



## Extron Quantum Elite Powers Videowalls for London Metropolitan Police Service

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The Metropolitan Police Service, MPS, of London, UK extensively uses public surveillance video as part of its duty to maintain public safety. IP and legacy CCTV cameras cover the Underground subway system and public areas throughout the Greater London area, nearly enough to monitor activity on every street corner of the city. After over a decade of investments in surveillance and protection, the MPS underwent an extensive overhaul to modernize and enhance the efficiency of its Command and Control, Communications and Information - C3i systems. More than 30 monitoring facilities were consolidated into three centralized Special Operations Centres outside of Central London in Lambeth, Hendon, and Bow. Each of these new facilities would need flexible, high performance video monitoring on videowalls so that numerous staff members can easily view numerous camera feeds and other important information. The Extron **Quantum™ Elite** videowall processor provided high quality video processing plus the scalability to support future system expansion.

### Videowall System Needs

The videowalls for the C3i systems were to be used to display a large number of camera feeds, together with news broadcasts and graphical information such as maps. These sources had to be presented simultaneously without compromising image detail. MPS also asked for the ability to add camera feeds or other sources to the videowalls as necessary. Reliability was imperative since these facilities operate around the clock. Furthermore, the system needed to have a user-friendly interface, and be integrated into the master control system being used for all other communications including telephony, radio, and data.

### Quantum Elite Meets the Need for Expandability

Approximately 30,000 IP and CCTV camera feeds are supplied into the system at each facility. Within the CCTV monitoring suite, the camera feeds are screened and selected for display on the videowalls located on the main floor. Each facility includes a Gold Command Center, within which control center staff and leaders discuss and delegate overall direction and strategy during major incidents as well as day-to-day operations.

The Quantum Elite is available in 8 and 15-slot versions with 4U and 6U card frames, respectively. The 15-slot **Quantum Elite 615** was selected to drive each of the seven videowalls deployed in the three facilities. The card slots can be populated with input or output cards. One of the input cards used for this application features high density video connections that accept up to 12 standard definition video inputs from the camera feeds. The output card drives two screens on a videowall and can display up to 128 source windows simultaneously.

Each videowall comprised between 8 and 12 screens and therefore required 4 to 6 dual output cards per card frame. The frames were also populated with 2 to 4 of the high density video input cards to accept between 24 and 48 video inputs, and one or more RGB video input cards, each with two VGA connections for PC graphics sources supplying data, maps, and other graphical information. Several slots were left available for each Quantum Elite unit to accommodate future system expansion.

In addition to PC sources directly connected to the videowall processors, multiple graphics sources were streamed over IP to the Quantum Elite units. A **QGE 100** DVI/RGB Computer Screen Capture IP Encoder enabled streaming from a PC to the Quantum Elite over the local network. Network-based content delivery avoids the need for additional input cards, and allows PC sources to be conveniently located anywhere a network connection is available. Hundreds of additional DVI or RGB sources can be interfaced into the Quantum Elite using additional QGE 100 encoders. The Quantum Elite can display up to 28 simultaneous streams on the videowall.

### Maintaining Image Integrity With High Quality Video Processing

An important requirement for the MPS videowall systems is the presentation of surveillance camera feeds and other critical visual information without compromising image detail. A video source presented on a videowall should have the same picture quality as if it were being viewed on a single display. Essential details and quality of the image must be retained, even with scaling applied to enlarge or reduce the source image size for the videowall.

The video processing is handled onboard the input and output cards. Video signals processed on the input cards are channeled to the output cards via a dedicated high capacity, 10 Gbps RAPT - Real-Time Asymmetric Packetized Transfer video/graphic bus with more than ample headroom for the 50 or more video sources to be displayed



The Metropolitan Police Service employed videowalls to make surveillance camera feeds and other information readily viewable by many staff members.



#### QGE 100

DVI/RGB Computer Screen Capture IP Encoder

Extron QGE 100 encoders can be used to stream DVI or RGB computer-video graphics to the Quantum Elite over IP, adding virtual inputs for hundreds of remotely located PCs.

### Surveillance Video Monitoring in the United Kingdom

The United Kingdom is said to be the country with the greatest deployment of surveillance video cameras. Surveillance video has been used for over a decade as a measure to help thwart criminal activity or other public threats, and facilitate and support criminal investigations. It is estimated that about 4.2 million cameras are located throughout the UK, or one camera for every 14 people. In London alone, there are about 500,000 cameras in private areas, and much more dotted throughout the public in the Greater London area. Surveillance video is also extensively used throughout the London Underground subway system. In addition to maintaining public safety, surveillance is also used in the UK to monitor and manage traffic conditions, particularly in London and on the major motorways.

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on the MPS videowalls at full frame rates. The RAPT bus and video processing are separated from shared system resources such as a dedicated bus or central processor. This prevents system overloading which could otherwise affect video processing latency and quality, and also ensures rapid control response when switching window presets or input sources.

### Failsafe, 24/7 Operational Reliability

The Quantum Elite satisfied the MPS's requirement for continuous failsafe operation in many ways, including hot-swappable fans and redundant power supplies, and system operation using write-protected CompactFlash memory, which eliminates the risk of virus retention and susceptibility to failures characteristic of hard disk drives.

In the unlikely event of a system crash, the Quantum Elite will continue to output content to the videowall since the operating system and shared resources are independent of the RAPT bus and input and output cards. A reboot restores the system to its previous operating state in less than 90 seconds.

### Simple User Operation

The MPS required that control of all communications in the control centers be intuitive and centrally integrated into a single, user-friendly system. For the videowalls, operators simply recall predetermined window presets. To accomplish this, window layouts were first created, and saved as presets, on a PC with the Quantum Elite control software. The master control room user interface was then programmed so that operators could quickly select window presets.



Quantum Elite videowall processors deliver high performance video processing, maintaining image integrity for important sources such as public camera feeds.



Three videowalls were installed at this Special Operations Centre in Lambeth, one of three such facilities for the Metropolitan Police Service.



Quantum™ Elite  
Scalable, Expandable Videowall Processing System



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