IMPLEMENTING A TRULY UNIFIED COMMUNICATIONS SOLUTION:

A STEP-BY-STEP PLAYBOOK

INDUSTRY PERSPECTIVE

MOTOROLA SOLUTIONS

INTRODUCTION

The challenges facing the U.S. military are daunting and more complex than ever. Combat missions involve working side-by-side with coalition forces drawn from many countries, not just our NATO allies. Installations must guard against and respond to any threat, including active shooters or bomb threat, whether the attackers are mentally ill or motivated by a terrorist philosophy. More and bigger natural disasters, both at home and abroad, tax resources. Technology is changing faster and faster, requiring nimble acquisitions that both break down silos and avoid creating new ones.

As new communication policies, procedures, and strategies are developed to address all of these challenges, budgets continue to get squeezed.

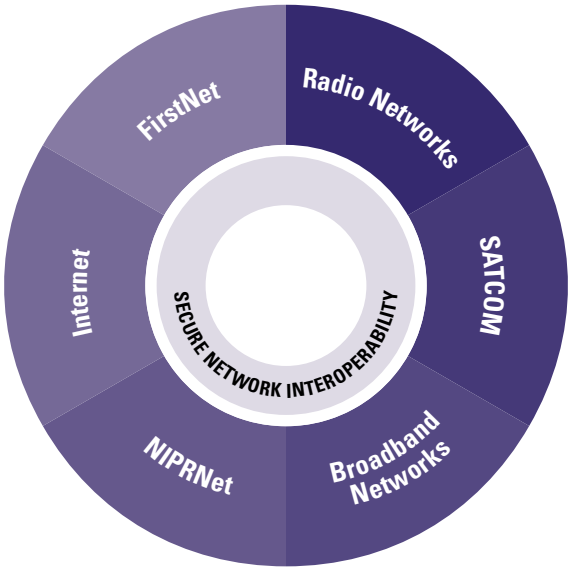
Establishing a true "unified communications" (UC) network has always been a goal of the military, as an essential tool to achieve coordinated action in combat missions and efficient operations in training, sustainment and installation support.

Historically, UC has been nearly impossible to attain. Years of unit- and command-level acquisitions for each mission need have resulted in a massive and expensive amassment of incongruous networks, systems and equipment. The challenge has been to identify a solution to connect disparate networks and assets in a flexible, scalable and economical manner.

Today, this has changed.

It is now possible to establish a software-based communications platform that can take voice input, whether by telephone or radio, convert it to a digital format, and then seamlessly connect all the associated communications equipment. In this way, you can maximize the utility of existing equipment and minimize the cost of upgrading or replacing components.

Using the Life Cycle concept, this playbook will lay out the specific, actionable steps decision-makers can take to identify and prioritize their communication needs and, by using new interoperability solutions, knit together a true unified communications network. Let's get started.



UNIFIED COMMUNICATIONS

THE BIG PICTURE

"Without the institutional Army, the operational Army cannot function. Without the operational Army, the institutional Army has no purpose."

- United States Army

Throughout the military, all branches are grappling with a similar challenge: the need for coordinated, continuous daily operations. Whether in emergencies or in planned events, they require seamless communications to support collaboration with federal, state, and local first responders, as well as internal mission work partners.

THE CHALLENGE

Every installation has "too many mouths to feed." The larger military bases cover hundreds of square miles and are home to roughly 15 to 20 tenant units, comprised of thousands of personnel and their families. The installation commander's challenge is to work with multiple operational commanders to establish "power-projection" platforms that will drive mission success in an increasingly complex and asymmetrical world of modern-warfare. The challenge is compounded by the rising incidents of threats from the inside and the need to protect the lives and assets inside the base through improved force protection and security systems, policies and training. At the same time, budgets are shrinking.

Whatever the mission of the installation, all commanders face similar challenges in adopting a unified communications infrastructure. Over the years, communications silos have become entrenched; different units have different responsibilities, with their own decision-making processes. Acquisition of communications equipment frequently is made at the unit level, where each leader seeks the best solution for his specific responsibilities.

The service-wide acquisition process, where some of these silos could be minimized or eliminated, has its own challenges, particularly in timeliness – technology changes faster than the procurement process can move.

