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Headquarters,
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G6/S6

Enhancing Signal Capabilities and Support for the Warfighter

Plus: From the Canadian Liaison Officer
Signals Transformation: Something New? Think Again

U.S. ARMY SIGNAL CENTER AND FORT GORDON

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Cover: ***Focus for this edition is the G6/S6 business. "G6/S6 is one of the most important jobs in the Army."*** *Cover by Billy Cheney*

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Chief of Signal's Comments

G6/S6 – a most important job in the Army

Regiment,

First I want to update you on the "health of the regiment" – the Signal Regiment – you out there everyday – are doing more and providing greater capabilities than ever before. We must embrace the culture change of transformation. We are now organized in effective modular formations, with the handpicked people in key positions, and now we're focused on getting future capabilities synchronized with our doctrine, training, organization, and leader development. No where is this more important than in the G6/S6 world. We've dedicated this special edition to G6/S6 business because it is one of the most important jobs in the Army. We must get this right. Thanks for the overwhelming feedback and contributions to this edition.

As we explore all ways to help better prepare G6 and brigade S6s for these assignments, we are increasing training, providing greater access to resources such as equipment simulations, and conducting mobile training team visits to deploying units. We're working hard to create a more collaborative environment in which we share experience and collective knowledge better across the Signal Regiment. There is great synergy in our shared experience.

We have just published the Signal Center of Excellence Campaign Plan that will cover the next six years, and we've focused on those priorities we can achieve in 500 days.

The 500 Day Plan is the action portion of the campaign plan. I've established eight critical priorities:

Campaign Plan Priorities

☐ Enhance G6/S6 Support to the Warfighter
☐Support the development of the incremental Warfighter Information Network-Tactical Program
☐Support the Development of the Future Combat System Program
☐Develop and Integrate NetOps Capabilities
☐Expand Training Support to the Force throughout the ARFORGEN cycle
☐Integrate Installation LandWarNet Support to the Force
☐Lead the delivery of incremental Joint Tactical Radio System capabilities to the force
☐Develop SATCOM and Network Extension Capabilities

BG Jeffrey W. Foley
Chief of Signal

To enhance G6/S6 support to the Warfighter, we have improved manning at the CTCs; we are now training Brigade S6s; and we are executing Pre-deployment Assistance Team visits to S6 sections as they prepare, plan, and organize signal assets for deployment ...

Below are some specific action items supporting the priority Enhance G6/S6 support to the Warfighter:

CTCs. In order to share our collective knowledge across the regiment, we will improve signal manning at the training centers. Soon Human Resources Command will assign additional signal personnel to the Joint Readiness Training Center at Fort Polk; to the National Training Center at Fort Irwin; and to the Joint Multinational Readiness Center at Hohenfels, Germany. Units in rotation will interact with the best and most experienced observer/controllers to increase deployment readiness. HRC will assign experienced brigade S6 officers as the senior signal O/C; a seasoned warrant officer from each of our warrant military occupational specialties, and will ensure that the senior 25U assigned is handpicked for this critical job.

S6 Officer Course. We are revising our battalion S6 course to provide training for our officers who will assume key brigade S6 positions. Along with this capability, we are working to ensure that these same officers attend the course en route to their new assignment. We have acquired Headquarters Department of the Army approval which will allow HRC to do exactly that. We are also executing Pre-Deployment Assistance Team or Mobile Training Team visits. Our team of experienced officers and noncommissioned officers has already made several trips to deploying units to help them plan, organize, and employ all signal assets to successfully support the warfighting mission.

S6 section training. A review of all training provided to our Soldiers and leaders who serve in the S6 section is also underway. I want to ensure that what we teach the officers in the S6 course dovetails with what we teach our warrants in the Warrant Officer Basic Course and the same with our enlisted Soldiers in Basic Noncommissioned Officer Course, and Advanced Noncommissioned Officer Course. We're also realigning by unit type all of the downloadable equipment simulations on LandWarNet eU to improve available resources to S6 personnel.

I have mentioned only a few of the initiatives we have underway here. There's lots more going on. We have included articles in this edition that highlight the challenges and successes of our fellow signaleers in the field — you are making it happen!

If you haven't been forwarded the "Chief of Signal Sends" emails with news and our regular updates you can catch up on our revamped Signal Center community page on AKO https://www.us.army.mil/suite/page/273

BG Jeff Foley
Army Strong!

CSM's Comments

G6/S6 – checklists, SOPs improve skills to "fight the network"

Regiment,

My name is Clark and I'm a Soldier!

In my opinion, "Soldier," is one of the most honored titles anywhere in the world today.

I am proud to be your Signal Regimental Command Sergeant Major.

This is the third longest war in our Nation's history, behind only the Revolutionary War and Vietnam. It is the only conflict since the Revolutionary War that we have fought with an all volunteer force. You and your extraordinary Soldiers reflect the very best of our Nation during a time when the demands on our force are significant. Seldom in our history have Soldiers, leaders, and our Families faced greater challenges.

We know you are giving 100 percent to your missions, while also living the Warrior Ethos everyday. That's why we are committed to supporting the regiment across the operational force with initiatives that positively impact you and your Soldiers.

One example is our priority to enhance G6/S6 support to the Warfighter. We will increase the capabilities of your G6/S6 section in the near term as we ramp up additional training opportunities, both virtual and on site, and as we work with deploying units to assist with G6/S6 section checklists and standard operating procedures to improve those skills necessary to command and control, or "fight the network."

In the near future, your units will receive copies of our Signal Center of Excellence Campaign Plan with an embedded action plan for the next 500 days — please read and share this with your fellow Soldiers.

Please keep sending us your questions, ideas, and feedback. It's important that we work together closely as a regimental team.

CSM Thomas J.Clark
Regimental Command Sergeant Major

CSM Tom Clark
Army Strong and Signal Proud!

Editor's Note: The Joint Network Node program is now called Increment 1 of Warfighter Information Network-Tactical. This change occurred in June 2007 as a result of the Department of Defense restructuring of the WIN-T program. There are now four Increments of WIN-T. Increment 1 (former JNN) is structured to support the maturing technology insertions from the WIN-T program.

WIN-T Increment 1 and JNN can be used interchangably.

Thoughts from a division G6

By LTC Jonathon R. Moelter

In the past four or five years, the Signal Regiment has seen more change in how we do business than I have seen in my entire military career. I believe we have accelerated change at a rate never before seen in the Army. Today, signaleers are operating at the very front of communications technologies. This article discusses how changes in technology and organization have affected the way we do business today, how we support deployed operations, and what this means to a division assistant chief of staff G6.

Growing up in the Regiment I served four-and-a-half years as a platoon leader and sixteen months as a company commander in the 63rd Signal Battalion. I have spent three years in a joint assignment and two years as a signal trainer at the National Training Center. Never did I think of being, or hoped to be, a division G6.

Four years ago I was assigned as the first Division Special Troops Battalion signal company commander. I was loving life — three detachments supporting thirteen battalion headquarters, three brigade headquarters, and the division's command posts. More than 400 Soldiers deployed to ten locations throughout the Baghdad area of operations.

On the other side of Camp Liberty was the Army's first centrally selected G6, LTC Frank Huber. Huber came to the Marne division just in time to field the first set of Warfighter Information Network-Tactical equipment, deploy it to the field in support of the Division Mission Rehearsal Exercise, and then deploy in support of Operation Iraqi Freedom III. He led an organization that wasn't manned quite right, relied on a set of equipment that had never been tested, and was responsible for the division's networks without command authority; quite a way to welcome in the future modular Army.

Additionally, the G6 has to understand personnel availability and know there will likely be some positions Human Resources Command will not be able to fill. In these cases, tough calls must be made as to fill the division headquarters or any specific brigade. As an example, the Army is short Functional Area 53 captains.

Luckily for Huber and the Signal Regiment, the Joint Network Transport Capability Center equipment was highly reliable and the 3rd Infantry Division Signal Team accomplished the mission, setting the path for future change as we continue to improve the organizations and equipment of the Signal Regiment.

After a successful year in Iraq and redeployment, I soon found myself on my way to Fort Hood to join the 4th Infantry Division. Today I am again at Camp Liberty, Iraq, but this time as the division's G6. With the job has come a much greater respect for the position and responsibility to the division and the Signal Regiment.

I joined the division four months after it returned from OIF 2005-06 and as it began the last training event prior to executing the mission rehearsal exercise for OIF 2007-09. My story is no different than any other G6 in today's deployed, modular Army. We all join our divisions usually at the end of resetting the unit and at the beginning of the cycle of receiving troops and equipment in preparation for deployment.

The first step for any new G6 is to understand the G6 mission. This should be defined as providing communications support for the division commander and his staff; ultimately enabling the commander to command and control the division through all phases of the deployment cycle. The implied task of this mission is to ensure the signal elements of the division are trained and equipped to accomplish their mission and integrate into the division's network.

The challenge here is that the division's organic brigades are all at different stages of their deployment cycle. It is not unusual to have one unit resetting, one conducting home station training, one at the NTC, one preparing their equipment for shipment to theater. The next challenge is that the units the division will operate with are likely not the organic brigades they know and have trained with. The following five topics are presented not as answers to the test but to generate discussion and share thoughts throughout our community.

Personnel

As the senior signal officer of the division, one responsibility of the G6 is to train and mentor the signal officers, noncommissioned officers, and enlisted Soldiers of the division. He must ensure signal leaders are put in the right jobs at the right time in their career to support the division mission and the professional development of the Soldier.

In today's deployment cycle, the G6 doesn't have much more than one chance at getting this right. Once the slate is set, brigades will be rotating in and out of theater at different times so moving leaders between brigades or the division headquarters will only be possible in unique situations, not the norm.

Additionally, the G6 has to understand personnel availability and know there will likely be some positions Human Resources Command will not be able to fill. In these

cases, tough calls must be made as to fill the division headquarters or any specific brigade. As an example, the Army is short Functional Area 53 captains. Each brigade is authorized one and there are two in the division headquarters. We made the call to send the three we had to the brigades where they lacked the expertise the most and where the skills of the 53s will best support the mission.

Finally, while deployed, there will be a number of non-modified table of equipment personnel requirements that must be filled. Teams such as military training teams, reconciliation cells, Joint Visitors Bureau, etc... are all division out-of-hide requirements. The G6 must fully understand his organization's strengths and weaknesses so as to be in the best position to support a fair-share of the extra requirements or justify the inability to accept additional taskings.

One area that requires much thought is the signal support at the company level. Many leaders in today's Army agree secure Internet Protocol router at the battalion level is insufficient for the current and future fight. SIPR must be taken to the company and probably platoon levels. We must start the process now in identifying how the Regiment will support S6s at the company level.

Training

There are many aspects of training that must be thought through, planned, and executed. Because most brigades are at different points in their own deployment cycles, it is virtually impossible for the G6 to execute a single integrated training plan. You just won't see the division in the field with all its brigades, supported by its organic signal assets as part of a larger division training exercise.

Even the division's mission rehearsal exercise was planned with the majority of the network support provided by the Army's simulation network, not the Warfighter Information Network-Tactical equipment. Small unit training up to brigade training events are likely the best opportunity a G6 will have at validating the units communications capabilities.

As the G6, Huber took the lead on making recommendations back to the PM that quickly spiraled into future fieldings of JNN equipment.

The division G6 must be prepared to deploy small teams of experts to assist brigade S6s during both home station train-ups and CTC rotations. We must also look at wide ranging deficiencies across the division and then coordinate for training opportunities to solve these deficiencies. Examples are frequency management, communications security, fiber optic installation, and network operations and management to name a few.

Additionally, G6s must look at how to assist and guide S6s in training their signal Soldiers within the brigades. Because of the increased numbers of FA53 officers and warrant officers at the brigade level and in the G6 section, we are seeing fewer NCOs and Soldiers being offered the opportunity to take on the higher level network management and planning tasks.

Many Soldiers and non-commissioned officers are used in help desk operations and network monitoring but are limited in opportunities to learn or put into practice the more technical skills of server management or network planning. The draw down and subsequent rebuilding of personnel strength in a unit also has a lot to do with the level of training achieved before deployment.

Receiving Soldiers after the units MRX and just before deployment often put Soldiers behind the learning curve to take on the more technical challenges and are therefore relegated to help desk functions until a concerted effort is made to put them in positions of greater responsibility.

Finally, the G6 also has a responsibility to train the senior leaders of the division and the brigade Special Troops Battalion leaders on the capabilities of their signal units and how to best enable their units to conduct their communications mission. STB commanders and staff must understand the requirements of their signal units, what to check, what questions to ask, and how best to assist their companies.

Commanders will take ownership of their signal companies but they must understand how actions at their level affect the overall division network.

Equipping

The WIN-T equipment fielded to 3rd Infantry Division in support of Operation Iraqi Freedom III proved to be exceptional. In my years working with both Digital Group Multiplexer and Mobile Subscriber Equipment, never before had I seen equipment as reliable as the Hub, Joint Network Nodes, and CPNs. Having the equipment support 12 months of deployed operations in the harsh environment of Iraq, not once did I see a system fail.

We had more than our share of generator and air conditioner problems but the communications equipment held strong. As the G6, Huber took the lead on making recommendations back to the PM that quickly spiraled into future fieldings of JNN equipment. Improvements were made and on the assembly line in less than 12 months, in time for the next division's fielding, and the division after that.

The capabilities found in the first set of JNN equipment were cutting edge technologies that are only today being seen in the civilian and commercial networks. We continue to see improvements to our capabilities and the future capabilities that will keep us on the front edge of technology for years to come. However with that being said, it is not enough.

As stated above, there is an increasing requirement to get SIPR and NIPR to the company level. I am in awe at the level of ingenuity signal leaders have used in meeting this requirement today. We find Redline AN-30 and AN-50 radios, VSAT,

SPOP satellite systems, Coalition Military Nodes, HCLOS, Harris 7800 radio systems, and data packages throughout the Iraq network, in every configuration imaginable.

Our cable Soldiers are installing fiber optic cable networks and commercial switches everywhere possible to free up tactical assets to be used at remote sites. Any and every idea is being tested and put to use in solving the increasing challenge in getting acceptable communications capabilities at both company and platoon levels. Push-to-talk radio and blue force tracking is not good enough in a digital world where small level units require up-to-date intelligence in order to out smart the thinking enemy. With this comes just one of the many financial costs of doing business.

There are many communications capabilities that divisions must purchase in order to support combat operations that are not provided through the many Army programs of record. It all starts at home station during reset and preparation for deployment. The first required purchase is for automation equipment. If your division doesn't have a base line Computer Table of Equipment developing one is a necessary place to start. Sure, we get some computers through Program Manager funded Army Battle Command Systems but, these machines do not come close to the automation requirements of the division.

If you don't have an approved CTOE that is used as an approval document you will never come close to controlling the number of systems in your network.

Without a CTOE you will not have the tool necessary to control the appetites of your BCTs. It is my belief that if we don't control the sheer numbers of computers purchased at home station we will never be able to afford the millions of dollars it will cost every year for life cycle replacement.

Every unit appears to have accepted the fact that Theater Provided Equipment has got to be the means of filling the delta between what we use at home and what we need in theater.

The G6s of tomorrow will be the most influential leaders in our Regiment; the leaders who shape our future organizations; provide critical input to how we equip our Army; develop the concepts of how we operate today and in the future; and teach, coach, and mentor our junior leaders.

The next requirement is the need for telephones. No longer do we rely on the Army green, fielded telephones. Cisco VoIP phones are also not fielded in sufficient quantities with our Warfighter Information Network-Tactical equipment.

Divisions must do an analysis of what the requirement is to plus up on hand instruments to support the division training requirements and then again, rely on TPE to meet all the extra requirements we only see in theater.

With telephones and computers comes the capability to install them. What is needed here is cable, wire, and the necessary tools to complete the installation. None of our current MTOEs provide the tools necessary to install commercial fiber optic cable or even CAT5 cable. The latter are inexpensive crimpers and cutters but for fiber optics we need fusion splicers, termination kits, and many other specialized tools not found on our MTOEs.

Every year, our cable Soldiers are installing miles of locally purchased fiber optics to support commercialization efforts throughout the many forward operating bases. Where the Army used to provide WD-1 or WF-16 wire, there is no CAT5 on the MTOE.

A typical division headquarters must deploy with at least 300 boxes of both red and green CAT5 cable as an initial stock.

In Iraq, there are vendors available to purchase more as the need arises but everything takes time. You don't want to begin behind.

Another item along these same lines are Cisco switches. Switches must be life cycled just as we life cycle computers. We came to theater with 100 switches and fell in on a number of spare TPE switches, but today with 90 days into the deployment, we are down to less than half of our starting quantity.

There are, of course, many other small items like connectors, fan out kits, wire ties, etc... which are required but, are too many to list here.

With installing the network comes protecting it.

A few additional items we found not on the MTOE but required to purchase were Yellow Jacket wireless detection devices to identify unauthorized emitters and spectrum analyzers to support our frequency managers' mission of identifying sources of frequency interference or jamming.

