



# Cisco Connected Mass Transit

## When Networks Communicate, Mass Transit Is Safer and More Efficient

Imagine your mass transit system capitalizing on the intelligent connection of people, processes, data, and things. Where IP video cameras monitor and report activity in stations, at bus stops and onboard buses, trains, trams, and trolleys. Connected vehicles communicate with each other and with the surrounding infrastructure. Central operation centers have greater visibility throughout the system and can share data easily. And real-time monitoring, location-based services, and fleet management provide greater efficiency and better asset management with reduced costs.

With Cisco® Connected Mass Transit, you can achieve these capabilities. Make faster and more informed decisions. Reduce operating and maintenance costs. And create a safe and more enjoyable way for passengers to travel with added services for greater mobility.

## Effectively Solve Today's Mass Transit Challenges

The digital solutions (Table 1) that make up Cisco Connected Mass Transit provide a single, standards-based, end-to-end network architecture that supports multiple services and applications. They also help enable vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I) and vehicle-to-anything (V2X) communications. These applications give rise to a wealth of capabilities that address the transportation industry's greatest challenges, including improved safety and security, and reduced operating and capital expenses.

Connected Mass Transit also helps you increase ridership by offering a more efficient and engaging experience with new services including Internet, onboard Wi-Fi and real-time trip planning. It also helps provide passengers with timely and accurate transit information.

**Table 1.** Key Capabilities and Product Components

Capability	Description
<b>Fleet Tracking and Management Services</b>	<ul style="list-style-type: none"> <li>• Computer aided dispatch and automatic vehicle location (CAD/AVL)</li> <li>• Vehicle GPS tracking and geo-fencing</li> <li>• Vehicle telemetry and data collection</li> <li>• Asset provisioning and monitoring</li> <li>• Customizable dashboard reports and policy-triggered events and alerts</li> </ul>
<b>Two-Way Voice Communication for Vehicles</b>	<ul style="list-style-type: none"> <li>• Cisco Unified Communications Integration</li> <li>• Dispatcher IP turret and IP phone support</li> <li>• Cisco Instant Connect for support of legacy digital push-to-talk radio system</li> </ul>

## Benefits

- **Improve safety and security** onboard transit vehicles, in stations, at bus stops and in maintenance yards
- **Reduce operating and capital expenses** with converged networks and better data sharing across the entire operation
- **Offer passengers new services** including Internet, onboard Wi-Fi and real-time trip planning
- **Deliver timely and accurate information** to passengers

“LINZ AG has had a strategic relationship with Cisco for the past decade so we decided to build on our existing Cisco® network and channel its agility and simplicity to incorporate new security, mobile, and analytics technologies that help us achieve our goals and gain greater business insight.”

**Georg Linhard**

Project Manager, LINZ AG TELEKOM

## Experience a Systems Approach with Cisco IoT System

Cisco Connected Mass Transit includes many products within the [Cisco IoT System portfolio](#). This portfolio allows you to create IoT solutions based on a systems approach, which results in stronger security, lower integration costs, and accelerated innovation.

### Cisco IoT System Products for Connected Mass Transit

- Cisco 829 Industrial Integrated Services Router
- Cisco Industrial Ethernet 2000 or 4000 Series Switches
- Cisco Video Surveillance 3050, 6050, and 7070 IP Cameras
- Cisco ASR 1000 Aggregation Services Routers and ASR 903 Router
- Cisco Industrial Wireless 3702 Access Point
- Cisco Instant Connect
- Cisco Video Surveillance Manager
- Cisco ASA 5500-X Next Generation Firewalls
- Cisco embedded services routers (ESR)

### Other Solution Components for Cisco Connected Mass Transit

- Cisco Catalyst® 3850 Series Switches (stackable)
- Cisco Unified MPLS
- Cisco Unified Computing System™ (Cisco UCS®)
- Cisco 5500 Series Wireless LAN Controllers
- Davra RuBAN™ software (provided directly by Cisco or from Davra Networks)
- CAD and AVL software provided by Cisco partners\*

\* Component has been tested as part of the Cisco Connected Mass Transit solution but is provided and supported by third-party Cisco partners.

For more details about the Cisco Connected Mass Transit solution, see the [solution overview](#).

Capability	Description
<b>On-Board Internet Service over Wi-Fi</b>	<ul style="list-style-type: none"> <li>• Passenger 802.11n Wi-Fi access on vehicle through Cisco 829 Industrial Integrated Services Routers</li> <li>• Separate SSIDs for passenger internet, push-to-talk voice, employee, and law enforcement with secure DMVPN tunnel to operations center for authorized users</li> <li>• Backhaul over Gigabit Ethernet or 3G/4G/LTE using the 829 router</li> </ul>
<b>Vehicle Safety and Video Surveillance</b>	<ul style="list-style-type: none"> <li>• Up to eight video surveillance cameras per mass transit vehicle</li> <li>• Video surveillance for stations, maintenance yards, bus stops and transit vehicles</li> <li>• Cisco Video Surveillance 3050 (wide dynamic range) and 7070 (360-degree) IP Cameras</li> <li>• Live streaming over cellular network upon incident event trigger</li> <li>• Panic button, contact closure, accelerometer, audio, and geographic event triggers</li> </ul>
<b>Passenger Real-Time Information</b>	<ul style="list-style-type: none"> <li>• Estimated time of arrival (ETA) calculated by algorithms running in Davra RuBAN™ software suite and displayed on digital signage display at bus stops and stations and on vehicle</li> <li>• RuBAN™ API for integration of applications, such as passenger smart phone apps</li> </ul>
<b>Wireless Bulk Data Transfer</b>	<ul style="list-style-type: none"> <li>• Bidirectional data transferred over Wi-Fi link for vehicles parked in the maintenance yard</li> <li>• Data transferred may include CAD/AVL system updates and log files, video surveillance recordings, software updates for other systems</li> </ul>

## Why 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 around the world. 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 helps 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 Connected Mass Transit solution.

## Next Steps

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