Cisco 3200 Series Wireless & Mobile Router

Mobile Network Solutions for Public Safety

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 Cisco Public

Communication Challenges

Communication Challenges in Public Safety

- Lack of interoperability within and across agencies

- Limited communication based on narrowband, proprietary networks

- Limited access to criminal or medical records while on scene

- Reliance on office resources to report field results

- Need for secure, standards-based networks to facilitate interoperability

Meeting the Challenge

Public Safety agencies seek to...

Improve public service delivery

Enable new applications and extend existing applications to the field
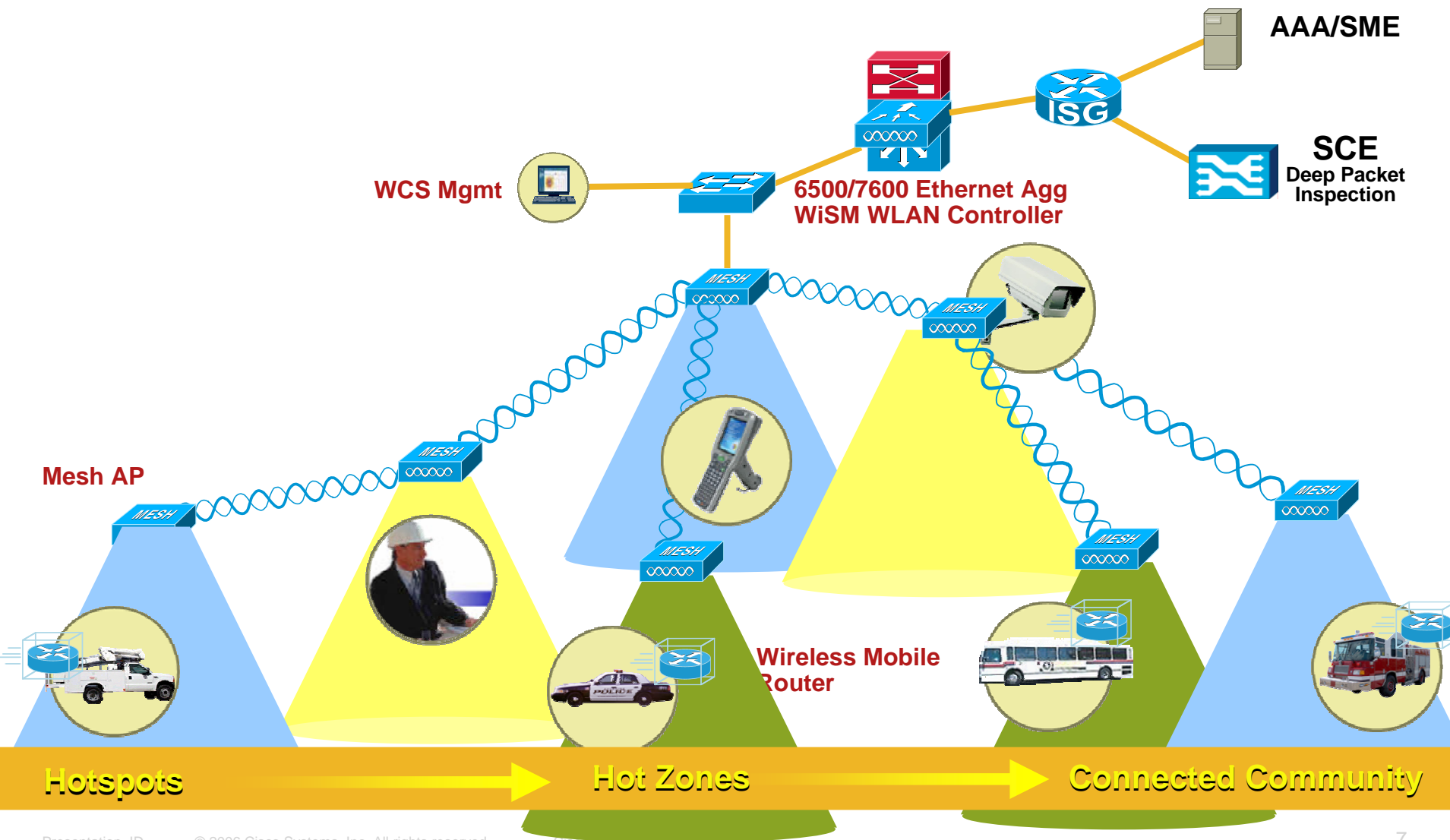
Improve interdepartmental communication

Improve transportation and infrastructure

Cisco Outdoor Wireless

Network Solution

Cisco Outdoor Wireless Network Solution

AAA/SME

SCE
Deep Packet
Inspection

WCS Mgmt

6500/7600 Ethernet Agg
WiSM WLAN Controller

Mesh AP

Wireless Mobile
Router

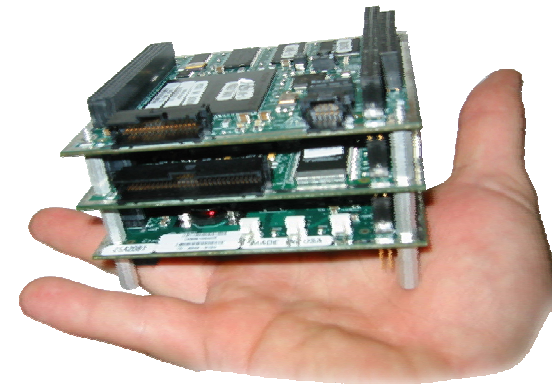Hotspots
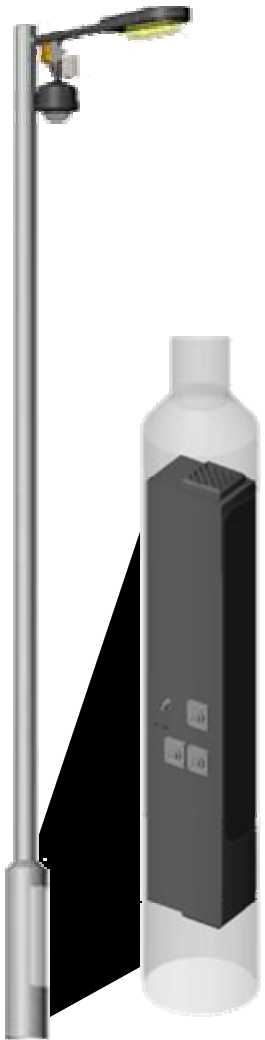
Hot Zones