Additionally, our information assurance Soldiers required specific sets of software to conduct forensic analysis on systems found to be infected with new viruses or to investigate misuse of government systems.

Finally, there are things such as: hand-held radio ancillaries like batteries, headsets, holsters, and hands-free push to talk devices; maintenance equipment like air compressors and static-free vacuums; solar shades, and many other items necessary to support the day-to-day operations of our Soldiers – all items not found on the MTOE.

Maintenance

Maintenance is an area that we still don't have quite right. Brigades are not yet manned or equipped to conduct signal maintenance on their own. We haven't trained any future planned system or organization to accomplish the mission. Many divisions are still relying on the division STB as the direct support

maintenance for all units. The next MTOE we organize to eliminates the division STB Communications and Electronics facility and builds a maintenance oversight capability in the G6.

We cannot move to this concept until the logistics community is trained and online to accept the responsibility. Until then we will continue to survive with the reduced C&E capability within the G6 and STB with a heavy reliance on field service reps and Civilian contractors.

What this means in the deployed environment is extra down time while we wait to deploy technicians from the division headquarters to the location with the problem.

Another issue we found was in accountability of Warfighter Information Network-Tactical repair parts that have been pushed down to the brigade or battalion level. We have made great progress through the division G4 in tracking precscribed load list parts within the units Standard Army Management Information Systems. There is no other way of ensuring our critical communications systems repair parts are not lost or forgotten as we conduct change of commands and rotate battalion staffs.

Maintenance of all the non-organic systems we rely on today is also a significant challenge. We do not carry sufficient PLL for the systems like our AN-50s or VSATs so most have to be shipped back to CONUS for repairs and units must survive without the capability, or shift assets to continue mission support.

Network management

Network operations continues to be a critical area where we need to implement doctrine and field advanced tools to simplify the process. Today, every division does it differently.

Given the concept of how divisions deploy without their organic brigades, not training to a doctrinal standard is problematic. The next set of MTOEs will help significantly with the realignment of NETOPS under the G6 and S6 sections.

The most functional NETOPS are those where the signal company and S6 are collocated and working together to manage their part of the network. Unfortunately, this is not necessarily the norm. I have seen where the NETOPS is not located anywhere near the S6 and where the JNN supporting the BCT CP is not attached to the CP. This creates barriers in information flow and management of the network.

The challenge G6s face is when to let the brigades manage their portion of the network and when to step in. In the old days of Digital Group Multiplexer and Mobile Subscriber Equipment, when there was a problem in a shelter, first the platoon leadership got involved. After a sufficient amount of time, if the problem wasn't solved, then the company got involved until finally the battalion sent its high speed warrants out and the issue was solved.

Today, brigades have their own warrants and other experts but we must better define when it is beyond their capability to solve a problem and when the division must take over in leading the trouble shooting effort. Given the limited quantities of JNNs and CPNs, we also have to look at when the division must step in and dictate where network assets are deployed to ensure network capabilities are spread throughout the division's area of responsibility, in the most efficient manner. We are all making it happen but sometimes at the cost of efficiency and time.

I never thought I would ever hope to be a staff officer. However, the time I have spent in this outstanding organization and the discussions I have had with our senior leaders of the Regiment have all changed my thoughts. I took the job because I competed for it and was selected, and most importantly because I saw the challenges Huber faced and the impact he made on the division and signal community.

If there is anything I can pass on to the next generation of signal lieutenant colonels, I hope it is a new desire to be one of the few Army division G6s. The G6s of tomorrow will be the most influential leaders in our Regiment; the leaders who shape our future organizations; provide critical input to how we equip our Army; develop the concepts of how we operate today and in the future; and teach, coach, and mentor our junior leaders.

LTC Moelter's last duty assignments were with 3rd Infantry Division, Fort Stewart, Ga., as deputy G6 and then as 1st Division STB Signal Company commander. He then served six months as an integrations officer in the Training and Doctrine Command Program Integration Office for Networks, U.S. Army Signal Center, Fort Gordon. Moelter now serves as the division G6 for 4th ID and Multinational Division-Baghdad.

Acronym QuickScan

BCT CP – Brigade Combat Team Command Post
C&E – Communications and Electronics
COMSEC – communications security
CONUS – Continental United States
CP – command post
CPN – command post node
CTC – Combat Training Center
CTOE – Computer Table of Equipment
DGM – Digital Mulitiplexer Group
HCLOS – High Capacity Line-of-Sight Radios
HRC – Human Resources Command
JNTC – Joint Network Transport Capability
MiTT – Military Training Teams
MSE – mobile subscriber equipment
MND-B – Multinational Division – Baghdad
MTOE – Modified Table of Organization and Equipment
MRX -- Mission Rehearsal Exercise
NCO – noncommissioned officers
NIPR – Non-secure Internet Protocol Router
NETOPS – network operations
NTC – National Training Center
OIF – Operation Iraqi Freedom
PLL – Prescribed Load List
STB – Special Troops Battalion
WIN-T – Warfighter Information Network-Tactical
JNN – Joint Network Nodes
SIPR – Secure Internet Protocol Router
SPOP – Sustainable Practices and Opportunities Plan
STAMIS – Standard Army Management Information System
TPE – Theater Provided Equipment
VoIP – Voice over Internet Protocol Router
VSAT – Very Small Aperture Terminal

CSSAMO 101:

A brief guide and experiences from a signal Soldier in a logistical world

By CW2 Aaron G. Tyler

As signal Soldiers we have all worked in or with an S6 during some point of our career. This experience has molded our opinions and beliefs of the S6 tasks and the support provided to the organic unit. This same experience cannot be applied to a similar section, the Combat Service Support Automation Management Office. Army transformation has forced these two, once distinct sections, to share similar information technology disciplines and skill sets at the same level. Modularity has made the brigade combat team the center of gravity for all actions and operations, pushing CSSAMO down to the brigade level. To better acquaint signal Soldiers with the roles of a CSSAMO, I will highlight my experience during my 15 month deployment to Iraq. I will discuss S6 related tasks conducted by my section, as well as, expound on CSSAMO as an emerging area for signal Soldiers. Lastly, I will provide a few "commandments" for signal Soldiers who may find themselves in or headed to a CSSAMO.

S6 related tasks

While my section was deployed to Northern Iraq, we were responsible for providing network administration, system administration, and other IT tasks for all logistical systems within our BCT's area of responsibility.

■ **Network administration**

Our most important task was establishing the network used within our BCT based on the various logistical standard Army management information systems. Our BCT's footprint expanded over seventy-seven thousand square miles. Our focal point was ensuring that our main supply systems, Standard Army Management System-Enhanced and Property Book Unit Supply Enhanced, had connectivity with the Standard Army Retail Supply System-1 which is located in the BCT's Supply Support Activity. These three systems combined to provide the backbone of the CSS network, which allows all classes of supply to flow into the BCT.

The primary technologies used to establish the CSS network were CSS very small aperture terminal interfaces, combined-service support automated system, and other commercial networking equipment. CSS VSATs provided contracted commercial non-secure Internet Protocol router access via a deployable and mobile satellite communication terminal. CAISI provided commercial off-the-shelf wireless technologies, which eliminated long cable runs and provided a greater footprint of NIPR access. Cisco routers and switches are some of the commercial equipment we used to make the CSS network more flexible, scalable, and adaptable.

PBUSE is a web-based program easily accessed from any computer with NIPR capabilities. For our PBUSE supported customers, we ensured we had NIPR access, which was provided by the unit's S6 section the majority of the time. In certain situations where the S6 NIPR network was not accessible to units, my section stepped in and provided the connection. This was achieved by using CAISIs providing a wireless local area network connection to either the S6 NIPR network or a CSSAMO supported CSS VSAT.

The BCT's infrastructure of SAMS-E systems was entirely supported by CSS VSATs. SAMS-E is a self-sufficient database, where each individual system is a standalone. This proved to be our toughest task – ensuring these systems remained connected with the SSA. The Standard Army Retail Supply System-1 had a dedicated CSS VSAT providing connectivity to higher echelons of the Army supply system, as well as, all subordinate supply systems. The SSA's CSS VSAT also provided NIPR connectivity for the BCT's radio frequency identification device/in transit visibility system and SAAS-MOD server. In addition, we were responsible for maintaining the MC4 network used within the BCT's medical treatment facility, which had a dedicated commercial VSAT.

■ **System administration**

Our units were spread across the Diyala province; thus making typical system administration very challenging. As in the S6, we were responsible for ensuring all supported STAMIS met all Army and Department of Defense information assurance policies. Some system administration required my section to travel to outlying forward operating bases to provide the necessary services. For certain time sensitive tasks, we used remote administration software in a limited capacity.

The various STAMIS supported by my section were based on a variety of commercial operating systems. Some of the operating systems included: Microsoft's 2000, XP, 2003 Server, and SCO Unix. This required my section to be well versed in all operating systems to ensure proper administration. It also required my section be adaptable and knowledgeable of emerging advances in each particular operating system.

One of our significant system administration tasks was the implementation of Software Change Packages and Interim Change Packages to all supported STAMIS.

During the deployment, our supported STAMIS faced several upgrades that required my section to physically administer to each system; this amounted to more than 150 systems spread across the battlefield. Though there are typically associated obstacles that occur when upgrades are conducted with ongoing operations; we ensured the process was seamless for our supported units.

Another significant task was the installation of information assurance vulnerability alert software patches. Just as the S6 is responsible for ensuring all systems are frequently updated with IAVAs, my section had to ensure all STAMIS were in compliance. Installing IAVAs in theater was a difficult process. STAMIS are not established in a domain structure, so the ability to push an IAVA patch down from a central server was not possible. A workaround in theater was created by the 13th Sustainment Command (E) and 316th Expeditionary Sustainment Command with a Windows Servers Update Services which enabled all CSSAMOs in theater to redirect their STAMIS to the WSUS server to retrieve all IAVAs in a timely manner.

Additional IT tasks

My section was also responsible for other various S6 related tasks specifically for logistical automation. One major responsibility was ensuring all supported equipment, such as laptops, printers, and networking equipment were operational. We conducted limited hardware repair and replacement for certain items. Those items still under warranty were evacuated to Tobyhanna-Forward Repair Activity at Logistics Support Area Anaconda, providing general hardware repair and replacement. In addition we had a certain percentage of "floats" for every STAMIS, or piece of equipment, we supported. This allowed us to do "on-the-spot" exchange for all supported customers.

Another task many Signal personnel would find familiar is a communications exercise or in the CSSAMO world, a "STAMIS Gunnery." We conducted a STAMIS Gunnery in Kuwait prior to moving north, which allowed us to ensure our systems were operational and able to communicate. Lastly, in garrison and in theater we conducted various IT tasks mimicking a typical S6, such as recovery of failed databases, customer site visits, and refresher training for supported systems.

Though my Soldiers and I belong to the Signal Regiment, we found ourselves in a world of logisticians. Our main focus was ensuring the systems our logisticians used were reliable, secure, and available when their mission called for them to support the warfighters on the ground.

Signal MOSs in a logistical world

Signal military occupational specialties have always been authorized in a CSSAMO, yet with the emergence of the modular BCT the number of authorizations has increased tremendously. In a typical heavy division, there was one CSSAMO authorized for the entire division found in the Division Support Command.

Modularity has created a CSSAMO within each BCT, amounting to six sections within a typical heavy division (4 x BCTs, 1 x Aviation BDE, and 1 x Sustainment BDE, which since moved to 13 SC (E)), with each section responsible for sole STAMIS support of their respective BCT or BDE.

The increase of CSSAMOs throughout a division requires an increase of signal Soldiers, in particular 25Bs and 251As, to be assigned to a CSSAMO. The 25Bs in my section provided the technical assistance needed for all STAMIS and networking for supported units. They possess the skill set to install, operate, and maintain multi-functional/multi-user information processing systems, peripheral equipment, and associated devices in mobile and fixed facilities. They are responsible for the testing of program software and scripting. They are also responsible for conducting data system studies and preparation of documentation for proposals.

I was the only 251A within the CSSAMO of the BCT. I managed all personnel and information system assets supporting the STAMIS framework for the BCT and served as the brigade liaison officer for all STAMIS issues. I advised the brigade support operations officer on all STAMIS related matters. I developed and deployed the CSS network for the BCT. I was also the sole Information Assurance Officer for all STAMIS within the BCT.

Signal is not the only branch represented in my section. My section also had personnel from the quartermaster and medical branches. Their background and experiences provided the skill set to support our customers from a functional aspect. This is the underlying difference between my section and an S6. In addition to providing technical support, we were responsible for providing functional support for every STAMIS we supported.

Though my Soldiers and I belong to the Signal Regiment, we found ourselves in a world of logisticians. Our main focus was ensuring the systems our logisticians used were reliable, secure, and available when their mission called for them to support the warfighters on the ground. The systems we supported touched every aspect of the logistical world, the Signal skills and experiences we brought highlighted the current Army motto of "Army Strong." We strengthen our unit by bringing together automa-

tion support and logistics.

Seven commandments of a CSSAMO

The following are seven guidelines that helped me during my time as a member of a CSSAMO in garrison and in theater. This is not a comprehensive list, only a starting point for signal Soldiers who find themselves in or headed to a CSSAMO.

1. Thou shall keep the logistician connected.

As a CSSAMO, our number one mission was to leverage technology to improve the BCT's logistical operation. The advances of file transfer protocol and data sharing allowed the logistician to obtain, distribute, and maintain logistical data more effectively. 3BCT, 1CD Support Operations Officer, MAJ Clint Taylor highlighted this point by saying "connecting the logistician allows critical sustainment and requirement data to flow from the end user through to the wholesale DoD (Department of Defense) logistics system. "

2. Thou shall be familiar with the logistician world.

When I first arrived in my current position in CSSAMO, I was immediately introduced to a logistician vernacular unfamiliar to me. Terms and acronyms such as, 0-26 report, BB status, TRANS-IN/OUT, RIC, MILSTRIP and much more have found their way into my Signal military-dialect. I realize that, to provide better support to my units I needed to learn some of their processes and their daily workings. I was once told by another CSSAMO officer-in-charge, CW3 Michael Roberts of 15th Sustainment Brigade "sometimes you have to become a logistician, to find out what they need Signal-wise to get the mission accomplished."

3. Thou shall remain acquainted with the signal world.

During my time in CSSAMO, I had to ensure I remained competent on technology that is emerging in the Signal arena in order to increase support provided to my users. As the number of Army information systems continues to grow, commanders want the ability to share data between different platforms and synchronize information across many disciplines. A CSSAMO that remains connected to their Signal roots empowers their commanders with information dominance.

4. Thou shall know all supported systems.

There is an Army saying "if there is data to be stored, then there is an Army information system to store it." CSSAMO supports a variety of information systems and acronyms that would stump any normal Soldier, such as Medical Communications for Combat Casualty care, Property Book Unit Supply Enhanced, Standard Army Maintenance System- Enhanced, Standard Army Retail Supply System-1, Transportation Coordinators-Automated Information for Movements System- II, Radio Frequency Identification Device/ In-Transit Visibility to Standard Army Ammunition System-Modernization are just a few. Once I identified the various systems my section supported, I was able to establish training guidelines and documentation for my section to provide the needed support to our units.

5. Thou shall stay connected with other CSSAMOs.

The ability to stay connected and pass information between other CSSAMOs greatly helped my section and me. The majority of issues arising in support for STAMIS have already been addressed or another unit has already established a workaround. My section was able to pass information and establish processes for some STAMIS issues which benefited other units in theater. One great tool in use in theater was a CSSAMO distribution list, which greatly aided in the dissemination and sharing of information throughout Iraq and Afghanistan.

6. Thou shall document, then document again.

The ability to document procedures and create historical information greatly benefits a CSSAMO. Technology changes often, but the ability to rely on historical data and procedures maximizes information dominance. In my section's relief-in-place process, both deploying and redeploying, the advantage of having network schemes, wireless access keys and encryption, and system administration data readily on hand made the Relief-In-Place/Transfer of Authority process a smooth transition. I was able to obtain a variety of tactics, techniques, and procedures; workarounds, and other documents that I placed on an external hard drive for the incoming unit.

7. Thou shall stay connected with commercial contractors.

The various logistical systems supported by a CSSAMO were developed by a private contractor for the Army. The ability to establish communication lines with local contractors in garrison and in theater has greatly benefited my section in support of these systems. In addition, leveraging the knowledge of the contractors who developed a particular system, allows you to keep both the functional aspect and technical aspect of a system fairly close. A contractor from McLane Advance Technology, Joseph Rich, stated "a private contractor is dedicated to one system; a CSSAMO Soldier is concerned about every system", he continued "using our knowledge is a no brainer."

Conclusion

Many tasks of a CSSAMO mirror the tasks of an S6. Network administration, system administration, and other various IT tasks play a vital role for both sections. The ability to connect the logistician and provide dedicated automation support to logistical systems proves to be a key component of success for any CSSAMO. The skills and knowl-

edge signal Soldiers bring to a CSSAMO greatly effect the logistical operations of a unit and the need continues.

