

CISCO *Live!*

ALL IN

#CiscoLive



The bridge to possible

Executive Roundtable Cisco Live – COTA 5G and the future of Mobility and Transportation

Presenter Name and Title
@Twitter_handle
CSSIOT-2102

Cisco Webex App

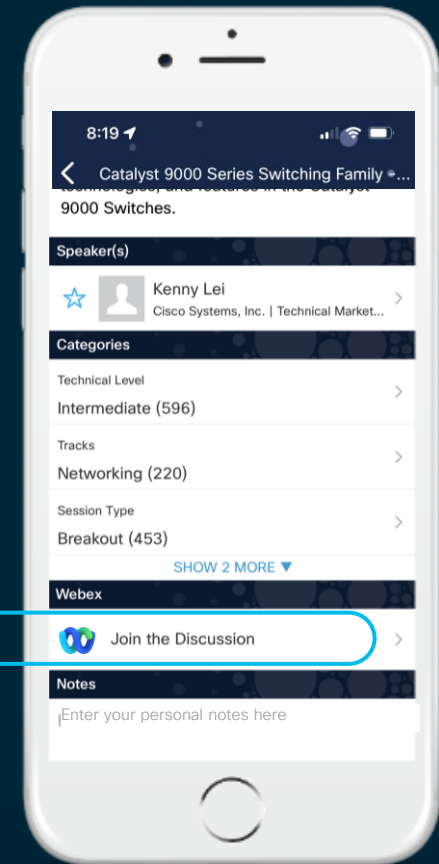
Questions?

Use Cisco Webex App to chat with the speaker after the session

How

- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
- 3 Install the Webex App or go directly to the Webex space
- 4 Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until June 17, 2022.



<https://ciscolive.ciscoevents.com/ciscolivebot/#CSSIOT-2102>

Columbus Region

The 14th largest city in the U.S.

PROJECTED GROWTH 2018-2050

POPULATION



2018 3,373,300

2050 +634,000

HOUSEHOLDS



2018 920,878

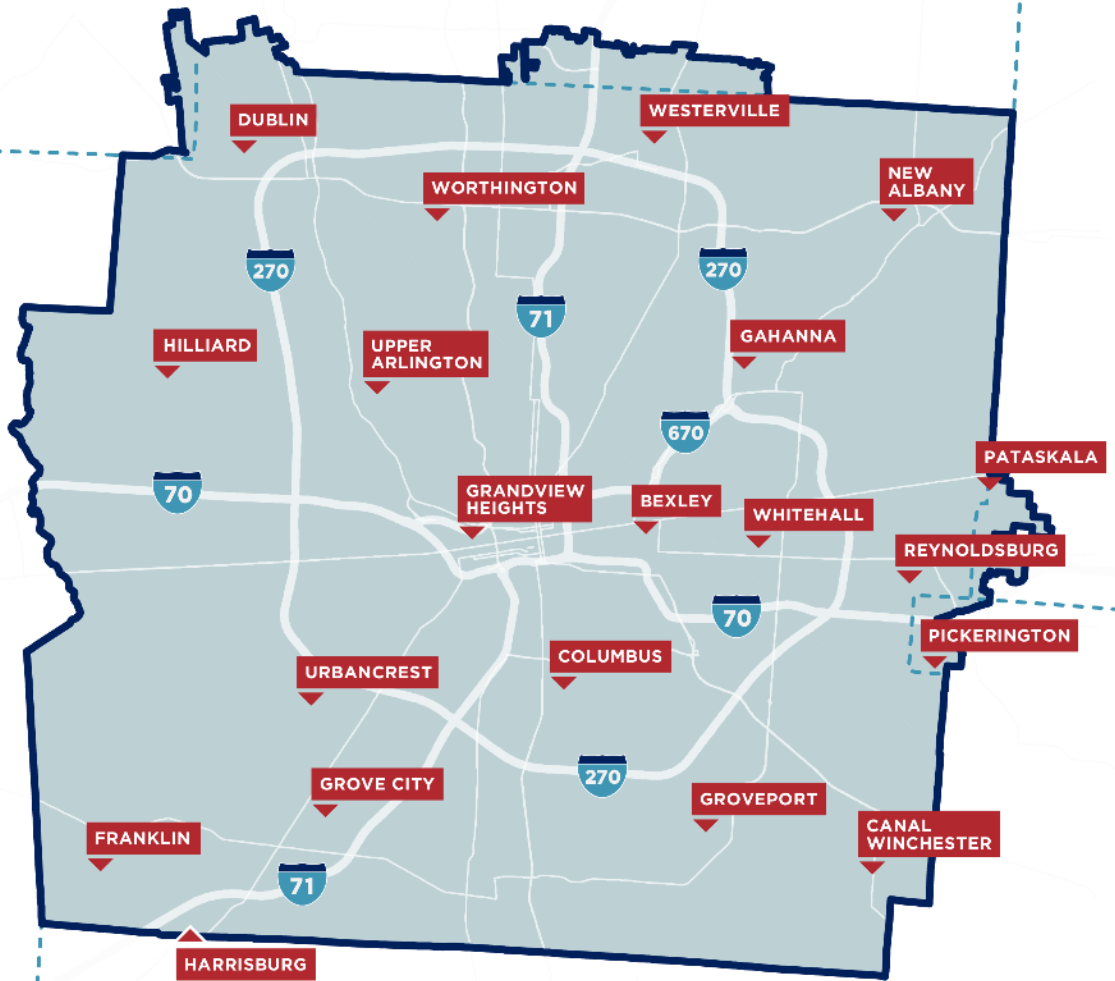
2050 +248,000

JOBS



2018 1,196,303

2050 +294,000



LEGEND

- County Boundaries
- COTA Service Area

about COTA

SERVICE AREA

- 562 square miles
- 1.4 million residents
- All of Franklin County
- Portions of Delaware, Fairfield, Licking and Union Counties

GOVERNED BY

12-member Board of Trustees

NEW FOCUS

on connecting technology systems to five adjacent county transit systems.

