

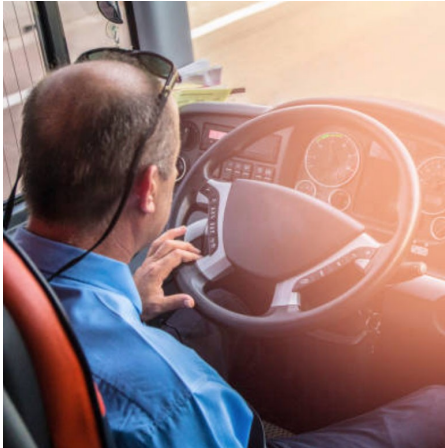
# Remote and Mobile Assets

IT designed. Field operated.





# Cisco can help manage your transition to the digital economy



**82%**

Fleet & Asset departments with on-going digitalization projects.

**52%**

Fleet & Asset owners rank security & data interoperability as #1 digitalization challenge

**91%**

Fleets & Assets requiring real-time or near real-time response for edge computing

257966

Digitalization is driving the future of your business and assets, providing new choices for your customers, changing their expectations, and affecting the socio-economics of your markets. Cisco is the global market leader in IoT and networking with a deep history of helping customers survive technology shifts like networking, the internet, and telecom disruptions.

## Digitalizing your Remote and Mobile Assets

Cisco's Remote and Mobile Assets (RaMA) solution addresses common needs across many industries, connecting assets, providing visibility, and optimizing total cost of ownership (TCO) through edge applications.

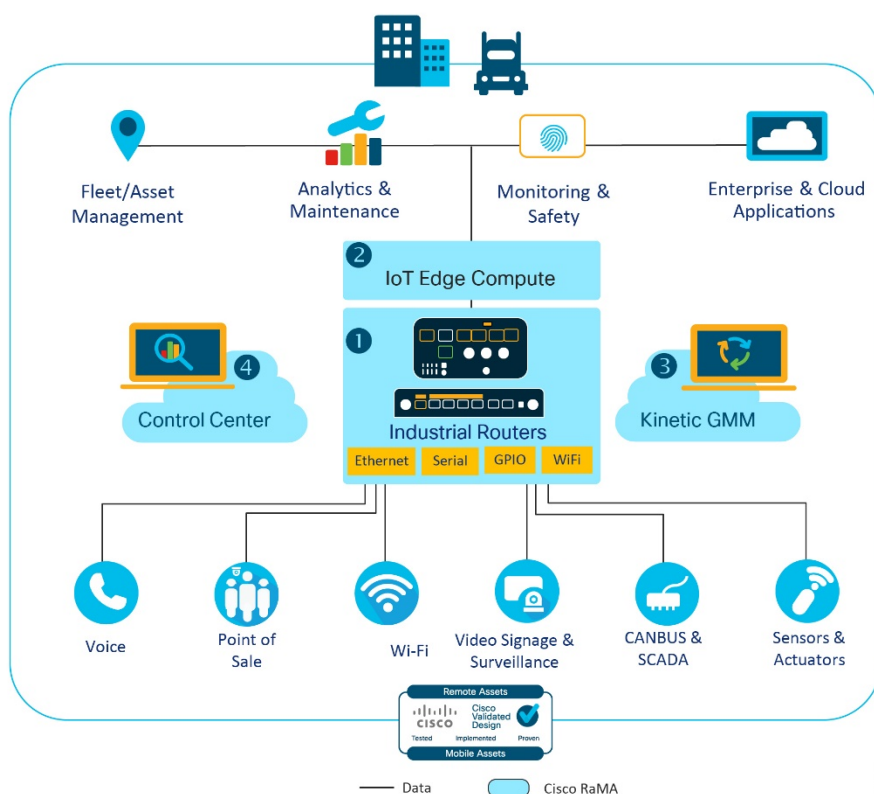
### Remote Assets



### Mobile Assets



## Four products, seamlessly integrated



The Cisco Remote and Mobile Assets architecture consists of four key products that have been fully validated with leading third-party devices, applications, and network components. These include:

1. Cisco's industry leading secure gateway portfolio.
2. Integrated IoT edge compute.
3. Simplified cloud management with Kinetic Gateway Management Module (GMM).
4. Cellular connectivity management with Control Center.

