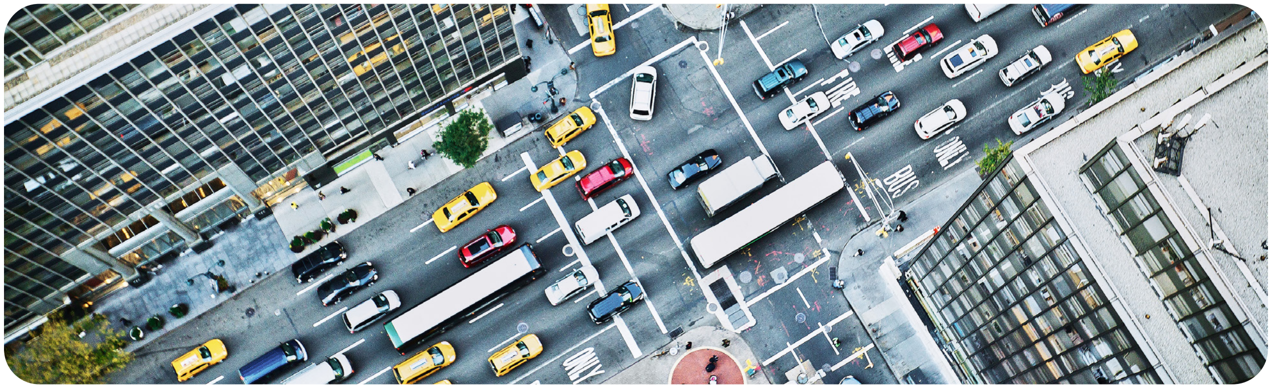
Robust Cybersecurity to Safeguard Roadways Infrastructure

As the world is modernizing transportation infrastructures, roadways are increasingly being connected and integrated with Intelligent Transportation Systems (ITS). Roadway assets include traffic signal controllers, remote weather stations, cameras, variable message signs, pedestrian detectors, and more. They all work together to enable dynamic roadway operations and reduce traffic congestion, limit carbon emissions, and improve public safety.

Safeguarding roadways infrastructure from cyberthreats has become a pressing imperative to ensure the resilience, reliability, and integrity of traffic systems and other critical components. By combining a market-leading portfolio of rugged networking equipment ideally suited for roadways and a comprehensive range of cybersecurity solutions, Cisco offers a powerful architecture to build modern and secure connected roadways.



Benefits

- Build a secure WAN with comprehensive threat detection, protection, and response capabilities.
- Drive cyber hygiene with deep visibility into connected assets and your security posture.
- Control third-party access to devices with cloud-based secure remote access.
- Reduce the risk of unauthorized access to field network equipment.
- Keep attacks from spreading by enforcing dynamic network segmentation.
- Easily manage assets connected over cellular networks.

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Build a robust and highly secure WAN infrastructure to connect all your roadside assets

The distributed nature of roadway infrastructures requires a complex network spanning multiple locations. The Cisco Catalyst™ SD-WAN solution with Cisco Catalyst industrial routers is ideally suited for these demanding requirements. It combines enterprise-grade performance and security with industrial-strength reliability and resilience.

Unify security policies to defend against threats

Cisco Catalyst industrial routers offer comprehensive Next-Generation Firewall (NGFW) and network security features. Catalyst SD-WAN Manager centralizes routers and security configuration to unify security policies, eliminate gaps in defense, and simplify managing and securing roadway infrastructures at scale. Build a modern and secure WAN with Cisco Catalyst industrial routers and these embedded security features:

- **Next-generation firewall** with application awareness to filter traffic in real time and provide granular control capable of detecting thousands of applications.
- **Intrusion detection and prevention (IDS/IPS)** with Talos® signatures to identify and block known threats and malicious activities such as vulnerability exploits.
- **Advanced malware protection** to identify and block both known and unknown threats from malicious files. Unknown files can be sent to a sandbox for further analysis.
- **URL filtering** to block or allow users to access URLs based on reputation or web categories covering millions of domains and billions of web pages.
- **DNS security** to prevent infected assets from contacting malicious servers.

There's a rugged router for every need

In addition to advanced network security features, Cisco Catalyst industrial routers offer unconditional connectivity for all your roadside equipment. They can withstand extreme temperatures, humidity, and dust. They offer a variety of WAN connectivity options, including 4G/5G cellular, MPLS, Ethernet, and fiber, through pluggable interface modules that can easily be replaced when needs or technologies evolve.