RIDERSHIP	2019	2020	2021
Fixed Route	19,141,454	10,322,476	8,875,103
COTA//Plus	Service Launched	17,719	50,772
Mainstream	305,559	238,713	191,698



we are COTA

TEAM COTA

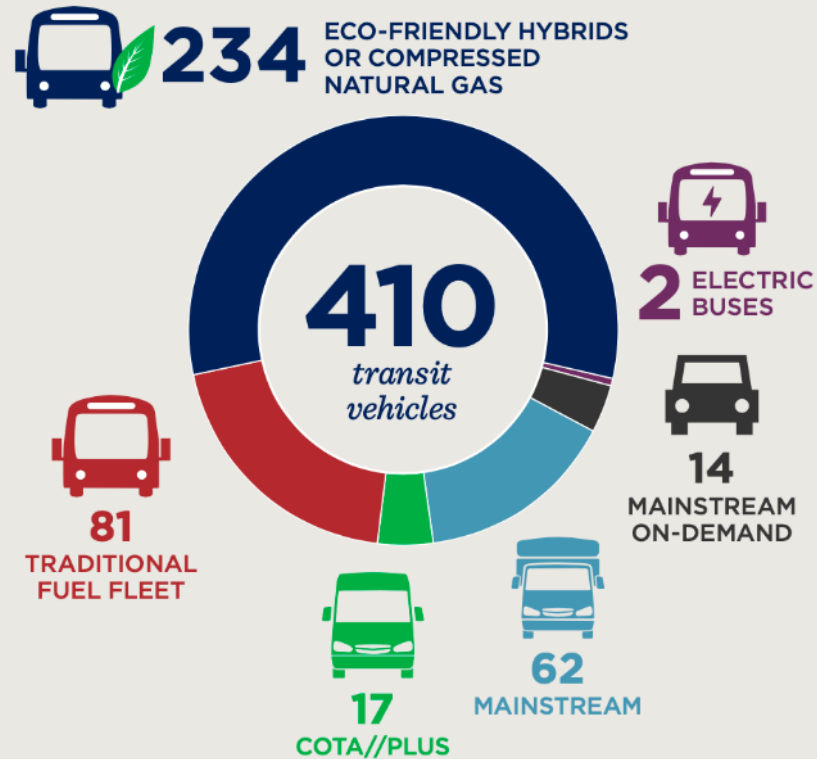
 **1,122** employees

 **672** operators

 **12** Board of Trustees members

President / CEO
JOANNA M. PINKERTON

OUR FLEET



OUR FIXED ROUTES

 **38**
Total Operational Fixed Routes

 **562**
Square Miles of Service Area

 **3,049**
Active Transit Stops

COTA//PLUS

 **4**
Community Service Areas

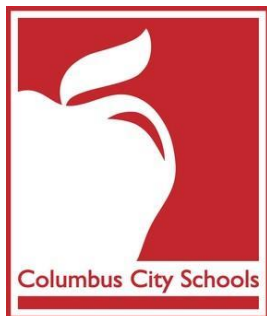
MAINSTREAM

 **FULL**
ADA Servicer Across Entire Service Area



WiFi *by* COTA

During the COVID-10 Pandemic, COTA partnered with Columbus City Schools and COSI, the nation's top science museum to provide WiFi access for students in underserved communities. COTA provided buses equipped with wireless internet access while COSI conducted outdoor science demonstrations for hundreds of CCS students and their families.

