



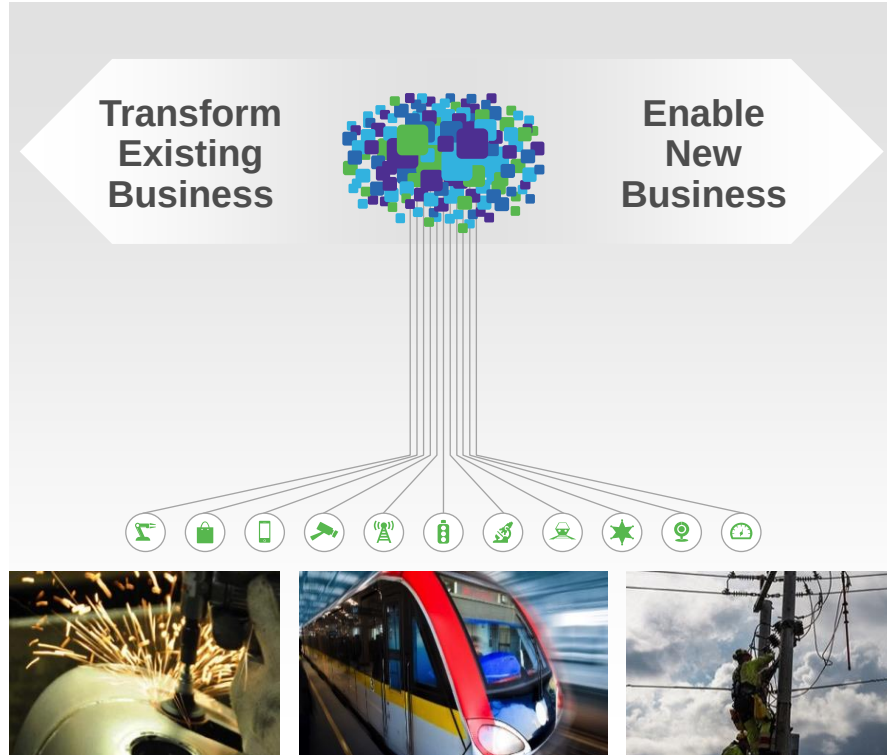
Unlocking Internet of Things Value

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IoT Unlocks Digital Business Value



Where is the value

50 Billion smart devices by 2020 will connect the unconnected

IT and OT convergence, hyper-connectivity across organizations

<1% of data currently used, more can be used for **optimization and prediction**

Interoperability across silo'd systems required to capture **40% of IOT value**

Source - McKinsey: The Internet of Things: Mapping The Value Beyond The Hype

The Promise of a Connected World is Complex



Connecting, managing & securing devices across a multitude of communication standards



Aggregating data from trillions of heterogeneous sources



Providing real time visibility across every device at any time



Automating actions based on unique business rules



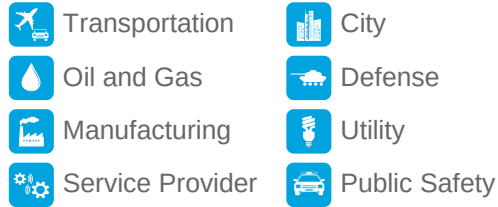
Billing customers on subscriptions with customizable meters and terms

