



January 14, 2008

Mr. Jim Bugel, Chair
FCC/NTIA Joint Advisory Committee on Communications Capabilities of Emergency Medical and
Public Health Care Facilities
c/o AT&T Services, Inc.
1120 - 20th Street, NW, 10th Floor
Washington, DC 20036

**RE: Communications Interoperability and Convergence - Advanced Capabilities of the
Cryptographic Overlay Mesh Protocol (COMP)**

Dear Chairman Bugel:

CoCo Communications Corp. (“CoCo”) is pleased to submit the following comments and recommendations to the Joint Advisory Committee on Communications Capabilities of Emergency Medical and Public Health Care Facilities (“JAC”) in the hope that we can assist the JAC in assessing technologies and options for improving the integration of communications devices used by emergency response agencies and in the health care system generally.

Introduction

CoCo, which was founded in April 2002 in response to communications interoperability and availability failures of 9/11, is a proven leader in IP-based radio solutions and networking interconnectivity. CoCo is defining the next generation of advancements that support the specific communications needs of emergency medical and public health care facilities. This includes the enhancement of basic voice, data, and broadband capabilities. CoCo has invented a new communications technology protocol – a Cryptographic Overlay Mesh Protocol (“COMP”) – that solves many of the most critical challenges facing our nation’s emergency medical, military and public safety professionals. Using COMP-based solutions, CoCo has begun to address the critical interoperability, sustainability and security needs of city, county, regional, state, federal and private sector entities.

The COMP technology allows multiple organizations to communicate and collaborate on an interoperable basis, and also enables interoperability and collaboration between disparate applications within an organization. These solutions can be implemented in scalable, secure, mobile forms without requiring changes in the way health practitioners normally communicate.

Worldwide

cococorp.com
info@cococorp.com

Corporate Headquarters

999 3rd Ave
Suite 3700
Seattle, WA 98104
Phone 206.284.9387
Fax 206.770.6461

Government Headquarters

1655 North Fort Myer Drive
Suite 700
Arlington, VA 22209
Phone 703.875.2136
Fax 703.351.5298

Dallas, TX

8008 Cedar Springs Road
Suite 210
Dallas, TX 75235

How COMP Achieves Interoperability

COMP represents a breakthrough in protocol technology, and while it has been assigned no formal classification, it is generally described as a next-generation or overlay protocol. This advancement is alternatively referred to as the CoCo Protocol. COMP unifies disparate communications systems by riding on top of them and providing a common interface. It then collects all available resources and forms a single, shared infrastructure from land mobile radio (LMR), wireless carrier, WiFi, Public Switched Telephone Network (PSTN) landline, satellite, and peer-to-peer networks. *See* Figure 1 below.

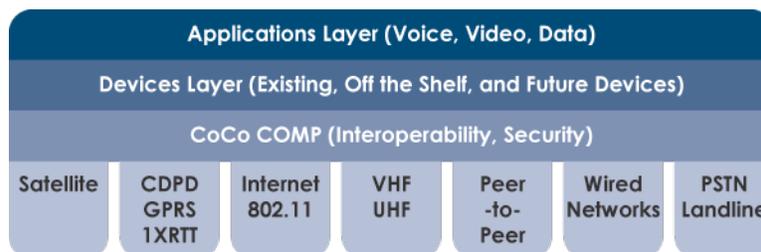


Figure 1: Secure interoperable connectivity

Though progress in achieving redundant and interoperable communications is being made, the current health care emergency and disaster preparedness landscape is characterized by a number of capable systems and networks that are generally isolated in nature. In this environment, information sharing in real-time is sometimes impractical and often impossible. Each incident that occurs teaches us that there is a continuing need for efficient collaboration and effective coordination capabilities.

The JAC should recognize the state-of-the-art practices that are being employed today to overcome these challenges. Doing so will enable the JAC to evaluate how the best practices and lessons learned from current initiatives can provide needed capabilities and lay the foundation for the future of emergency medical response. Our comments and recommendations here are intended to familiarize the JAC with CoCo's proven, commercially available approach for addressing the communication needs of the emergency medical and public health care community.