As more BCTs are formed, CSSAMO continues to be a focus for logistical automation for Army units. This requires more signal Soldiers to venture into a logistical environment. The skill sets a 25B or 251A obtain as an S6 will benefit them greatly when transitioning to a CSSAMO. The significant difference between a CSSAMO and an S6 are the systems they support. An S6 is responsible for all Army Battle Command Systems and CSSAMO is responsible for Combat Service Support Automated Systems. The terminology and systems may seem daunting at first, but the knowledge obtained in prior assignments can be put to use in a CSSAMO. Logisticians have a dedicated automation office and signal Soldiers are up to the task to provide the support.

An S6 is responsible for all Army Battle Command Systems and CSSAMO is responsible for Combat Service Support Automated Systems.

CW2 Aaron Tyler currently serves as the officer-in-charge for a CSSAMO. He deployed with 3rd BCT, 1st CD to Iraq in support of Operation Iraqi Freedom 06-08. His previous assignment was with the G6, U.S. Intelligence Command at Fort Belvoir, Va. Tyler holds a Bachelor of Science degree from the University of Maryland.

Acronym QuickScan

13th SC (E) – 13th Sustainment Command (Expeditionary)
251A – Information Systems Technician
25B – Information Systems-Specialists
316th ESC – 316th Expeditionary Sustainment Command
3BCT, 1CD – 3rd Brigade Combat Team, 1st Cavalry Division
AOR – Area of Responsibility
ABCS – Army Battle Command Systems
BCT – Brigade Combat Team
BDE – Brigade
BSB – Brigade Support Battalion
CAISI – Combat-Service-Support Automated Information Systems Interface
CD – Cavalry Division
COMMEX – Communications Exercise
COTS – Commercial off-the-shelf
CSS – Combat Service Support
CSSAS – Combat Service Support Automated Systems
CSS VSAT – Combat Service Support Very Small Aperture Terminal
CSSAMO – Combat Service Support Automation Management Office
DISCOM – Division Support Command
DOD – Department of Defense
ESC – Expeditionary Sustainment Command
FOB – Forward Operating Base
FRA – Forward Repair Activity
FTP – File Transfer Protocol
IAVA – Information Assurance Vulnerability Alert
ICP – Interim Change Package
IT – Information Technology
LAN – Local Area Network
LSA Anaconda – Logistics Support Area Anaconda
MOS – military occupational specialty
MC4 – Medical Communications for Combat Casualty Care
NIPR – Non-Secure Internet Protocol Router
OIC – Officer-In-Charge
PBUSE – Property Book Unit Supply Enhanced
RFID/ITV – Radio Frequency Identification Device/ In-Transit Visibility
RIP/TOA – Relief in place/Transfer of Authority
SAAS-MOD – Standard Army Ammunition System-Modernization
SAMS-E – Standard Army Maintenance System- Enhanced
SARSS-1 – Standard Army Retail Supply System-1
SATCOM – satellite communication terminal
SCP – Software Change Package
SSA – Supply Support Activity
STAMIS – Standard Army Management Information System
TC-AIMS-II – Transportation Coordinators'-Automated Information for Movements System- II
Tobyhanna-FRA – Tobyhanna –Forward Repair Activity
TTPs – Tactics, Techniques and Procedures
WSUS – Windows Server Update Services
VSAT – Very Small Aperture Terminal

Innovation, flexibility remain keys to communications success in Iraq

By MAJ Mike Brown

Along with the Army's new modular concept came a significant change to the way communicators support brigade combat teams. However, some things never change. The following article highlights a few examples of the importance of innovation and flexibility, as well as, accomplishments of some of our best and brightest paratroopers from 4th Brigade Combat Team (Airborne), 25th Infantry Division, Spartan Brigade, while executing combat operations in support of Operation Iraqi Freedom 06-08.

With the many advances in technology and resources made available to modular BCTs, our real success continues to hinge on our greatest asset, the individual signal Soldier. Also, I will discuss some of the advantages and challenges of the new modular force structure as it relates to command, control, communications and computers operations in a modular BCT. In order to better understand the context of these observations, 4th Brigade Combat Team (Airborne), 25th Infantry Division is one of the newly formed BCTs in the Army and was established beginning in the summer of 2005 and deployed to OIF in the fall of 2006.

Riverine operations

One of the problems 1st Battalion (Airborne), 501st Infantry faced in north Babil, Iraq, was how to interdict insurgents and extremist groups along the Euphrates River valley. A portion of their solution included the integration of patrol boats along the Euphrates River. When asked to overlay an architecture to support command and control and situational awareness, the paratroopers of the battalion S6 section developed a dismounted solution for powering and sustaining an AN/VRC-92 along with vehicular blue force tracking all mounted to boats for key leaders as they conducted patrols along the Euphrates River.

The design included a fiber glass tuff bin that could be mounted in the boat to protect components from the environment. This solution provided for a more robust communications architecture which included a beyond line-of-sight capability, as well as, enhanced situational awareness for all coalition forces operating in the area.

Once developed, this design was applied in a "plug and play" manner as required depending on when the watercraft were made available to the battalion for operations.

Internet Relay Chat

During the BCT's OIF mission rehearsal exercise at the Joint Readiness Training Center, Fort Polk, La., it quickly became apparent that the existing system we had for the brigade command net did not meet the brigade commander's intent or vision for command and control.

At that time, Macromedia Breeze's chat program was being used to facilitate real time data communications between the brigade and battalion command posts. What we learned was that we needed a reliable and scalable Internet Relay Chat capability that could time stamp and log all entries.

Figure 1. Blue Force Tracking

Figure 2. Blue Force Tracking

Figure 3. G-Shark

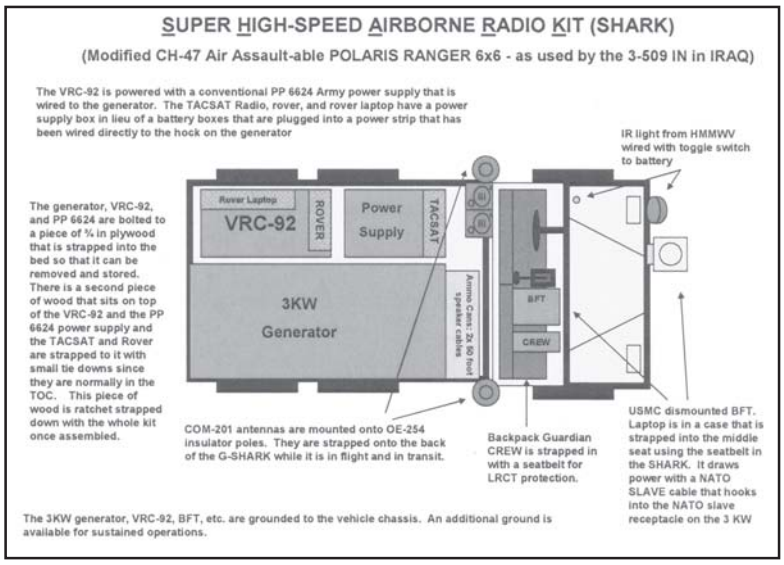


Figure 4. G-Shark digram

The brigade's automation officer was tasked to develop quickly an IRC capability that would meet this requirement. With the brigade's existing server infrastructure and many hours of combing through configuration files, Spartan mIRC was born and implemented at JRTC.

Spartan mIRC currently resides on two Dell servers that are linked together in order to provide redundancy and support on average 90-100 users in the command channel alone. This server currently provides approximately six different channels that primarily replicate our brigade frequency modulation net structure.

Due to the sheer size of our operational environment, IRC is proven as one of the most critical C2 assets that we employ and has effectively replaced the brigade's FM nets. Aside from being very bandwidth friendly, mIRC generates log files that can be used for historical purposes to include conducting investigations and building operations summaries and storyboards.

This is a tremendous capability that should be strongly considered for inclusion in the Army's architecture for BCT tactical enterprise services.

Air assault operations

In a predominantly rural environment with many rural roads and canals such as our operational environment in Iraq, air assault operations provide a great mechanism for striking the enemy where he operates. 3rd Battalion (Airborne), 509th Infantry was given the mission of striking targets using air assault as the predominant means of infiltration and ex-filtration during Operation Marne Avalanche.

Due to the geographical dispersion of many of these targets, the battalion S6 section adopted a concept developed by other special operations and airborne units.

They also adopted the name used by the 82nd Airborne Division, the Super High-speed Airborne Radio Kit with a little Geronimo flavor, G-SHARK.

By modifying a Polaris Ranger, the battalion successfully installed a 3KW generator, AN/PRC-150 (HF radio), AN/PRC-117F (single channel tactical satellite), a blue force tracker, AN/VRC-92, a manpack Guardian Counter Radio Controlled-IED Electronic Warfare system, and various whip and OE-254 antennas. This platform can be air assaulted via a CH-47 and provides a great venue for effective C2 for a battalion tactical assault command post or company command post.

This capability was effectively used on numerous occasions in support of Operation Marne Avalanche and has been adopted by two other brigades in Multinational Division – Center.

BCT tactical assault command post

Due to the limited time available in preparing for OIF, the brigade was not able to fully exercise its tactical assault command post.

When directed to conduct offensive operations in Ad Diwaniyah, Iraq, in support of Operation Black Eagle, we were faced with the requirement for a robust tactical assault command post with various enablers requiring secure Internet Protocol router network, non-secure Internet Protocol router network, voice over IP services, blue force tracking, and combat net radio support to include single channel tactical satellite communications. Our solution was to leverage the capabilities of a command post platform and a satellite terminal trailer.

This configuration supported the requirements of the TAC, as well as, provided additional power generation capability housed in the CPP. The CPP allowed us to consolidate our combat net radio systems and provided hard and soft common access units via tactical operations center network. The configuration worked extremely well and supported 23 secure Internet Protocol router network users, five non-secure Internet Protocol router network users, six common access

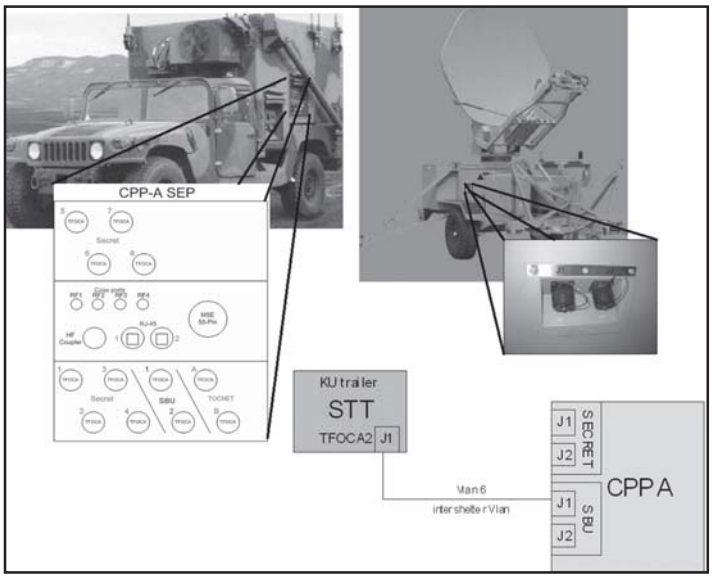


Figure 5. G-Shark digram

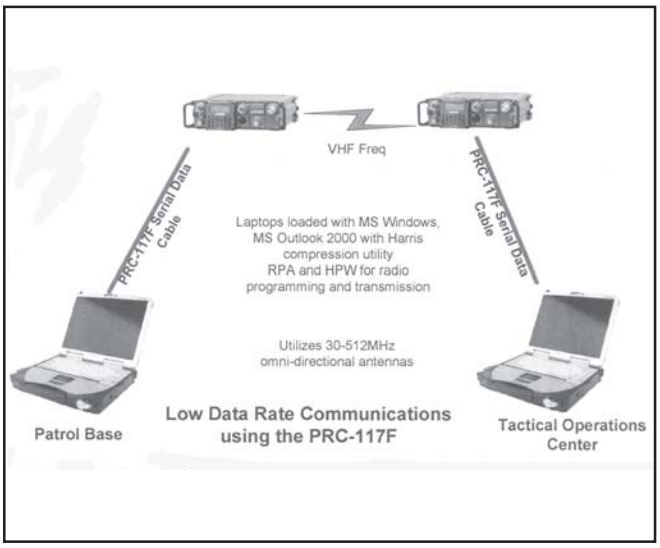


Figure 6. G-Shark diagram. Low Data Rate Communications using the PRC 117F

rusers, and 11 VoIP phones. Our setup time was reduced, as were the requirement for various dismounted very high frequency-FM and single-channel tactical satellite systems.

With tactical operations center network, we were able to provide combat net radio communications to the desktop via the network thus allowing our TAC personnel to monitor CNR communications from any given workstation via the network. This also helped to reduce the noise level in the TAC by reducing the need for various external speakers.

All of this was realized without any degradation to the brigade's main command post and various attachments and tenants at forward operating base Kalsu, supported by two Joint Network Nodes. Our BCT TAC looked fairly similar to a slightly scaled down version of a battalion command post from a communications perspective. A CPP in lieu of a CPN for a battalion command post would serve as a tremendous enabler with the combat radio capability it provides.

Low data rate communications at a patrol base

Through some assistance provided by the Asymmetric Warfare Group and some great ingenuity from communicators in the 1st Battalion (Airborne), 501st Infantry, a low data rate communications solution was emplaced at a coalition patrol base in north Babil, Iraq.

The solution provided a much needed data capability at Jurf As Sukhr patrol base. The solution provided Apache Company the ability to send data obtained from patrols and engagements to its parent battalion headquarters using a Harris AN/PRC-117F radio, radio programming application, high-performance waveform, and a serial data cable over very high frequency high line-of-sight. A laptop computer with Microsoft Office (Outlook) provided a user friendly/familiar environment for users. This configuration provided an average of about 3 Kb/s transfer rate for data.

The capability facilitated the exchange of pictures from patrol debriefs, various reports, and administrative actions required for day to day operations. We are currently looking to model and expand the capability to another patrol base in our operational environment.

Joint interoperability

In December 2006, the 3rd Battalion (Airborne), 509th Infantry was tasked to relocate to Fallujah in support of Regimental Combat Team 5, Multinational Forces-West for a period of three to six months. The brigade headquarters and 3rd Battalion (Airborne), 509th Infantry in conjunction with RCT 5 developed a concept for communications support that would allow the battalion to use its organic equipment and maintain ties to its parent brigade headquarters while at the same time capitalizing on the existing capabilities available at Camp Fallujah.

The solution involved using the battalion's CPN and STT in the brigade's time division multiple access mesh with access via satellite to the brigade's enterprise services (email, active directory, etc.) while using a static route into the fiber optic network at Camp Fallujah. This provided links to both RCT 5 and 4th BCT (ABN), 25th ID. This clearly illustrates the flexibility of a battalion possessing a fairly robust beyond line-of-sight transmission system and data stack with Cisco Call Manager Express providing SIPRNET, NIPRNET, and VoIP services such as that inherent in the battalion CPN and STT.

By integrating the battalion into the Marine infrastructure at Camp Fallujah, 3-509 IN (ABN) was able to place calls and send real time data to their higher and adjacent Marine headquarters while still maintaining a direct line of communications to its parent Army headquarters over 60Km away, thus

Figure 7. Switchbox

taking advantage of the benefits of access to both networks. The static route employed allowed for connectivity to both networks without causing issues with routing and provided for additional redundancy in the event that there were issues on the fiber optic network at Camp Fallujah or with the brigade's network.

Since the CPN and STT were organic to the battalion, the battalion was trained and prepared to assume this mission with nominal assistance from the brigade and RCT. The primary consideration was good coordination between network technicians and engineers to ensure that there were no routing issues and that both organizations were comfortable with the architecture and routing configurations with the two autonomous networks.

Commercialization

With the extensive use of commercial assets in theater, both network and transmission systems, the BCT provided vital NIPRNET and SIPRNET connectivity to various command posts and transition teams throughout our operational environment.

Commercial fiber optic cable was a critical component in extending tactical network connectivity to company command posts and various tenants that absolutely must have NIPRNET and SIPRNET connectivity to effectively conduct combat operations. Additionally, the use of commercial assets provided the commander increased flexibility by freeing up tactical assets to support other mission areas such as patrol bases, joint security stations, and military transition teams.

With some resourcefulness, paratroopers from the signal company and battalion S6 shops across the BCT were able to acquire the necessary skills and equipment to extend network services via fiber optic cable. One such example is a pelican case equipped with media converters and switches that provided network connectivity to five company command posts at FOB Iskan in north Babil province, Iraq.

Additionally, the commercial fiber optic network at FOB Kalsu, initially installed by 4th Infantry Division, has grown two fold in our year on the FOB and is now a network that the BCT can successfully upgrade and expand as needed to meet new requirements, such as the integration of a new BCT at the FOB in support of the troop surge.

