

Ticket to ride

For transport operators, protecting their passengers, staff and their assets is of paramount importance, and increasingly so. Whether on buses, trains or trams, indeed on any passenger transport, combating crime and dealing with the fall-out of crime is a major concern, fraught with challenges. For *Eurotransport*, Robert Wint, Marketing Director of EMEA Verint Solutions interviewed Mr. Burkhard Eberwein, Head of Vehicle Management (Bus) Department at BVG, who examines the challenges and developments concerning security for public transport users in Berlin.



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Burkhard Eberwein

Head of Vehicle Management (Bus) Department, BVG

Dipl. – Ing. Burkhard Eberwein is the Head of Vehicle Management (Bus) Department at BVG responsible for the implementation and testing of new technologies in buses and new concepts and strategies for operation. He is also responsible for the management of all EU and nationally-funded projects in the field of innovative vehicle technologies and a member of both the VDV (Association of German Public Transport Companies) and UITP (International Association of Public Transport).

Perhaps the greatest challenge is how to find the most viable, most cost-efficient and most effective way of dealing with the serious issues of violence and vandalism that plague network operators, reduce passenger numbers and impact significantly on the bottom line. The solutions, too, must have the support of those passengers and the wider public at large, not to mention the authorities, in order for those solutions to work.

One network operator that can genuinely claim to be at the forefront of providing a safe environment for staff and passengers alike is Berliner Verkehrsbetriebe (BVG), one of the largest bus operators in the European local public transport sector. BVG's network comprises nine underground railway lines, 22 tram lines and 201 bus routes as well as six ferries on Berlin's waterways.

Wholly owned by the State of Berlin since 1929, when BVG was established in 1847 it operated five bus routes with 20 horse-drawn vehicles and 120 horses. Today its vehicles carry approximately 900 million passengers – equivalent to over 2.4 million people very day – and its bus routes alone total more than 1,600km. Almost 6,600 unidirectional bus stops (total of day and night services combined) are available.

Vandalism and petty crime

BVG suffers no more than any other transport operator in Europe from incidences of petty vandalism on its buses, or other outbreaks of antisocial behaviour. Assaults on drivers or other passengers are thankfully still the exception, rather than the rule, but BVG

nevertheless understands it has a public duty to try and reduce any examples of crime on its buses to nil, if at all possible.

Therefore, it was in 2001 that the management at BVG began looking seriously at the latest developments in mobile video surveillance and whether CCTV would act both as a deterrent to crime and be effective in recording a crime as it happened to help the police bring the perpetrators to justice after the event.

Burkhard Eberwein, a member of the Special Projects Team who looked into the solutions available, comments, "We invited five companies to tender to deliver a CCTV system that we would pilot on a small number of buses for a year, and then evaluate its performance. CCTV was clearly useful in a static environment, but wasn't proven in a mobile environment which has different challenges."

One of the companies invited to tender was Berlin-based LAT – Funkanlagen Service GmbH. LAT has over 20 years experience in integrating security systems and has been working in partnership with Verint's mobile video solutions since 2002.

Mr. Eberwein continues, "Our technical department compared the systems available before opting for LAT as being able to provide the right technology at the right price, but also because they provided the appropriate levels of support we needed during this testing phase."

The 'right' technology, as Mr. Eberwein calls it, was centered around a core solution for each vehicle comprising either three or four cameras (depending on the length of the bus), a monitor, and an RP8000 video recorder with



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BVG bus routes cover more than 1,600km

20Gb hard disk storage – technology specified in partnership with Verint.

“The cameras are installed at the front overlooking the driver area and the entrance and then throughout the length of the bus,” explains Mr. Eberwein. “The driver has a monitor in front of him so that he can see what is happening and if there are any problems and images from each camera are recorded to hard disk currently at a rate of six frames per second for up to 16 hours.”

Whilst the first systems to be installed had to be done so retrospectively, all new buses being delivered now arrive with the technology already fitted. LAT, Verint and the bus manufacturers have worked together in making this process as streamlined as possible. The recording unit, for example, is pre-cabled within a 19 inch rack to fit each of the different bus



Reducing the fear of crime is an important subject area for BVG

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‘types’ and so dramatically reduce installation time.

The bus ‘types’ include 12 metre vehicles from Evobus; 12 and 15 metre buses from Evobus and MAN; 18 metre ‘bendy’ buses from Evobus, MAN and Solaris; and double-decker business from Neoman. An average of €8,000 per bus is allocated to the installation of security equipment.

Harnessing advanced technologies

Since the first 50 buses were equipped from 2002 onwards, LAT and Verint have now installed CCTV in 825 vehicles out of a total fleet of approximately 1,300. In those six years, Verint’s technology has evolved significantly. This means that the equipment used now spans three models of video recorders: the RP8000 (in 188 buses), the RP12001 (in 312 buses), and



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the latest generation six-channel mDVR-6S (in 325 buses).

This latter device allows images to be recorded (and transmitted if required) as either digital video signals using Verint's intelligent edge devices or as analogue video signals, thus protecting BVG's current investment in analogue technology.

As well as the recording units, various models within Verint's range of mobile colour mini-dome cameras have also been specified, including the RP306 – a device with anti-vandal characteristics that has been specifically designed to work in difficult environments – i.e. those with the challenges of continuous vibration, extreme temperatures and frequent power fluctuations. Designed for round-the-clock operation, clear, crisp images are delivered under virtually any lighting conditions. Compact and rugged polycarbonate housings make Verint mobile cameras resistant to vandalism, whilst rounded edges protect against passenger injury.

Mr. Eberwein explains, "The cameras have to be robust as they can be an easy target for

vandals or for school children putting chewing gum on the lenses!"

Complementing the cameras and recording units are bespoke 10.4 inch monitors that have been designed by LAT with BVG and the bus manufacturers and which can be painted according to the bus' model and make.

As well as the 'standard' fittings inherent within Verint's technology, LAT has also engineered (in conjunction with a small Berlin-based manufacturer) a video pause switch that enables bus drivers to stop the cameras from recording at the point that the bus reaches its terminus. This was developed at the specific request of the transport unions so that their drivers' privacy was assured when they are not on duty.

As well as the technology installed on the buses, LAT has also provided an 'evaluation suite' to the B-SUS – the Bus' Service and Security Unit, the only department authorised to evaluate captured data. Should an incident need further investigation, the recorded images are secured (to show that they have not been tampered with) and reviewed by B-SUS in consultation with the law enforcement agencies.

Reducing fear of crime

The technology, of course, has been installed with a specific purpose: both of reducing crime and the fear of crime. Signs are clearly visible as passengers climb on-board that the bus is CCTV-equipped and their movements are being monitored. But is it proving successful?

"Yes it is," confirms Mr. Eberwein. "We recently conducted a survey amongst our drivers and passengers and more than 85% of those questioned said that they now feel safer on one of our buses than they did previously."

Mr. Eberwein was then asked what the future holds. His response, "Technology has come a long way since we first trialed CCTV seven years ago. The first systems were analogue, and the next step will be to make greater use of digital and higher storage capacities for each vehicle. We will also be looking to take advantage of the latest MPEG 2 or MPEG 4 technologies and increase the Fps rate to 25 frames per second to give us more 'real-time' recording. It's an exciting opportunity." ●

DESTINATION	PLATFORM
REDUCED VANDALISM	01
INCREASED RIDERSHIP	02
IMPROVED SECURITY	03
FASTER RESPONSE TIMES	04

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