Connected Community
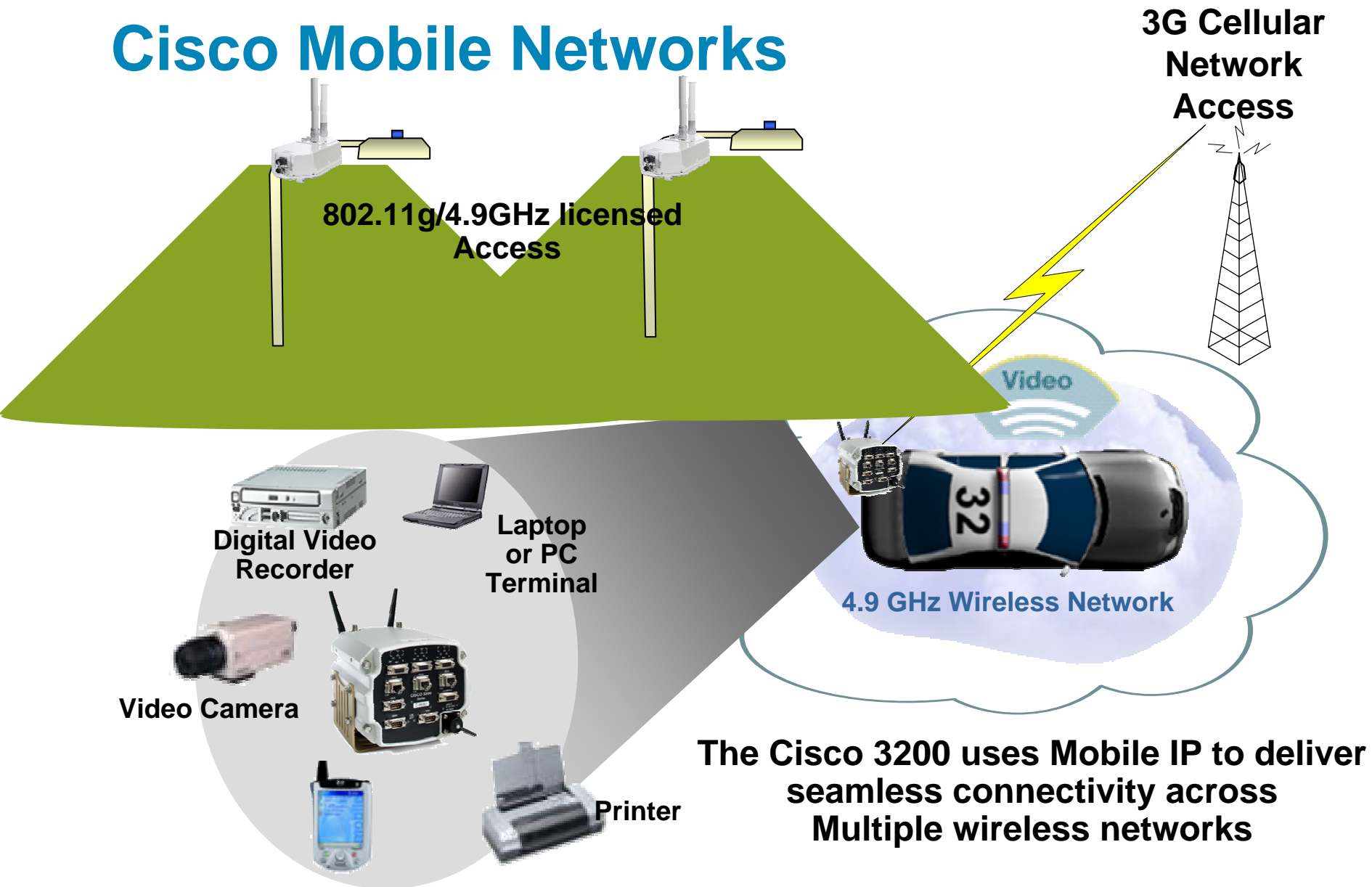
Cisco Mobile Network Solution