## Solutions that fit your business needs

### Why Cisco Remote and Mobile Assets?

- Uncompromised security
- Unmatched flexibility
- Unprecedented deployment at scale
- Best-in-class data architecture
- Integrated network and asset security
- Networking and IoT leadership
- Award-winning services
- Broadest developer and partner ecosystem

|               | Typical Applications:                                            | Platform Benefits:                                                                      |
|---------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Remote Assets | SCADA/Telemetry                                                  | SCADA-certified, ruggedized routers to meet stringent specifications                    |
|               | Applications & Analytics                                         | Edge compute options for automation and legacy protocols                                |
|               | Safety & Productivity                                            | Architecture for remote machine access and data acquisition                             |
| Mobile Assets | Computer Aided Dispatch (CAD) & Automatic Vehicle Location (AVL) | Geo-location enabled solution that can support your device and application requirements |
|               | Laptop & Workforce Applications                                  | Wi-Fi enabled gateways with secure enterprise connectivity                              |
|               | Vehicle Operations & Maintenance                                 | Secure OBD-II integration and edge compute options for effective data management        |

Cisco's Remote and Mobile Assets solution provides powerful ways to connect your assets, with the added benefit of simplified zero-touch gateway deployments using LTE, Ethernet, or Wi-Fi connections. This solution enables you to manage your fleet vehicles and field assets as a full extension of your enterprise with an easy to use management platform that your field technicians can operate.

## Cisco Validated Design™

Since the inception of IP networking, Cisco Validated Designs (CVDs) have been used to validate, architect, and configure next-generation technologies. Each is designed to help you accelerate digital transformation, innovate faster, and stay competitive. This CVD is no exception. It provides a design foundation for incorporating a broad set of technologies, features, and applications presented in easy to consume modules. Every aspect has been thoroughly tested and documented, helping ensure a deployment that's faster, more reliable, cost effective, and predictable.

### Remote and Mobile Assets CVD

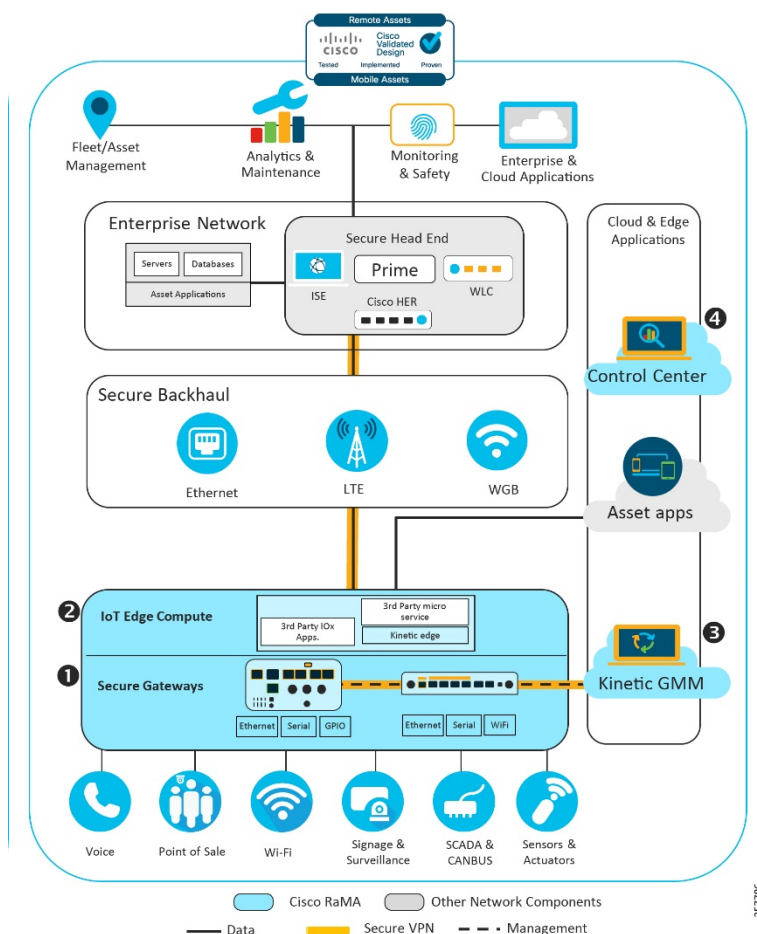
- Standardized architecture templates and adherence to best practices.
- Designs and configurations to help integrate the IoT gateway with enterprise networks.
- Advanced templates and automation scripts for configuring specialized Cisco IOS features.
- Use case modules that provide design and configuration guidelines for specific vertical requirements.