The Benefits of COMP to Emergency Medical and Public Health Facilities

Interoperability Benefits. By establishing a core architecture with a uniform interface into which various communications technologies are integrated, COMP allows interoperability across different—and typically incompatible—types of communication systems, while at the same time providing emergency medical professionals and their response partners with access to advanced technology and application capabilities. For example, CoCo can integrate location-based wireless broadband push-to-talk technology and Geographic Information System (GIS) applications or WebEOC with existing satellite, land mobile radio, Internet, intranet, WiFi, cellular systems and standard operating procedures.

The system serves emergency medical and public health care facilities communication requirements that arise in day-to-day events and during emergencies with the following capabilities:

- *Enabling a heterogeneous network:* The CoCo technology allows for different technologies to be connected with one another, enabling users to design networks that take advantage of the various benefits of different technologies.
- *Mission Critical Applications:* COMP-based solutions support Information Sharing, Patient Tracking, Video Surveillance, Sensors, GIS, Location/Asset, Situational Awareness, Online Reporting, Email, Instant Messaging, Voice/Video Telephony.
- *Policy-Based Applications:* Integrated policy-based communications, incident management, notification, alerting and communications interoperability. Enables operations managers to create policies to support standard operating procedures—including talk group establishment and user notification—and then activate those policies.
- *Decentralized Network Architecture:* The system supports multi-jurisdictional pre-hospital response that understands and respects mutual aid agreements.
- *Secure Communications:* Patient privacy is maintained in compliance with the requirements of the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and applicable state laws.
- *Role-based Access:* Allows for authentication through role-based access control and a shared core service that provides authentication to support other mission critical applications.
- *Standards Driven:* COMP systems are consistent with the communications interoperability guidelines issued by the DHS Office of SAFECOM.

Benefits of an Open Architecture and Standards-Based Approach. The CoCo technology allows for an open standards based solution that, unlike some other proprietary products, does not require proprietary hardware or force the user to select one provider over another with regard to building out an IP-based Service Oriented Architecture. The CoCo solution thus enables emergency medical and public healthcare facilities to coordinate with one another while maintaining the ability to exercise full control over their communication systems. This open-architecture, standards-based approach also provides full backward compatibility to legacy systems.

COMP also is technology agnostic and can be deployed with as small or large of a footprint as needed in areas where the extended services of a COMP-enabled network are desired (*i.e.*, extended network coverage, voice and data services, interoperability between analog and digital voice, video and data systems, wired or wireless security). COMP improves the ability of major proprietary hardware systems to be effectively utilized and does so in an open standards manner by taking advantage of standards already established by the industry, such as IP.

CoCo's Dallas Interoperability Network

COMP systems are in use today to enhance existing communication systems both in the medical and public health system and in important non-medical emergency response systems such as law enforcement and fire services. CoCo's Dallas Interoperability Network ("DIN"), which is deployed at Dallas Love Field, was designed from a peer-reviewed, requirements-based operational model to support day-to-day and emergency management and response activities.

Through a unique private-public partnership with the Department of Homeland Security, the State of Texas, the City of Dallas and other local, state and federal partners, CoCo successfully established a communications framework that uses existing equipment and spectrum. The new system provides aviation officials, industry partners, and the region's emergency responders—including more than 5,000 law enforcement officers, firefighters, and emergency medical service practitioners—with the capacity to exchange secure voice, video and data across diverse networks.

