Flemish Road Authority Builds Safer, Efficient Roads with Cisco IoT Solutions

Cisco and its partner are shaping the digitization of the Flemish Roads

Agentschap Wegen en Verkeer (Flemish Road Authority)

Industry
Public Sector

Location
Antwerp, Belgium
**Challenge: Keep Traffic Running Safely and Smoothly**

Agentschap Wegen en Verkeer is responsible for controlling and operating the main roads in the Flemish region in Belgium. In this leading EU state, supporting the smooth flow of people, goods, and vehicles is critical to the entire region’s economy.

To keep traffic in its vast system of roadways running safely and efficiently, Agentschap Wegen en Verkeer has long employed a sophisticated network infrastructure. However, after ten years in operation, its network was beginning to show its age. The system provided limited support for the latest IP Internet of Things (IoT) sensors and applications, and its components were not designed for extreme temperatures and harsh outdoor environments.

“We have many roadways with below-freezing conditions in the winter, and in summer, temperatures in cabinets can reach more than 45°C,” says the Agentschap Wegen en Verkeer Manager of IT and Security. “The enterprise network equipment was not built for this and created a risk of reliability and warranty issues.”

To gain the reliability it needed, together with the performance and flexibility required for new applications, Agentschap Wegen en Verkeer deployed a solution based on the Cisco Connected Roadways reference architecture.

**Solution: A Roadside Infrastructure of the Future**

Together, Cisco and its partner assisted the agency with two major initiatives to digitally transform the region’s roadside infrastructure.

The first initiative connects all the traffic lights in and around the city of Antwerp to a new supercomputer system, providing centralized control and management. Previous traffic management system relied on traffic lights with timer-based controllers on serial connections, which could not adjust to real-time traffic conditions. Troubleshooting and managing outages was cumbersome and manual.

“If the power on a traffic light goes out, an uninterruptable power supply (UPS) would send out an alarm,” says the IT Manager. “However, these UPS devices used batteries, and we had to change the batteries on 300 devices each year, which was labor intensive. With the Cisco IE4000 network devices, we can now be alerted by power outages through the dying gasp functionality.”

Agentschap Wegen en Verkeer are installing about 400 Cisco Industrial Ethernet (IE) 4000 Series switches which provide the communications infrastructure for to the traffic light control applications. These ruggedized switches, that are designed to work in harsh conditions, provide Gigabit connectivity to a regional fiber-optic network. Their rich bandwidth supports advanced IP applications like real-time monitoring of traffic information via cameras and sensors, enabling the agency to improve awareness and optimize traffic light timing when traffic conditions change.
Agentschap Wegen en Verkeer is also providing the street lighting services and associated systems. In the past, these lights worked on simple timers to save energy, which was creating public safety issues if first responders needed more light during incidents at night.

Cisco and its partner helped the agency deploy Cisco 809 Industrial Integrated Services Routers (IR809) to control the lighting infrastructure. Built for extreme conditions, these compact routers support 3G and 4G LTE wireless communication and enterprise-class quality of service (QoS) for the telecontrol traffic controlling the light systems.

“With the IR809, remote control of the streetlights in a particular location allows emergency personnel to have a safer work environment,” says the IT Manager.

With its Cisco solution in place, Agentschap Wegen en Verkeer can support dynamically controlled public infrastructure for 400 light strips along the roads it manages.

**Benefits: A Safer, Responsive Infrastructure Built to Grow**

With its flexible Cisco Connected Roadways solution, Agentschap Wegen en Verkeer is experiencing a wide variety of benefits. By migrating traffic lights to an intelligent IP-based infrastructure, the agency can now dynamically adjust systems based on conditions. The results? Improved traffic flow, minimized environmental impact, reduced risk of accidents, and better public safety.

“The Cisco solution gives us more capabilities and possibilities to adapt to real situations, instead of simply using a timed controller that predicts traffic,” says the IT Manager.

Its energy-efficient lighting system also helps reduce energy consumption for road lighting, without compromising the needs of public safety agencies.

Perhaps best of all, the IP-based solution provides a springboard for future roadway applications. With more sensors and cameras on its roadways, Agentschap Wegen en Verkeer can provide support for connected and autonomous vehicles (CAVs) and other innovations that are coming soon. It can also help public agencies monitor traffic to better analyze traffic flow.

“The city center of Antwerp is a low emission zone, and only cars built after a certain year are allowed to enter,” says the IT Manager. “With our Cisco network, we can use roadside cameras to check license plates to help control these restricted areas and minimize pollution.”

An integral part of a Smart City approach, Agentschap Wegen en Verkeer’s advanced traffic infrastructure is building a brighter future for a highly dynamic region.