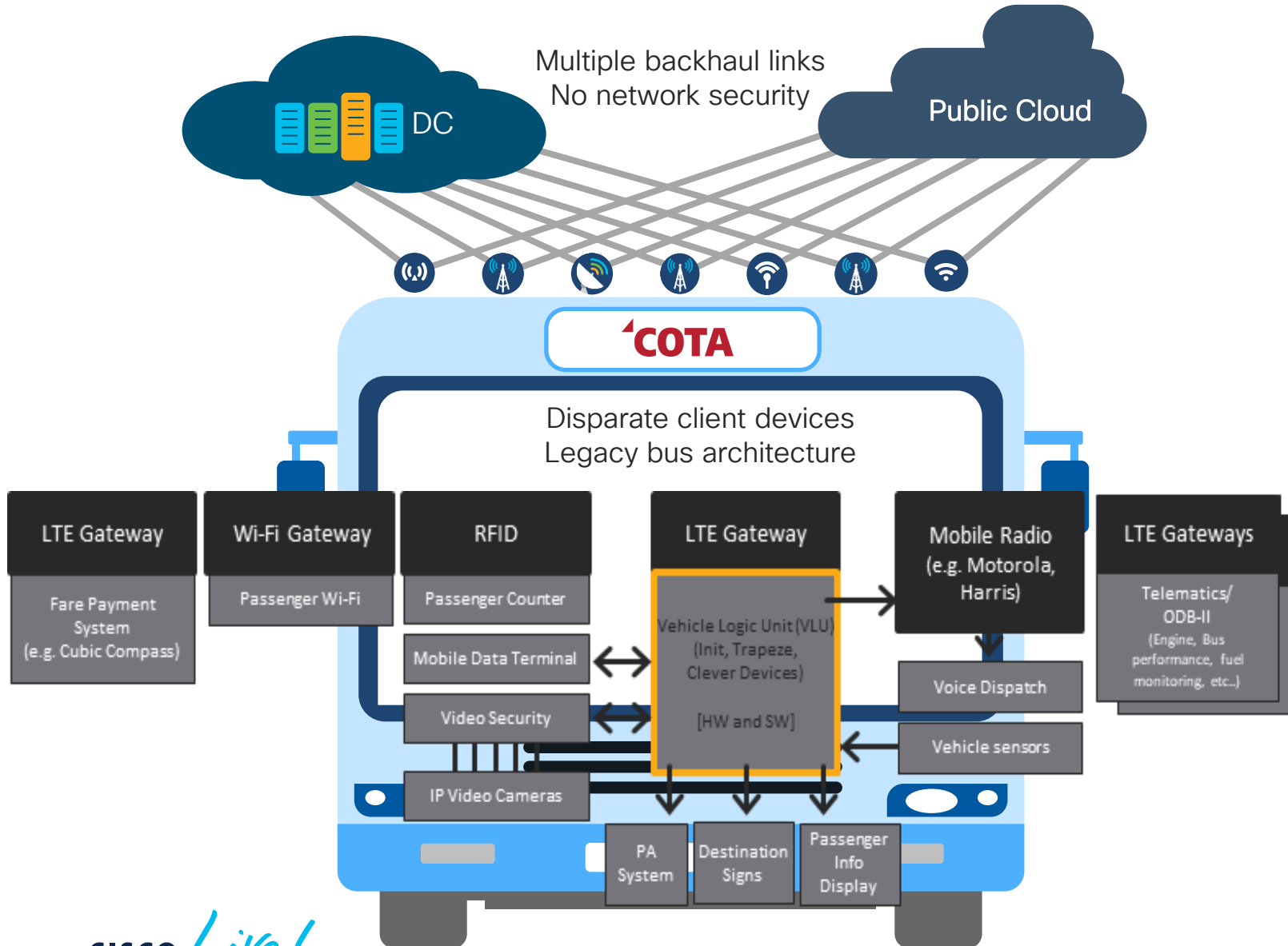
The COTA logo features a stylized red triangle to the left of the word "COTA" in a bold, red, sans-serif font.The COSI on Wheels curbside logo features the word "COSI" in a large, teal, sans-serif font, with "on WHEELS" in a smaller, blue, sans-serif font below it. The word "curbside" is written in an orange, sans-serif font at the bottom. The entire logo is surrounded by a circular arrangement of small orange dots.

CISCO *Live!*

#CiscoLive



Before: Transit agencies face a number of challenges due to multiple on-board network



Technology Challenges

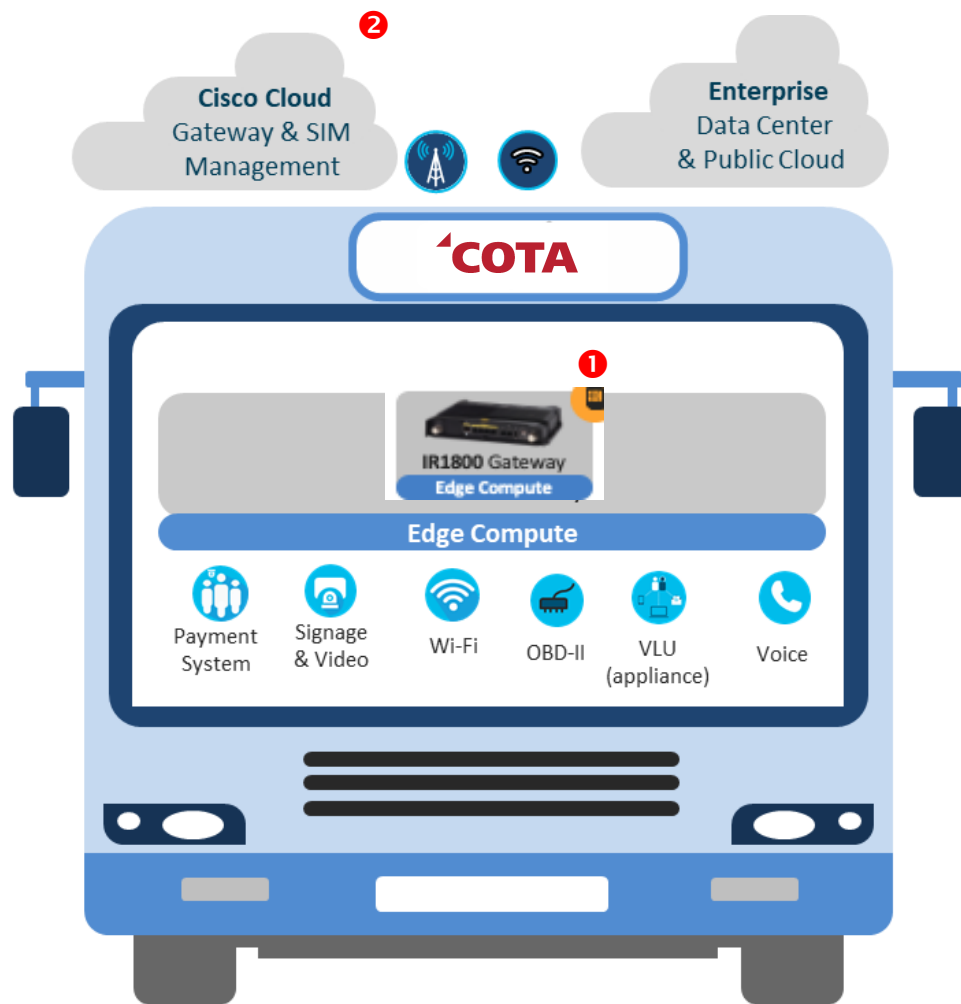
- Multiple LTE gateways/SIM cards packaged with disjointed on-board technologies
- Need for on-board WiFi
- High costs (especially antenna installation & cellular charges), operational challenges.
- Minimal to no security; need a single security control point.
- Legacy VLU-centric architecture, limits future technologies, passenger services