One significant feature of the DIN is its inclusion of law enforcement, fire service, emergency management agencies as well as local, state and federal emergency medical and public health officials. These two communities often work independently of one another, but perform indispensable and interrelated emergency response functions. This inclusive interdisciplinary approach provides continuity, interoperability and enhanced emergency response capabilities across both disciplines. Agencies participating in the DIN include:

- U.S. Centers for Disease Control
- U.S. Department of Health and Human Services
- Texas Department of State Health Services
- Dallas Fire Department
- Dallas Police Department
- Dallas Aviation Department
- Southwest Airlines
- Texas Department of Public Safety
- U.S. Customs and Border Protection
- U.S. Transportation Security Administration

The Department of Homeland Security's SAFECOM Program has recognized CoCo's solution as a Best Practice and Model approach for overcoming the communications interoperability challenges. This successful interagency, interdisciplinary, inter-jurisdictional voice and data project in Dallas, Texas was profiled in SAFECOM's Spring 2007 Edition of Interoperability Technology Today.¹

Recommendation for the JAC Report to Congress

CoCo suggests that the JAC's report to Congress include a recommendation the Congress establish a pilot project program in which at least three emergency medical and public health care facility pilot

¹ See "Cooperation and Innovation in the Lone Star State," Interoperability Technology Today (Spring 2007 Edition). A copy of this article is enclosed with this letter.

projects are funded. Doing so will leverage the latest advances in technology so that the lessons learned from models that are in operation today can be applied on a broader scale. Any such program should be funded only if (as in the DIN system) both the emergency response and public health care communities are active participants.

CoCo commends the Joint Advisory Committee for its important work in blazing a path forward on which technologies and system solutions that are developed in the private sector—and that are in operation today—can provide needed communication capabilities to the emergency medical and public health care communities. We hope that these comments and recommendations will assist you in that effort.

We stand ready to help in any way we can, and appreciate the time and attention that you and the other members of the JAC are devoting to this important topic.

Sincerely yours,

A handwritten signature in blue ink, appearing to read "John E. DeFeo". The signature is fluid and cursive, with a large initial "J" and "D".

John E. DeFeo
Chief Executive Officer

Enclosure: *Cooperation and Innovation in the Lone Star State, Interoperability
Technology Today, Spring 2007 Edition*

Innovation and Cooperation in the Lone Star State

Texas Council of Governments: Regional Partnerships

The Dallas region's locally driven approach and commitment to partnerships have proven invaluable to overcoming the challenges of implementing a regional communications framework. Since September 2002, Texas has leveraged 24 Councils of Government regions to ensure that homeland security planning and execution occurs on a regional basis, with local officials working together closely across all jurisdictions and disciplines. During the Dallas Love Field Wireless Integration Project, the North Central Texas Council of Governments (NCTCOG) was actively involved to ensure that new emergency responder communications supported regional interoperability goals. The NCTCOG serves a 16-county region of North Central Texas, which is centered around the two urban centers of Dallas and Fort Worth. NCTCOG was established to assist local governments in planning for common needs, cooperating for mutual benefit, and coordinating for sound regional development. NCTCOG's purpose is to strengthen both the individual and collective power of local governments and to help them recognize regional opportunities, eliminate unnecessary duplication, and make joint decisions.

The City of Dallas, Texas, has achieved interoperable communications for the region's emergency responders—all for less than the cost of a new squad car. This milestone represents a significant step toward implementing a statewide interoperable communications system.

Through regional cooperation and an innovative, service-based approach, Dallas successfully established a communications framework that uses existing equipment and spectrum. The new system provides aviation officials, industry partners, and the region's emergency responders—including more than 5,000 law enforcement officers, firefighters, and emergency medical service responders—with the capacity to exchange voice, video, and data across diverse networks.

"It is important that I have the ability to communicate not only with my firefighters but also with other agencies—we are the first line of defense when it comes to man-made and natural disasters," said Dallas Fire Chief Eddie Burns, Sr. at the Dallas Love Field (DLF) press conference, held September 14, 2006. "Having the ability to talk with other cities, other departments, and other agencies will enhance the capabilities of all first responders."

Interoperability progress in Dallas gained momentum in May 2005 through the partnering of the State of Texas, the City of Dallas, the Texas congressional delegation, the North Central Texas Council of Governments (NCTCOG), the U.S. Department of Homeland Security (DHS), and a Seattle-based technology company in order to implement a communications framework at DLF. Initiated in collaboration with the State of Texas Governor's Office of Homeland Security, the DLF Wireless Integration Project was funded by a \$979,100 grant from the DHS Information Technology and Evaluation Program, which is co-administered by the Department's Office of Grants and Training and Office of the Chief Information Officer.