Making all of this simple to administer at hyper scale

Cisco's IoT Framework: Applications Centric

Secure, Scalable, IT / OT Consistency, Validated Architecture & Solutions

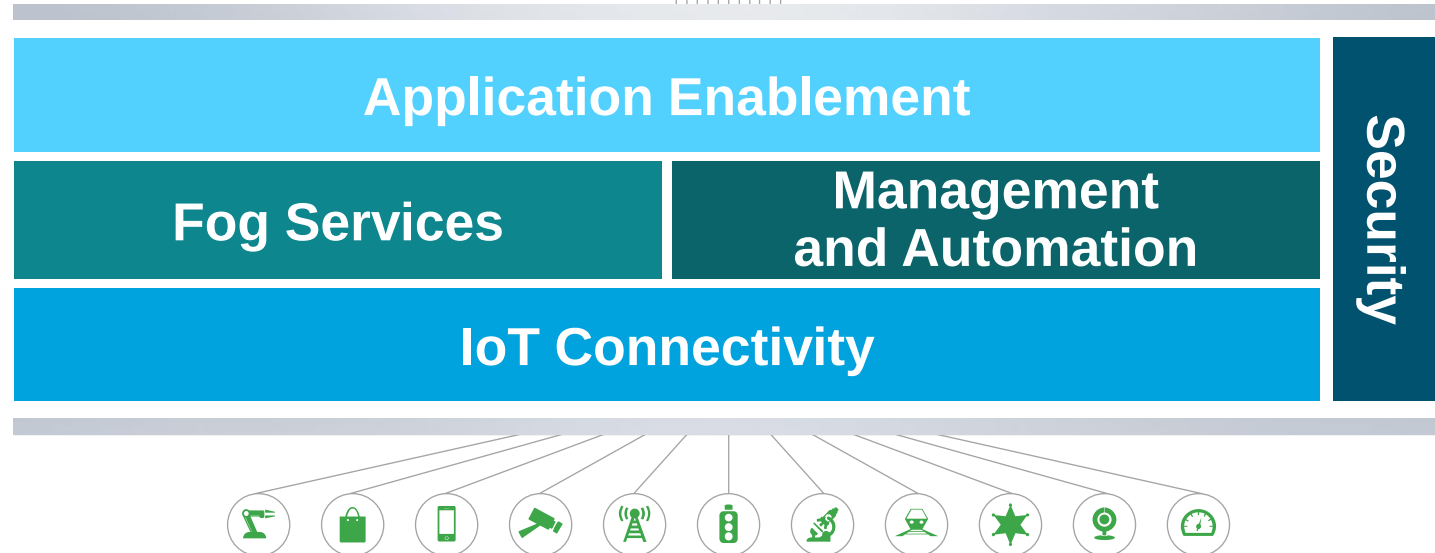
SOLUTIONS



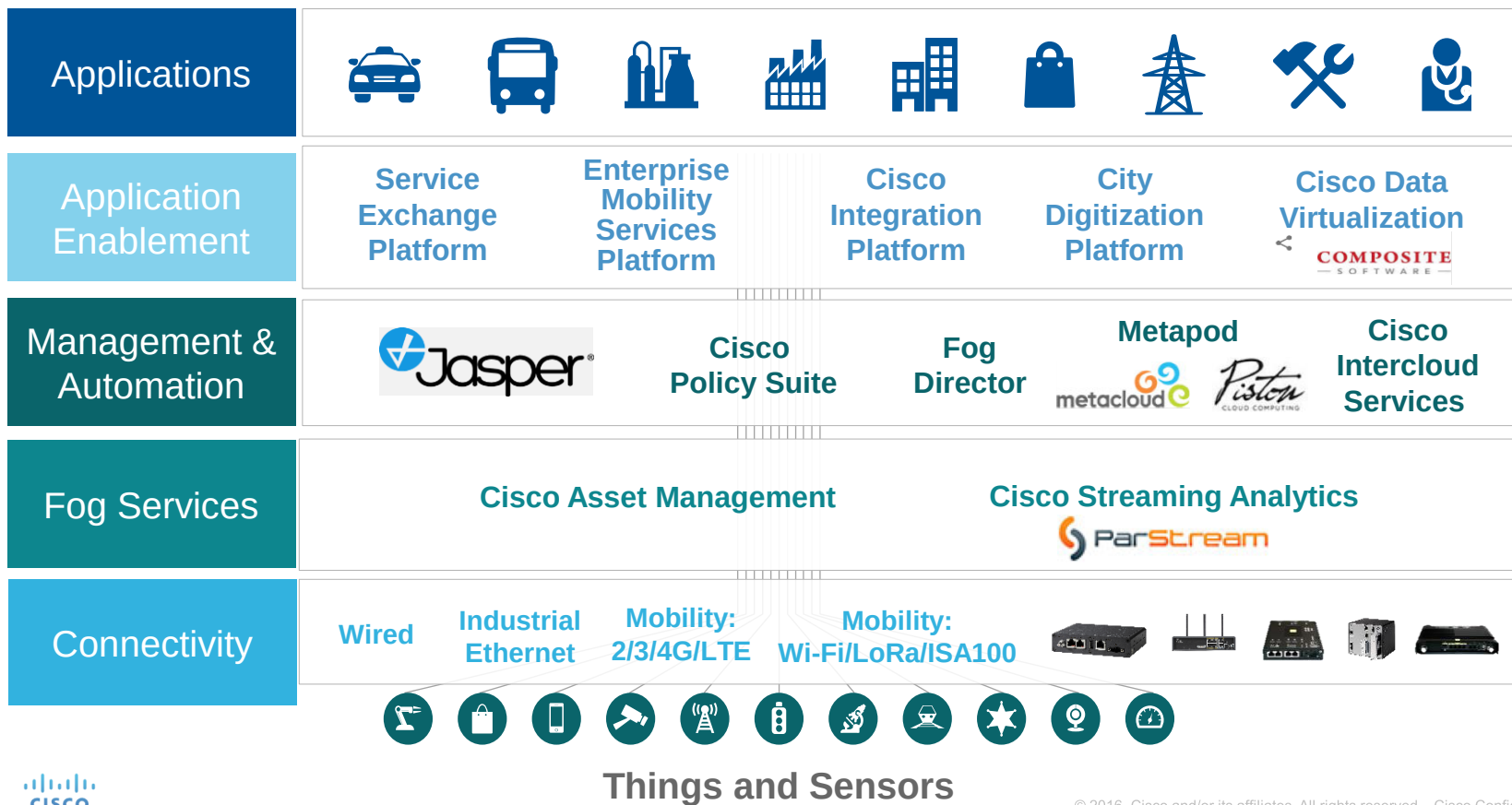
APPLICATIONS



ECOSYSTEM



Cisco's IoT Framework Components



Security Components

- Intrusion
- Mobility
- Identity
- Threat
- Access Policy

IoT Networking and Security Portfolio



Network Connectivity

Industrial Switching



IE 2000, 3000
CGS2000



IP67



IE 4000



IE 5000

Industrial Routing



CGR 2000



ASR 903



ASR 902

Industrial Wireless



Field
AP
1552



Mfg WGB/AP
(Rockwell)



