Solving the Public Safety Interoperability Crisis: What Legislators and Policymakers Can Do

State legislators and local policymakers can enhance public safety by advocating an interoperability approach that includes any type of communications device, not just radios, from any vendor.

Abstract

Lack of communications interoperability has become an urgent problem affecting every level of government as well as citizen trust in government. The basic problem is that when different first-responder organizations convene at an incident scene, they cannot communicate directly because their radios operate over different frequencies and use different techniques. State legislators and policymakers can enhance public safety by encouraging state and regional interoperability committees to adopt communications technologies based on open standards so that public safety agencies are not tied to a single technology, such as radio, or a single vendor. Effective emergency response requires the flexibility to use any communications device: existing analog or digital radios, new Project 25 (P25) radios, Push-to-Talk (PTT) devices, regular phones, cell phones, IP phones, and PCs and laptops with the appropriate software.

Communications Interoperability: Vital for Public Safety

Radio interoperability means that public safety personnel can talk directly to each other—without a dispatcher—from any type of radio device, including UHF, VHF, and PTT. Interoperability is essential for situational awareness and a unified chain of command. But radio interoperability alone is not enough because some members of the chain of command likely will be outside the radio range when an incident occurs. Therefore, addressing the challenge requires reframing it—from radio interoperability to more general communications interoperability among radios, phones, and PCs and laptops.

Solution: Using the Government's Existing IP Network

A proven solution for communications interoperability is to send radio traffic over the government's existing IP network, just like any other kind of voice, video, or data traffic. With an IP-based approach to interoperability, first responders, commanders, and government executives can join radio talk groups using any type of communications device: radio, phone, or other (Figure 1).

Cisco® IP Interoperability and Collaboration System (IPICS) delivers this capability today by creating a "network of networks." For example, Cisco IPICS can link county A's P25 800-MHz network over the IP network to the state police department's P25 700-MHz network, county B's analog VHF network, the local university's analog UHF network, and the public switched telephone network and cellular networks.

The advantages of an IP-based approach to interoperability include the following:

- Enabling public safety agencies to continue using their existing radio systems as they gradually replace them with new P25 radios; P25 and non-P25 radios can interoperate

- Supporting phones and other communications devices in addition to radios

- Improving resilience; IP was designed with the goal of withstanding even a nuclear attack

- Scaling for any size emergency

Figure 1. Cisco IPICS Facilitates Simple, Low-Cost, Comprehensive Communications Interoperability
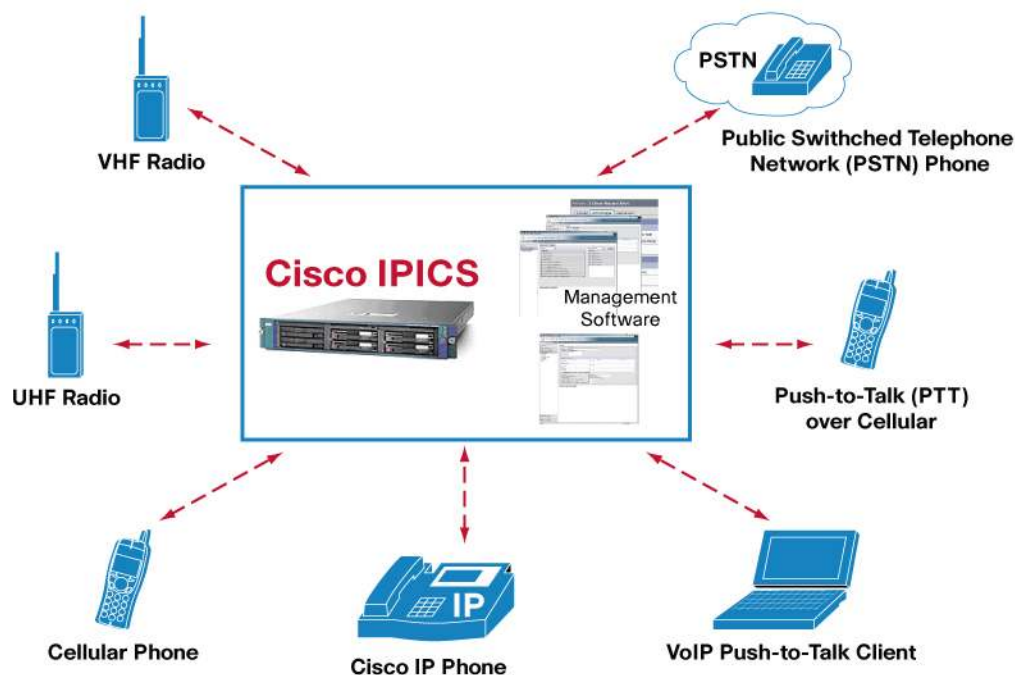
How Cisco IPICS Reduces Government Costs

- Cisco IPICS costs just a fraction of the cost of replacing the entire radio system.