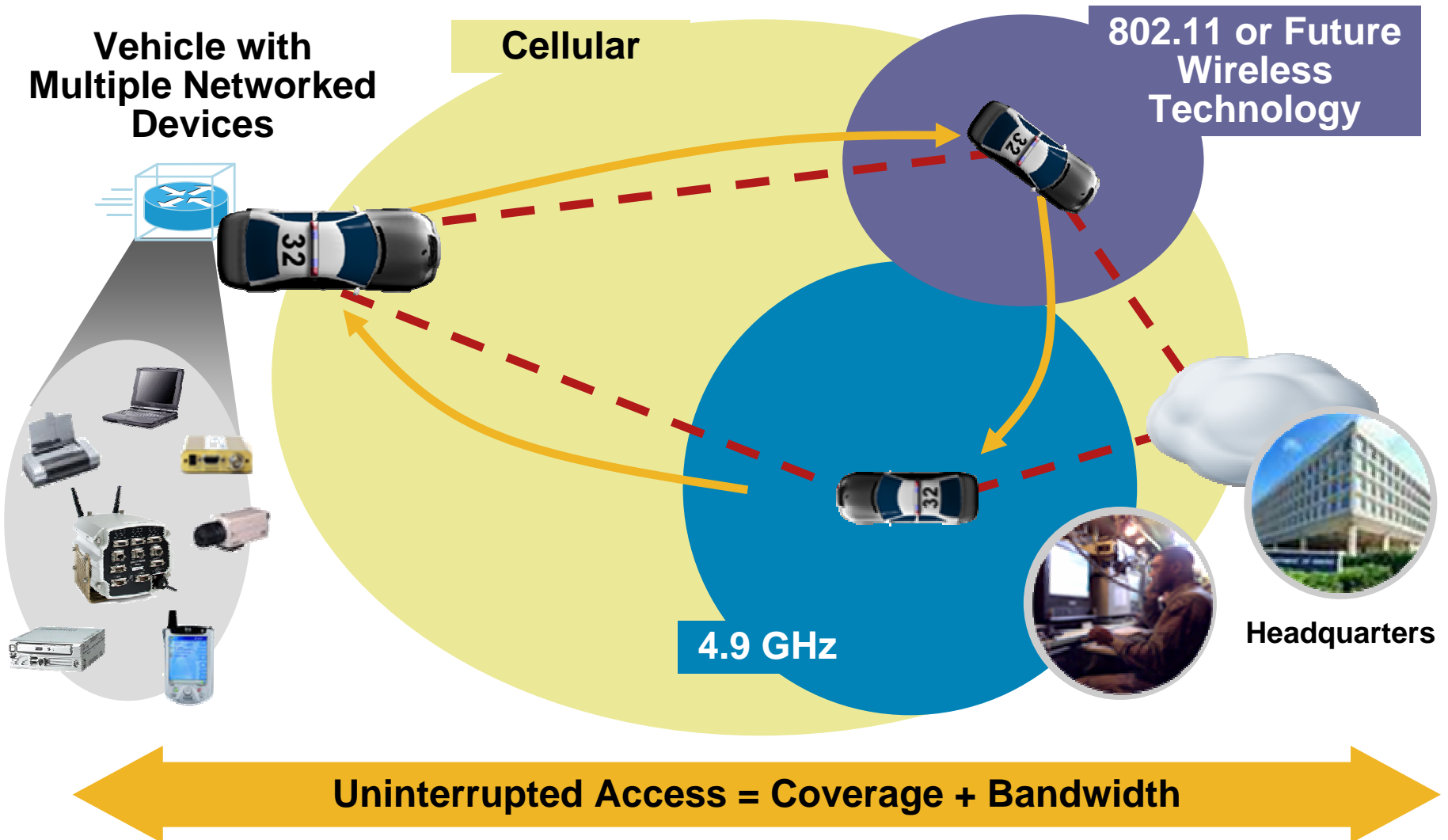# Cisco 3200 Series Outdoor Wireless Router Overview

- Flexible, high performance & rugged design for mobile & embedded applications

- Integrated 802.11b/g, 4.9GHz, 3rd party Cellular

- Secure, scalable, and managed data, voice and video communications

- Seamless mobility across wireless networks

- Advanced IP services and interoperability through Cisco IOS Software

Cisco Mobile Networks

3G Cellular Network Access

802.11g/4.9GHz licensed Access

Video

Digital Video Recorder

Laptop or PC Terminal

4.9 GHz Wireless Network

Video Camera

The Cisco 3200 uses Mobile IP to deliver seamless connectivity across Multiple wireless networks