We quickly learned that we must devise new ways of providing network connectivity where tactical assets are unavailable, such as company command posts, and that our signal paratroopers in the BCT can and must install and maintain these commercial devices and networks.

Enterprise services

4th BCT (ABN), 25th ID employed the following SIPRNET enterprise services at the brigade level throughout OIF 06-08: Exchange mail, SharePoint portal service, IRC, Active Directory, Domain Name Server, Windows System Update Service, Symantec Antivirus, SQL 2005, and Adobe Connect. These services were absolutely essential to enabling battle command across the BCT.

With a Dell server baseline provided by the Battle Command Common Services fielding, the BCT was able to augment with additional hardware and software to complete the enterprise suite. The suite provided robust and reliable services for information dissemination management throughout the BCT. This was particularly important considering our geographic location at FOB Kalsu.

It significantly reduced our requirement for data transfer outside of the BCT's internal network and supports the concept of modularity. IRC and a collaboration suite, such as Adobe Connect, should be considered for inclusion into the Army fielded tactical enterprise services suite. The real challenge associated with this configuration is staffing and training. The requirement for domain and systems administrators coupled with information assurance requirements is demanding based on the existing allocation of personnel. It will be further addressed in a review of the modular signal force structure below.

Our BCT also operates enterprise services on NIPRNET that support Exchange mail, Active Directory, Domain Name Server, Windows Systems Update Service, Symantec Antivirus, file server, and a Certificate Revocation List Stratum II server in order to provide a Common Access Card logon capability. Admittedly, it is difficult to manage given the current staffing of the BCT S6 shop.

Even though it is a challenge to operate and maintain these servers and develop the expertise to sustain them, enterprise services at the BCT is a non-negotiable requirement and is something that must remain in the BCT's arsenal.

Following our deployment in support of OIF, we will pursue integrating this architecture into a garrison environment and truly "train as we fight" while reducing the transition for users as we deploy for training and future operations.

Modular signal force structure

Many discussions have takenplace concerning the effectiveness of the existing modular signal force structure in the divisions and BCTs. As a BCT S6, I am a strong advocate for the current force structure. That is to say that with minor adjustments to the existing structure, what we have today provides the required flexibility and responsiveness required at the brigade level.

I will begin by discussing what I believe is the most important aspect of this new structure: relationships. Then I will discuss some observations as a BCT S6 from our experiences during the first twelve months of our rotation in support of OIF 06-08.

The challenges with the existing modular signal force structure for a BCT largely relate to the new dynamic created between the BCT S6 and the signal company. The coordination and collaboration required to make this new dynamic effective is a good working relationship between the BCT S6, signal company commander, and special troops battalion commander and staff.

Ultimately, the signal company is a brigade asset and although we sometimes have to work through questions relating to organization, roles, and responsibilities we should always defer to the brigade commander's intent and vision for battle command. Through the orders process, the BCT S6 has the authority to direct the movement of assets, establish priorities of work, and provide technical guidance as required.

With the tools inherent in the signal company and with a close working relationship with the network operations/computer network defense team, depicted in the organizational diagram (next page), the BCT S6 has the ability to monitor and manage the BCT wide area network.

I am aware of a few different ways that BCTs in Iraq organize themselves to make the best use of signal assets and to coordinate network management. My opinion, with regards to our organization, is that the network operations/computer network defense team must be integrated into the BCT S6 section so the S6 has ready access to the expertise embedded in that cell, regardless if they remain by Modified Task Organization and Equipment in the signal company or in the brigade S6 section. I would also add that the spectrum management and communication security functions must be under the direct oversight of the BCT S6.

As we continue to learn how to maintain and remain compliant with regard to information assurance, we have asked how we can best make use of the automated data processing security personnel in the CND cell. With the effort required to ensure IA compliance, the ADP security personnel may be employed to assist the S6 automations section with the patching and scanning of servers and computers and remediation. Lastly, we are currently able to sustain our enterprise services largely because the brigade S6 section can focus on enterprise systems and information dissemination management while the signal company runs the helpdesk that supports our brigade staff and FOB tenants.

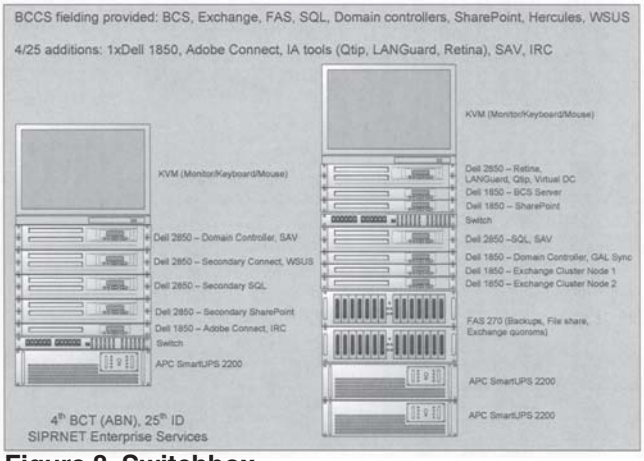


Figure 8. Switchbox

On the next page is an organizational diagram depicting what I think is a reasonable solution for enterprise systems, information dissemination, and IA management with the existing personnel and what I believe is a shortfall of three 25Bs within the brigade S6 structure.

The relationships discussed above are largely informal but are tailored to meet the needs of the BCT. One might make the argument that these relationships should be formalized. On the other hand, BCTs will very likely continue to organize themselves as their mission dictates. Ultimately, organization does matter.

The key to success at the BCT level is to retain the flexibility inherent in today's signal force structure.

Conclusion

As a newly formed BCT, our BCT was given a short window to prepare for deployment in support of OIF. This is not uncommon across the Army.

One of the things that make us somewhat unique is that we have no association to a division headquarters; therefore we had not trained with a division headquarters outside of our mission rehearsal exercise. Once we arrived in Iraq, we were task organized to the 4th Infantry Division and shortly transitioned to 1st Cavalry Division as part of Multinational Division-Baghdad.

This provided us with a completely new outlook we had not previously experienced. Through some great help from the division G6 staff we were able to sort out reporting requirements and what it meant for us to be part of a larger wide area network. After five months with MND-B, we were tasked organized to 3rd Infantry Division, MND–Center. This required us to migrate from the MND-B to MND-C network while conducting operations. Since the BCT's inception, we conducted new equipment fielding and training, a mission rehearsal

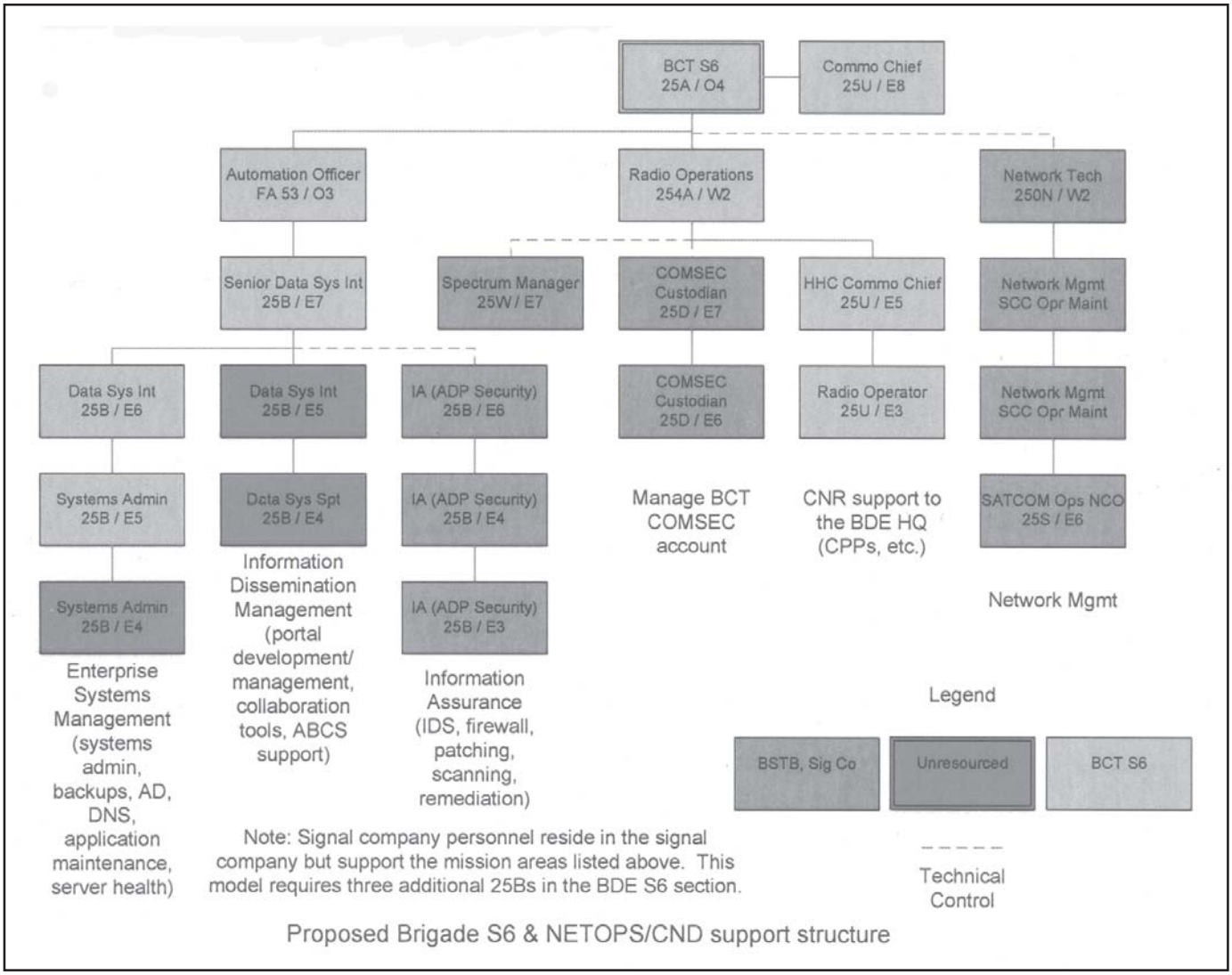


Figure 10.

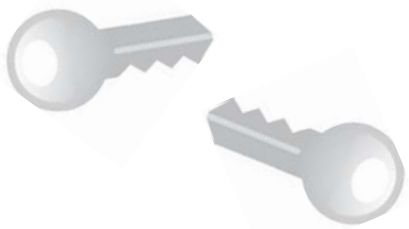
exercise, established a network with MND-B and then transitioned to MND-C.

Our BCT has employed a wide area network at Fort Greely, Alaska; Fort Polk, La.; and under three different division headquarters in Iraq, to include a battalion CPN under Multinational Forces–West with Regimental Combat Team 5 and 6 in Fallujah.

I can say without doubt, today's modular signal force structure works. My brigade commander appreciates the flexibility he has by having these assets organic to his BCT. Additionally, this network is his to command and control through his staff proponent and signal company. The above example clearly validates the concept of modularity, "plug and play".

As previously stated, with the Army's new modular concept came a significant change to the way communicators support BCTs. However, some things never change. Our signal Soldiers' innovation and "can do" attitude continues to be the cornerstone for the Signal Regiment's success. Although the current modular signal force structure is not perfect, in my opinion, it is far better than what we had previously. Having the resources to execute is critical and today's force structure provides the flexibility at the BCT level that enables us to succeed.

MAJ Mike Brown is currently served as the S6 for 4th BCT (ABN), 25th ID at FOB Kalsu, Iraq.



Acronym QuickScan

ADP – automated data processing
AWG – Asymmetric Warfare Group
BCT – brigade combat teams
BCCS – Battle Command Common Services
BFT – Blue Force Tracking
C2 – command and control
C4 – command, control, communications and computers
CAC – common access card
CAU – common access units
CND – computer network defense
CNR – combat net radio
COMSEC – communications security
CPP – command post platform
CREW – Counter Radio Controlled-IED Electronic Warfare
FM – frequency modulation
FOB – forward operating base
HPW – high performance waveform
IA – information assurance
IRC – Internet Relay Chat
JNN – Joint Network Node
JRTC – Joint Readiness Training Center
JSS – joint security stations
LOS – line-of-sight
mIRC – m Internet Relay Chat
MITT – military transition teams
MND-B – Multi-national Division-Baghdad
MND-C – Multi-national Division-Center
MTO&E – modified task organization and equipment
NETOPS – network operations
NIPRNET – Non-secure Internet Protocol Network
OE – operational environment
OIF – Operation Iraqi Freedom
RCT – Regimental Combat Team
RPA – radio programming application
SHARK – Super High-speed Airborne Radio Kit
SIPRNET – Secure Internet Protocol Network
STT – Satellite Terminal Trailer
TAC – Tactical Assault Command
TDMA – time division multiple access
TOCNET – Tactical Operations Center Network
VHF – very high frequency
VoIP – Voice over Internet Protocol

Supporting OIF

Mobile regional hub node

delivers network-enabling capabilities to lowest tactical echelon

By MAJ Jacqueline D. Brown, MAJ Philippe R. Persaud, and CPT Jackie A. Williams

As the Army continues to conduct asymmetric combat operations in a noncontiguous area of operations, the demand for modular communications has increased at a rapid pace. In an environment where an insurgent can claim victory from one success out of a hundred failures, coalition commanders require a new generation of tools that not only bring them real-time intelligence and shared situational awareness, but provide them with capabilities to achieve strategic, operational, and tactical objectives.

Therefore, commanders are leveraging a wide selection of automated collaborative tools that provide real-time synchronization of combat operations.

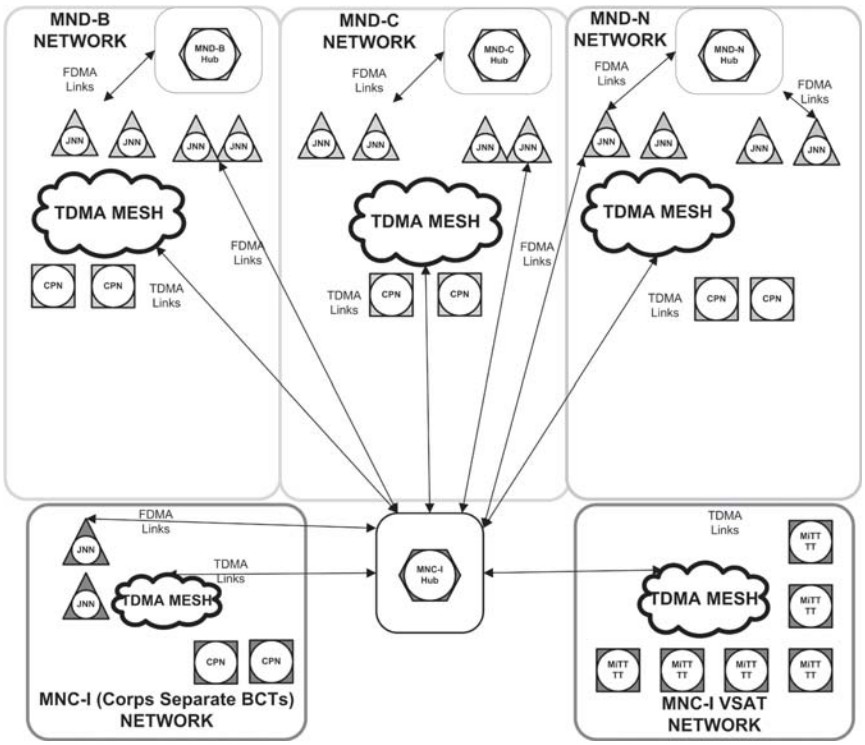
An example of these tools is the latest generation of automated biometrics technologies allowing for the real-time querying of individuals against a data base of suspected insurgents based solely on a fingerprint or retina scan.

Commanders in Iraq are also enjoying shared situational awareness throughout the Iraqi Theater of Operations in the form of command post of the future, a collaborative tool that presents a common operating picture across the ITO.

The success of these tools and others are resulting in an extensive proliferation of biometrics collection and dissemination systems down to the platoon and company levels, giving commanders at all levels the ability to exploit real-time intelligence with unprecedented speed, detail, and effectiveness. The signal community in Iraq provides these tools to the lowest tactical echelon via the Iraq Mobile Regional Hub Node, initially employed by the 3rd Infantry Division during Operation Iraqi Freedom III.

The lessons learned in the employment of the MRHN provide the signal community a frame of reference for the application of the fixed regional hub nodes, the first scheduled for commission, March 2008.

The Signal Regimental transformation to support the modular Army brought many advances in technology to the signal community. The interim modularity solution, Joint Network Transport Capability-Spiral program enabled divisions to provide Defense Information Systems Network services down to the battalion level without having to leverage external communication agencies' assets. This capability is provided by the divisions' TRHNs, providing a point of presence for the divisions' network traffic entering the Global Information Grid. These services are then extended to the



Mesh Diagram

subordinate units via the brigade combat teams JNNs and the battalion CPNs, enabling the BCTs to establish an independent brigade communications network based on a TDMA mesh. This allows any node connected to the BCT mesh network to communicate directly with any other node without exiting the BCT network. It also allows the BCT to receive DISN services from the TRHN via the TDMA mesh.