Industrial AP
IW 3700
802.11ac



Mobile IP Gateway

Field Network



CGR
1000



819H



IR509



IR910



IR829



IR809

Embedded Networks



ESS
Switches



5900 ESR



5921
Software
Router



Security



IP Cameras



VSM



IR Portfolio



Cisco ISE



ISA 3000

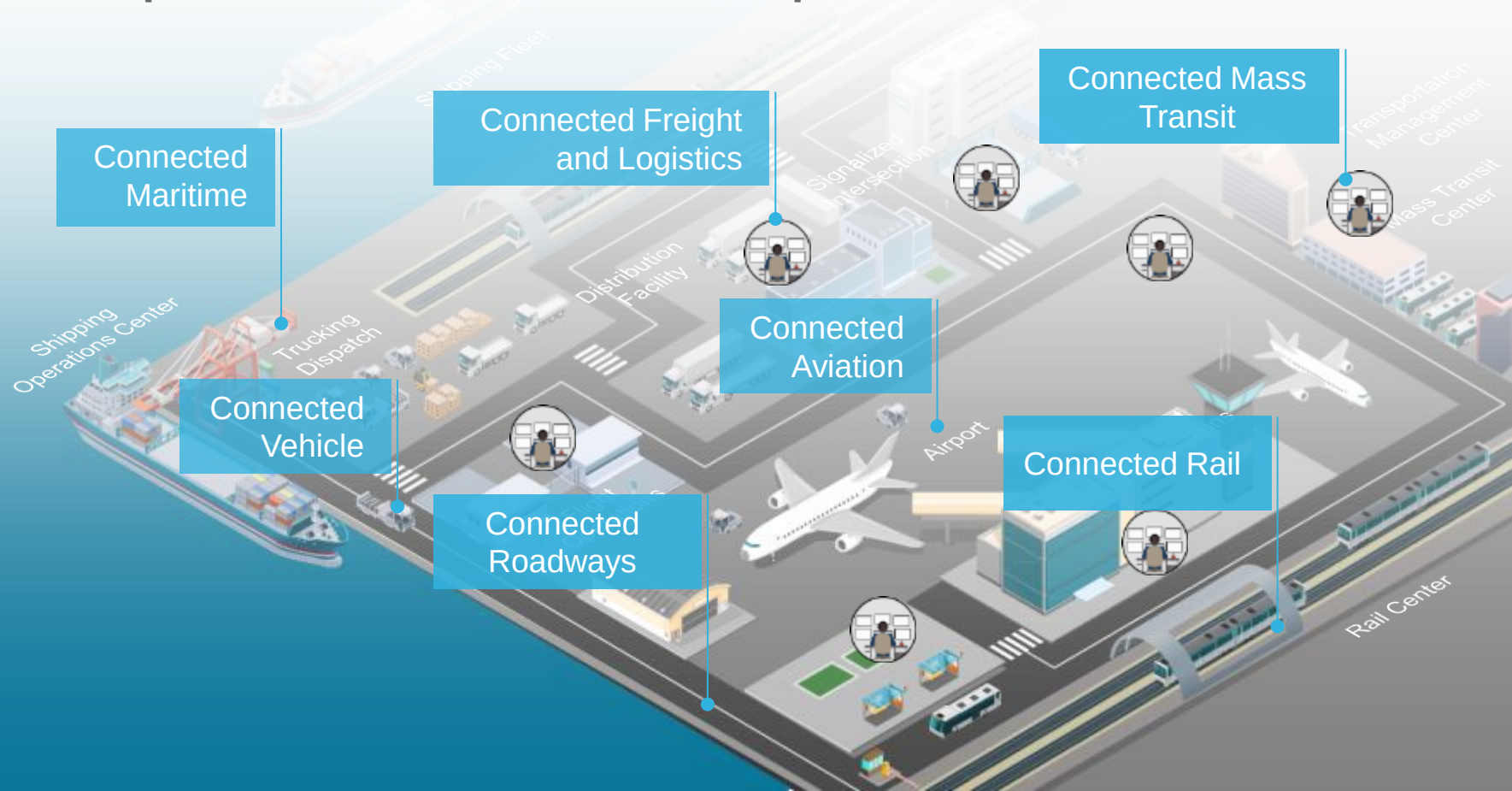


Cisco ASA H