SOLUTIONS

» The technology exists today to establish an interoperability platform that closes communications gaps created by the silos separating existing infrastructure, systems, and communications networks

» You may already have much of this technology in your existing communications portfolio, underutilized because of the lack of connecting platform

» This is true whether you are CONUS or OCONUS, in-theater, or supporting in-theater operations

Using the Life Cycle model to assess and create true unified communications capabilities can clarify what you have, what lines of communications you need, and the gaps that need to be filled. This will help you allocate responsibilities, resources, and budget dollars.

Life Cycle stages include:

1 **PLANNING** 2 **DESIGN** 3 **IMPLEMENTATION** 4 **MANAGEMENT** 5 **OPTIMIZATION**

Priorities are different depending whether you are addressing installation needs or tactical requirements, but the stages are the same.

PLANNING

► **STEP 1**
Identify all the communication assets currently on hand at the installation.

► **STEP 2**
Identify all the lines of communication that need to be in place on-site.

► **STEP 3**
Identify the lines of communications that need to be in place with the broader Service command structure, not just in emergency situations but on an every-day basis.

► **STEP 4**
Think about who you want to be able to talk to that normally has been out of reach and identify steps you can take to cut down roadblocks.

DESIGN

► **STEP 1**
Map the communications assets assessment against the lines of communication to identify gaps.

► **STEP 2**
Identify the key personnel who will be responsible for executing against the plan's design.

► **STEP 3**
Procure a unified communications (UC) software platform that addresses gaps.

IMPLEMENTATION

► **STEP 1**
Designate a project lead.

► **STEP 2**
The project lead determines where the UC platform will be hosted and a protocol for utilization.

► **STEP 3**
Test different configurations of devices being connected.

MANAGEMENT

► **STEP 1**
Assign responsibility to a team for keeping it updated with new releases and patches.

► **STEP 2**
The installation commander, or a designee, decides when to use the unified communications function.

► **STEP 3**
Utilize UC platform during exercises and drills.

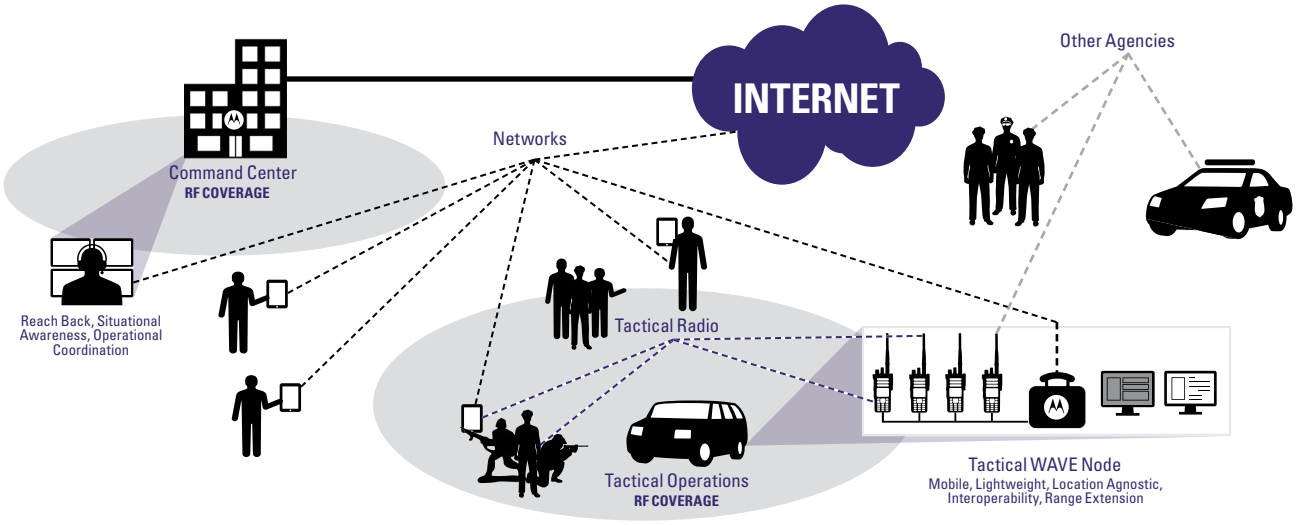
OPTIMIZATION

► **STEP 1**
Communications team utilizes technical assessment to prioritize additional needs.

► **STEP 2**
Based on those priorities, and budget constraints, procure necessary technologies.

LIFE CYCLE STAGES

PLANNING



1

▶ STEP 1:
Identify all the communications assets currently on hand at the installation.