The TDMA mesh effectively shares bandwidth among the battalions' CPNs within a BCT, providing bandwidth on demand. The JNNs provide the brigade headquarters and larger elements the ability to talk within the TDMA mesh and to use dedicated FDMA links provided by the TRHN to transfer larger files to division headquarters.

Doctrinally, the tactical regional hub nodes are placed in sanctuary locations outside the area of operations. In order for elements in the division to transfer information to units outside the division network, their data traffic must traverse one satellite link to the TRHN and another satellite link to arrive back in theater.

The double satellite hop induced by not having a POP in the area of operations adds a full second of latency to any traffic leaving the division, hampering effective communication between the divisions and other units in theater. Tools such as CPOF and Biometric Automated Toolset are both latency sensitive applications which require special engineering considerations outside of the JNTC architecture engineering solutions to work properly.

In addition to the increased latency, a double satellite hop also has other impacts on the network. The more satellite links that data has to traverse, the greater the chance a packet is dropped due to congestion within the network. If a packet is dropped, TCP will automatically halve the current number of packets it is sending, decreasing an already slow file transfer rate to a crawl.

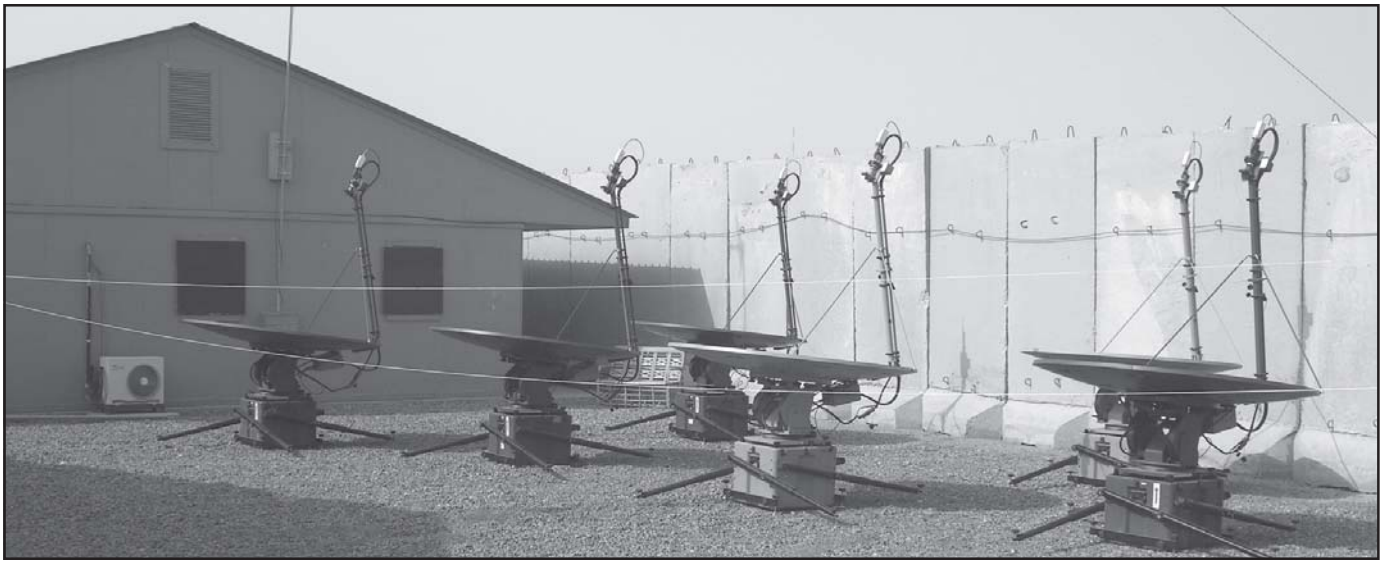
More hops also increase the probability that the traffic may take alternate paths in the network. The travel time difference between packets as a result of congestion or variable routes is known as jitter. Jitter causes Voice over Internet Protocol phones to experience poor performance and dropped calls.

Applications such as CPOF and BATS have been severely hampered by the effect of slow transfers induced by traffic being forced to take multiple satellite hops.

Recognizing the need to reduce latency, 3rd ID established the first JNTC Time Division Multiple Access POP in the ITO with their THRN prototype in 2005. This allowed traffic within the 3rd ID division network to be one satellite hop away from Multi-national Corps-Iraq and Multi-national Forces-Iraq headquarters. While greatly enhancing the performance of the 3rd ID tactical network, the POP did not provide any increase in performance of the other JNTC brigades and divisions. When 3rd ID rotated home, the hub truck was left behind as an enduring MRHN. The 22nd Signal Brigade expanded the POP to include the 4th Infantry Division (replaced by 1st Cavalry Division).

In order to provide services they installed a separate data stack to handle the interconnect between the division tactical network and MNF-I strategic network. 22nd also established a separate data stack to handle BCTs that arrived in theater with JNTC equipment not assigned under a division. The 3rd Signal Brigade expanded the mesh to include the 25th Infantry Division network. By February of 2007 the enduring MRHN contained three data stacks and became the primary POP for strategic to tactical traffic exchange in the ITO.

In January of 2007, MNF-I published the Baghdad Security Plan which resulted in a surge of combat forces into the ITO. Additionally, a requirement was identified to support the military transition teams. MNC-I purchased 38 MTT very small aperture terminals packages that were capable of providing the same services as a JNTC CPN. Knowing that both the



Pictured are six of the 38 MiTT VSATS purchased for use in Iraq.

new MTTs communication requirements and the surge of combat forces would equate to a surge of modular communications requirements, the 3rd Signal Brigade began planning for the incorporation of these assets in the ITO MRHN.

The addition of 38 VSAT to meet MTT missions and an additional division as part of the surge, the 3rd Signal Brigade identified an opportunity to efficiently and effectively support both requirements by leveraging the ITO TDMA mesh provided by the MRHN. However, this addition of the 38 MTT VSAT terminals and a division JNN required the purchase of more satellite transponder space. Central Command purchased the additional transponder space for the ITO, however it was located on different satellite than the ones currently accessed by the ITO MRHN. 3rd Signal Brigade required an additional TRHN satellite truck to access the new transponder space. CENTCOM in coordination with 3rd ID shipped an extra pair of TRHN satellite to theater in April of 2007.

In April of 2007, the 86th Signal Battalion, in conjunction with 3rd Signal Brigade staff, received and configured the satellite trucks for operation. This was a complex undertaking, requiring a team of experts to execute. The 3rd Signal Brigade, and the JNTC General Dynamic Field Service Representative, Brian Heaton, configured and installed a 3rd ID data stack, a MNC-I call manager and voice gateway router. The addition of the new data stack provided a router stack for each division (1st Cavalry Division, 3rd ID, 25th ID) along with a data stack to handle any separate units not under the divisions. All the routers were tied into the strategic network. This allows any JNTC element to be terminated at the ITO MRHN accessing any of the tactical networks.

Currently the ITO MRHN provides the primary interconnects between the tactical JNTC network and the Iraqi-Theater Information Grid reducing latency on intra-theater traffic as well as providing fail-over capability to the divisions' TDMA meshes. The 3rd ID passes more traffic through the ITO POP than they do through the 3rd ID TRHN. Future engineering plans include the ability for each division and separate unit data stack to pass traffic between each other without going through the strategic network and the ability to pass interchange voice traffic within the I-TIG. As a result of the success of the ITO MRHN, MNC-I plans on exploiting the MRHN TDMA mesh by supporting the expanding JSS and combat outposts with VSAT terminals.

The expansion of the MRHN taught many valuable lessons. First, tactical units require an I-TIG POP inside the theater of operation to maximize the performance of critical applications. The theater is constantly reminded that latency severely degrades the performance of critical command and control application in the ITO so as to be unusable by tactical commanders. Next, an FRHN must provide the primary interchange between tactical autonomous systems and the GIG. Accomplishment of this mission dictates a data stack for each division installed at the FRHN. Last, the FRHN must possess the capability to rapidly change and expand in order to meet the emerging combat operations in the theater of operation. The MRHN continues to evolve as combat commanders requirements change.

As the Signal Regiment begins to commission their FRHNs, the lessons learned from the Iraq MRHN should be incorporated in both the installation and operation of the FRHNs to support future modular units deploying into combat operations.

Due to the ongoing support to combat operations the Signal Regiment has an incredible opportunity to execute its wartime mission in support of OIF/Operation Enduring Freedom. While warfighter communication requirements grow at a

phenomenal rate, the Signal Regiment continues to rise to meet the challenge by transforming technologically, organizationally and doctrinally. As a result, the Iraq signal community refined the JNTC TTPs enabling a more robust architecture while leveraging the I-TIG strategic infrastructure providing unprecedented levels of support to the lowest tactical echelons by connecting their VSATs into the MRHN. The theater signal community successfully engineered a TDMA POP via the MRHN which reduced latency and provided a much needed fail-over capability for the divisions' TRHNs. As a result of these efforts, commanders are armed with unprecedented capabilities allowing them to exploit the full lethality of these tools in the noncontiguous area of operations.

Doctrinal, institutional, and technological changes are inevitable and bring with them skepticism and uncertainty. It will be the ingenuity and resourcefulness of our Signal Regiment that quells this natural resistance toward change and ushers forward a new generation of capability using both existing and emerging technologies to support Warfighter communication requirements throughout the full spectrum of operations.

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MAJ Persaud is an FA-24 (information systems engineer) assigned to the 3rd Signal Brigade as the officer-in-charge of the S3 engineering section. He previously served as S3 engineer for the 11th Signal Brigade. He holds a degree in electrical and computer engineering from University of Wisconsin at Madison and is currently working towards a masters in telecommunications systems from the University of Maryland

CPT Williams is the 3rd Signal Brigade's S3 circuits and transmission officer. He previously served as the 160th Signal Brigade plans and projects officer. He holds a bachelor of applied science in computer information systems from Dallas Baptist University and is currently working towards a masters in telecommunications systems from the University of Maryland.

Acronym QuickScan

ACRONYMS:
AO – area of operation
AOR – Area of Responsibility
BAT – Biometric Automated Toolset
BCT – Brigade Combat Team
CENTCOM – Central Command
COP – Common Operating Picture
CPN – Command Post Node
CPOF – Command Post of the Future
DISN – Defense Information Systems Network
FDMA – Frequency Division Multiple Access
FRHN – Fixed Regional Hub Node
GIG – Global Information Grid
ID – Infantry Division
I-TIG – Iraq-Theater Information Grid
ITO – Iraq Theater of Operation
JNN – Joint Network Node
JNTC-S – Joint Network Transport Capability-Spiral
JSS – Joint Security Station
MNC-I – Multi-national Corps-Iraq
MNF-I – Multi-national Forces-Iraq
MRHN – Mobile Regional Hub Node
MTT – Military Transition Team
OEF – Operation Enduring Freedom
OIF – Operation Iraqi Freedom
POP – Point of Presence
TCP – Transport Control Protocol
TDMA – Time Division Multiple Access
TRHN – Tactical Regional Hub Node
TTP – techniques, tactics, and procedures
VOIP – Voice over Internet Protocol
VSAT – Very Small Aperture Terminals

Canadian Army transformation

By MAJ Neil McKenna

Transformation:
1. a. The act or an instance of transforming.
b. The state of being transformed.
2. A marked change, as in appearance or character, usually for the better.
Transform:
1. To change markedly the appearance or form of [something]
2. To change the nature, function, or condition of; convert
(Source: http://www.thefreedictionary.com)

When approached to write this article, I gladly accepted. The concurrent invitation to dinner by the fine officer who asked me to write this was surely coincidental and was in no way intended to influence my decision. I can say, however, that both experiences (dinner and the article) were enjoyed.

I had intended to write an article using the Doctrine, Organization, Training, Material, Leadership and Education, Personnel and Facilities criteria to compare and contrast the transformation activities of both the United States and Canadian armies and the subsequent impact this had on the signal components of both armies. I thought it quite a brilliant topic and eagerly dove into the required research to gather all necessary information. I got more than I bargained for, but in the process, learned a great deal (I will return to this later).

I read through countless back issues of *Army Communicator* starting at the most recent edition and working backwards to try to find a somewhat precise point in time when the U.S. Army Signals transformation (or redesign) began. As well, I perused a number of the newer U.S. Army signals doctrine publications (Field Manuals and/or Field Manual Interims) to support my pending argument that doctrine need not only be current but, at the same time must also be able to embrace further transformation without necessarily needing a complete revision. Lastly, I reviewed countless PowerPoint slides and surfed Army Knowledge Online like a demon, searching for relevant material to use in support of my article.

On the Canadian side, I again reviewed doctrine manuals, surfed our Army On Line (equivalent to U.S. AKO), reviewed another ton of PowerPoint slides, searched through a number of other Canadian army journals and training bulletin/manuals, and back editions of the Canadian Forces Communications and Electronics Branch newsletters. Again, my intent here was to select a start point where I could say with some degree of certainty, "There!!!…this is the point in time where our Canadian army transformation, and subsequently, Canadian army signals transformation began."

I learned that it is indeed possible to do too much research. Second, and more important, was my epiphany: signals never stops transforming; ever! Follow me now on a small trek back in time as I use my own career experiences to support this statement.

I joined the Canadian army in 1982 as a private. My Military Occupation Code was 211 Radio Operator. "Signalman McKenna" as a Rad Op, had to learn more than simply how to operate all tactical radios in the Canadian army inventory (high frequency, very high frequency and ultra high frequency).

I also had to learn such important items as teletype operations and Morse Code. I had to become an expert on the knowledge of crypto; how to operate it and, of course, the crypto handling procedures. I learned the basics of electronic warfare, and of course the ever fascinating world of antenna theory and radio wave propagation.

This, on top of all the other necessary Soldier skills, prepared me to be that all important third man in a three-man CNR detachment.

I thought at the time that I was at the cutting edge of technology…how could it get better than this? I had to be working with the best technology in the world. Didn't I? Our government wouldn't have us preparing (at that time) to defend Europe, alongside our allies, with equipment that wasn't the best in the world? Would they?

These are the kinds of thoughts that went through my young head as I would be banging the tuning fork against the palm of my hand in an attempt to sort out my TTY 76/98 which probably had just gone berserk for the fourth time in my eight-hour shift in the back of the message center vehicle (an AN/GRC 142); a vehicle we would affectionately refer to as a CRTTZ (HF Radio Teletype Secure).

This, after having had to change frequency on my AN/GRC 106 HF radio (tune/load/tune/load…get the needles in the green) and also after having had to reset the KWK-7 with the crypto setting for the next day. I am proud to say now

FIG 1. Circa 1959 the TT-76 reperforator-transmitter provides perforated tape copies of teletypewriter messages received, or transmits messages pre-recorded on perforated tape.

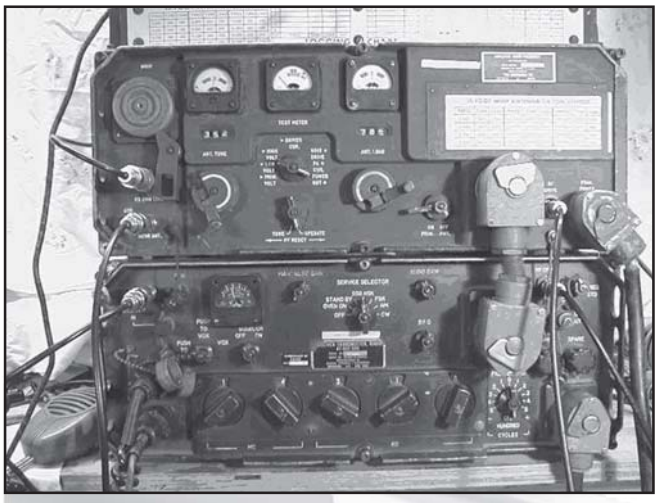


FIG 2. Radio set AN/GRC-106 is a high frequency, single-sideband, radio receiving-transmitting set. This set operates over a frequency range of 2.0 to 29.999 MHz.

that all of the above mentioned equipment can be viewed in our Canadian Forces Museum of Communications and Electronics…where perhaps it should have been in the early 1980s.

I noted above that, as a Pte Rad Op, I was referred to as "Signalman McKenna". This of course, was during the days when the Canadian army Rad Op trade was closed to females. That policy changed in the mid to late 1980s when the trade opened up to females, as did a number of other Canadian army MOCs. Of course, this incursion by females into the male bastion of Combat Arms and the Combat Support Arms MOCs was not without a great deal of teeth-gnashing and misery on the part of many, many non-commissioned officers and officers in the Canadian army. Given this significant change in the personnel structure of our MOC, the term signalman was simply shortened to "Sig" as signalwoman and/or signalperson was simply too many syllables to yell out on parade and, in hindsight, probably didn't translate well into French for those who hailed from Quebec.

