most of these 'added value' features are likely to be incorporated into a camera's DSP chipset. The Samsung WiseNetI and WiseNetII DSP chipsets, for example, have been designed specifically to allow users to gain maximum benefit from megapixel camera technology.

Although megapixel cameras can capture very detailed images, one of the benefits is that there is the option to simultaneously transmit images at lower resolutions, which include QVGA (320 by 240), VGA (640 by 480) and SVGA (800 by 600) and with multiple compression methods available, different authorised users are 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.

Of course, more often than not, users do not require the highest of resolutions across their entire site and it always comes back to understanding the operational requirement and then specifying cameras to match the specific requirements of the project. A security system will nearly always use HD megapixel cameras where they are required, coupled with standard resolution cameras for general overview purposes.

Intelligent video analytics

Another substantial benefit of most HD megapixel cameras is the use of Intelligent Video Analytics (IVA), which includes optical tripwire and enter/exit direction detection, as well as an appear/disappear function to detect the movement of objects. IVA also has a scene change tampering function which creates an alert if, for example, paint is sprayed on a camera lens or there is unauthorised movement of a camera away from its usual field of view.

If we look at the home and how the take-up of HD TV has gathered pace to the point that virtually every TV on sale is HD, I think we will see this trend in the security industry too. Average selling prices for HD megapixel cameras have reduced compared to last year alone, meaning more applications can benefit from higher quality images as the market gets more competitive. Samsung has recently introduced 4 and 16 channel NVRs capable of recording HD images, offering a cost effective solution for smaller IP based systems and the trend will continue down to smaller applications.

To justify the spend in what will be, for the foreseeable future, tough economic times, security management will be looking for increased value from a CCTV or IP video surveillance system. In many cases it may be that the cost of the systems will be met with the support of HR, IT and marketing budgets with both departments, as well as senior operational



Samsung IP Network Solutions.



The SNV-7080R.



The SRN-1670D.



The SPE-100.

management, having the opportunity to share the valuable information captured by the cameras. This will certainly involve a 'solutions' approach where cameras and recording devices interact with a range of other systems, for example, access control, ANPR, point-of-sale, intruder, fire alarm and building management systems.

Fortunately, surveillance technology has been able to keep pace with the changing expectations of end users, which has been partly encouraged by the realisation that the latest generation of high definition cameras, with their ability to capture amazingly good quality images, can be used for so much more than just verifying what may be happening within a scene.

Progressive scan

It can be quite frustrating for end users who have invested in PTZ domes to find that images captured when the camera is on the move lack clarity, or have what is referred to as 'motion blur effect.' If the end user is an airport or port or is involved in some other mission critical activity, video recorded from a PTZ dome that is of a poor quality is likely to reduce confidence in a video surveillance system. Car parks, industrial estates and retail parks may not be regarded as high security applications, but they are environments where PTZ cameras are commonly installed and where blurred images can seriously impact on the ability of security personnel to make fast and effective decisions when an incident or emergency is taking place.

Fortunately, yet again, technology has come to the rescue. A feature called 'progressive scan' optimises high quality video capture and provides sharper image edges. The improvement is most noticeable on paused images, providing picture-perfect stills of, for example, number plates without any blurring.

Samsung has included progressive scan technology in a new series of network speed dome cameras. All four of the new ONVIF compliant models, which incorporate Samsung's highly acclaimed SV-5 DSP chipset, are able to capture 4CIF resolution images at 25 frames per second. The SNP-3371 is equipped with a powerful 37x optical zoom as is its weatherproof counterpart, the SNP-3371TH, which has an object auto-tracking feature and is supplied in an integrated housing for easy installation. The SNP-3302 has a 30x zoom capability and the housed version, the SNP-3302H, is IP66 rated.

In addition to progressive scan, the dome camera's ability to capture superb quality images when on the move is enhanced by true day/night functionality and a high-end 600 TVL CCD which work extremely well in low light applications. The cameras are also equipped with wide dynamic range (WDR) technology which compensates for backlight problems and is 160 times more effectively than standard BLC.

ABOUT THE AUTHOR



Tim Biddulph, who has worked within the electronic security industry for seventeen years, joined Samsung Techwin Europe Limited in February 2009 as a Pre-Sales Engineer to provide clients with support in system design, tender returns and compliance and product training. Tim has recently been promoted to the position of IP Product Manager.

ABOUT THE COMPANY

Samsung manufactures video surveillance and access control products designed to meet the current and future needs of security professionals. The products utilise innovative technologies many of which are unique to Samsung, which can deliver tangible benefits to security personnel involved in combating criminal activity.

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