Printer

Hand Held

Seamless Mobility Across Wireless Networks

Vehicle with Multiple Networked Devices

Cellular

802.11 or Future Wireless Technology

4.9 GHz

Headquarters

Uninterrupted Access = Coverage + Bandwidth

Cisco 3200 In-Vehicle Network

External 2.4 GHz/4.9 GHz
Diversity Antennas

Video Camera

Mug Scanner

Laptop

Printer

PDA

Digital Video Recorder
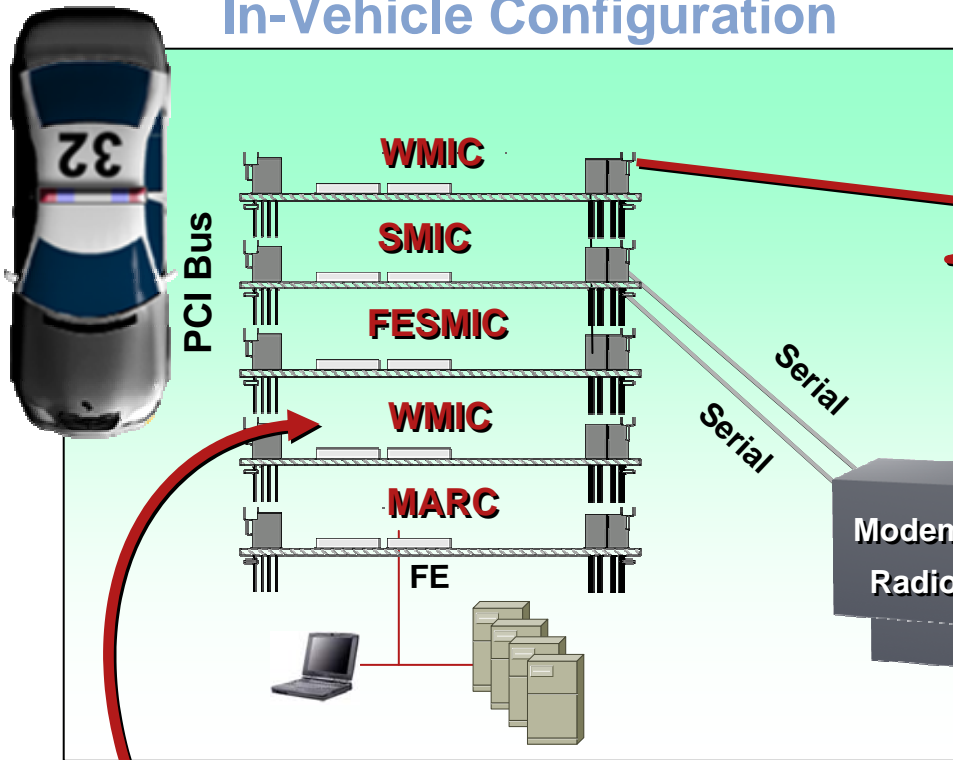
Cisco 3200

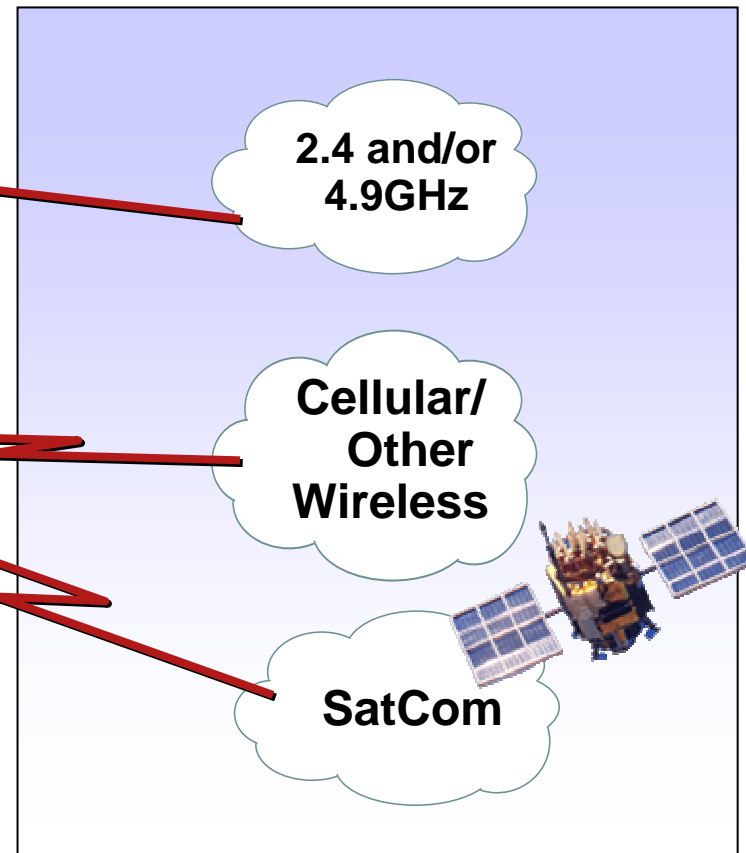In-Vehicle Router with Embedded Access Point & wireless uplink
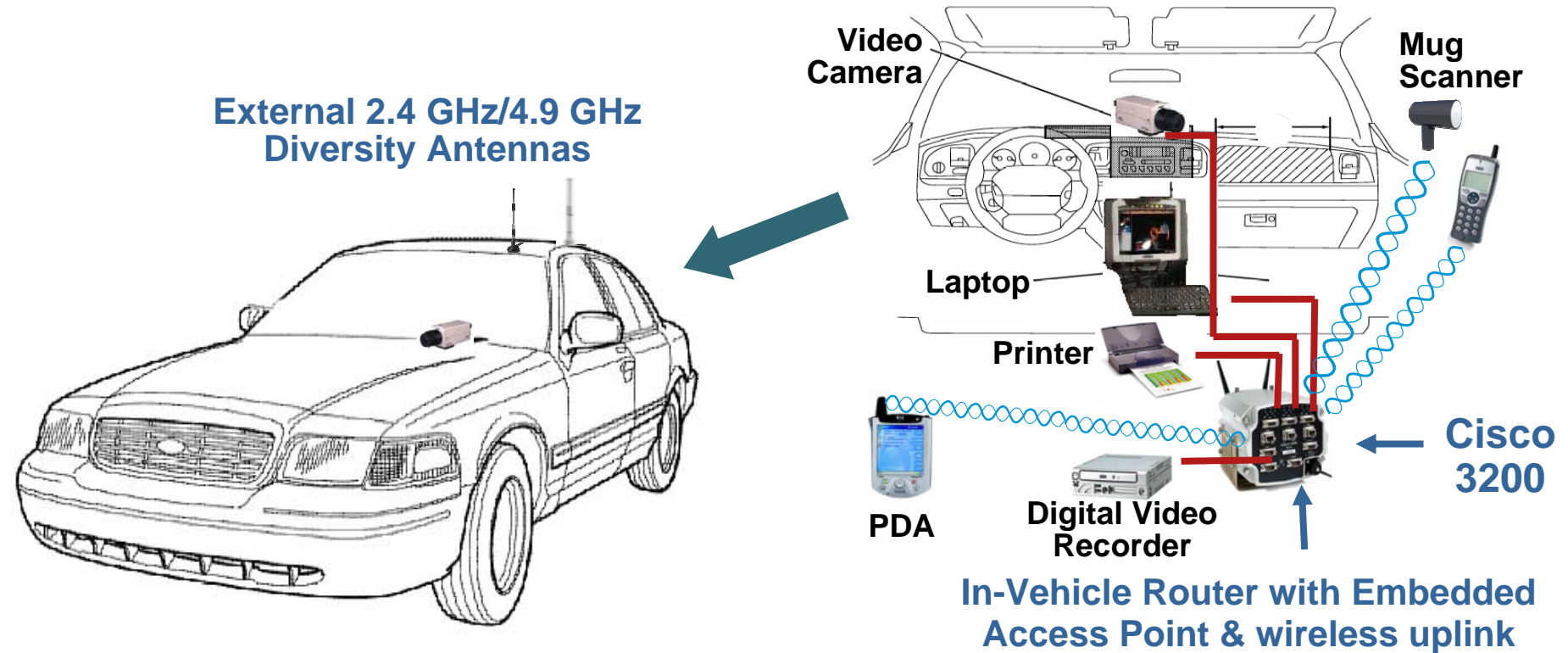
- **Multiple In-Vehicle IP devices create a network-in-motion**
- **Uses mobile IP to allow all in-vehicle devices communicate seamlessly and securely**
- **Enables integration with sensor devices in the vehicle**
- **Wireless Agnostic & Standards Based platform**