There was another MOC that was quite similar to the Rad Op 211 MOC. It was the teletype operator 212 MOC. The Tel Op trade had nothing to do with radios or Morse Code, electronic warfare nor antenna theory/radio wave propagation. They rarely were posted to field units and if they were it was, in all likelihood, as a Crypto Custodian or Crypto Custodian Clerk. This MOC had been open for many years to females. So, from a Rad Op's perspective, a Rad Op had to know everything a Tel Op knew…but it was not so vice versa. Tel Ops were for the most part concerned with providing the institutional Canadian Forces message delivery services. They manned strategic level and base level communications nodes and message centers across Canada and in many cases they were housed in hardened underground bunkers. These bunkers were constructed at the height of the Cold War. Authority to construct them came from Prime Minister John Diefenbaker (the bunkers became known as "Diefenbunkers"). The Tel Op MOC was stood down in the late 1990s. The personnel from this trade were merged with Rad Ops and a new trade of Signals Operators MOC 215 was created.

(Hang in there….I am getting to the point of this article.)

My first assignment was to the 1st Canadian Signal Regiment in 1983 (after completion of my Radio Operator Trade Qualification Course Level 3 at the Canadian Forces School of Communications and Electronics. I should note, CFSCE, although providing all Canadian army signals officers, warrant officers and NCOs the necessary formal Signals training to succeed in their careers, was not an army "owned" school. CFSCE also provided the Air Force and Navy environments communications training for their personnel. CFSCE was truly a joint school. More on this later. Upon arrival at 1 CSR I was employed as a Detachment Member, and subsequently as a Det 2ic, and eventually as a Detachment Commander of a CNR detachment. This command post detachment was designated "Div Arty CP" meaning that my vehicle served as the net control station for the Div Arty VHF/HF Command Nets. The role of the 1 CSR at that time was to support the deployment of the 1st Canadian Division Headquarters.

Let's have a brief look at some of the history of this unit. Created on July 1, 1958, 5 Signal Squadron (Kingston) was re-designated 1 Signal Unit on June 1, 1961. Then, on Aug. 15, 1963, this unit became the 1st Canadian Signal Regiment until 1990 when the 1st Canadian Signal Regiment and 1st Canadian Division Headquarters were amalgamated to form 1st Canadian Division Headquarters and Signal Regiment. This lasted until June 1, 2000, when the 1st Canadian Division Headquarters and Signal Regiment and 79 Communication Regiment were officially stood down on June 1, 2000, to merge and create the Joint Signal Regiment. Today this unit is known as the Canadian Forces Joint Signal Regiment and it provided the supporting strategic and theatre level communications for all Canadian Forces Joint Operations Group missions until 2005 when the CFJOG was stood down and replaced by the Canadian Forces Joint Headquarters the deployable headquarters of the Canadian Expeditionary Force Command which was a new operational level headquarters stood up in 2005 as part of Canadian Forces transformation (Principal Source: *90 Years and Counting, a history of the Canadian Signal Corps)*. So, in the span of approximately 50 years, this unit went from being a completely army oriented unit supporting the traditional war fighting role of a divi-

sional headquarters to being a unit completely focussed on provision of the extension of strategic C2 links to overseas operations for the Canadian Forces and not just the Canadian army.

I mentioned earlier that CFSCE was a "joint" school. This was true for many years. While the main customer of the school was the Canadian army, it was not an "Army School"….until recently. Effective April 1, 2007, in simple terms, CFSCE became an army school that continues to provide education and training to the Navy and Air Force. This is a significant change for CFSCE as it is now felt that it can be more responsive to the needs of the Army which provides the bulk of the Soldiers and officers for overseas deployments and virtually all of the communicators required for these operations. As well as assuming ownership of CFSCE, the Army will also assume ownership of the Canadian Forces Communication Reserve on April 1, 2008. I believe it safe to say that the Commander of the Canadian Army would also like to repatriate the CFJSR back to the Army as well. What is being demonstrated here is a significant desire by the Army to own those all important signals resources (personnel and equipment) so as to be able to continue to force generate these resources in support of ongoing deployed operations. It would also enable better command and control of those resources and a significantly improved ability to influence future growth, training and development of signals as an invaluable war-fighting capability.

(Now to my point.)

Why have I discussed the early years of my career, my trade structure, the old equipment, the opening of my trade to females, the merging of the Rad Op and Tel Op trades, the history of one of the major signals units in the Canadian Forces and a brief mention of our signals school and Communication Reserve component? The answer is simple; to demonstrate to you that which I stated earlier; Signals never stops transforming, ever.

The Canadian Army Signal Corps has been transforming for all of my (thus far) 26 years of service to Queen and country. There is no end in sight. In fact, as can be attested to on both sides of the border, it is only the pace and magnitude of transformation which has changed. In other words, more is changing faster. Why? I offer some reasons in no particular order.

The first reason is a derivation of one of Sun Tzu's thoughts as outlined in *The Art of War*: know your enemy. As the commander of the Canadian army stated in 2003 "As an Army, we are no longer preparing to fight the bear as we did during the Cold War - we are now preparing to fight many snakes in an un-defined, foreign battle space where the enemy mingles freely with innocent civilians and humanitarian aid workers" (Source: CA army Chief of Land Staff's *A Soldier's Guide to Army Transformation*). With these words the Canadian army kicked into a higher gear and launched significant transformation activities to orient ourselves towards fighting snakes. It was recognized a number of years ago that our army needs to be able to conduct direct actions, take out terrorists, conduct cordon and search operations for weapons or explosives, face down or destroy a militia, or remove a suicide bomber. At the same time we must search out the good folks, support them and enable them to achieve stability and to do what they need to do to rebuild their lives, their families, their communities, and their countries. In order to do this the Canadian army changed its approach to fight the enemy with speed, agility, and information dominance. This meant changing the way we train, changing the way we force generate, and changing the way we fight.

The second reason can be seen as either a negative or positive consequence of living in a highly modern, well educated, G8 nation that most of the world only dreams about. The simple fact is that our people are very intelligent and well educated. Given this, there is huge competition between the civilian commercial sector and the military for personnel. If the army wishes to hire the "best and the brightest" we need to be able to offer them competitive salaries, ongoing advancement, and continual education and training opportunities. We need to provide them with the best equip-

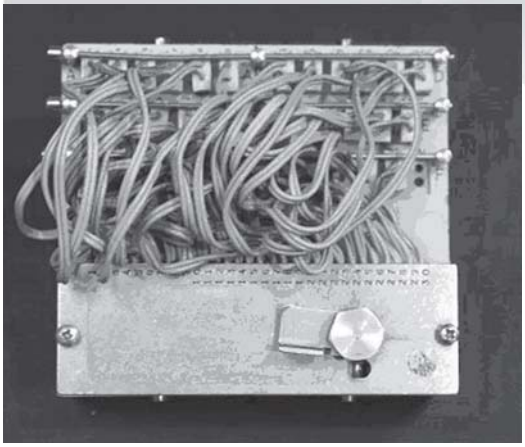


FIG 3. KWK-7 plug block assembly. Once wired up, this mated with the plugboard in the photo Figure 2. (Page

ment in the world and we need to assure them that should they be injured or killed in the service of their nation, that they and/or their Families will be looked after. This is all proper, of course, but the bottom line is that this is a hugely expensive undertaking. Politicians in both the U.S. and Canada are gravely aware that there are many competing demands for the taxpayer's dollar. Therefore, the military had better make the absolute best use of all monies allocated to them. From a signals perspective this means structuring and equipping ourselves to do the most with the least. Can we afford to have two separate and distinct trade structures (211 Rad Op/212 Tel Op), one of which can do all of the other's tasks? No. Not these days.

Yet another reason is technology.

Remember the Diefenbunkers mentioned earlier. They are all sold now to the private sector and the antiquated Strategic Message Switching System is no longer the backbone of the national information technology infrastructure. Secure and non-secure email, the Canadian Forces Defence Information Network, the internet, secure and non-secure video-teleconferencing and all those other marvellous technological advances made since my entering the Canadian army have changed the way we communicate and support day to day, domestic and overseas operations. To put things in perspective my former three-man CNR detachment simply provided secure and non-secure voice and it could only provide that for a range of approximately 25 miles (VHF) (RT-524 high power) without needing a complete other detachment serving as a rebroadcast station. Think about this in the context of a single person can do with a cell phone today.

I personally feel that the primary reason for transformation is the fact that we are a combat support arm and we realize that those who we support need us to change. The network is a weapon system now. If history in the United States Army is similar to that of the Canadian army the ops plan used to be crafted in a signals vacuum. The signals annex was too often "to be issued" and we would be left to draft a plan to support the warfighter after the fact. These days, after years of wishing we could be elevated to the grown-up table so that we could provide input into the ops plan as it is being drafted, we are now recognized as the "silver bullet" in the era of network enabled operations, network centric warfare. Now that we are at the table we, as signaleers, must add value. Part of the Canadian army commander's vision is the army will be a knowledge-based and command-centric institution capable of continuous flexibility and task tailoring, useful for a wide range of modern conflict. Warfighters today are not fighting on the same battlefield as their fathers and grandfathers. Signals intelligence, electronic warfare, and other electromagnetic spectrum operations have increased in importance on a magnitude that couldn't be predicted a decade ago. EMSO is a warfighting capability. The warfighters look to us to give them the edge in this realm. This is why in the U.S. Army an entirely new MOS has been stood up to oversee electromagnetic spectrum operations. This is why much recent effort has gone towards improving Army EW capabilities. In the Canadian army our lone Active Component EW Squadron has essentially doubled in size. It is why a new Reserve Component EW Squadron was stood up several years ago. It is why so much effort has gone towards Canadian army IED defeat efforts.

There is always a lot of "noise" commanders at all levels must address. Budget concerns, retention issues, technology advances, time constraints, Soldier/Family issues, and many other external and internal pressures. As a former commanding officer of mine said, you must "find your signals in the noise." I was never sure exactly what he meant by that. I think it is a phrase that can apply to many situations. For the purposes of this article, I choose to believe it means that in this era of rapid and ongoing transformation we must remain focused on the purpose of signals which clearly is, despite all the "noise": to enable the commander to exercise command and control. We do it differently today, and we will do it differently tomorrow, but we

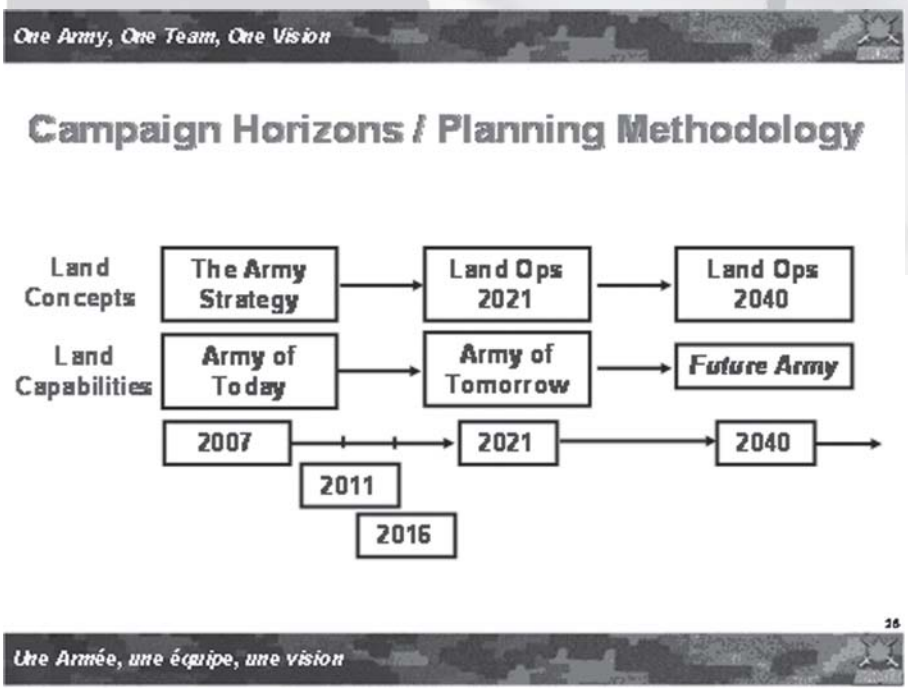


FIG 4. Canadian Army Vision chart

will only do it by continuous transformation; we always have, we always will. For signals, transformation is both a curse…and a blessing.

MAJ McKenna is the Canadian army liaison officer to the U.S. Army Signal Center and Fort Gordon. After enlisting and spending nine years as a noncommissioned officer, McKenna completed Royal Military College in Kingston, Ontario, and accepted his commission as an officer. Since then he served as the operations and training officer for 73 Communication Group in Winnipeg, Manitoba; as the plans officer for 72 Communication Group Halifax, Nova Scotia; as the officer commanding 721 Communication Troop, Glace Bay, Nova Scotia; as the deputy commanding officer for two Canadian Mechanized Brigade Group Headquarters and Signal Squadron, Petawawa, Ontario, and most recently he served on the Canadian army G6 Ops staff as the desk officer for signals and EW support to deployed operations. In 1992/93 McKenna served as the Canadian contingent J6/officer Commanding the National Command and Control Information System for Canada's contribution to United Nations Protection Force in Bosnia/Croatia. In 2001 he was appointed as the Canadian delegation chief for Canadian participation in EX COMBINED ENDEAVOR and in 2002/03 he served as the Canadian J6 for Canada's Joint Task Force Southwest Asia as part of Operation Enduring Freedom.

Acronym QuickScan

AKO – Army Knowledge Online
1CDHSR – 1st Canadian Division Headquarters and Signal Regiment
1CSR – 1st Canadian Signal Regiment
CEFCOM – Canadian Expeditionary Force Command
CFJOG – Canadian Forces Joint Operations Group
CFJHQ – Canadian Forces Joint Headquarters
CFJSR – Canadian Forces Joint Signal Regiment
CFSCE – Canadian Forces School of Electronics
Det Comd – Detachment Command
DOTMLPF – Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities
EMSO – electromagnetic spectrum operations
EW – Electronic Warfare
IED – improvised explosive device
ITI – information technology infrastructure
FM – Field Manuals
FMI – Field Manual Interim
MOC – Military Occupation Code
Rad Op – Radio Operator
Sig Ops – Signals Operators
Tel Op – teletype operator
TQ3 – Trade Qualification Course Level 3
TTY – teletype
UNPROFOR – United Nations Protection Force

Digitization of the French army

By LTC Vincent Bajon, French Liaison Officer

This article aims to provide an overview about the digitization of the French army. This process is directly managed at the army staff level in Paris. The document is divided as follows:

Part 1: a short overview of the French army.

Part 2: a presentation of the digitization process (when, what, how?).

Part 3: comments

The French army

1:1. General organization

Comments:

- Doctrine and Training are not under the same command.
- CoFAT – Commandant de la Formation de P'Armie de Terre – (Branch schools command) is in charge of education: basic training, individual training, advanced military studies.
- CFAT – Commandant de la Force d'Action Terestre and CFLT – Commandant de la Force Logistics de P'Armie de Terre – implement training policies provided by the army staff; CFAT – is the coordinator.
- High Readiness Force Headquarters is a new army corps headquarters under CFAT command; it was certified by the North American Treaty Organization in June 2007.
- France provides some education to Eurocorps and partly supports its training.
- Both corps are part of NATO HRF system.

1:2. Operational formations

The operational force (100,000 Soldiers) breaks down into:

- 2 x Corps HQs
- 4 x Division HQs
- 8 x Brigade Combat Teams
- 1 x Army Aviation Brigade
- 1 x Special Force Brigade
- 4 x Support Brigades
- 2 x Logistic Brigades

2.0 Digitization of the French army

As far as experimentations are concerned, digitization is the most important process, in the French army right now.

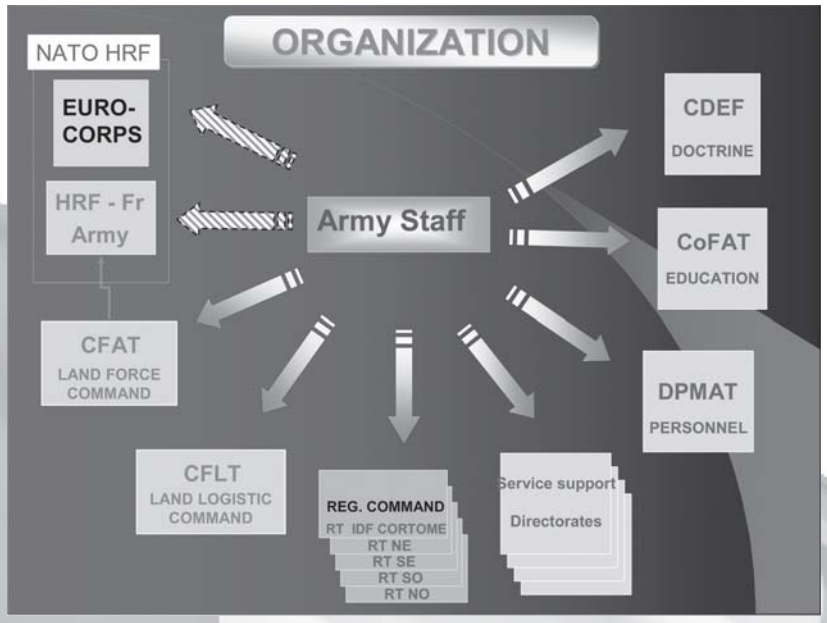
2:1.