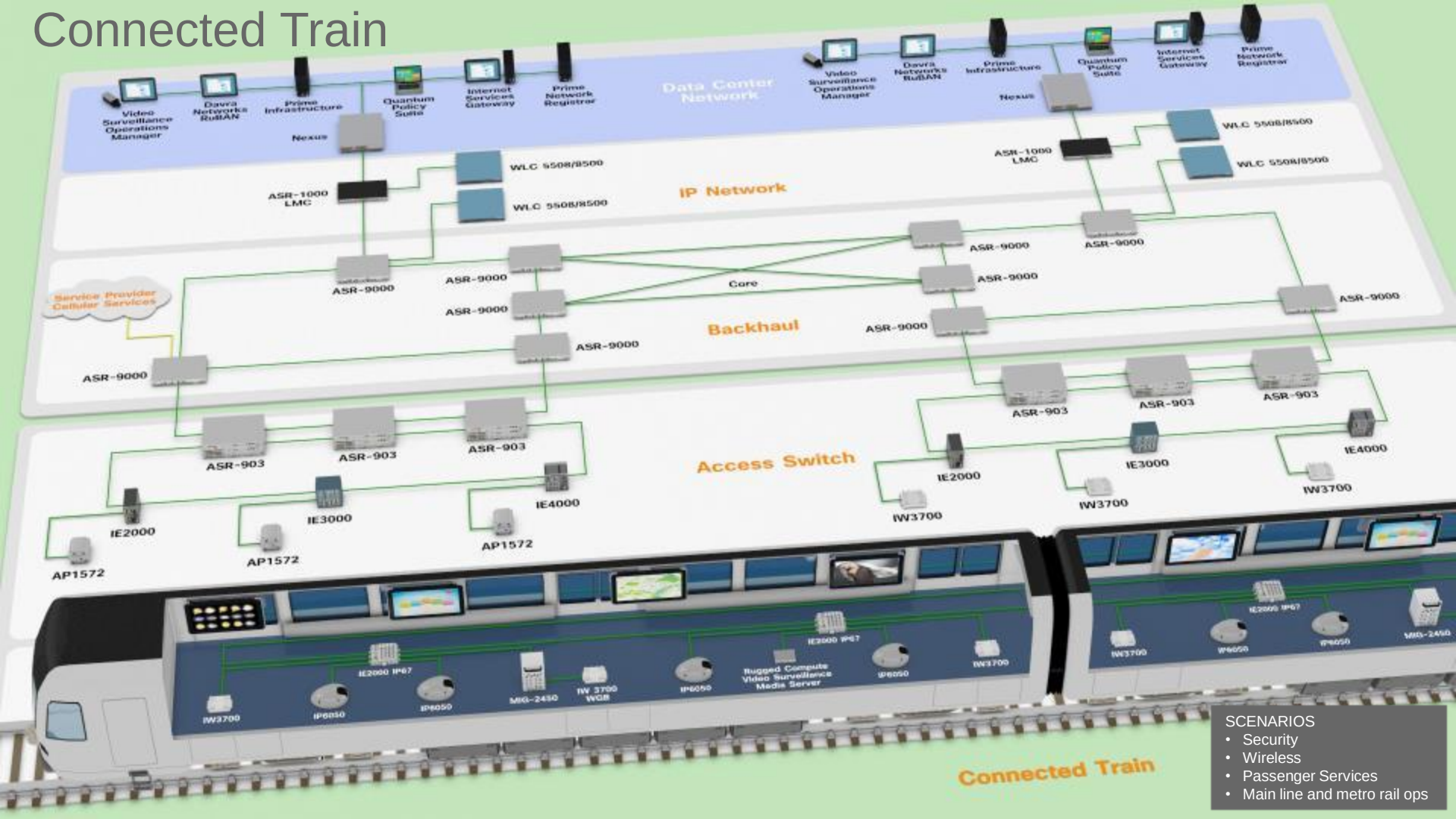


AMP, Sourcefire
Defense Center,
Cloud Security

Example: Connected Transportation Solutions



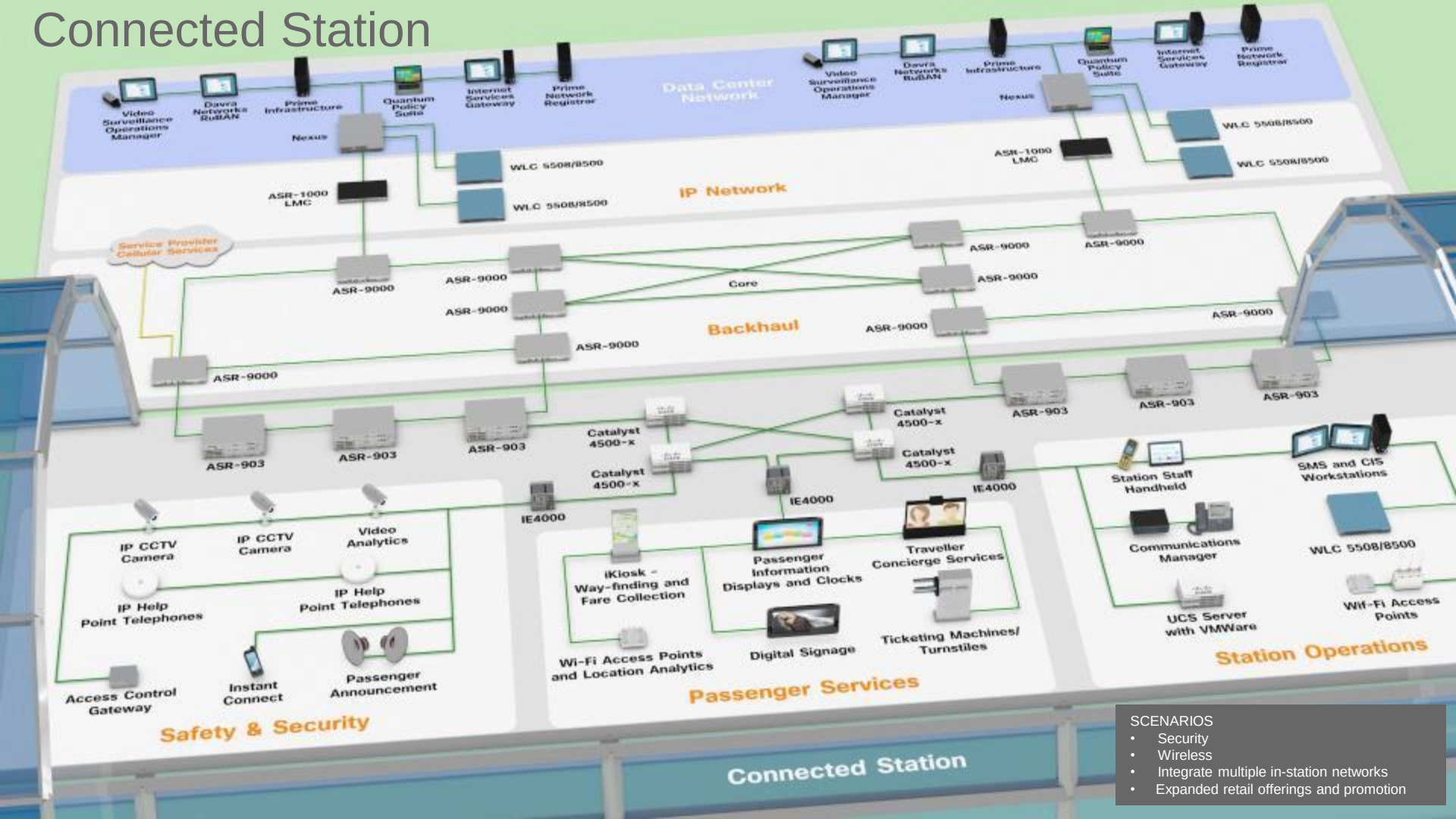
Connected Train



SCENARIOS

- Security
- Wireless
- Passenger Services
- Main line and metro rail ops

Connected Station



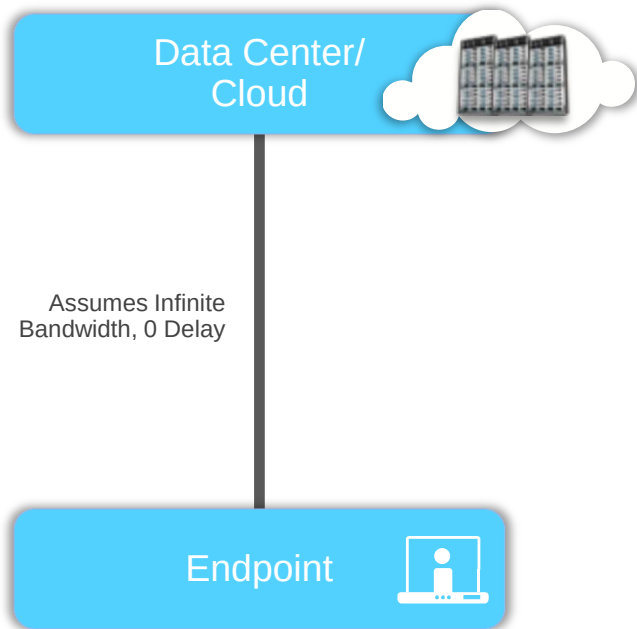
SCENARIOS