The RaMA Cisco Validated Design consists of eight easy to consume modules that include typical requirements, the proposed architecture, design guidance, and best practices as well as sample configurations. In short, everything you require to design and deploy a robust and scalable asset platform.

| CVD Modules      |                         | Benefits                                                                                                                                                                                                                                                                   |
|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vertical Modules | Remote Site Management  | Remote site connectivity for typical southbound devices and sensors over wired and cellular networks. Includes best practices for connecting to devices behind the gateway including isolation of management and data planes and whitelisting of applications and devices. |
|                  | Fleet Management        | Support for typical on-board devices and applications using the IR829 as a managed gateway connecting to a variety of networks including LTE, WiFi, and GPS. Using edge compute microservices to access gateway stats such as LTE/WiFi/GPS signal strength.                |
| Platform Modules | Technology Guidance     | Overview of hardware options for IoT gateways with recommendations for hardware selection and configuration options for common scenarios.                                                                                                                                  |
|                  | Enhanced Security       | Detailed description of the end-to-end security architecture using the SAFE model to secure the gateways, data plane, and management plane.                                                                                                                                |
|                  | Zero Touch Provisioning | Use of Kinetic GMM by IT personnel to create templates for provisioning and managing routers with a focus on secure, scalable deployment.                                                                                                                                  |
|                  | Network Integration     | Extending enterprise network connectivity to the edge IoT gateway in a highly secure and redundant fashion.                                                                                                                                                                |
|                  | Edge Compute            | Overview of the edge compute capabilities in the Cisco routers in the form of IOx. Includes examples for deploying Dockerized applications.                                                                                                                                |
|                  | Field Deployment        | Use of Kinetic GMM by OT personnel for deploying Cisco routers with minimal knowledge of the underlying networking technologies required.                                                                                                                                  |

## A security-centric architecture

Our detailed CVD outlines the steps for both IT and field users to get the most out of their cloud-managed IoT gateways. It includes IT designs and configuration snippets, allowing for deep integration with your existing enterprise platforms.



### Cisco Solutions Components:

- 1) Secure Industrial Routers
- 2) IoT Edge Compute
- 3) Kinetic Gateway Management Module
- 4) Cisco Control Center

### Key Features:

Comprehensive portfolio of full-featured IOS routers in a ruggedized form factor

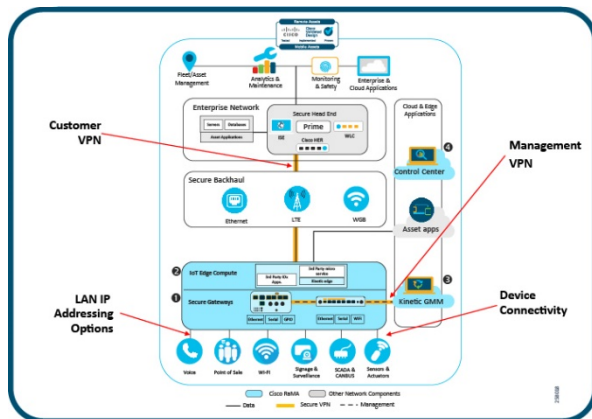
Infrastructure integrated edge compute platform with Docker support and edge data management

Simplified cloud-based management platform for rapid deployment & field visibility

Integrated SIM activation and management to optimize LTE usage

Additional product documentation is available at [www.cisco.com/loT](http://www.cisco.com/loT)

# Remote & Mobile Assets CVD Modules



## Remote Site Management

### Requirements:

- Quickly and easily connect devices at remote sites to cloud or on-premises applications.
- Gain secure access to remote devices behind the gateway.

### Design Guide:

- Use common VPN applications (like Cisco AnyConnect VPN client) to establish secure connectivity to the gateway and assets behind it.
- Enhance security by locking down unused and open ports.
- Five deployment options for remote sites.

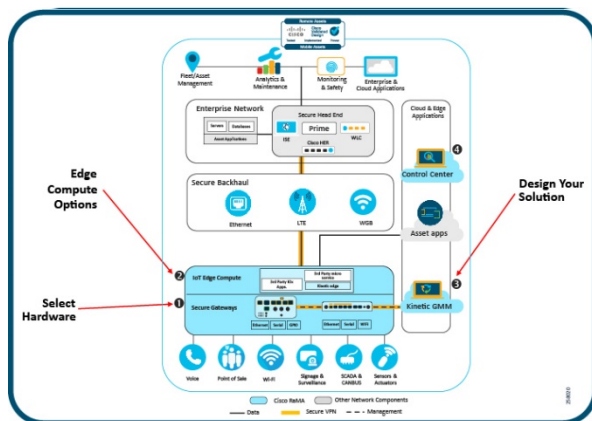
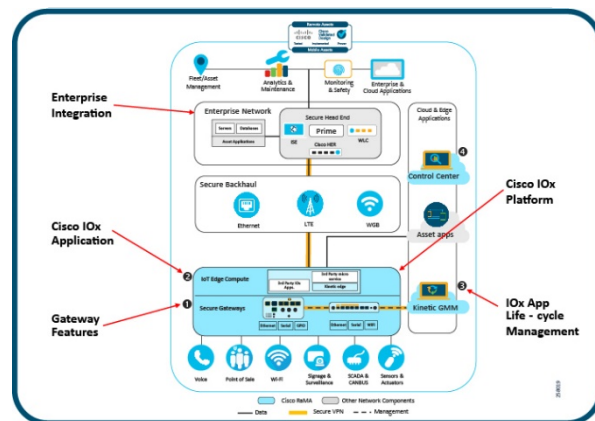
## Fleet Management