The project was designed with the goal of implementing a communications framework for a national interoperability service model that could be cost-effectively duplicated throughout Texas and the Nation. As Dallas is the first city in the Nation to use this national interoperable communications service, DLF project leaders see their city as a working model for regions nationwide.

DLF airport was chosen for the project because of the site's critical infrastructure, location in a major urban metropolitan area, and high concentration of diverse responder agencies and private-sector organizations.

"After this system was implemented at DLF, all participating local, state, and Federal agencies were interoperable—using their existing equipment for communications, and capable of sharing digital data and live video originating from the airport," says Terry Mitchell, Assistant Director of Aviation

Operations for the City of Dallas.

Mitchell added that the communications framework also has strengthened information sharing and coordination among participating agencies and partners.

These participating agencies include:

- Dallas Fire Department
- Dallas Police Department
- Dallas Aviation Department
- Southwest Airlines
- Texas Department of Public Safety
- Texas Department of State Health Services
- U.S. Customs and Border Protection
- U.S. Centers for Disease Control
- U.S. Department of Health and Human Services
- U.S. Transportation Security Administration

The DLF project supports the interoperability goals of Texas leaders, who have long understood the gravity of ineffective communications. In keeping with their commitment to achieving interoperability, in 2004 the state released its Texas Homeland Security Strategic Plan, which included a roadmap for ensuring interoperable emergency communications. With the implementation of the DLF communications framework, the state made great strides toward establishing a statewide network of interoperable radio systems.

The DLF project also addresses communications breakdowns that compromised local response operations during recent large-scale disasters—including Hurricanes Katrina and Rita, and last year's Panhandle wildfires.

Service-Based Approach

Project participants began developing the interoperability service network in fall 2005. The project used an innovative technology developed and implemented by the Seattle technology company. This overlay software encryption technology is referred to as a Cryptographic Overlay Mesh Protocol. It creates a "network of networks" that enables emergency responders operating on different frequencies to seamlessly and securely exchange communications. The technology passed all qualification tests for certification under the Department of Defense's (DoD) Interoperability Communications Exercise 2006, certifying adherence to DoD interoperability standards.

In addition to enabling voice and data exchange, the software protocol provides Dallas agencies with real-time access to live video from existing cameras installed in airports, government buildings, police cruisers, and fire trucks. Network access and voice and data transmissions are secured by the Advanced

Lessons Learned from the Dallas Love Field Wireless Integration Project

- Consider a software-enabled service approach.
- Develop a plan and standard operating procedures to govern how, when, where, why, and who uses an interoperability system.
- Emphasize a regional, stakeholder-driven approach.
- Encourage innovative thinking and cooperation.
- Leverage existing infrastructure and resources.
- Practice frequent training on and use of an interoperability system; this is a must for a viable system.



Encryption Standard 256 (AES-256). AES-256 provides responders in Dallas with confidence they can securely exchange incident-related information without disruptions that could compromise the safety of responders in the field and those awaiting help.

“The Dallas Love Field Wireless Integration Project demonstrated the efficacy of integration technology in achieving radio interoperability,” says Steve McCraw, Texas Homeland Security Director.

By creating a common interface that all available resources can share, the network of networks made the two-way radios of the Dallas agencies compatible with other radios and commonly deployed devices, including cellular phones, laptops, and personal digital assistants. Agencies using the service are able to control their levels of interoperability, and at all times know with whom they are exchanging information.

Leveraging Existing Resources

Like many emergency response agencies nationwide, agencies in Texas typically purchase communications equipment independently of each other. Many of these legacy systems work well only with equipment made by the same manufacturer. Even agencies with the newest equipment find that their radios cannot work with equipment from other manufacturers.

The software technology used for the DLF project addresses this challenge by providing interoperability across multiple, disparate networks. Rather than relying on the costly acquisition of new equipment, the framework leverages existing radio systems. Legacy devices are bridged onto the network through gateways enabled with overlay software. Use of existing resources has not only proven cost-effective for Dallas agencies, but also has reduced the implementation and training time for making the service operational.