Scaling Challenges

- Thousands of vehicles, multiple gateway vendors & disjointed operations.
- Need to improve monitoring & control.
- An IT platform that can be operated by bus mechanics.

“We have created a rolling data center and finally integrated the OT and IT experience”

—Sophia Mohr, COTA



Challenge

1. Need to deploy more passenger services, faster.
2. 1,000s of assets, multiple gateways, disjointed systems, weak cybersecurity.
3. Difficult for mechanics to deploy and operate.

Solution

1. Secure gateway with native edge compute.
2. Mechanic-friendly gateway and SIM management.

Outcomes

- **Simple** transit operations, zero-touch.
- **Scalable** & secure infrastructure for consolidated communications.
- **Flexible** edge compute for native support of application services.

Transportation 5G Use Cases

Business Driver	Use Cases	5G Accelerators	Business Impact
Enhance the Passenger Experience	<ol style="list-style-type: none"> 1. High-speed WiFi connectivity for passenger devices 2. Digital entertainment and information applications 	High-speed data with rapid handoffs along transportation routes	Improved overall passenger productivity and experience
Reduce Costs	<ol style="list-style-type: none"> 1. WiFi backhaul via track-side 5G connectivity 2. Continuous data collection of passenger counts 	Reliable uploading of real-time passenger data	Higher utilization of passenger cars and routes
Improve Operational Efficiency	<ol style="list-style-type: none"> 1. Live operational data for all on-board systems 2. Live Look in 	persistent data connectivity	Continuous improvements to operational procedures
Modernize Operations	<ol style="list-style-type: none"> 1. Self-operating, self-managing, self-healing railway system 	low-latency, reliable wireless connectivity	More reliable transportation with reduced travel times

Secure Infrastructure

Challenge

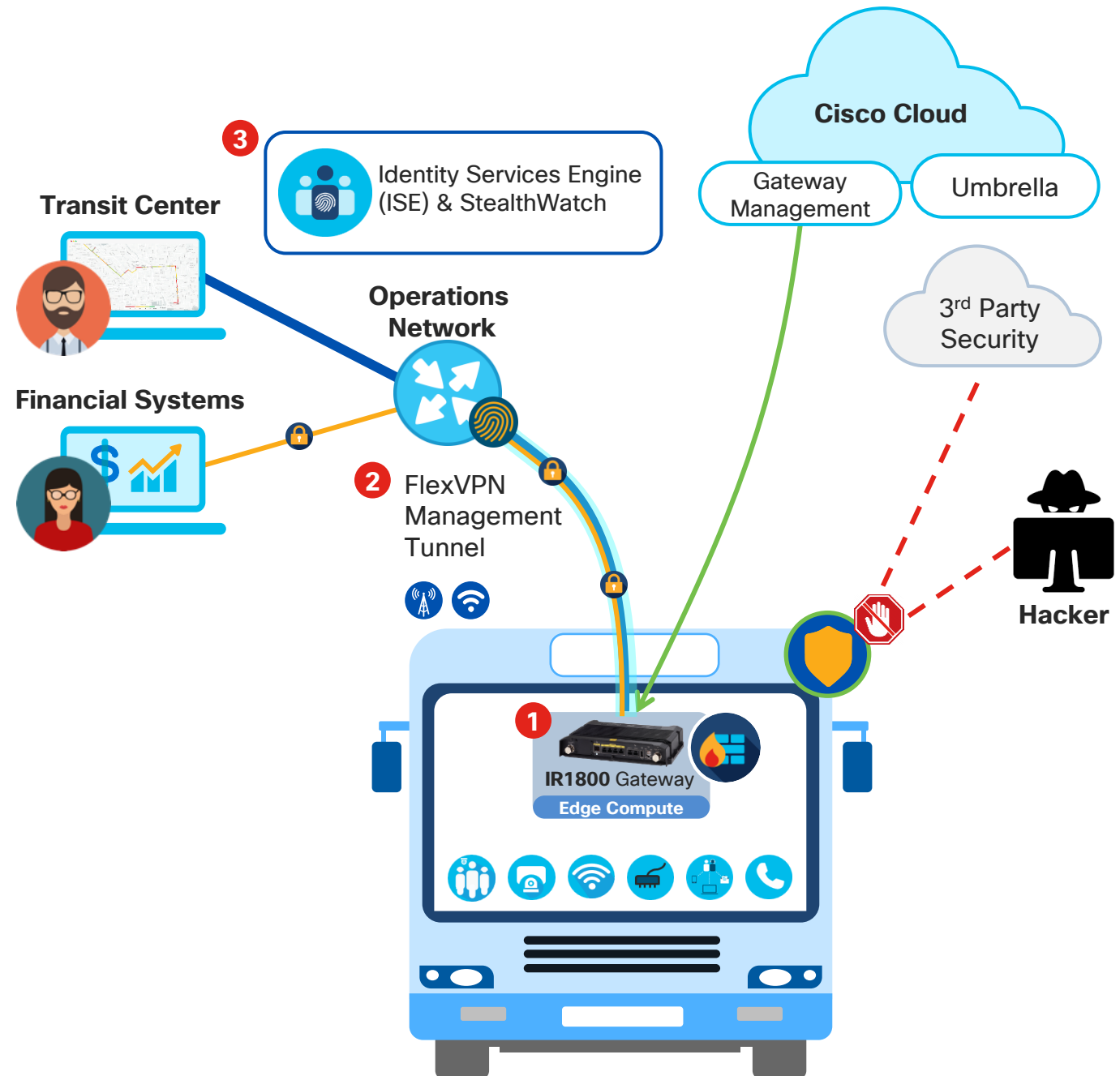
Real-time cybersecurity protection from external and internal threats for thousand of buses.