This includes land mobile radios, telephones – both landline and mobile – VoIP capabilities, intercoms, loudspeakers, and computer networks. For radio, it includes communications capabilities in vehicles, weapons platforms and systems. For mobile telephones, it includes both those issued by the Service and those owned privately by those at the installation, including service members, their families, and contractors.

Identifying assets also includes those not on-site (telephones at off-base housing, for instance), and the communications assets of the outside civilian agencies the installation may work with – fire and police departments, hospitals, rescue squads, even local media.

2

▶ STEP 2:
Identify all the lines of communication that need to be in place on-site. Start with the commander, and ask yourself, "Who are the direct reports that need to be able to reach the commander?" For instance, the commander may need to be able to talk to the Emergency Operations Center, on-base first responders (military police and medical staff), the leaders of all the operating groups, etc. It might include the need to be able to reach a single person or everyone at the installation. Depending on the nature of the event, the commander may have personnel active in one location or multiple locations, and order those not required for action to shelter in place.

This also includes identifying the lines of communication required to communicate with off-site resources, including civilian agencies and the media, and which on-site personnel besides the commander need those connections. For instance, on-site medical personnel will need to be able to coordinate with both emergency responders and local hospitals, military police with emergency responders and civilian law enforcement (both their command structures and individuals), and PAOs with the commander and local media.

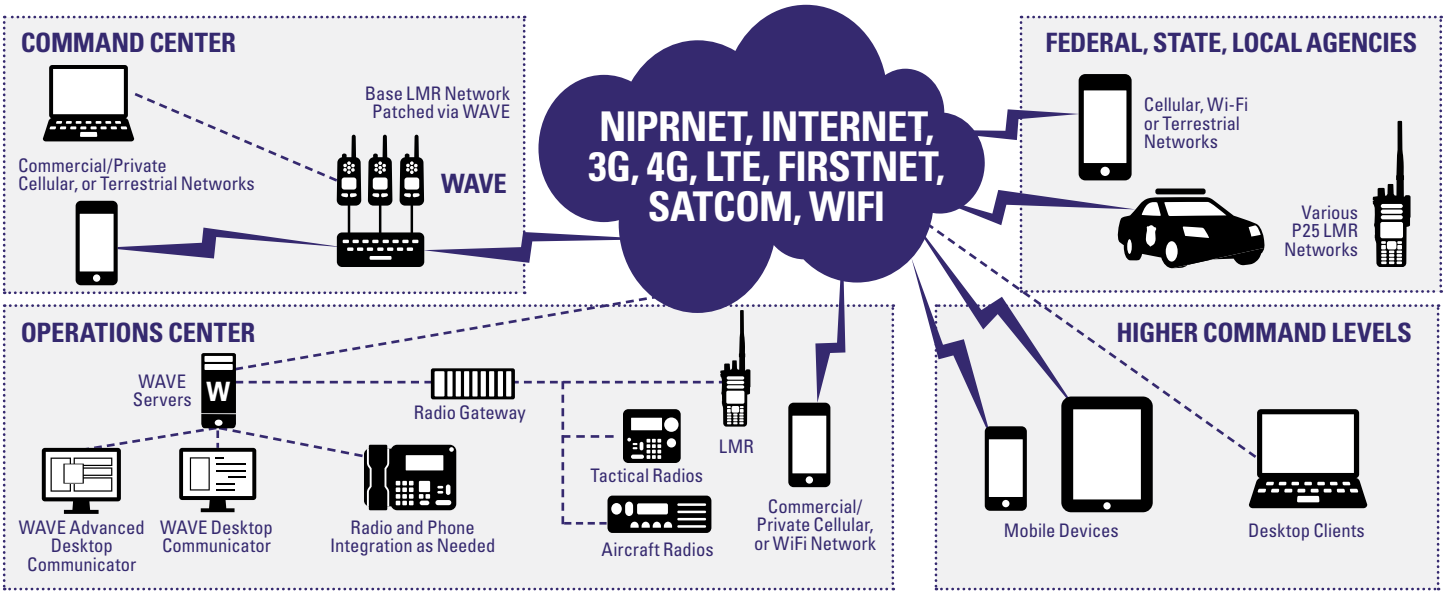
3

▶ STEP 3:
Identify the lines of communications that need to be in place with the broader Service command structure, not just in emergency situations but on an every-day basis. This is one area where potential new communications capabilities can be identified. If a training installation has sent a brigade to a combat theater, the installation commander can talk to the officers in charge OCONUS and determine whether changes are needed in training regimens, for instance, or whether new equipment is performing as expected or if an on-the-ground adaptation was needed.