- States and local governments can upgrade to new P25 radio systems gradually, as the budget permits, rather than all at once. Cisco IPICS provides interoperability between the old and new systems for as long as needed.

- Spectrum costs decrease because agencies have the option to provide some personnel with devices that do not require spectrum, such as telephones, cell phones, and PCs, with the appropriate software.

- The state or local agency pays a lower share when it takes advantage of the Department of Homeland Security (DHS) grant programs for interoperability. The DHS pays for 80 percent of the investment, and the state or local government pays for the remaining 20 percent. Because Cisco IPICS costs so much less than a complete P25 radio system, state and local governments are responsible for far less funding—often hundreds of thousands or even millions of dollars less. In addition, if the state's Cisco IPICS solution meets local public safety agencies' needs as well, the local agencies can contribute their 20-percent grant to the state.

> **"Government agencies constantly look for resources to improve service levels without necessarily spending more money. Cisco IPICS enables us to capitalize on our existing investment in IP infrastructure to be more efficient and effective in delivering public services. Neither additional manpower nor any other technology we have seen could deliver the same benefits."**
> —Chuck Pringle, division chief, Sheriff's Office, Boulder County, Colorado

Proven Technology

Cisco IPICS is already solving the interoperability challenge for state and local governments. Table 1 gives examples of how this solution helps state and local governments meet public safety needs.

Table 1.   Cisco IPICS: Meeting Public Safety Needs

Agency	Public Safety Need	How Cisco IPICS Solves the Need
Boulder County, Colorado	• County executives wanted to extend the reach of the radio network to phones and other devices. • Surrounding counties and Colorado state agencies used incompatible radio systems, impeding collaboration.	• The county set up virtual talk groups that preauthorized participants can join using the county's VHF radio system, any other radio system, cell phone, IP phone, traditional phone, or PC or laptop with Cisco software. • When radio coverage is not available, SWAT teams and bomb squads communicate using traditional phones, cell phones, and IP devices.
Georgia Forestry Commission (GFC)	• The statewide radio infrastructure was unreliable. • Personnel using the agency's two different VHF radio systems could not communicate directly with each other or with first responders from other agencies. A commander who needed to communicate with three different teams had to repeat the message on three different radio channels or else go through the dispatcher.	• Cisco IPICS and an IP network facilitate highly reliable communications. • GFC can now fulfill its charter to be a logistical stronghold for the state's emergency plan. When GFC collaborates with other agencies in incident response, dispatchers need just a minute or two to set up a talk group that personnel can join using their various radio systems or laptops with client software.
Bryant University	• University public safety personnel using different types of radio systems could not communicate directly with each other or with public safety agencies in nearby communities.	• The university and public safety agencies from nearby towns use Cisco IPICS for interoperable communications. • When fire or police departments from nearby towns are dispatched to the campus, they can communicate with the university's public safety personnel while traveling to the scene, increasing their situational awareness. • Community safety has improved because government and university first responders can collaborate more effectively.

How Does Cisco IPICS Compare with Other Vendors' Systems?

Cisco IPICS augments rather than competes with radio systems from various vendors. Because it is based on open standards, Cisco IPICS gives local, state, and federal public safety organizations the freedom to choose and manage their own radio systems, from any vendor. Cisco IPICS facilitates interoperability among P25 radios, non-P25 radios, and communications systems other than radios.

Uniquely, Cisco provides 20 years of experience in designing and deploying IP-based solutions—not only for radio, but also for the other voice, video, and data services that public safety personnel require for situational awareness and effective response. Hundreds of thousands of public- and private-sector organizations use Cisco network solutions because of their reliability, security, and scalability.

What Can Legislators and Policymakers Do?

- Insist that laws and policies directed at solving interoperability are not limited to radio-based solutions. Instead, direct the State Interoperability Executive Committee (SIEC) and local public safety agencies to adopt interoperability solutions that work with radios from any vendor as well as other types of communications devices, such as phones and PCs. This requirement will empower government to select the most cost-effective interoperability solution for emergency responders.

- Ensure that funding for communications interoperability is not interpreted narrowly as funding for new radio systems. Funding is more effective when directed toward standards-based technology that enables existing radio systems to work together by creating a network of networks.

- Sponsor leadership and education programs encouraging an approach to communications interoperability that is based on IP standards. Tools can include written communications, training, task forces, pilots, and production deployments.

- Supplement federal grants by establishing ongoing funding for public safety communications interoperability at the state and local levels.

Contact Information

Mary Brown, director of government affairs: marybrow@cisco.com or 202-354-2923.

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Europe Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: +31 0 800 020 0791
Fax: +31 0 20 357 1100

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