### Requirements:

- Support for typical on-board devices and applications connecting to networks including LTE, WiFi, and GPS.
- Using edge compute microservices to access gateway stats such as LTE/WiFi/GPS signal strength.

### Design Guide:

- WiFi hotspots and station connectivity including enterprise network integration.
- Managing GPS and location-based services.
- Creating, deploying, and managing edge compute micro services.



## Technology Guidance

### Requirements:

- Simple guide to understanding key gateway features and help with selecting the appropriate gateway model for your use-case.
- High-level design template for various connectivity options and feature requirements.

### Design Guide:

- Overview of gateway features including ports and backhaul, WiFi options, embedded sensors, edge compute capabilities, dimensions, and other features.
- Designing your solution for remote asset and mobile asset use cases including selection of key IOS network capabilities.



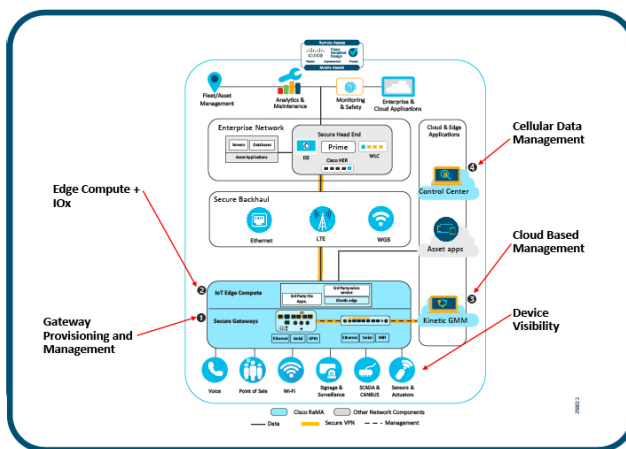
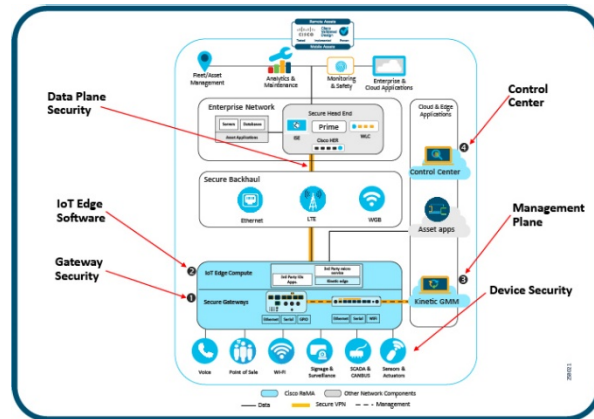
## Enhanced Platform Security

### Requirements:

- Alignment with the Cisco SAFE security model.
- End-to-End security including gateway security and a secure management and data plane.

### Design Guide:

- Securing the management plane with encrypted IPSec tunnels and certificate-based authentication.
- Securing the data plane with FlexVPNs and best practices to achieve PCI compliance.
- Device and gateway security with 802.1x and hardware based encryption.



## Zero Touch Provisioning

### Requirements:

- Simplified provisioning templates with a focus on secure, scalable deployments.
- Centralized monitoring and management.
- Gateway firmware management and remote access

### Design Guide:

- Steps for provisioning and claiming both greenfield and brownfield gateways.
- Creating basic and advanced templates for Cisco IOS features.
- Remote management and gateway updates using GUI and APIs.
- Leveraging Cisco Control Center for LTE connectivity management.