4

▶ STEP 4:
Think about who you want to be able to talk to that normally has been out of reach, or only with significant coordination needed in advance, and identify steps you can take to shorten or cut down known roadblocks. And think creatively about different scenarios that might arise, including any that would be unique to your location (such as geographic issues), your responsibilities, your manpower, and your options for response. These scenarios serve as use cases for designing the solution.

DESIGN



▶ STEP 1:
Using the communications assets list, a technical assessment will determine which of those devices (and types of devices) are able to communicate currently and which ones cannot. Mapping that assessment against the lines of communication that are needed will identify the gaps that need to be addressed.

The gaps could be caused by one (or more) issues. For instance, there could be poor cell phone reception because of a lack of towers; on very large bases, there could be line-of-sight challenges; perhaps the equipment is old and there hasn't been the budget to replace it. Identify and categorize both the type of gap and the importance of that gap relative to all gaps in order to help set priorities.

▶ STEP 2:
Identify the key personnel who will be responsible for executing against the plan's design. This includes communications professionals, radio operators and the like, but also will include civilian counterparts, both on- and off-site.

▶ STEP 3:
A unified communications (UC) software platform, such as Motorola's WAVE Workgroup Communications, Mutualink or Harris' BeOn, will address many of the most pressing needs. A flexible open source UC platform provides interoperability among all different types of radios, landline telephones, cell phones (both Android and iOS), mobile devices including tablets and laptops, and computer networks, including desktop computers.

For example, WAVE already is in use at some installations, both CONUS and OCONUS. It is being implemented at eight U.S. installations in Japan, enabling all of them to communicate and collaborate on action items that affect them collectively, as well as providing interoperability for their existing communications methods and devices.

"WAVE is already in use at 8 U.S. Installations in Japan."

IMPLEMENTATION

1

▶ STEP 1:
Designate a project lead, responsible for training, who else in both communications and IT functions will receive training, and coordinating with civilian agencies and personnel.

2

▶ STEP 2:
The project lead determines where the UC platform will be hosted (e.g., EOC, commander's desktop, IT facility – all of them possible), whether it will be "always on" or if it is an on-demand capability, if the latter what events or activities trigger its activation.

3

▶ STEP 3:
Test different configurations of devices being connected through the platform – LMRs to cell phones, laptops to LMRs, desktop to loudspeaker – all the communications lines and permutations identified in the plan.

MANAGEMENT

1

▶ STEP 1:
Because this kind of unified platform is software-based, assign responsibility to a team for keeping it updated with new releases and patches. While this may be an IT function – which also has responsibility for maintaining the currency of desktops, laptops, and any other military-issued It equipment – there may be shared responsibilities with the communications team.

2

▶ STEP 2:
The installation commander, or a designee, has responsibility for deciding when to use the unified communications function in the case of an emergency (whether a natural disaster, an active shooter, or other scenario).

3

▶ STEP 3:
When exercises and drills are scheduled, the UC platform should be utilized, both to facilitate the event under way and to provide practice for both communications staff and users.

OPTIMIZATION

1

▶ STEP 1:
Using the technical assessment developed during design, the communications team should prioritize additional communications needs (reception, equipment, security, etc.).

2

▶ STEP 2:
Based on those priorities, and budget constraints, products are available for:

- » Extending coverage in areas out of range or challenged (such as buildings)
  - LMR coverage, such as Motorola's DVRS, a digital radio base station with vehicular, fixed mount, and portable applications
  - LTE coverage can now be rapidly deployed. For instance, Motorola and CyPhy Works have created a drone-based incident area network called the PARC/GuardIAN which provides unlimited flight time and secure communications.
- » Arming operators with devices that utilize available networks and deliver clear, reliable communications with FIPS 140-2 Level 3 encryption, including:
  - A wide range of land mobile radio requirements, including ruggedness and ergonomic design for different operational needs. There are numerous radio manufacturers, some of whom offer a family of products suitable for a spectrum of different users, such as the Motorola APX family, which meets the highest audio and voice standards for clarity in chaotic or noisy operating environments, Harris Corporation, Kenwood Corporation, Tait Communications, EF Johnson Technologies, and Relm Wireless;
  - Purpose-built, ruggedized cell phones that use broadband networks yet have mission critical user interfaces and features, for instance Motorola LEX L10 audio is 2-3X louder than consumer-grade devices, other manufacturers include Sonim Technologies, Kyocera Mobile, or Genaker; and
  - Consumer mobile devices across a variety of manufacturers, Samsung Electronics, BlackBerry Corporation, Apple Inc., etc, can even be used if they've been encrypted. Motorola's Cryptr Micro is an SD card that delivers hardware-based encryption and key management.