Cisco Catalyst IR1100 Rugged Series Routers

An ultra-compact, modular, and expandable router that fits in any cabinet to securely connect ITS assets.

Cisco Catalyst IR1800 Rugged Series Routers

This modular router offers multiple cellular interfaces, Wi-Fi 6, and advanced SD-WAN security capabilities.

For more information on Cisco Catalyst industrial routers, visit www.cisco.com/go/iot-routers.

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Gain visibility into your roadway assets

Securing your roadway assets starts with having an accurate and detailed inventory of what's connected. Knowing what you have, and continuously updating the list, is the first step to efficiently manage resources and drive security hygiene to reduce the attack surface.

Cisco® Cyber Vision identifies all your assets and uncovers the smallest details: device types, vendor references, serial numbers, firmware and software versions, and more. You can now build a plan to improve your security posture and drive compliance with security regulations.

Visibility you can easily deploy at scale

Cyber Vision embeds visibility capabilities into Cisco industrial routers and switches installed at intersections, in street cabinets, along highways, or in your data center. It analyzes every IP packet moving into or out of your ITS devices without the need for additional security appliances and the effort of installing them. Your network is the sensor and sees everything that connects to it to save on WAN costs and enable deployment at scale.

Visibility that meets you where you are in your journey

Whether you just need to assess your security posture to drive improvements or you're ready to enforce advanced security policies, we've got you covered. Cyber Vision automatically profiles connected assets and maps their communications. It feeds your cybersecurity tools with ITS context so you can protect your infrastructure by easily creating access control policies. It monitors ITS communications so you can detect, investigate, and remediate threats using your IT security tools.

For more information on Cisco Cyber Vision, visit cisco.com/go/cybervision.

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Apply a zero-trust policy to your infrastructure

Because your network equipment is installed in street and road cabinets, you need robust security, starting where the roadway devices physically connect. Zero-trust security principles must be implemented to ensure that bad actors cannot connect to your network in case they gain access to the cabinets. All communications should be monitored to continuously verify trust and isolate devices that have been compromised. This is particularly important in roadways, since the ITS protocols typically do not have Transport Layer Security (TLS), and key information/credentials are sent in plain text.

Cisco industrial network equipment combined with Cisco Identity Services Engine (ISE) and Cisco Cyber Vision offers a simple and powerful way to define and enforce zero-trust policies across your roadways infrastructure.

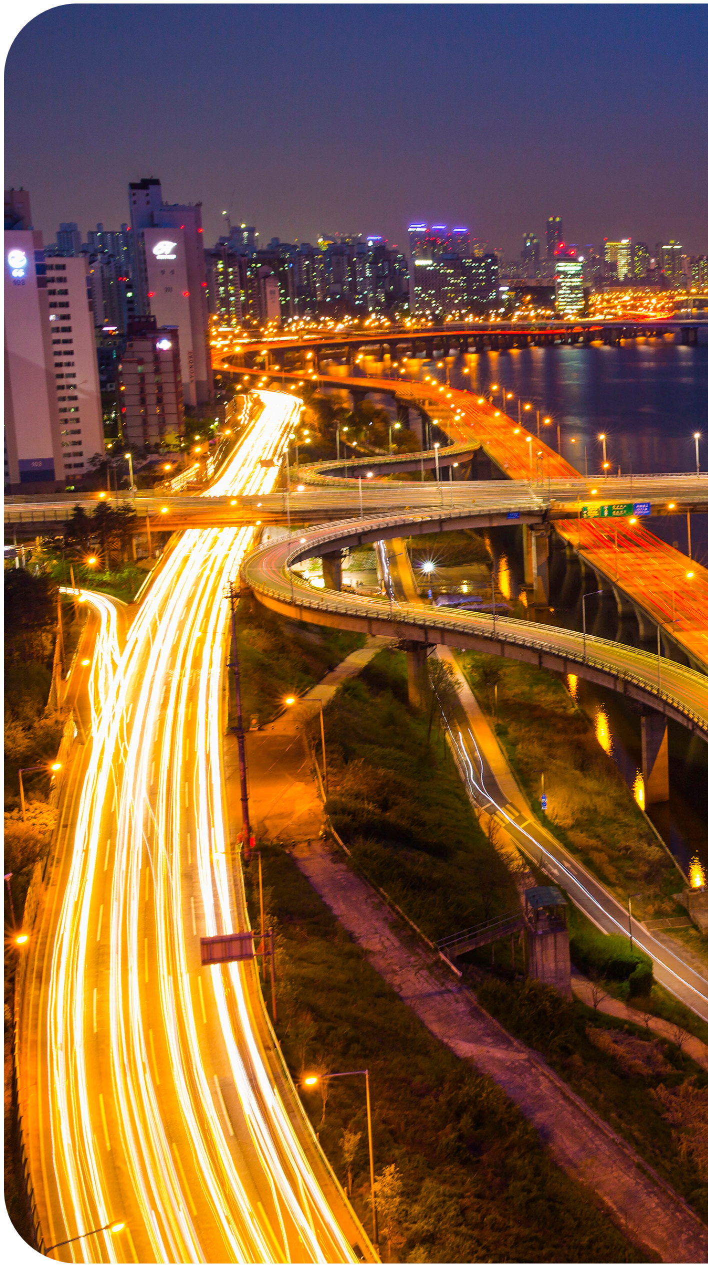
Ensure that only your roadway assets can connect