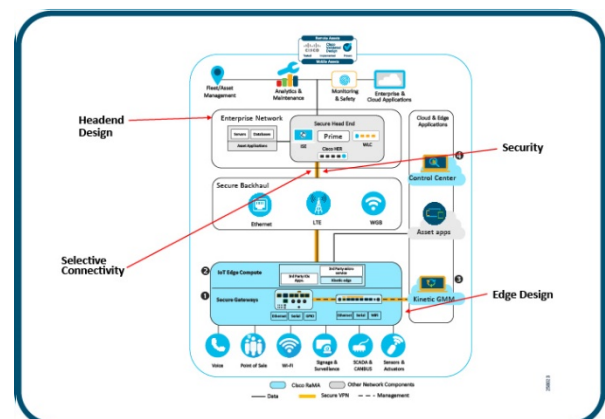
## Enterprise Network Integration

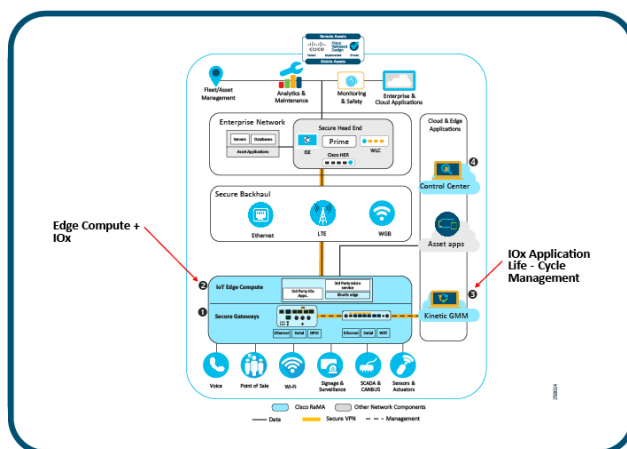
### Requirements:

- Securely connecting gateways to the enterprise headquarters and ensuring enterprise-class security, resiliency, high-availability, and load-balancing.
- Applying advanced network policies to the edge networks and leveraging corporate security tools.

### Design Guide:

- VPN headend design options including selection of the head end routing platform and resiliency options.
- Best practices for network integration and head end design including load balancing and using Cisco ISE for authentication.
- Full-Tunnel and Split-Tunnel routing option for Edge Gateways.





## IoT Edge Compute

### Requirements:

- Options for distributed edge compute to transform IoT data into business outcomes.
- Understand key edge compute drivers including local data management, bandwidth optimization, and protocol conversion.
- Use of standard container technologies such as Docker.

### Design Guide:

- Cisco IOx overview and best practices including supported microservice features.
- Cisco IOx deployment life cycle, resource profiles, and application package definition.
- Building Docker containers.

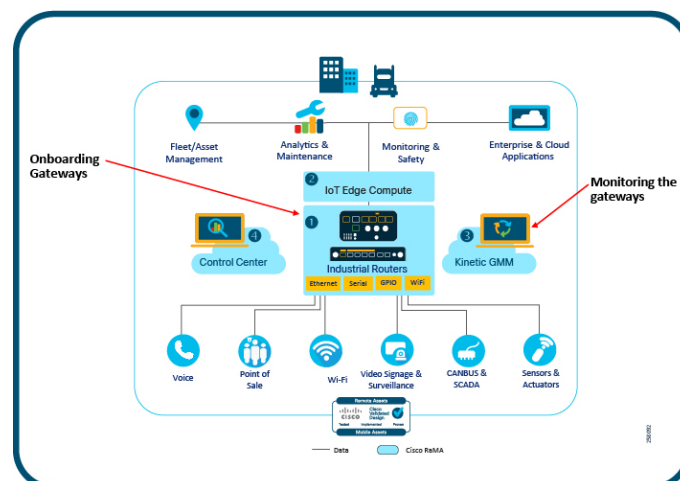
## Field Deployment

### Requirements:

- Simplified steps for non-IT technicians to provision and deactivate the gateways
- Simplified gateway operations including status screens, alerts and reports, troubleshooting, and frequently asked questions.

### Guide:

- Three-step guide for claiming the gateway using a mobile phone and web app.
- Two-step guide for deactivating gateways and SIMs
- Sample screens and reports available for field operations.



## Learn more

You can access our CVD through the help button on your Kinetic Gateway Management Module or as a stand-alone document through Cisco Design Zone.

Additional documentation is available at [www.cisco.com/go/RAMA](http://www.cisco.com/go/RAMA)

For more information, contact your Cisco representative, visit [cisco.com/go/rama](http://cisco.com/go/rama), or email [ramacyvd@cisco.com](mailto:ramacyvd@cisco.com).