- 2001: beginning of the studies
- 2003: beginning of the experimentation at battalion level
- 2005: the digitized experimental units (see below Part 2:2) start to be deployed with their digitized equipments (i.e. Kosovo, Ivory Coast…)
- 2006: the experimentation is now at the brigade level
- 2008:
  - certification of the first

digitized BCT

- First major rendezvous: two BCTs plus possible reinforcements are digitized and ready to be deployed
  - 2011: 80 percent of all the operational formations are digitized
  - 2015: the operational force is fully digitized

Note: the French-German Brigade will get specific digitized equipment (beginning 2008).



2:2. The experimental force

Since France did not have the capability of maintaining a full time experimental force, it was decided to commit specific forces to this additional task:

- The 2nd BCT (Heavy)[1]
- The 6th BCT (Medium)[2]
- Additional dedicated combat, combat support, service support, air defense artillery, and army aviation units

Comment 1: at the beginning, logisticians wanted to stay apart from the process arguing they had their own specific systems. But after two main experiments, it was decided to digitize the combat service support units at the same pace for a better technical coherence, and to keep logistics in the digitization process.

Comment 2: as mentioned in Part 2:1, the main level being tested now is the BCT HQ. The environment is provided by the echelon-above-corps, meaning digitization links all levels from the Soldier to the division command post.

Comment 3: experimentation is a permanent process with main yearly events alternating experimental field training exercise and combined arms exercise. Nevertheless, the capabilities of its contacts allow the French army to conduct live technical testing and experiments during CAX.

2:3. What is involved in digitization?

The French digitization is not some kind of FCS based program. It is more command, control, communications, computers, intelligence, surveillance, and reconnaissance and DP enhancement oriented.

Subsequently, the program SCORPION (i.e. System of Contact for Versatile Capabilities in Information Networking) will take over. The conception step will start in 2008.

2:3. Command and control process

The army staff is in charge of the digitization process.

2:3.1. A quick history

- At the beginning, it was the responsibility of the C4IS Office of the HQA, in co-ordination with the G3.
- In August 2004, this responsibility was given to the G3 to ensure the operational pre-eminence in this process.
- In December 2004, following a major digitization experiment, a report analyzed the full process and made recommendations which were all approved by the Vice Chief of Staff of the Army and the Chief of Staff of the Army (see below Part 2:3.2).
- In 2005, the CSA, in compliance with the 2004 report, gave the responsibility of digitization to a full time officer.
- Since July 2007, it has been the responsibility of the BDOR[3] - Bureau développement des opérations en réseau – Development of the Networked Warfare Office. This office was created this year.

2:3.2. The 2004 report

This document was titled *"10 keys for a good digitization"*. The main recommendation was to address these 10 issues simultaneously.

1. **To have a full time officer-in-charge,** supported by an expert from each office involved with the Army Staff (including doctrine, i.e. the French version of Training and Doctrine Command). Therefore and accordingly with the nine other "keys", all the offices had to be involved.
2. **Equipment** (development and allocations, including a revision of the C4IS allocation subsequently to the results of the experiments and to put logistics in the loop).
3. **Experiment:** to maintain the planning whatever the cost (meaning time available) with a priority for field training exercise at the beginning (to be able to fully analyze the equipment/Soldier tandem).
4. **Experimental force:** to improve its design and to involve the CTCs.
5. **Doctrine, employment and force design:** a spiraling of the writing, the testing, the validating and the re-writing at the pace of the main experimental exercises.
6. **Education and manning:** to implement a process more coherent and to anticipate the needs for the future digitized units.
7. **Joint level:** to address ASAP the interoperability issues with the

other services.

8. **Multinational:** to address ASAP the interoperability issues with the main partners – priority to Germany, Great-Britain, and the United States.

9. **Training** (to study the needs of digitized units and to adapt it subsequently).

10. **Information** (within the Army, the Department of Defense, the Joint and multinational communities, towards industry…).

2:3.3. Cooperation between French army and U.S. Army

- In regards to these 10 "keys", it is obvious that France is interested in all the recent lessons learned.
- As far as the key # 8 (Multinational) is concerned there are two aspects:
  - The first one is the technical one and it is addressed by the Delegation Generale pour l' Armament, the French Procurement Agency.
  - The second one is more operational oriented. It is why the French army is looking for installing a liaison officer at Fort Bliss, Texas. His job would be more concepts, doctrine, tactics, techniques and procedures, Training, employment oriented.

3.0 Additional considerations

- All these projects take time. To reach interoperability – whatever the level envisioned – takes time.
- The 10 "keys" I refer to must be addressed simultaneously. If not, each time there is something new in one domain, there are subsequent implications. It is true at the national level; it is truer in bi- or multinational.
- The later two countries work together, the bigger their differences, the (more) they can later achieve their goals.
- Which mainly aim at supporting the Soldiers on the ground.

Footnotes

[1] 2 ème brigade blindée (2BB)

[2] 6 ème brigade légère blindée (6BLB)

[3] Bureau développement des opérations en réseau

French Brigade's Combat Team

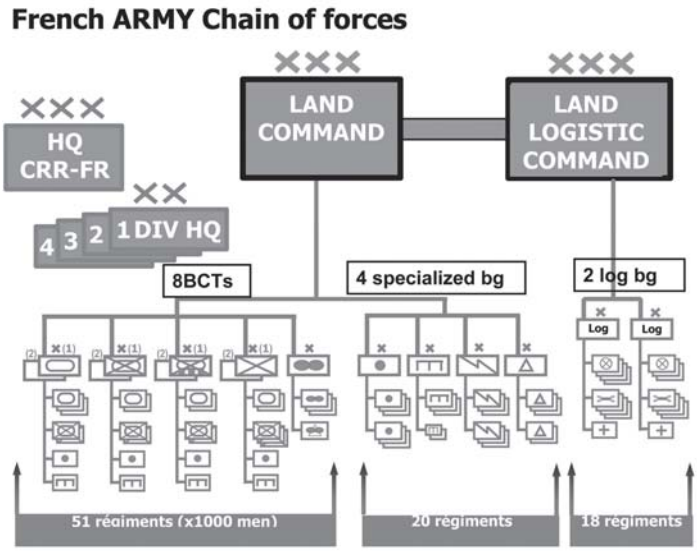
In the French chain-of-command, the land command is composed of:

- **eight twinned combined BCTs**: One light armored and one heavy armored brigade in each pair (same capacities in the four pairs); They are made of six regiments or expeditionary battalions (1,000 men each)

These brigades have been built to be autonomous; their structures focus on modularity.

In addition, there are in the land command:

- One army aviation brigade (transportation + attack)
- One Special Forces brigade
- The French German brigade
- Four specialized brigades (artillery, signal, engineer and Information +Electronic Warfare)



French Brigade Combat Team

1° Mechanized Bde 6° Light armored bde	3° Mechanized Bde 9° Marines' bde	2° Heavy armored Bde 27°Mountain Inf Bde	7° Heavy armored Bde 11° Paratrooper Bde
Inf. VAB	Inf. VAB	Inf. VAB	Inf. VAB
Inf. AMX10	Inf. AMX10	Inf. AMX10	Inf. AMX10
AFV	AFV	AFV	AFV
Leclerc MBT	Leclerc MBT	Leclerc MBT	Leclerc + AMX30
Field Art.	Field Art.	Field Art.	Field Art.
Engineer	Engineer	Engineer	Engineer
11 000 men	11 000 men	12 000 men	13 000 men

French Rapid Reaction Corps High Readiness Force

By LTC Vincent Bajon, French LNO

The French Rapid Reaction Corps is set up in Lille, France, in the immediate vicinity of many of the Allied contributors and also collocated with the Land Command. This corps is within a one-hour drive of Supreme Headquarters Allied Powers in Europe at Mons, Belgium and the North Atlantic Treaty Organization in Brussels, Belgium.

- 12 Nations will be eventual contributors, of which four nations are contributing 10 or more significant posts. The United States Army, Turkey, and Italy have already joined the corps. The remaining significant post could be filled next year by Austria.

A word about the French generic capacities.

FR Contribution
Command : 1,700
Combat : 12,000
Support : 12,000
Total FR: 26,000

C2 concept:

The French army has very carefully studied other Multinational HQs and eventually opted for the generic concept based on a single Main CP, just as did the ARRC a few years ago, moving from the Cold War pattern with a Main and a Rear.

With all enablers on board, Arty and Engineer Brigades interfaces, this allows the best flexibility to address any kind of issue. It also minimizes the force protection with a single location.

The RRC stands ready to deploy an alternate HQ to allow adequate survivability (would the Force Protection assessment lead to it) – or to act as a step-up if we need to move.

There is also a TAC CP to allow the COM to exercise command at the right place and time.

Indeed the Corps HQ has all necessary liaison links to flanking, subordinate and superior units.

The Rear Support Command has the delicate diplomatic and logistical roles to coordinate with the host nation and each contributing nation's support - together with other components and agencies as necessary, in order to organize the Reception, Staging, Onward Movements, and Integration, as appropriate.

Finally, the home base CP is key to a successful deployment; it provides the critical rear link during operations, and is the essential pied-à-terre during redeployment.

Peace structure:

All the staff is displayed in this fairly classic structure with MN responsibilities pretty well spread throughout the HQ:

An Italian colonel will lead the Faction Liaison cell.

In support division, G1 is under the command of a Belgian colonel, and G9 under a Dutch colonel.

In RSC Division, G7 is led by a German colonel. In Ops Division, ACOS G3, who is also ACOS OPS, is a British colonel.

The staff is organized as supported/supporting according to task, as for example G. Engineer, G9 and G7 have responsibilities within each of the divisions.

Certification process:

NATO certification process was successfully led last year. This process has been split into two main steps, and controlled on the field by the NATO control team (Deployable HQ Task Force)

The initial operational capabilityoccurred in the October - November 2006. It aimed to control the staff procedures, the means and equipment set up in the accommodations, the documents, and above all, the CIS infrastructures, to fulfill all the NATO conditions so that the staff might be able to afford its mission during peace time.

The full operational capability occurred in February-March 2007. The rapid reaction corps HQ has been deployed on the field in France and tested on its ability to work in full autonomy, to generate orders quickly, to protect itself (force protection), to organize its support and to use safely a large CIS network. All the skills have been tested during a five weeks CPX field exercise with terrestrial, aerial, and chemical alerts.

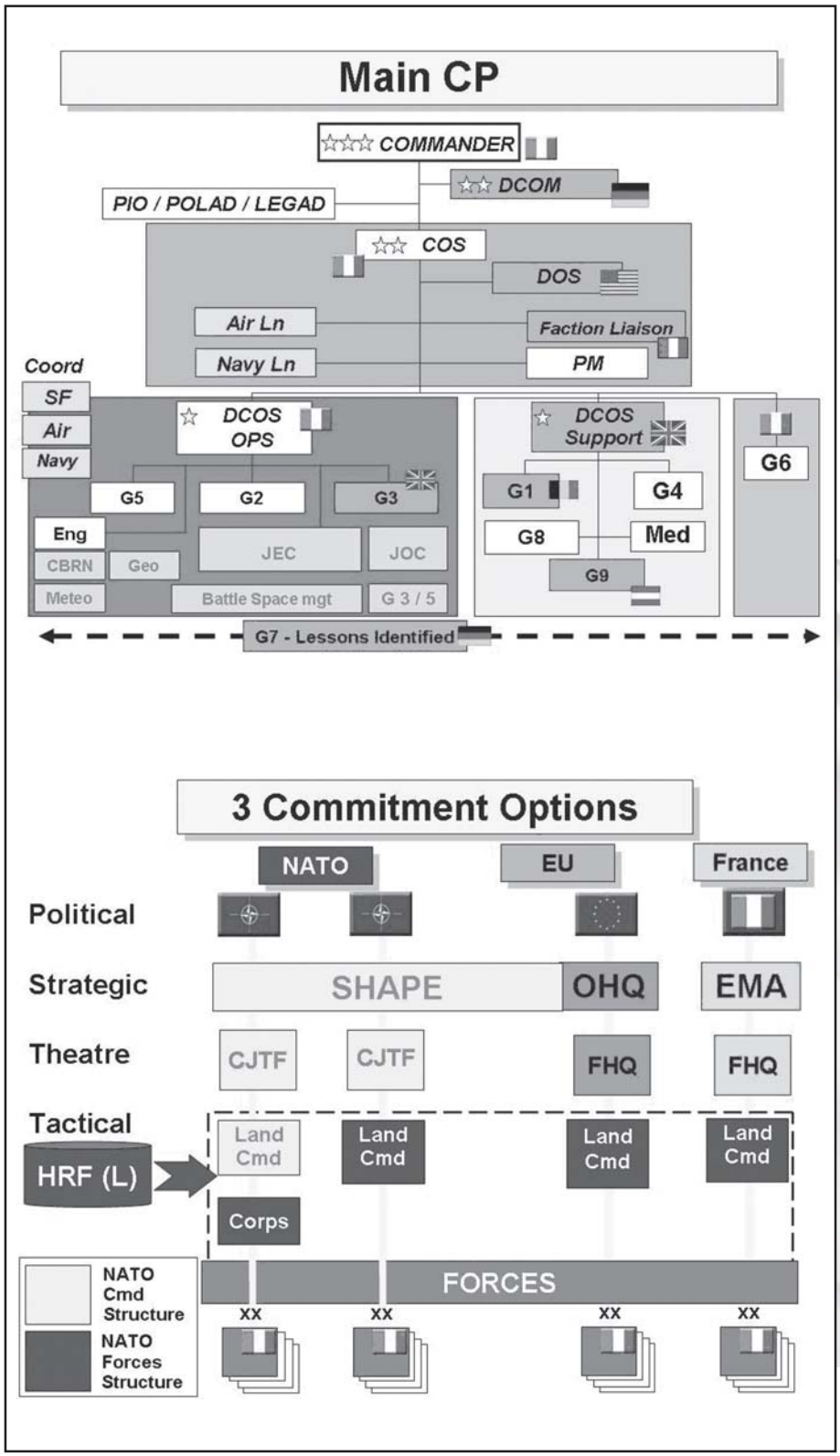
As far as the CIS and interoperability are concerned, the following items have been tightly controlled:

- connectivity and communication security
- command and control communications
- satellite and voice communications, digital transmission
- passage of information and orders, transfer of command delivery of information (to a processing unit)
- army fixed telecommunication system and trunk communication system (RITA)
- the meshing, radio net, the equipments, switchboards
- operating the equipment, operating instructions and direction for use
- power failures

Policy, logistics, administration, and operation cells have also been controlled according to a large number of certification criteria.

Each conclusion has been written in a report and sent to SACEUR, who indicated last year to the NATO Military Community that the French Rapid Reaction Corps is fully operational (SACEUR certification). The final decision belongs to the North Atlantic Council. At that time, the (FR) RRC takes the NATO Response Force alert in June 2008.

LTC Bajon is the French Liaison signal officer at Fort Gordon, Ga.



Acronym QuickScan

ARRC – A Rapid Reaction Corps
CIS –
COMSEC – communications security
CPX – Command Post Exercise
DGA – Delegation generale pour d'armement
DHQTF – Deployable Headquarters Task Force
FOC – full operational capacity
FR RRC – French Rapid Reaction Corps
IOC – initial operational control
NAC – North Atlantic Council
NRF – NATO Response Force
RITA – Research and Innovative Technology Administration
RRC – Rapid Reaction Corps
SACEUR – Supreme Allied Commaner Eruope
SHAPE – Supreme Headquarters Allied Powers Europe
TAC CP – Tactical Command Post

Signal Regiment Soldiers *on point with* NATO High Readiness Force

By LTC Mark Rosenstein

United States Army Regiment Soldiers serve proudly around the world in support of the Global War on Terrorism. Most signaleers are familiar with traditional signal assignments with J6, G6, and S6 offices however few are familiar with the Regiment contribution to North Atlantic Treaty Organization High Readiness Force commands.

In 2001, following a comprehensive force structure review, NATO approved a new war-fighting force structure to provide Alliance countries with five new HRF (Land) organizations as Rapid Deployable Corps Headquarters. The NATO Rapid Deployable Corps-Italy was established at Ugo Mara Barracks, Solbiate Olona, Italy, 23 miles north of Milan. Others were established in France, Germany, Spain, and Turkey.

NRDC-Italy is a multi-national headquarters with Italy serving as the framework nation; Italy provides almost 70 percent of the personnel with the remaining 30 percent consisting of Soldiers from other contributing nations. The multi-national environment is the key enabler of the organization. Currently, 15 member nations comprise the Headquarters.

