



Cisco IT@Work Case Study: **Land Mobile Radio (LMR) over IP**

Cisco Information Technology

October 24, 2005

- **Challenge:**

Enable interoperable communication among radios, PSTN phones, wireless phones, and cellular phones

- **Solution:**

Land Mobile Radio (LMR)-over-IP solution

- **Results**

More efficient command and control, and cost savings

- **Next Steps**

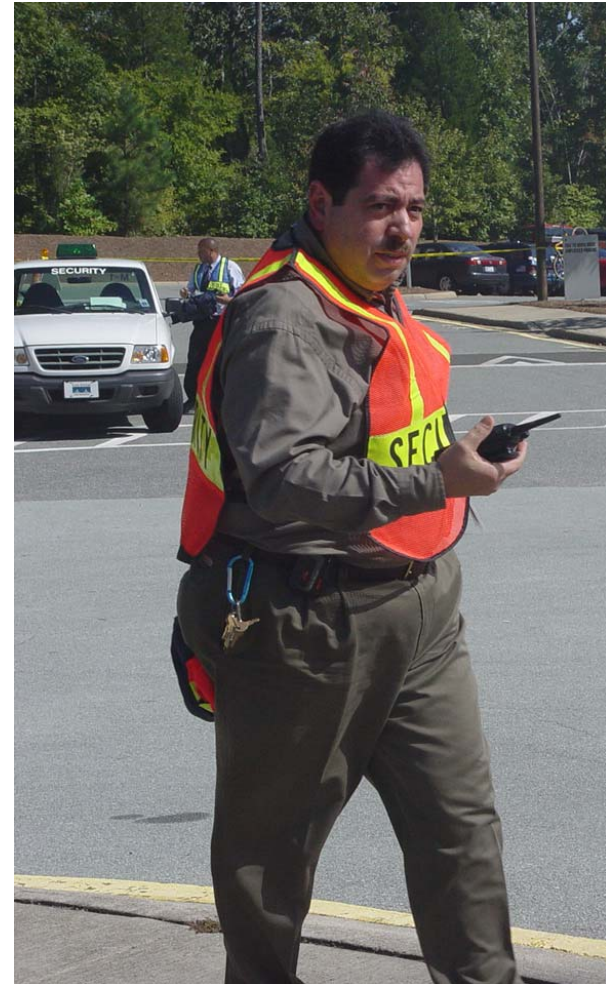
Extend solution to more Cisco locations

Challenge: Radio Interoperability

- **Cisco security officers could only be reached by radio**

Radios interoperate only with other radios on the same frequency and using the same mode

Cisco managers could not participate in talk groups using PSTN phones, IP phones, cell phones, or PCs



Challenge: Radio Interoperability

- **Slow response to building alarms**

The nearest Cisco Security Operations Center (SOC) would attempt to call on-site security officers' cell phones, which had erratic coverage, or to page them, which could cause delays of five minutes or more

- **Delayed emergency response team (ERT) notification**

In the event of an employee medical emergency, ERT volunteers might not receive the page for a few critical minutes

- **Impeded incident management**

Off-site Cisco managers and executives could not use PSTN phones, cell phones, or PCs to participate in radio conversations with personnel at the scene

Solution: LMR-over-IP

- **Takes advantage of Cisco's multicast-enabled IP network**
- **Cisco personnel can participate in talk groups using any voice technology**

Radio: any frequency, any mode

PSTN phone

Cisco IP phone

Wireless Cisco IP Phone 7920

PC or laptop with radio-emulation client software

Solution: LMR-over-IP

- **Rooftop antenna receives radio signal and converts to analog signal**
- **Cisco router with voice interface card converts analog signal to voice over IP**
- **Cisco LMR Gateway software on Cisco router provides additional capabilities for push-to-talk (PTT) radio communications**
- **Dispatcher at SOC uses administration server software on a Windows PC to manage talk groups**



Cisco SOC

Results: More Efficient Command and Control

- **More efficient command and control**

SOC can talk directly to security officers via remote site's UHF radio system

- **Faster ERT notification**
- **Communications resilience**

Either RTP or San Jose SOC can act as dispatcher for any emergency in the Americas



Results: Improved Crisis Management

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“I can monitor and manage a crisis from anywhere in the world that I have connectivity—even, say, from a cell phone on the street of Santiago, Chile.”

Jeff Breeding
Cisco Program Manager for Safety and Security

Results: Cost Savings

- **Free PC radio-emulation software avoids capital expense of radios for executives, ERT volunteers, others: US\$400 to US\$500 apiece**
- **Cisco paid for investment in six months**

Results: Enhanced Standard Operations

- **Coordinators for fundraisers or other events use radios for crowd control and other communication**
- **Cisco can establish mutual aid agreement with other nearby companies**

During a crisis, companies and first responders can participate in talk groups using any type of radio, as well as landline or wireless phones

Next Steps: Extending the Solution

- **Extend LMR-over-IP solution to more locations in the Americas and EMEA**
- **Use Cisco CallManager group-page feature to send messages directly to the built-in speaker and display of Cisco IP phones as well as to PC clients and radios**
- **Automatically dial out to pre-identified Cisco managers in the event of an emergency**

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