Example Configuration in a Vehicle

In-Vehicle Configuration

WAN Wireless Networks

PCI Bus

WMIC

SMIC

FESMIC

WMIC

MARC

FE

Serial

Serial

Modem/
Radio

2.4 and/or
4.9GHz

Cellular/
Other
Wireless

SatCom

In Vehicle Wireless/Wired LAN/s

Cisco Mobile Network
Solution Benefits

          Cisco Public

End User Benefits

- **Improved Situational Awareness:** Real-time communications allow officers to make better decisions more quickly resulting in safer communities and a more efficient public safety workforce

- **Network Reliability:** Redundant wireless network connections ensures reliable communications while on scene or in motion

- **Extends The Office Network to the Incident:** Offers real-time access to remote broadband applications for first responders in the field

- **Confidentiality of Information:** Ensures information shared between an Emergency Operations Center and first responders is secure and dedicated for public safety use only

- **Interoperability:** Provides a standards-based network platform which enables communications interoperability

Technical Benefits

- **Redundancy**: Redundant network connections across multiple wireless networks using standards based mobile IP

- **Security**: Secure connectivity to the vehicle using *network* encryption, IOS firewall, intrusion detection, FIPS 140-2 compliance

- **Connectivity**: Mobile router provides network connectivity for wired or wireless client devices in or around a vehicle

- **Network Management:** Use the same network management tools to manage the office network and mobile network

- **Multi-Media Applications**: Broadband wireless network for voice, video, and data applications for real-time communications with mobile network

- **Wireless Agnostic**: Interfaces with 802.11b/g, licensed 4.9GHz, 3G and future wireless networks

- **Modular Design**: Enclosure slots allows module expansion (e.g. video)

Why Choose a Mobile Network vs. a Mobile PC?

Car with PC Based Access

Car with Cisco Mobile Networking Solution

- Single networked device (PC)
- Multiple devices may require individual radios & subscriptions
- Windows OS for both access and applications
- Mobility client SW installation required for each device
- Limited 802.11 range for client to AP
- Lack of integrated security (separate SW installed and maintained)
- PC crash from virus, security patch, or application conflict, etc. will cause all devices & applications to lose network connectivity
- Limits on number of wireless technologies supported at once and in the future

- Multiple wired & wireless devices
- Integrated 4.9 & 2.4 GHz radios
- Bridging & high gain antennas for greater WAN range
- 802.11 Access Point for vehicle Hotspot
- Connects to any WAN link including 700-900 MHz, cellular, & future WAN technologies
- Cisco IOS Software OS for network reliability
- Cisco integrated network security (Firewall, Encryption, AAA, IDS)
- QoS & Multicast for voice and video
- Flexible, rugged hardware designs meeting MILSPEC and SAE specs.
- Standards based mobility (Mobile IP)
- Remote debug and troubleshooting tools through Cisco IOS software

Mobile Networking Applications for Public Safety

# Scenario: Public Safety (Police Department)

1
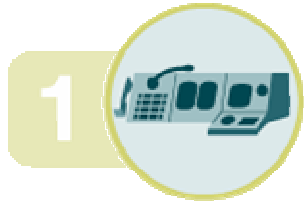
A police officer, stationed in a control room at headquarters, monitors several high-crime areas being targeted for increased enforcement. In a parking lot next to a metro rail station, the officer observes two individuals looking around the lot.

2

Because the parking lot has been the scene of several assaults and vehicle thefts, the officer contacts a local unit and provides a video feed to the patrol car of the suspicious activity.

3

The officer and another responding unit are able to quickly locate the individuals. On the mobile data computer in the patrol vehicle, the officer is able to pull up previous composite pictures of suspects believed involved in several crimes in the same area.

4
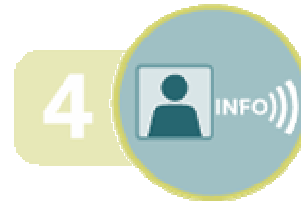
Although the officer was given false identification information by the two suspects, he is able to inquire on mug photos and positively identify both individuals. An inquiry into local and national databases reveals that both suspects have outstanding warrants.

Scenario: Public Safety (Fire Department)

1

The driver of a truck-tractor semitrailer combination containing hazardous materials overturns at the curve of an on-ramp for the local interstate.

2

The fire department and the hazardous materials response team are dispatched. En route, weather data is provided wirelessly to a mobile data computer, allowing the initial on-scene commander to properly deploy equipment and personnel and establish hot, warm, and cold zones for possible decontamination.

3

The video feeds from local traffic cameras are fed wirelessly to the mobile command post, which has been established within the cold zone.

4

Command personnel are able to better direct resources without having to enter the warm or hot zone.