- Security
- Wireless
- Integrate multiple in-station networks
- Expanded retail offerings and promotion

Fog Systems: Application Centric Infrastructure

Take Processing and Storage to the Data Using the Intelligent Network Fabric

Traditional Computing



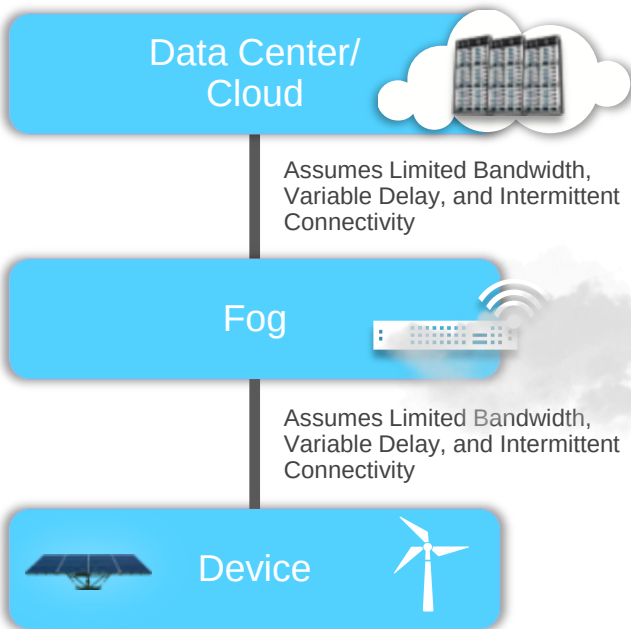
Latency-Critical
Responsiveness
Required