The software also has allowed Dallas agencies to efficiently use fixed network resources, such as spectrum. Instead of loading networks with devices that deplete the operating capacity of the networks, the software creates a “mesh” architecture in which every device that accesses the network adds to the network, with each device acting as its own router, extending network reach.

Making Strides

These technologies have had a significant impact on the Dallas region’s emergency response communications.

“In addition to interoperable radio communications, the system has provided us with the ability to share digital data and live video from Love Field among system users, which was previously unavailable,” says Mitchell. “Voice communications between local, state, and Federal responders is now much easier to accomplish, and we no longer must share radios between groups.”

“This is a must-have service. We must have interoperability among our radio communications,” said Dallas First Assistant Chief of Police David O. Brown at the DLF press conference. “This is a potentially life-saving technology.”

The subscription costs each local, state, and Federal agency or critical infrastructure partner \$20,000 per year, which provides all of its responders and key personnel access to the interoperability service network. The service is offered on a nationwide basis.

Commitment to Partnerships

The DLF project’s stakeholder-driven, cooperative approach has proven invaluable to this progress. Recognizing that disasters know no boundaries, emergency response leaders, local government officials, and private sector representatives—many with competing constituencies and communications requirements—joined to lead the DLF project.

The NCTCOG, which represents 16 counties in the Dallas-Fort Worth Metropolitan Area, coordinated the effort. The NCTCOG ensured that implementation supported: State of Texas interoperability plans, the Dallas-Fort Worth-Arlington Urban Area Security Initiative Tactical Interoperable Communications Plan, and the National Strategy for Homeland Security.

“Regional cooperation and partnerships played an important role and contributed to the project’s overall success,” says Mitchell. “A broad range of local, regional, and statewide partnerships provided valuable stakeholder feedback during the design and implementation of the project, ensuring that all stakeholder participant requirements were met.”

The project has helped strengthen a regional interest in and commitment to working together on today’s interoperability challenges.

Says Mitchell, “This [approach] paved the way to successfully fostering information sharing and interagency cooperation on a local, regional, and statewide basis.”

Benchmarking • continued from page 3

efforts. Further, as information technology improves, software products may become more proprietary, multiplying the disconnect between the disparate systems.

Since the SWG’s creation, we’ve achieved remarkable progress. One SWG standard has been adopted by the Organization for the Advancement of Structured Information Standards (OASIS), and two standards sets are currently under OASIS review that are likely to result in approximately 20 individual message standards. And we have work on the horizon.

The SWG is working with DM to develop a situational awareness messaging standard (SitReps). SitReps provides practitioners with data about an emergency’s current situation, including what resources are needed.

Many times, the development of more than one standard is underway. So it will continue to be important for SWG members, industry, and the emergency response community to recruit subject matter experts so that resources meet development needs.

SWG members work closely with the DM program’s Practitioner Steering Group (PSG), a practitioner-comprised body that provides input and recommendations regarding programmatic direction. SWG addresses the priorities and emergency response requirements identified by the PSG and collaborates with the PSG on draft standards.

The work of these groups, coupled with partnership efforts across government, industry, and the practitioner community, are essential to progress. Together, we are laying the groundwork for achieving data interoperability for our fellow responders on the frontlines.

Office of Emergency Communications Update

The Department of Homeland Security Appropriations Act 2007 (Public Law 109-295) establishes the Office of Emergency Communications (OEC). The Act transfers SAFECOM from the Office for Interoperability and Compatibility (OIC) to OEC. SAFECOM’s authorities related to research, development, testing, evaluation, and standards will remain in OIC. The Act also transfers the Integrated Wireless Network and the Interoperable Communications Technical Assistance Program to OEC. OIC and OEC leadership are working closely together through the transition to ensure that SAFECOM’s current activities remain on schedule. Once the transition is complete, OIC and OEC will continue to coordinate to successfully achieve SAFECOM’s critical mission. Additional updates will be made in *Interoperability Technology Today* as the transition continues.