5

The incident commander is able to monitor shifts in wind and weather patterns in real time at the command post, and is able to look up current information on all hazardous materials being transported.
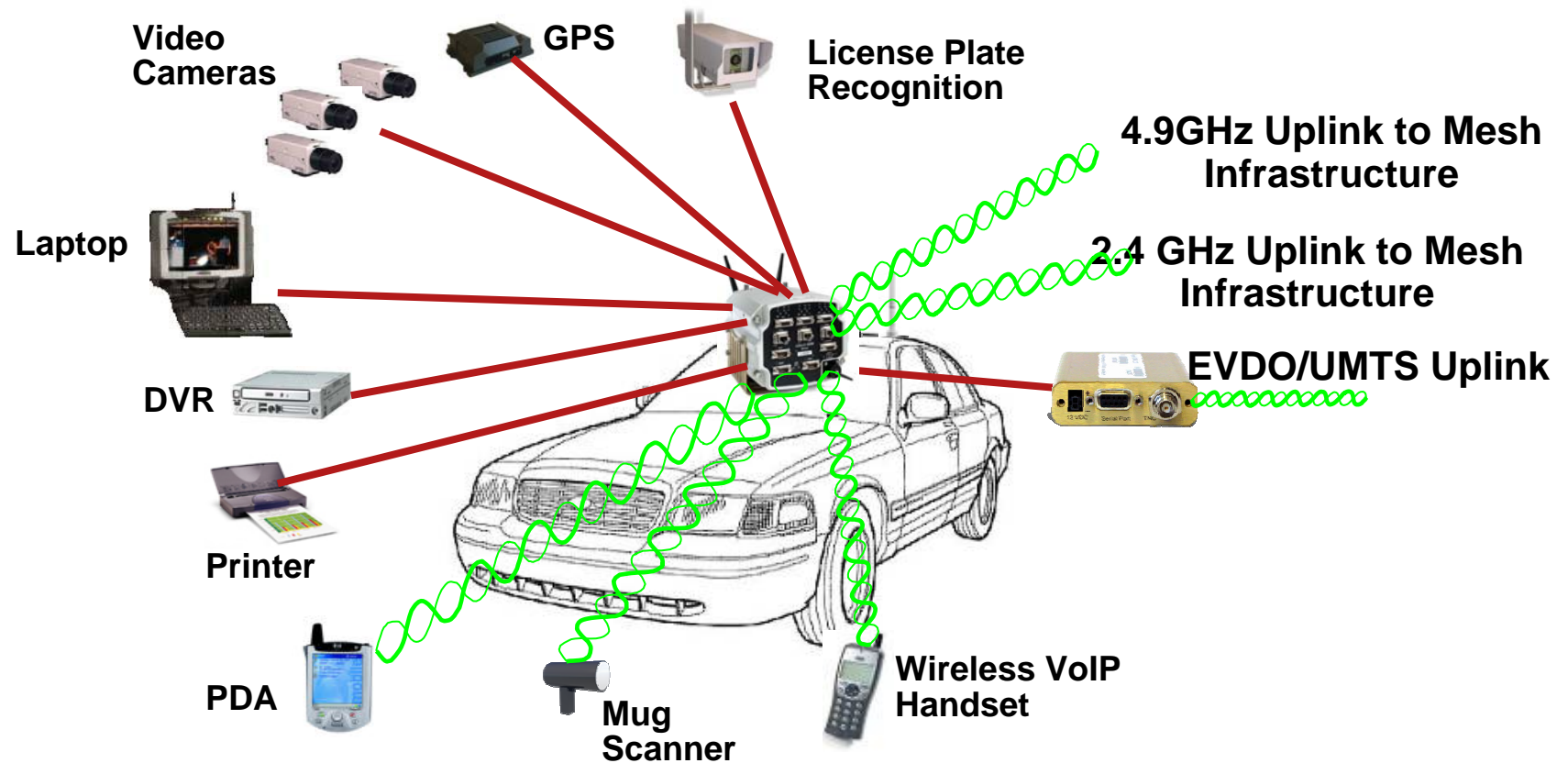
6

The fire incident commander is able to share information from the scene with the law-enforcement incident commander and the traffic control center at the department of transportation through an online collaboration room that is broadcast wirelessly from the scene.

Empowering the First Responder With Real-Time Communications

- Dispatch

- Situational video transmitting and receiving

- Field reporting, premise history lookup

- Car-to-car messaging

- Auto Vehicle Location/Mapping

- Pictures, criminal database/history

- E-Ticketing

- Vehicle telematics

- Send/receive medical data

- Hazard material monitoring

In-Vehicle Network/ Vehicle Hotspot

DVR

Laptop or PC Terminal

Video Camera

Printer

Mobile Router w/ 802.11 and CDMA Modem

Hand Held

Mug Scanner

Public Safety Vehicle Applications

Video Cameras

GPS

License Plate Recognition

4.9GHz Uplink to Mesh Infrastructure

Laptop

2.4 GHz Uplink to Mesh Infrastructure

DVR

EVDO/UMTS Uplink

Printer

PDA

Mug Scanner

Wireless VoIP Handset

The Cisco 3200 extends the network to the mobile officer

Cisco 3200 Series Router Enabling Real Time Mobile & Wireless Video Communications