Solution

Multi-layered security enforced through a single control point; ensure data confidentiality/end-end encryption.

- 1 Secure edge devices and gateways with secure boot, firewalls and 802.1x authentication.
- 2 FlexVPN to the operations network. Enforce network segmentation and policies:
 - Keep financial data separate and protected.
 - High availability and confidentiality of CAD/AVL data.
- 3 Full integration with existing security services like Umbrella, Stealthwatch, etc. to create a unified control point.

Internet ready cybersecurity without the need for 3rd party security vendors.



Regulations & Guidance for Transportation Systems



**Homeland
Security**



**Transportation
Security
Administration**



**CYBERSECURITY
& INFRASTRUCTURE
SECURITY AGENCY**



[Enhancing Rail Cybersecurity - SD 1580-21-01](#)

[Enhancing Public Transportation and Passenger Railroad Cybersecurity - SD 1582-21-01](#)

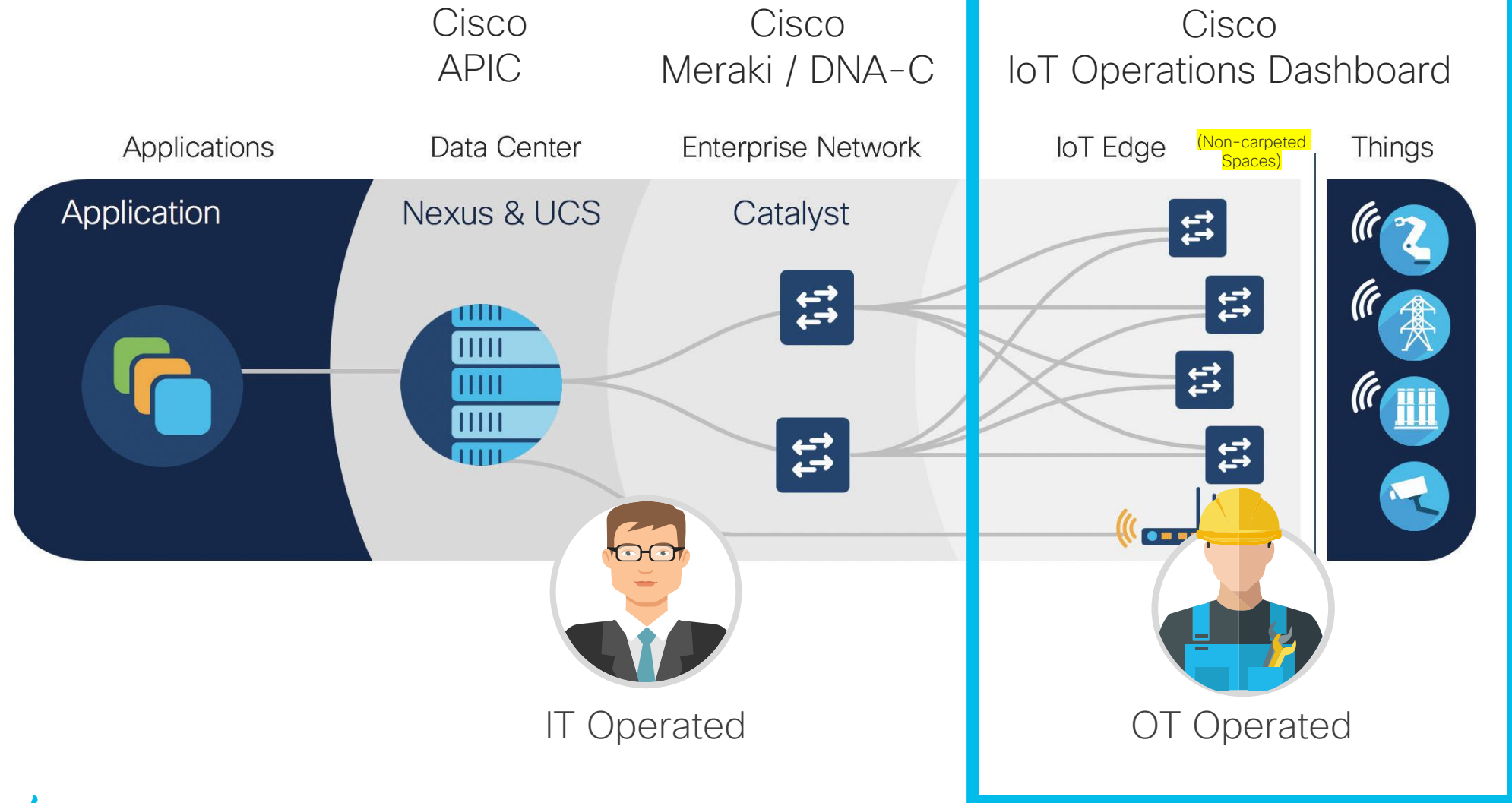
[Enhancing Surface Transportation Cybersecurity - IC 2021-01](#)