Resiliency

Security

**Data Grows Faster
Than Bandwidth**

IoT Computing Model

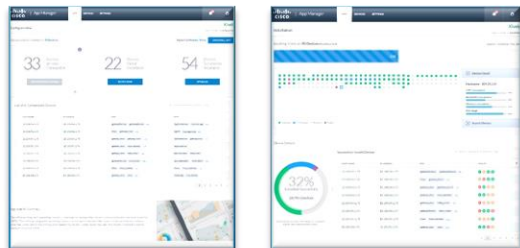


Essential Elements for Fog Applications

Fog-ready Network Infrastructure



Fog Application Management



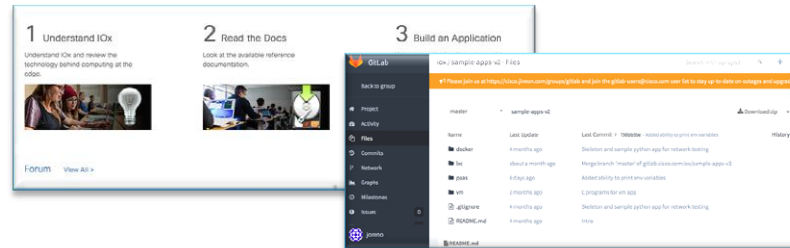
Application Execution Environment

Cisco IOx

Cisco IOS

Linux

Developer Tools



Customer Example – Manufacturing

Cisco IoT System with Fog, IOx Applications

Challenge



- Common data collection and control
- Increase manufacturing line availability
- Improve workflow and factory processes

Solution



- Mazak SmartBox
- Cisco IE 4000 Ethernet switch
- Fog application

Business Outcomes



- Continuous OEE improvement
- Predictive maintenance



Customer Example – Cell Tower Asset Monitoring

Cisco IoT System with Fog, IOx Applications

Challenge



- No visibility for hurricane planning
- Costly to manage remote sites
- Losses due to asset theft

Solution



- Operations dashboard and business intelligence in Cisco cloud (Connected Assets solution)
- Fog application (Azeti Sonarplex)
- Cisco IR 829 router (IOx)

Business Outcomes

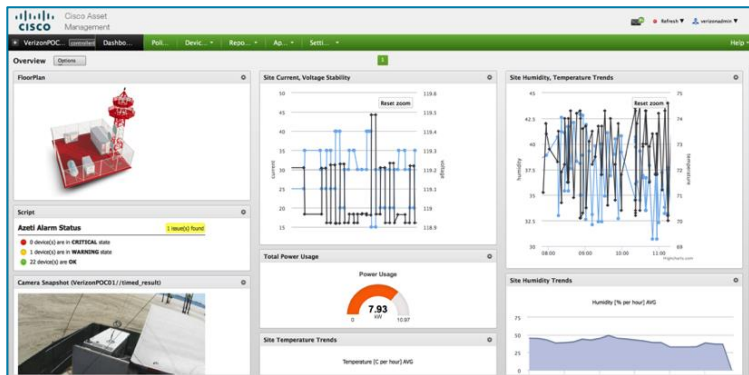


- Reducing workload for routine site checks
- Complete visibility into assets
- Knows exactly how long towers survive on battery