4.9 GHz

2.4GHz

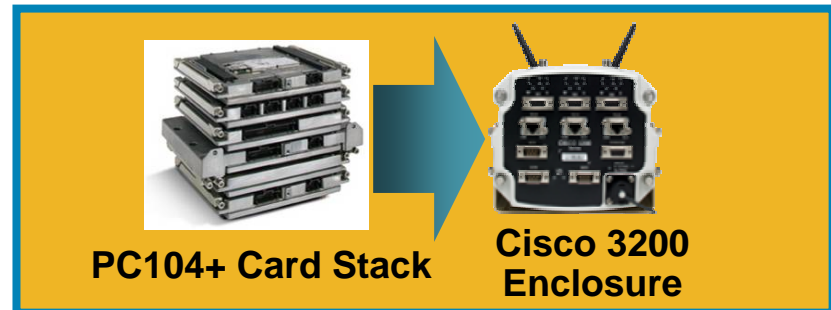**Cellular**
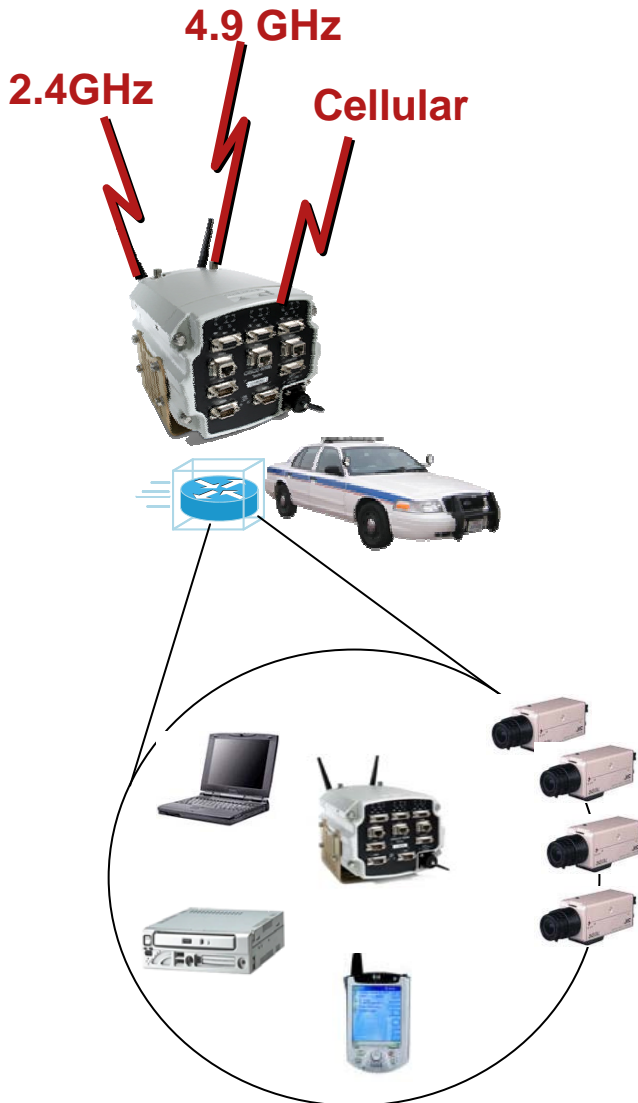
Real time mobile data and video

- Rugged platform
- Modular chassis for integrated services
- Advanced network services - Multicast & QoS, Security
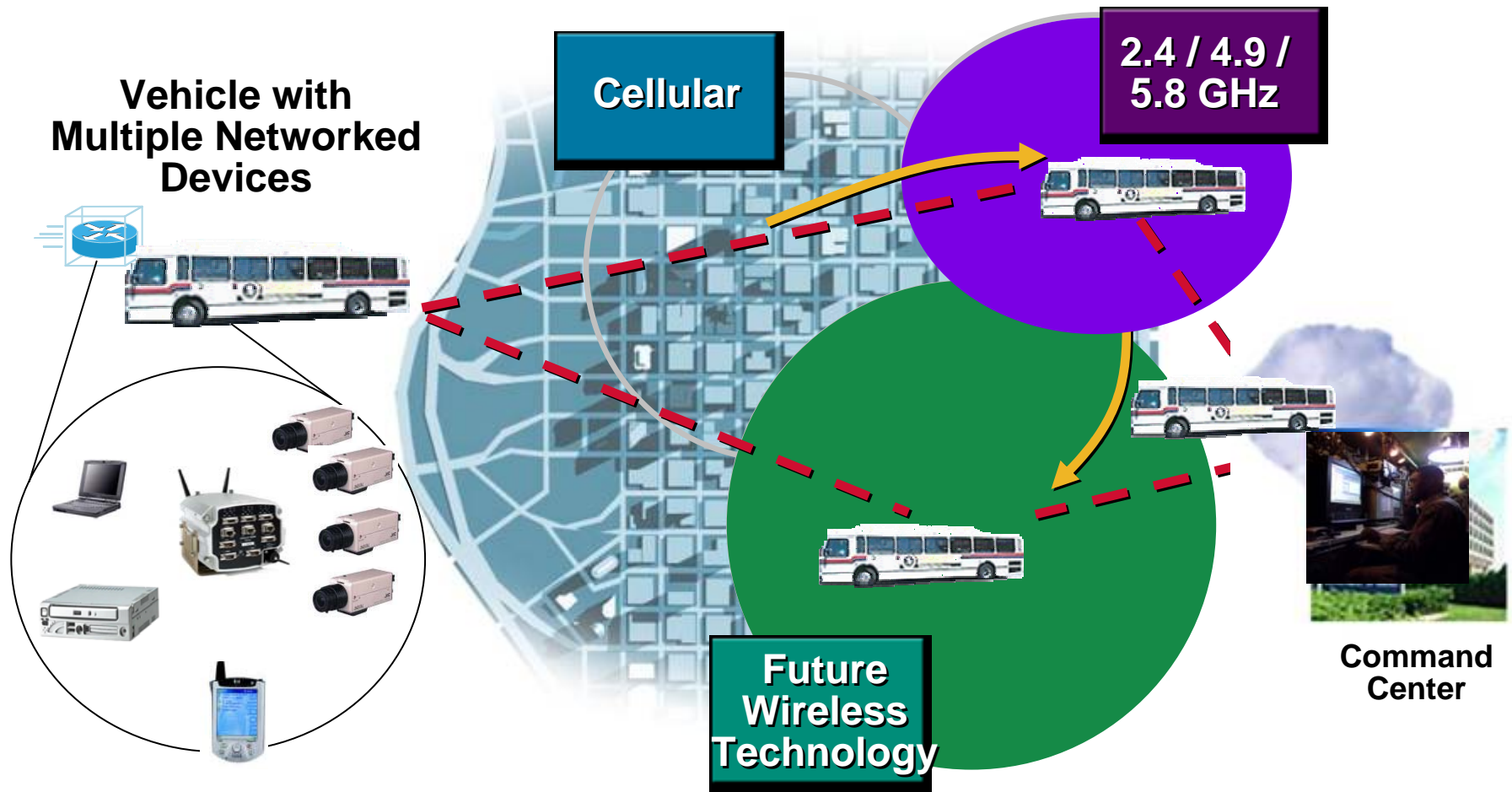
Best in Class Wireless Networking

