Genetec™

The Lyon subway

Name
Sytral, the joint union of public transport for the Rhône and Greater Lyon area

Size
42 stations, 4 subway lines, 2 funicular railways

Product used
Security Center

Sector
Transport

Head office
Lyon (69), France

Partner
ROIRET Transport, a VINCI ENERGIES company

Sytral, the joint union of public transport for the Rhône and Greater Lyon area, uses the Genetec Security Center platform to monitor the 1,900 cameras in Lyon's 42 subway stations. It also seamlessly supervises 576 in-car cameras onboard the D-line trains from the same interface.

The challenge of having "eyes" in automated trains

Sytral, the joint union of public transport for the Rhône and Greater Lyon area, has opted for the Genetec video surveillance solution to improve its metropolitan network security. This project's tour de force is to have successfully deployed video cameras onboard the 36 trains of the fully automated D-line. These cameras allow the Security Control Station (PCS), connected to the police, and the Central Control Station (PCC), responsible for traffic, to react in real-time to events by accessing the live stream or playback stream on request.

"Our aim is to eventually equip all the lines. We started with the D-line because it's currently the only automated line, and therefore requires increased visibility to ensure passenger safety. Our challenge is to improve the quality of intervention of the teams of the network operator, Keolis Lyon. Twelve internal cameras facilitate analysis of the situation when a user calls from a car. And four external cameras help to remove any doubts when an alarm is triggered, to detect the likelihood of an obstacle on the tracks," explains Jean-Baptiste Badet, Manager at Sytral, responsible for electrical energy and passenger travel equipment.

Security Center, a more efficient solution

The Sytral subway network, which consists of four subway lines and two funicular railways, was commissioned in 1978. Since improving security is a constant requirement of local public authorities, the network has evolved from an analog system to a digital platform. In 2013, it acquired the Genetec Security Center platform because of its ability to record IP-based video throughout subway stations.

However, while the teams were able to track users in stations, they lost sight of them as soon as they boarded trains. So Jean-Baptiste Badet's team came up with a system to extend the video surveillance network into the trains.

"A lot of engineering was involved. Firstly, we needed to position our interior cameras so that their angle of vision was not hampered by the lateral layout of the seats. And, secondly, we needed to develop a system that sends images by radio to pairs of directional antennae arranged every 250 meters along the tracks," he says.

The ingenious system enables the 36 trains consisting of two cars with eight in-car cameras each—i.e., 576 cameras in total—to send 25 frames per second at 50 Mbit/s, even when the train is traveling at 75 km/h.

A new call for tenders was launched at the end of 2016 to centralize these new streams in the PCS and PCC. Among the solutions proposed, it is once again that of Genetec, presented by the integrator, ROIRET Transport, that was selected for its performance.

Custom interface

From 2016 onwards, thanks to ROIRET Transport, the platform evolved to include subway station cameras and in-car cameras and made their operation possible from the PCS and the PCC.

The solution deployed by ROIRET Transport consists of placing a Genetec recorder with a capacity of 2 TB in each car. Thanks to Security Center, these recorders facilitate the management of optimized video feed and bandwidth. They also capture and record images locally, allowing the train to be autonomous in the event of loss of the radio link. In addition, they are also able to store recordings from the eight cameras in a car for six consecutive days.

ROIRET Transport has developed the existing architecture to bring together the 36 subway trains on the D-line and the system in charge of the 42 subway stations. The video streams are connected to the Genetec servers. On the PCS side, a wall of screens has 24 viewing angles and four operator stations. The PCC has two walls of screens, one of which displays 50 images, as well as twelve user stations.

The company developed a custom interface: an interconnected video hypervision solution thanks to the Security Center SDK. Its flagship features include an HMI graphic interface specific to the subway environment, with a line thermometer and ergonomics designed for accessing the station cameras and in-car cameras as quickly as possible. Another feature is replay, which makes it possible to playback the trains' location and access synchronized video feed recordings. Finally, the development of an ergonomic solution to configure and control image walls should also be highlighted. This is an interface that is common to the PCS and PCC but which adapts to each case with specific monitoring scenarios and alarms. It effectively meets the need both for the regulation of subway traffic and for passenger safety.

"We try to comply with a charter in our software so that orders are always in the same place, with specific color codes," explains Jean-Baptiste Badet. He is delighted with the result: at the top of their screen, operators can now see a graphic of the D-line, which, connected to the automated system, indicates the position of the trains. They simply click on one of them to display their camera images.
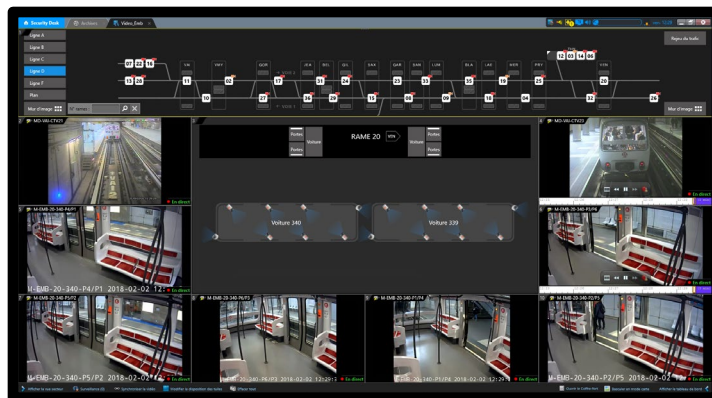
Remote inspection of the tracks from Security Center

Video surveillance from the trains on the D-line of the Lyon subway has been in operation since 2018. Jean-Baptiste Badet is completely satisfied: "thanks to this system, the PCS was able to respond in time to prevent incidents. As for the PCC, it now benefits from a custom solution that allows it to inspect the tracks remotely. Previously, they had to send teams in person at regular intervals, which was very time-consuming and random," he said. In addition to the operational efficiency of the system, staff have also expressed satisfaction:

"The performance of the Genetec solution is what impresses us the most: you click, you see the image!"

Sytral does not intend to stop there. While waiting for the B-line to be automated in turn and to benefit from the same equipment as the D-line, the trains on the C-line should also soon be equipped with cameras, so that drivers can better monitor users boarding the trains and make sure that there is no danger when closing the doors.

"We didn't choose a particular system, we simply opted for the one that offered the best performance. It turned out that the Genetec solution was the most suitable for centralizing on our PCS and PCC the live images from the 1,900 cameras set up in our 42 stations. "

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