REAL WORLD SCENARIOS

GARRISON SECURITY

Following the Fort Hood shooting, the Secretary of Defense mandated the procurement and deployment of AT HOC Mass Notification and Warning Systems (MNWS) capable of warning and response direction for all personnel within 10 minutes of an initial verified incident notification. Installations were tasked with improving force protection and readiness policies and training.

The need for this was further illustrated during other high-profile incidents, including the Washington, DC Navy Yard shootings in 2013 by a mentally ill employee, where military first responders were unable to communicate directly to their counterparts in other federal, state and local agencies.

This type of scenario illustrates the need for a software platform that ties together cell phone, radio and IT-based communications networks and devices – the current drawback to the MNWS is that it doesn't deliver mass notification to devices operating on LMR – i.e. those used by folks responsible for managing emergencies. A unified communications platform pushes those notifications to LMR devices.

TACTICAL OPERATIONS

In October 2013, American forces conducted two operations – one in Somalia, the other in Libya – to capture fugitive terrorists. These operations required elaborate communications capabilities, connecting not only special forces on the ground with their support teams, but with political and military leaders to provide a common operating picture.

The two small teams faced potentially extreme environmental conditions, both very hot and very dusty, and they required secure communications networks certified for classified traffic.

The communications networks also had to be able to work with foreign members of coalition forces, supporting their equipment while maintaining security.

DAILY OPERATIONS

There are several different kinds of military installations – CONUS, OCONUS, in friendly countries, in hostile countries, with different responsibilities. Many have residential properties, while at others most folks live off base.

Because of their different functions, sizes, and locations, each installation has its own pattern of daily routine. But all of them share a need to streamline their communications networks and accommodate the variety of devices and applications they operate with today, while minimizing changes and additions to their equipment. They also share the need to be able to contact all of their personnel through base-wide communications.

This also represents the best way to conduct ongoing training in the use of interoperable communications – personnel have the opportunity to practice using different modes of communication (smart phone, desktop, laptop, radio, etc.), which will make communications work more smoothly in emergency situations, and provide continuity for use in tactical operations.

CONCLUSION

Unified communications has been a longstanding ideal for the military. It has been an elusive goal, however, because different units, different services, different events have had communications needs addressed as standalone purchase decisions. Nor did the technology exist to serve all these audiences and circumstances.

The emergence of digital communications has finally made it possible to establish not a single communications device, but an interoperable digital platform capable of pulling together and sharing all the disparate devices used in today's military.

Achieving unified communications through interoperability will:

- Enable force protection, whether at the installation level or in a combat theater;
- Facilitate sustainable readiness, by improving coordination in training, which itself carries over to coordination in execution;
- Fill in performance gaps with new technology that addresses specific needs; and
- Provide both cost savings and cost avoidance, as units throughout the military are able to continue using existing equipment, using scarce resources for priorities rather than replacement equipment.

By applying the step-by-step process discussed above – planning, design, implementation, management, and optimization – to your current communications environment, it is possible to create a unified communications network that will benefit theater operations, coalition partnerships, improve training outcomes, and prepare for emergencies that demand immediate, appropriate response.

For more information or assistance in creating your own UC network, visit MotorolaSolutions.com/ConnectingDefenseTeams

ABOUT MOTOROLA

Motorola Solutions is a global leader of mission-critical communications solutions and services for government and commercial customers. For over 85 years, Motorola has been an innovator of voice, video, and data technologies that have helped its customers to be their best in the moments that matter. You can find our solutions at work in a variety of industries including the military, federal government, law enforcement, fire, emergency medical service, transportation and logistics, education, healthcare, and energy.

Learn more at motorolasolutions.com

ABOUT GOVLOOP

GovLoop's mission is to "connect government to improve government." We aim to inspire public-sector professionals by serving as the knowledge network for government. GovLoop connects more than 250,000 members, fostering cross-government collaboration, solving common problems and advancing government careers. GovLoop is headquartered in Washington, D.C., with a team of dedicated professionals who share a commitment to connect and improve government.

For more information about this report, please reach out to info@govloop.com.

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