

# PROJECT PROFILE



## Signal Training on the Victoria Line

### Dedicated Facility for Training Operational Staff

The Victoria Line on London's Underground is currently being upgraded with new Rolling Stock, a new Signaling System and new Line Management System under the direction of the Victoria Line Upgrade Team (BCV Upgrades, part of Transport for London).

There is a dedicated facility for training Operational Staff in the operation of the new systems. Invensys Rail (Signaling) and Siemens (Line Management System) have supplied training simulator hardware and applications, Electrosonic was contracted by BCV Upgrades to supply overhead displays and a system by which training sessions could be recorded.

The training space is set up in a manner identical to that of the actual control room. Two consoles are provided for trainees, one for the "north end" of the line, and the other for the "south end". Both face a display consisting of eight 32-inch LCD monitors (from NEC) that shows the simulated status of the line. Below the display is the instructors' console, facing the trainees. The instructors set up the scenarios

(such as incidents on the line) and monitor how the trainees react. Another set of monitors is mounted on the opposite wall, behind the trainees, and these displays repeat images of each trainees' workstation monitors.

With simulator training of this kind it can be difficult to analyse what went wrong if a trainee takes inappropriate action. However, a simple way to overcome the problem is to record what is shown on the workstation screens in real time. This approach has the great merit that it is non-invasive and does not involve access to the simulator application itself. The potential problem is that the amount of data to be stored is huge, since each display screen needs around two Gigabits per second.

Electrosonic offered an effective solution to the problem by equipping each of the trainee workstation monitors (four per trainee) with an Extron VN-MATRIX™ codec. This device captures the screen images in real time and converts them to an IP format of modest bit



rate, with a highly efficient and robust compression system based on the wavelet transform and novel methods of coding and temporal compression.

The system is completed by a VN-MATRIX Recorder installation. This records the IP streams for subsequent review. In the initial installation the recorder is in the same room as the simulator which uses a local network; however if connected to the WAN the images could in theory be made available anywhere on the London Underground system, either in real time, or as played back by the recorder.

In the initial installation eight synchronous SXGA+ image streams are recorded, but this is not a technical limitation; the system can easily be expanded. Nominal capacity of the storage system is eight hours, but this depends on bit rate. The bit rate is adjustable over a wide range; currently rates in the 10 - 20Mb/s are being used, ensuring that fine detail is captured.



The VN-MATRIX Recorder System