Securing every port of your field networking equipment is key. Cisco ISE manages network access using IEEE 802.1X or MAC Authentication Bypass (MAB) to help ensure that only the devices you specify are granted access. Combined with Cyber Vision, the solution is even simpler to implement. The assets you trust are identified by Cyber Vision and the list is dynamically shared with ISE. All other devices are denied access by default.

Enforce trust through network segmentation

Once a device is granted access, you need to ensure that it communicates only with the resources it needs to do its job. Security policies must be enforced to build zones of trust for each device as defined in the ISA/IEC-62443 security standard. And if a device is compromised, trust should be removed so the threat can be contained. Cyber Vision, together with ISE, lets you easily create and modify security policies that segment the network according to your operational constraints.

For more information on zero trust for industrial operations, check out our white paper or our solution overview explaining how Cyber Vision and ISE work together.



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Enable easy-to-use, secure remote access

Your roadway assets are distributed across your city, region, or country. Enabling remote access is key to reduce operational costs and minimize downtime. Whether you need to grant access to third parties or make it simple for your technicians to manage assets connected over cellular networks, you want a remote access solution that's easy to implement and highly secure.

Cisco Secure Equipment Access is designed to simplify the remote access workflow. It leverages your Cisco industrial routers and switches, so there is nothing extra to install on site. It's a cloud service, so it's very easy to deploy, configure, and scale. And it's a security solution, so it lets you control who can access what, when, and how.

Remote access under total control

Secure Equipment Access is the ideal alternative to punching multiple holes in firewalls or configuring port forwarding in from the public internet. Remote users log into a cloud portal that grants them access only to the devices you selected, never to the entire network.

You can choose the days and times when they can log in, and you can require Multi-Factor Authentication (MFA). Communications are automatically tunneled to assets, so you don't have to restructure your network to enable secure remote access.

Remote access made for operations

Secure Equipment Access makes it easy for IT to empower operations teams. ITS managers can create remote access credentials by themselves to immediately enable access when needed. Yet security policies are always enforced and sessions can be recorded. Logging into remote assets simply requires a web browser, but desktop applications can also be used for advanced management tasks. All without having to install additional appliances into space-constrained roadside cabinets–Secure Equipment Access is built into your Cisco network infrastructure.

For more information on Cisco Secure Equipment Access, visit cisco.com/go/sea.

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The Cisco advantage

For more than 20 years, Cisco has been helping industrial organizations around the globe digitize their operations, working with manufacturers, power and water utilities, energy companies, mines, ports, railways, roadways, and more. Today, Cisco offers a market-leading portfolio of industrial networking equipment plus a comprehensive suite of cybersecurity products, integrated tightly together with a deep understanding of OT requirements. It’s a rare combination.

By designing, developing, and testing products together, Cisco enables IT and OT teams to achieve advanced outcomes while reducing the complexity, time, and gaps incurred by the need to make point products work together. Our solutions come with comprehensive design and implementation guides that will help you reduce risk, accelerate implementation, and make the most of your technology stack.

Secure your roadways infrastructure with Cisco

Talk to a Cisco sales representative or channel partner and visit cisco.com/go/connectedroadways or cisco.com/go/iotsecurity to learn more.

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