Deployment Architecture

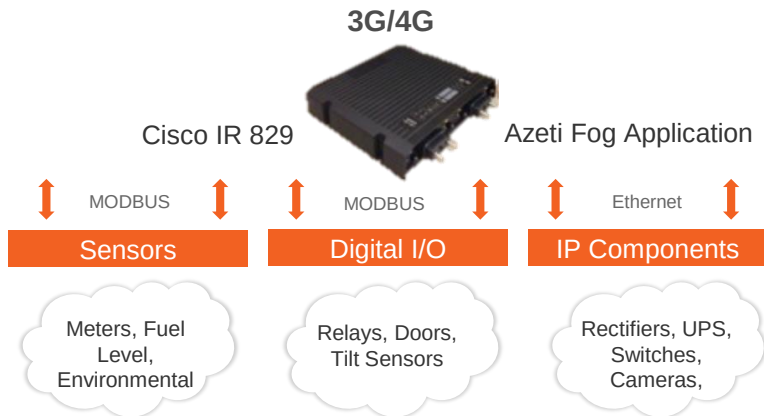
Cisco Cloud



Business intelligence and operations

- Historical trending
- Multi-site correlation
- Single pane of glass management

Remote Site



Ecosystem partner application using Fog Data Services running on IOx-based IR 829

- Local device control
- Accommodates many types of sensors (analog, digital, legacy, etc.)
- Data aggregation/reduction
- VPN secured data link

Customer Example – Fleet Management

Cisco IoT System with Fog, IOx Applications

Challenge



- Lower OPEX through efficient vehicle maintenance
- Increased field productivity
- Improved customer satisfaction

Solution

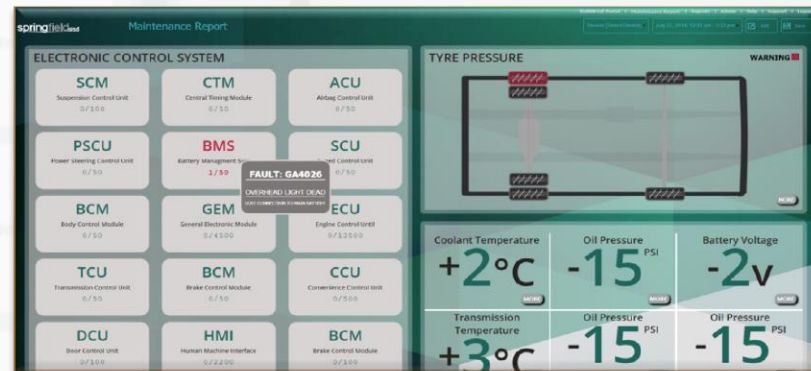


- Cisco IR 829 – WiFi and 4G connectivity
- Davra RuBan fleet management application
- Vehicle diagnostics and asset tracking

Business Outcomes



- Lower OPEX through efficient vehicle maintenance
- Increased field productivity
- Improved customer satisfaction



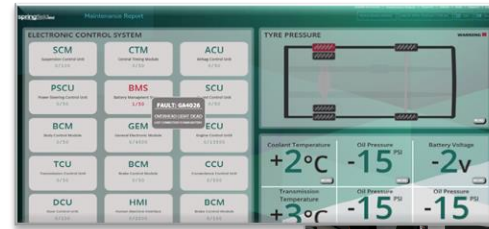
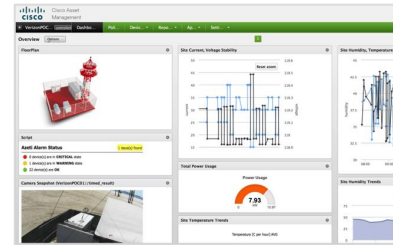
Common Denominators of Customer Success

Fog-ready Network Infrastructure

Integrated Security

Management at Scale

Open Source Development Tools



IoT Solutions Partner Ecosystem

Manufacturing

**Rockwell
Automation**



FANUC
Robotics



Mazak

Utility

Itron

SIEMENS

ALSTOM



BITSTEWSYSTEMS

Oil and Gas



Honeywell

ABB

**Schneider
Electric**



Transportation

BOMBARDIER



CABLEVISION



City



WORLD **W** SENSING



ch2m

Workspace

PHILIPS



CREE



Key Takeaways

Leverage the Value of the Secured Network

Innovate with Cisco: DevNet and Fog IOx

Attain full Value with Management, Automation
and Application Enablement Solutions

Build on Proven IoT Solutions and Vertical Use Cases