- Integration with Cisco Wireless Mesh Portfolio
- Multiple Wired & Wireless Backhauls

3rd party hardware & software options for System Integrators

- Interoperability with Analog & IP Cameras
- Bandwidth conservation (transrating)
- Flexible compression codecs
- Integrated Video Analytics options

PC104+ Card Stack

Cisco 3200 Enclosure

Video Cameras Mounted on Vehicles Viewable from Any Place in the Network while in Motion

Vehicle with Multiple Networked Devices

Cellular

2.4 / 4.9 / 5.8 GHz

Future Wireless Technology

Command Center

Uninterrupted Access = Coverage + Bandwidth

Increasing Situational Awareness with Cisco Outdoor Wireless & Mobile Network Solutions

Transit Video Surveillance

Roadways

Officer on Foot

HQ Monitoring & Storage

Mobile Solutions with the Cisco 3200

Outdoor Wireless Solutions with the Cisco 1500
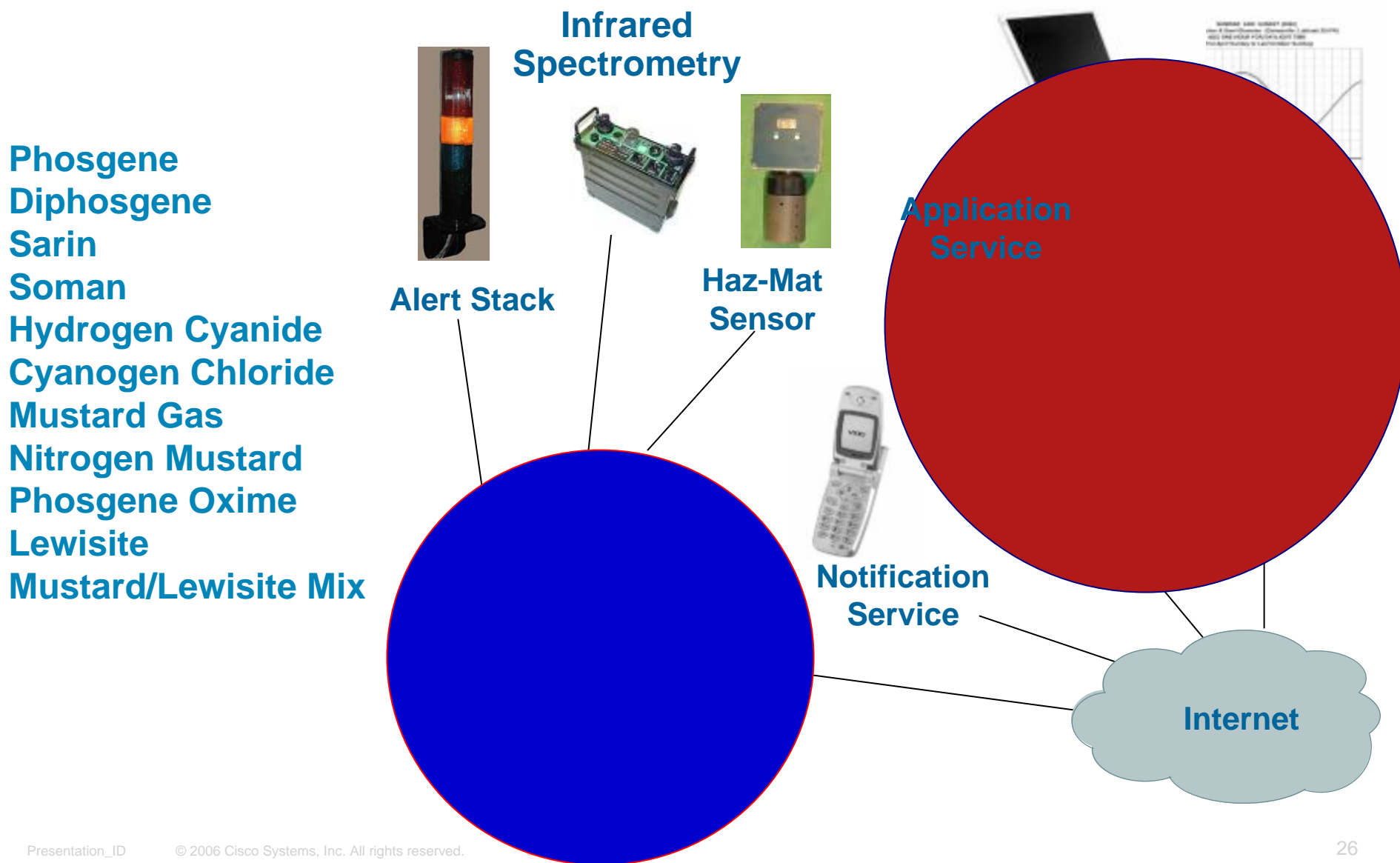
In-Car Video

Schools Safety

Sharing with Agency Across the Country

3rd Party Chemical Sensor Solution

Phosgene
Diphosgene
Sarin
Soman
Hydrogen Cyanide
Cyanogen Chloride
Mustard Gas
Nitrogen Mustard
Phosgene Oxime
Lewisite
Mustard/Lewisite Mix

Infrared Spectrometry

Alert Stack

Haz-Mat Sensor

Application Service

Notification Service

Internet

Summary

- Extending IP Networks to Outdoor & Mobile Environments

- Providing seamless mobility & continuous access

- Network Security, Scalability & Manageability

- Standards Based Solution with Interoperability & Investment Protection

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