VIDEO OVER IP LIKELY TO PLAY MAJOR ROLE IN FUTURE CCTV SURVEILLANCE

The Internet Protocol will in all likelihood play a major role in CCTV security surveillance systems of the future, especially once improvements to systems have been implemented.

Dr Bennie Coetzer, joint managing director of Thales Advanced Engineering, a local manufacturer of high-level integrated electronic CCTV surveillance, digital recording and data capture systems, told delegates at the recent Securex conference and exhibition in Sandton that use of IP to transmit video images in today's technology environment would have to be done very carefully.

"Undoubtedly IP is useful in small and relatively non-critical systems but it is not yet robust enough for critical surveillance solutions. Its use also pre-supposes that CCTV system installers have the ability to install high bandwidth networks. This requires confirmation because CCTV installers are knowledgeable about CCTV and network installers are knowledgeable about data, but right now, the conclusion is that neither is skilled enough for video over IP."

Discussing how an IP solution differs from current analogue technology, Dr Coetzer said all CCD cameras use digital sensing. With analogue cameras the image samples are reconverted into analogue signals on a line by line basis and presented to the cable. With digital cameras the samples are digitally quantised and transmitted serially over a network.

"Up to this point, there's not a great deal of difference. But there are different levels of implementation. In a full implementation system, all video signals are digitised and transmitted on IP. In a partial implementation system, some or all of the video signals are transferred in analogue form to a base station, usually the digital video recorder (DVR), and are converted there into IP for remote surveillance or image distribution.

"This poses questions, such as does IP improve on our basic shortcomings? Does it provide better evidence? How is the evidence to be stored? Do we use analogue or digital cameras? Are the pictures better? Can we improve their storage? Can we move them to where they are needed in a better way?

"If we are looking for images of a quality that allow precise identification of individuals or even technical analysis to precisely determine a feature, object or component such as differentiating a R50 note from a R20 note, then bandwidth becomes a primary consideration."

Analogue images typically use less than 4MHz at 25 frames per second. Digital images require 120Mb per second or 120MHz at 25fps. Typical LAN availability is 100 Mb/s or 1 Gb/s. IP is also a "bursty-type protocol" designed for messages

that can be repeated if delivery fails. To convey digital images some form of compression or a very high bandwidth network is needed and both come at a cost. Broadcast quality can be compressed to 6-10 Mb/s.

For storing images digitally, Dr Coetzer said the available bandwidth for hard disk technology is much wider, up to 80MB/s, allowing digitising and storage at a much higher rate than if it were restricted by the transmission medium. Cost and reliability, upgrade paths, true life cycle costs and support and maintenance are other factors to be considered.

“To use the IP digital transmission medium we have to digitise and compress images before transmission. The advantages include the network topology – flexible, easily controllable systems as every device has a unique address. Maintenance and service can be conducted by remote interrogation of net devices. The systems can automatically report faults to a technician no matter where he is located as long as he has an Internet connection.

“The first disadvantage is the cost of the cameras. Because compression takes place in the camera, every camera requires compression capability, which comes at a cost. DVRs on the other hand share the processing and can compress many inputs with a single compression engine. Reliability is adversely affected because of single points of failure in terms of the network and storage. The storage operation is also file-based, not streaming.

“So while IP is good for non-real time transfer of large video files it raises serious concerns for real time video transmission. Security is another concern as firewalls are adversely affected by multimedia traffic. They cause delays so users either turn firewall ports off or have to install and open many more new ports.”

Dr Coetzer added that video over IP should be used when the system needs to be accessed over a network for remote viewing or to allow remote service calls. For this the system would have to be on IP but not the cameras. “While IP is standardised, the systems aren’t so it means that specific software will be required to address specific cameras, making a mix ‘n match approach difficult. System latency can also be a problem with pan, tilt and zoom (PTZ) cameras.

“But there will be many digital advantages in the future, such as digital zooming without loss of fidelity, digital panning and tilting will reduce the cost of lenses and PTZ and direct control of cameras will allow sophisticated systems. We will also be looking at higher resolution and larger image displays on LCD or OLED as opposed to CRT.”

Note to Editors: Thales Advanced Engineering is a wholly South African company, formed in 1987 and headquartered at Lonehill, Sandton. It should not be confused with a French defence electronics company now calling itself Thales but formerly known as Thomson-CSF.

Thales Advanced Engineering specialises in image processing, data communications and digital CCTV surveillance systems for defence, commercial security and specialised imaging. Thales provides system engineering, high-speed digital design, image processing, embedded software design, digital signal processing, high level software design, data communications and general RF communications.

ISSUED BY:	COPYWISE Dave McDermott +27 11 478-2055 or +27 82 608-0019 dave@copywise.co.za
ON BEHALF OF:	THALES ADVANCED ENGINEERING (PTY) LTD Dr Bennie Coetzer +27 11 465-4312 Web site: www.thales.co.za