See the [Surface Transportation Cybersecurity Toolkit](#) for additional resources

[Transportation Systems Sector Cybersecurity Framework Workbook](#)

[Transportation Systems Sector Cybersecurity Framework Implementation Guide](#)

Cisco Tools / Dashboards



Simple Provisioning

Challenge

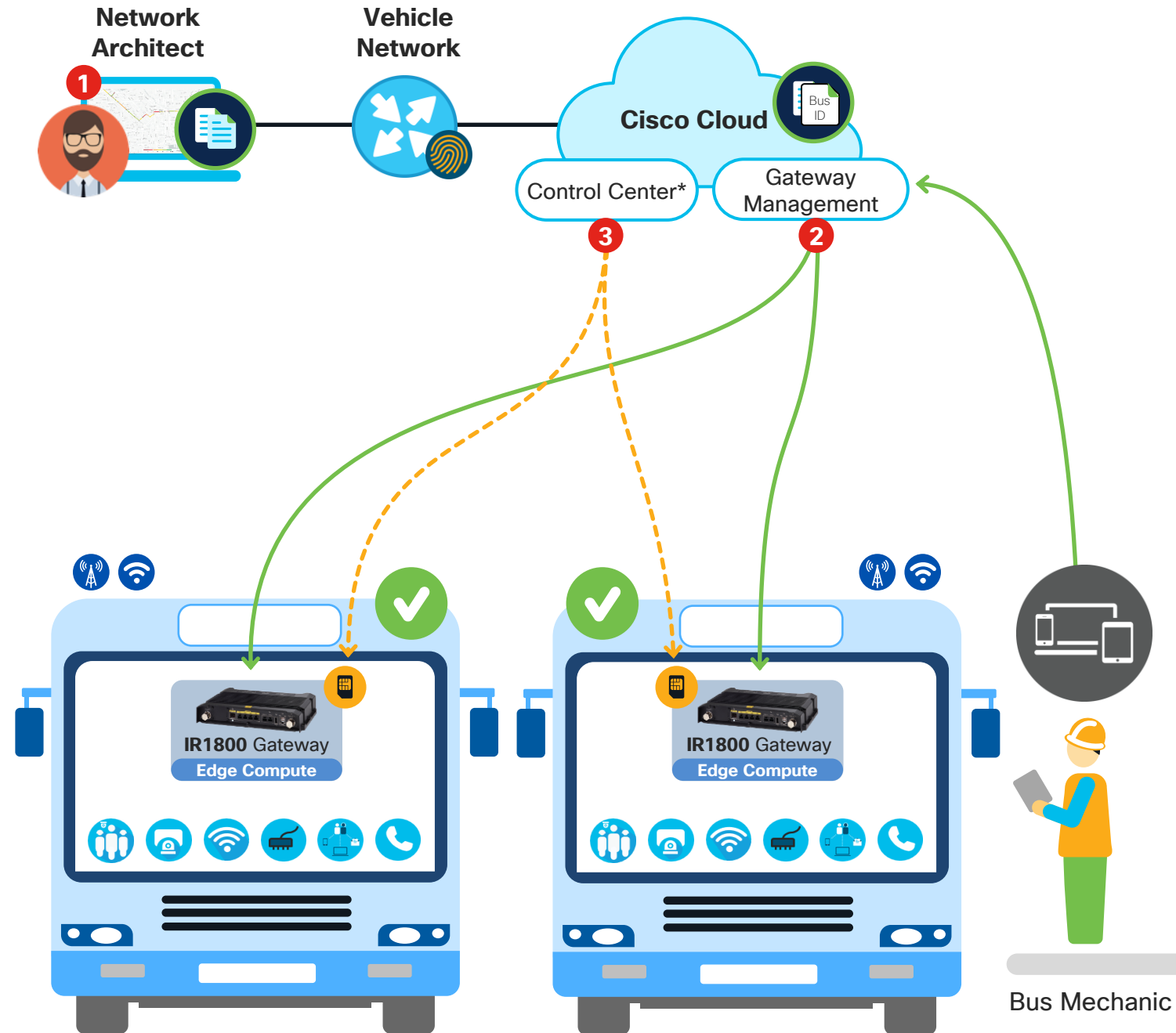
Make it easy for bus mechanics and non-IT staff to provision and manage connectivity. At Scale.

