



# Cisco Connected Roadways

## When Networks Communicate, Transportation Is Safer and More Efficient

Roads keep us connected. The safer and more efficient they are, the better we can live and work. But it takes information to keep our roads running smoothly. Thanks to the Internet of Things (IoT), now even our highways can benefit from technologies that share vital information in exciting new ways.

Cisco® Connected Roadways capitalize on the power of digital transformation to intelligently link people, processes, data, and things to create a converged network infrastructure that can transform any type of roadway system. Video cameras and sensors monitor and report traffic flow. Connected infrastructure and traffic lights transmit signal, phase and timing information along with road and weather conditions and traffic flow data to networked onboard vehicle navigation systems. Emergency vehicles and first responders can arrive to emergency situations faster due to signal preemption systems.

Cisco Connected Roadways help cities and transportation agencies use data analytics to make more informed decisions while reducing both operating and capital expenses as well as ongoing maintenance costs. And the solutions help motorists by creating safer roads with more available services and less congestion.

## Benefits

- **Reduce costs** with the flexible, scalable design of open, standards-based infrastructure
- **Make operations more efficient** with visibility into roadway systems
- **Enhance security and safety** with faster incident response, congestion control, and weather and traffic alerts
- **Create greater collaboration** between personnel in emergency response and transit agencies
- **Enable new opportunities** for innovative roadside services and applications, such as smart parking

## Effectively Solve Today's Transportation Challenges

By securely connecting disparate intelligent transportation systems, Cisco Connected Roadways enable new vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) applications. These applications give rise to a wealth of capabilities that address the transportation industry's greatest challenges. Cisco Connected Roadways help:

- Improve safety on streets, highways, bridges, and toll roads.
- Reduce urban congestion to lower fuel costs and pollution.
- Deliver timely and accurate information about traffic, weather and road conditions to motorists.
- Make roadside network infrastructure more reliable, even in harsh or remote environments.
- Reduce the number of incident responses on roads and cut the time needed to clear accidents. This also lessens the occurrence of more dangerous secondary accidents.
- Help cities and municipalities comply more easily with air pollution and other regulations.
- Reduce response times for emergency vehicles and first responders.
- Maintain mass transit schedules despite changing road conditions.

“Getting traffic information out fast is one of our top priorities, and our Cisco solution lets us meet this need through a single flexible infrastructure.”

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**Johannes Kreuzer**

Network Department Head,  
ASFINAG

## Next Steps

To learn more about how Cisco Connected Roadways can benefit you, visit [www.cisco.com/go/connectedroadways](http://www.cisco.com/go/connectedroadways).

Watch the [Cisco Connected Roadways](#) video and see the many capabilities of a connected infrastructure.

## Key Components

Cisco Products	Description
Cisco 819 or 829 Integrated Services Router	<ul style="list-style-type: none"> <li>Ruggedized vehicle routers connect on-board systems to wireless DSRC radio.</li> <li>Roadside routers connect roadside DSRC radio to citywide Unified Multiprotocol Label Switching (MPLS) transport network.</li> </ul>
Cisco Industrial Ethernet Switches	<ul style="list-style-type: none"> <li>Ruggedized Ethernet switches provide transport connectivity to the roadside equipment components.</li> </ul>
Cisco 3945 and 4451-X Integrated Services Router	<ul style="list-style-type: none"> <li>Hub router for maintenance yard networks.</li> </ul>
Cisco ASR 900 Series Aggregation Services Routers	<ul style="list-style-type: none"> <li>Provides scalable and resilient Unified MPLS transport infrastructure, interconnectivity between roadside, yard, data center, and operations center networks.</li> </ul>
Cisco ASR 1000 Aggregation Services Series Routers	<ul style="list-style-type: none"> <li>Provides hub routing functionality for management of mobility and communications to and from vehicles moving around the roadside infrastructure.</li> </ul>
Dedicated short-range communications (DSRC) radios*	<ul style="list-style-type: none"> <li>DSRC hardware for onboard (OBU) and roadside units (RSU) provides wireless communications between vehicles and roadside equipment for V2I services.</li> </ul>
Automated traffic signal control and management equipment*	<ul style="list-style-type: none"> <li>Advanced traffic controller (ATC) unit provides automated traffic signal control and management.</li> </ul>
Transit signal prioritization (TSP) processor*	<ul style="list-style-type: none"> <li>The transit signal prioritization (TSP) processor provides “black box” functionality for TSP handling, receiving TSP requests from vehicles and appropriate signaling action to the ATC.</li> </ul>
Network management and data analytics platform*	<ul style="list-style-type: none"> <li>Provides a comprehensive network management system and a data analytics and management platform for monitoring vehicle performance and metrics</li> </ul>
Computer-aided dispatch and automatic vehicle location (CAD/AVL) system*	<ul style="list-style-type: none"> <li>The onboard system responsible for generating TSP requests for a vehicle when approaching an intersection (i.e. ambulance needing right of way or a city bus sends a TSP request to maintain transit schedules)</li> </ul>

\* These components have been tested and validated as part of the Cisco Connected Roadways solution, but are provided by third-party Cisco partners. Services supported in Cisco Connected Roadways solution are transit signal prioritization (TSP) and wireless bulk data transfer (WBDT).

## Why Turn to Cisco?

Cisco architecture and validated network designs, built on open standards, let you take advantage of commercially available products and services to lower costs while improving performance. Whether you are a transit authority, first responder, systems integrator, or a public sector agency, you gain the benefits of IP networking capabilities that have been proven in every other industry worldwide. Get the high capacity needed to support today’s intelligent transportation applications and services with the flexibility you need to easily adapt over time.

Cisco Services help you plan, build, and manage the new capabilities cost-effectively. With Cisco, you can support new and future requirements, lower your total cost of ownership, reduce deployment costs, manage risk, and deliver high performance of your Cisco Connected Roadways solution.