Solution

True zero touch deployment of the gateways and network.

- 1 Configure templates using our point & click simplicity. Associate gateways with bus ID.
- 2 Bus mechanic deploys the gateways using either a mobile or web application.
- 3 A single pane-of-glass to activate/deactivate your SIM card and manage your rate plan with Cisco Control Center (offered by select Service Providers).

Your buses are now in service!





BEFORE



AFTER



Reimagining mobility for the *future*

- Repurpose unsafe, underutilized infrastructure
- Create thriving communities
- Increase equitable access to opportunity
- Accommodate future growth
- Focus economic prosperity
- Shape the future and reimagine the region for shared prosperity

Vision *Zero* Columbus

Mission is to end crash-related fatalities and serious injuries. By equipping those who use the city's transportation system with knowledge and awareness to build safer habits— whether they are driving, walking, riding a bus, bicycle or motorcycle— Vision Zero is creating more equitable mobility in Columbus.

- Connected vehicle technology
- Sidewalk/Crosswalk Improvements
- Traffic camera monitoring
- Artificial Intelligence

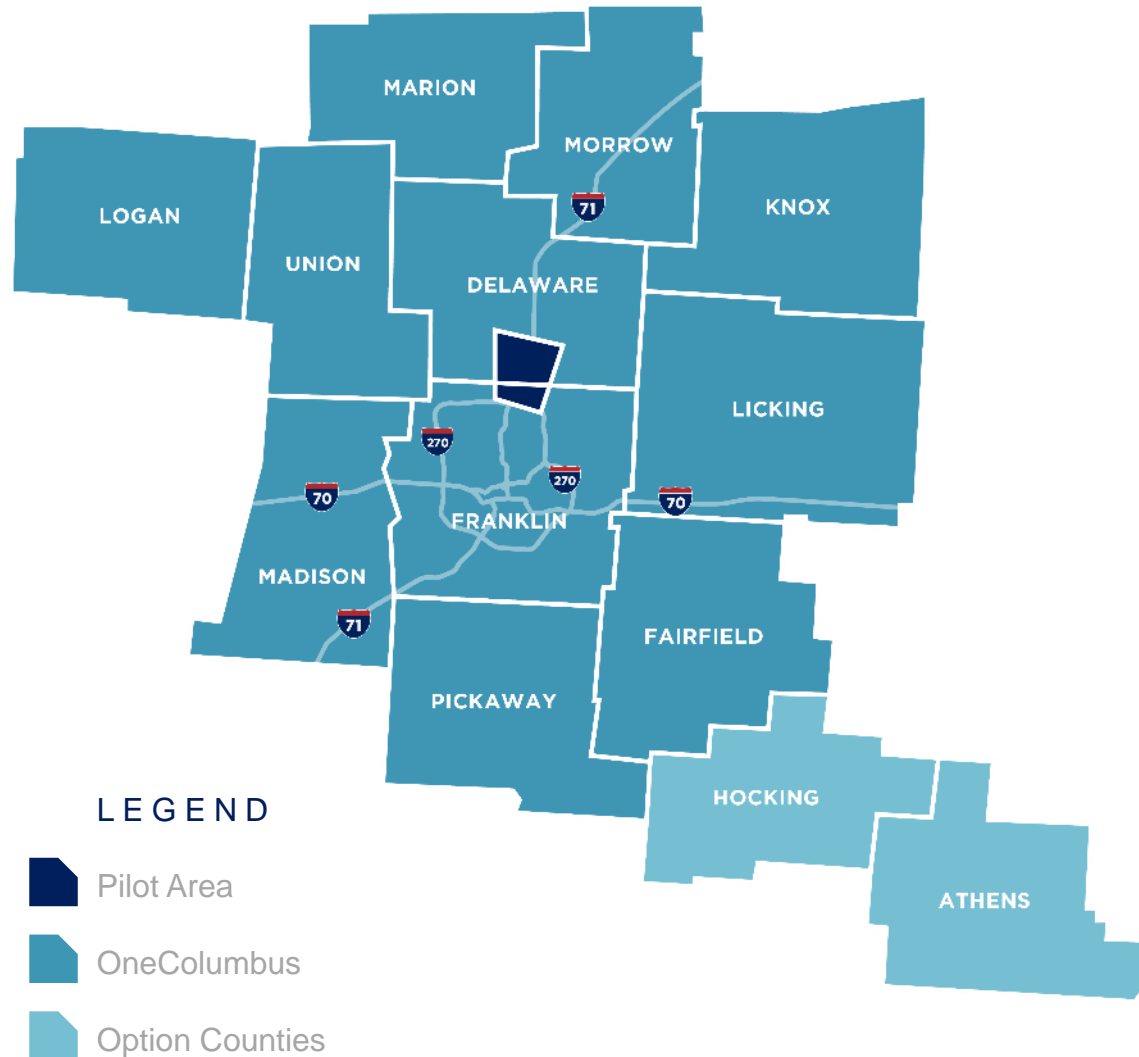


Making Traffic Safer

with Artificial Intelligence

Operated by Rekor, this first-of-its-kind project will improve traffic safety and reduce travel time for residents across 13 Central Ohio counties through a cloud-based connected mobility platform.

- The system will be the **largest of its kind** in the country and the first involving public transit agencies.
- Supports **Columbus Vision Zero** initiative to eliminate all roadway related deaths and severe injuries, while increasing safe, healthy, and equitable mobility for everyone.



Technical Session Surveys

- Attendees who fill out a minimum of four session surveys and the overall event survey will get Cisco Live branded socks!
- Attendees will also earn 100 points in the Cisco Live Game for every survey completed.
- These points help you get on the leaderboard and increase your chances of winning daily and grand prizes.



Cisco Learning and Certifications

From technology training and team development to Cisco certifications and learning plans, let us help you empower your business and career. www.cisco.com/go/certs

Pay for Learning with Cisco Learning Credits

(CLCs) are prepaid training vouchers redeemed directly with Cisco.



Learn



Cisco U.

IT learning hub that guides teams and learners toward their goals

Cisco Digital Learning

Subscription-based product, technology, and certification training

Cisco Modeling Labs

Network simulation platform for design, testing, and troubleshooting

Cisco Learning Network

Resource community portal for certifications and learning



Train



Cisco Training Bootcamps

Intensive team & individual automation and technology training programs

Cisco Learning Partner Program

Authorized training partners supporting Cisco technology and career certifications

Cisco Instructor-led and Virtual Instructor-led training

Accelerated curriculum of product, technology, and certification courses



Certify



Cisco Certifications and Specialist Certifications

Award-winning certification program empowers students and IT Professionals to advance their technical careers

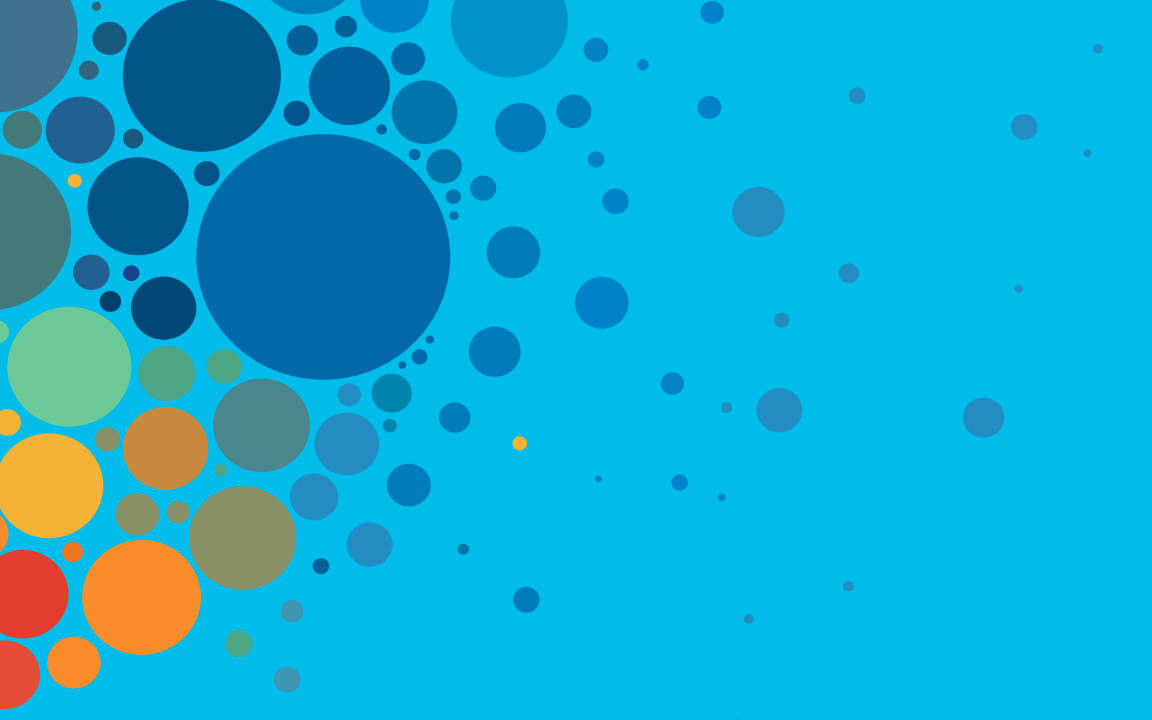
Cisco Guided Study Groups

180-day certification prep program with learning and support

Cisco Continuing Education Program

Recertification training options for Cisco certified individuals

Here at the event? Visit us at **The Learning and Certifications lounge at the World of Solutions**



Continue your education

- Visit the Cisco Showcase for related demos
- Book your one-on-one Meet the Engineer meeting
- Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs
- Visit the On-Demand Library for more sessions at www.CiscoLive.com/on-demand

CISCO *Live!*

ALL IN

#CiscoLive