Mission: NRDC-Italy contributes to the deterrence of aggression against NATO countries through the establishment and maintenance of a capability to deploy anywhere in the NATO Area of Operation as approved by the North Atlantic Council. NRDC-Italy prepares to conduct defensive, offensive, peace support, humanitarian support and other operations throughout NATO territories and beyond NATO's Area of Operation as directed by NATO mission Commanders. NRDC-Italy trains, exercises and operates its headquarters, assigned forces and affiliated elements using NATO procedures.

NRDC-Italy is capable of commanding up to four divisions and associated combat support and combat service support units (approximately 60,000 Soldiers). The headquarters has a wide-range of options available to command and control land forces at the division and brigade level, to operate as a stand-alone formation or as a subordinate organization to a higher headquarters. On Jan. 16, 2008, NRDC-Italy completed its six-month mission as NATOs Reaction Force in which it was prepared to deploy for operations anywhere in NATOs Area of Operation. The NRF mission

NATIONS	FLAGS	PERCENTAGE
Bulgaria		0.8
France		1.6
Italy		69.1
Germany		2.4
Greece		3.2
Hungary		4.0
Netherlands		0.8
Poland		0.8
Portugal		0.4
Romania		0.8
Slovenia		0.4
Spain		2.8
Turkey		0.8
United Kingdom		6.8
United States of America		5.3

NRDC-Italy Member Nations

Pictured (Left) in front of an Italian Army Tri-Band Satellite Station and (Right) in front of an Italian Army Single Channel Tactical Satellite Terminal are from left to right, LTC Mark Rosenstein, G6; COL Alfonso Miro, commander, 1st Signal Regiment, Italian Army; and CPT Jermaine Sutton, Information Management.

rotates through all NATO HRF commands.

The Headquarters is an organization with a committed, confident and experienced multi-national staff working in a cohesive and structured team environment. The staff employs well-developed doctrine for multi-national and joint operations at the Land Component level and has an in-place support structure with equipment for both training and operations which includes the full range of dedicated communications.

To remain at the leading edge of rapidly changing doctrine, the headquarters undertakes a full and demanding training schedule exercising the full operational spectrum up to high intensity warfighting using a complete range of modern weaponry. To ensure Soldiers are prepared for deployment, all nations are required to participate in Individual Readiness Training similar to that conducted by the U.S. Army.

(Pictured left) 1LT Andrea Tortarolo, Italian Army, coaches LTC Mark Rosenstein through qualification on the AR 70/90 Assault Rifle at Caserma Babini, Bellinzago, Italy. The AR 70/90 is the basic Italian infantryman weapon.

The G6 Division is responsible for providing communications and information systems, guaranteeing connectivity with higher echelons and command and control of the Corps' subordinate formations. To accomplish this, the division has 41 permanently assigned personnel of which two are from the U.S. Army Signal Regiment. Another member of the Regiment works within the Central Staff supporting Information and Knowledge Management.

(Left) Pictured from left to right are SFC Dawn Waites and LTC Felice Cofini, chief G6 Networks, Italian Army.

(Right) Pictured, left to right are CPT Jermaine Sutton; WO Antonio Citton, Information Management Specialist, Italian Army, and MAJ Giovanni Boggeri, Chief Information Management, Italian Army.

SFC Dawn Waites, 25B, previously assigned as NCOIC Help Desk Operations, Fort Carson, Colo., now serves as an Information Systems Technician in G6 Networks Section, NRDC-Italy. She is responsible for developing and testing new software prior to implementation on the Local Area Network/Wide Area Network, developing architectures, assisting with Corps-level network configurations and training Soldiers to maintain the Headquarters website.

During exercises, she assists with network Quality of Service monitoring and other Information Technology functions. Waites was offered the assignment by her Branch Manager and accepted it based on its unique location and professional opportunity. Her most rewarding experiences include learning how Allied Armies operate, seeing how women in different Armies have progressed and experiencing the Italian culture.

Sutton, 25A, previously assigned as commander, B Company, 53rd Signal Battalion, U.S. Army Space and Missile Defense Command now serves as assistant chief, Information and Knowledge Management, NRDC-Italy. He is responsible for establishing policies and developing new strategies for effectively exchanging and transmitting information throughout the Headquarters, its deployed locations and to higher NATO echelons. Sutton selected the assignment for its cultural enrichment, to gain insight into command and control operations from another country's perspective and to obtain Joint experience within the NATO environment. His most rewarding experiences include enjoying the Italian culture with his family, training with multinational officers and the professional experience/knowledge gained from

Pictured from left to right are MAJ Rosario Serraino, Interoperability and Policy, Italian Army; MAJ Andres Genovard, Plans Team B, Spanish Army; LTC Mark Rosenstein and LTC Marco Cali, Plans Team A, Italian Army.

working with NATO allies.

Rosenstein, 25A, previously assigned as S3 Officer, 22nd Signal Brigade, V Corps now serves as Chief G6 Plans, NRDC-Italy. He is responsible for exercise and operational communications planning as well as communications project management. He assists with planning and integration of critical Knowledge Management systems and influences and revises signal Doctrine and signal policy.

Rosenstein selected the assignment to gain Joint-level experience, learn about NATO, work with Soldiers from many different countries and provide his family with a unique overseas experience. His most rewarding experiences include gaining a new perspective on multinational and NATO training and operations, making life-long professional/personal friendships and enjoying Italy and its culture with his family.

Assignments with NRDC-Italy are 36-month nominative command sponsored tours. Field grade officers receive Joint credit. The assignment is considered a remote overseas assignment. Prior to accepting an assignment with NRDC-Italy, Soldiers should contact their Branch Manager and the serving NRDC-Italy U.S. Senior National Representative at DSN 314-634-6790 or 011-39-0331-32-9349.

For more information about NRDC-Italy visit: http://www.nato.int/nrdc-it/index.htm.

LTC Rosenstein joined the U.S. Army Signal Corps after serving as a field artillery officer. Over his 25-year career he has held a variety of tactical, operational, and strategic assignments including: brigade S-3, battalion executive officer, corps and division G-6 plans officer, group S-2/S-3 officer, company commander and platoon leader. He deployed to Haiti with the 10th Signal Battalion, 10th Mountain Division for Operation Uphold Democracy and twice to Iraq with V Corps and the 22nd Signal Brigade for Operation Iraqi Freedom I and 2005-07. He is currently serving as chief, G-6 plans, NATO Rapid Deployable Corps – Italy.

Acronym QuickScan

GWOT – Global War on Terrorism
HRF – High Readiness Force
IKM – Information and Knowledge Management
IRT – Individual Readiness Training
LAN – Local Area Network
NAC – North Atlantic Council
NATO – North Atlantic Treaty Organization
NCOIC – Noncommissioned Officer-in-Charge
NRDC- NATO Rapid Deployabe Corps
NRF – NATOs Reaction Force
QOS – Quality of Service
WAN – Wide Area Network

Integrating a modular tactical signal company into the world of transformed Army sustainment

(Training on the ku- trailer)

By CPT Jason Daugherty

The last several years of Army transformation has seen multitudes of signal units undergo modularity or activate as a modular unit. Prior to transformation, most signal companies existed merely to provide signal node services.

With the addition of tactical radio communications equipment and specialists, network operations cells, signal maintenance teams, the new modular signal package allows brigades to self-support its own command and control assets. Fortunately, the added flexibility of newly formed modular signal companies has allowed leadership to adapt their companies to support evolving mission sets and changing battlefield conditions.

One of the unique experiences of being a junior officer in today's Army, is that we get to take a new, modular concept and apply it to the truth on the ground in a deployed environment. Some deployed tactical signal companies are conducting their traditional support missions, some are commercializing forward operating bases, some are conducting communications training, some are conducting personnel security team missions, and even one company is currently running a combat outpost in Iraq and controlling route security for a main supply route. For many units, though, the mission set becomes a hybrid solution.

As the Army heads into its fifth year of physically implementing modular transformation at the unit level, it has been my experience that each newly formed or modified unit, signal or not, evolves and matures initially to support the immediate mission at hand.

My most recent experience has been to activate, stand-up, equip, and deploy a modular Joint Network Node-Network signal company to support a newly transformed sustainment brigade. Through this journey, I have gained valuable insights into the quest for providing value-added support to a multi-functional logistics unit, and determining if the level of capability provided by a signal company is sufficient to support this unit in a deployed environment.

The following are questions which I set out to answer over the last year and a half:

❖ **What is the optimal fit for a deployed modular tactical signal company supporting a sustainment brigade in a commercial environment?**

❖ **Are the fielded equipment and resources of a modular tactical signal company sufficient to support a sustainment brigade in an expeditionary mission?**

The search to find these answers has yielded a balanced solution that is currently being implemented to support the 7th Sustainment Brigade in its mission to provide area logistical support to southern Iraq. Our signal mission set is a solution that fits an already commercialized environment. Although I am not able to completely answer whether a modular signal company for a sustainment brigade is adequate in an expeditionary environment, I do have some recommendations for discussion.

Background:
Operational environment

The operational environment in a theater of operation constantly evolves, and therefore signal support must also evolve to support changing mission sets. I established an open and in-depth relationship with the commander of the signal company our unit replaced in southern Iraq,

more than six months prior to the actual deployment. This gave our company the opportunity to adapt our pre-deployment training focus and modify our company organizational structure, in light of understanding the current operational picture.

During the information gathering process prior to deployment, we learned how the operational environment in southern Iraq is becoming more and more of a sustainment operation. It is an environment much different than the initial stages of operation in Iraq, and even much more different than when JNN-N was first implemented in theater.

Signal supporters in Iraq have evolved from primarily providing tactical voice and data networks, to providing a permanent enterprise network infrastructure in most places. This transition is still taking place at some of the developing forward operating bases. For example, we learned from the company we replaced that its FOB Delta JNN provided services for several C2 nodes at remote locations on the camp, where the commercial network had not extended to yet.

As things changed on the ground in Iraq, the company commander kept me abreast of new situations. The end result was that our company knew exactly what we would be facing, as we arrived in theater. The biggest learning point to note is that while you can be as informed as possible about the situation you are about to face, until you personally get a feel for the situation on-the-ground, it is best to maintain the flexibility to execute various alternatives as you are coming into theater.

Background:
How does a sustainment unit use communications assets?

Two factors have shaped the way Army sustainers use information technology to conduct logistical operations and support customers. First, support units are "commo light": support units traditionally lack the same level of communications assets as combat maneuver units. It was not until signal companies were created within sustainment units, that supporters possessed dedicated communications assets to provide non-secure and secure Internet Protocol router, voice, and defense switched network services. Secondly, as information systems advanced along with changing technologies, Army sustainers became increasingly reliant on using .mil websites and web servers to process and conduct force sustainment missions. Among functions which use these .mil sites and servers are maintenance operations, classes of supply operations, personnel and human resource operations, postal operations, and finance operations.

In part because Nonsecure Internet Protocol Router connectivity was not as easily available, and also because sustainers became increasingly reliant on direct access to .mil websites and servers, the Army fielded Combat-Service Supported Automated Information Systems Interface and very small aperture terminal communication systems to interface with Standard Army Management Information Systems. This provides supporters with a separate network with direct connectivity to their essential informational systems. In effect, Army sustainers had already integrated a solution to satisfy the communication requirements needed to conduct its core missions.

Additionally, sustainment units needed a permanent solution to provide connectivity for actual C2 of personnel, sections, and units. Modular transformation fulfilled this requirement to supporters through the implementation of the JNN-N signal companies. The JNN-N system provides services to support C2 functions, such as access to NIPR, SIPR, and DSN networks, including exchange servers and share portals. Even though NIPR access provides connectivity to most of the sustainment information systems that supporters use, Army logisticians continue to use the CAISI/VSAT network as a primary connection. This is mainly because the network has more direct connectivity and better compatibility to provide certain reports.

Support units have been, and continue to be "commo light" for actual signal personnel outside of a signal company. The Modified Table of Organization and Equipment authorizations in a sustainment brigade S6 shop are significantly less substantial than a maneuver brigade S6 shop.

Even in the newly formed special troops battalions for sustainment brigades, only two signal Support Specialists (25U1Os) are authorized to run communications at the battalion level. This makes it more difficult to provide robust signal support to operate tactical communications systems and maintain networks within a sustainment brigade.

Mission analysis, arrival of a solution set

Mission analysis to determine our signal company's initial deployed mission set was a continual process, as requirements evolved prior to deployment and when we first arrived in southern Iraq. Our leadership worked to determine how we could best support a sustainment unit in a mostly commercialized environment, though our traditional mission is to provide initial entry tactical communications.

During analysis we had to figure out where the gaps in the commercial network were, across the various FOBs our brigade supports, and determine where we could best give support. In our unit's situation, we were tasked to provide communications in the gaps that were already being filled by tactical communications assets we would replace.

The other issue that we placed the most significant amount of effort and analysis into, was to determine how our signal company could be involved to directly support a sustainment unit's core mission of providing customer support. Due to the fact that supporters already primarily use the Combat-Service-Support Automated Information

Systems Interface/VSAT network, and use commercial NIPR for secondary means, little assistance is needed with this central mission. It was found that the best way to give value-added support to our brigade was to provide training and mission support for tactical communications.

In analyzing how to support a sustainment mission and provide the most value-added communications, we determined the essential mission support roles for this operational environment.

My first sergeant and I took the derived essential roles, and logically organized the company to enhance its ability to execute the primary signal support missions for the brigade. Each platoon and section in the company is organized to support a specific primary mission. By continually analyzing our operational environment before and after we deployed, we arrived at a stable solution which optimizes the amount of support we are able to provide to the 7th Sustainment Brigade.

Our first primary mission is to support the tactical communications customer, which involves providing training and mission support for tactical radios and tactical tracking systems. Our second mission is to provide signal network node services, which includes operation of our JNN and our Command Post Node. Our third mission is to provide network management for signal nodes, which is the core mission for our brigade network operations team. Our final mission is to support the tactical and commercial network customer, which includes end-user support for our tactical subscribers and our parent battalion's command, staff, and separate companies.

Our company's doctrinal/modular core mission is to provide "network level" signal nodes and node management support to a brigade tactical voice and data network, and to provide extended FM coverage to a brigade's area of responsibility.

Our modified mission set has the following focus:

2LT Beverly Wendell and CPT Jason Daugherty, CO executive officer and company commander with 7th Signal Company, Special Troops Battalion, 7th Sustainment Brigade.

1.) Provide Information Technology services from the end-user (client) to the tactical hub (the "cloud") for the tactical voice and data network;
2.) Provide support to brigade tactical radio communications customers;
3.) Provide end-user support for the special troops battalion commercial network.

I will highlight and describe the key points which exemplify how we are providing signal support in a commercialized environment, broken down by key mission.

Key mission: Support the tactical communications customer

One of the greatest benefits which adds to the flexibility of the modularized signal companies, is that there are substantial numbers of authorized Signal Support Specialists (25U), a military occupational specialty most predominantly invested inside actual unit communications shops before transformation. Of the 55 authorized slots for a sustainment brigade signal company, 14 are 25Us, most of which are slotted to operate and maintain frequency modulation radio retransmission assets in order to extend FM coverage for the brigade. Since FM retransmission is not needed in our brigade's area of responsibility, our unit went through a process to determine how they could still provide services to the brigade.

We decided to reorganize the company to house all the 25Us in one platoon, with the addition of the CPN team. The platoon was given the primary mission to support tactical communications, and secondarily to provide one node for signal support, the CPN.

The signal company we replaced used its 25Us to provide mission and training support for tactical communications for the brigade. Our company assumed the same mission, and refined it and expanded it. The most visible success for our 25Us has been the development of the Contingency Operation Base Adder Radio Telephone Operators Academy. Company Soldiers are permanently assigned to provide tactical radio training for units within the 7th Sustainment Brigade. For more details, please refer to a subsequent article in this issue of *Army Communicator* about the RTO Academy and

its use of signal community e-university resources.

Mission support for tactical communications is another emphasis for the signal company. Two 25Us are provided to the brigade fusion cell (brigade tactical operations center) to permanently provide communication support and battle tracking for CLPs. 25Us are also provided as part of the brigade's Personnel Security Detachment for vehicle communications. 1LT David Hamlin is a school-trained electronic warfare officer, and he provides augmentation support for the COB Adder Electronic Warfare Officer team. In particular, he works with the team to ensure counter-improvised explosive device warlocks for tactical vehicles are fully operational and updated.

Another key advantage of having a wealth of 25Us not conducting their doctrinal mission, is that we have the ability to support other battalions that have shortages in their S6 shops. In addition to supporting the 142nd CSSB for the RTO Academy, our 25Us provide mission support measures as well. The battalion conducts convoy logistics patrol validation prior to FOB departure for every CLP, which includes status checks and troubleshooting measures to ensure all vehicles are able to command and control using tactical communications. Our company Soldiers provide assistance to this mission from time to time. The gamut of mission support operations will continue to evolve as requirements change throughout the deployment.

Key mission: Provide signal network node services

Even though our sustainment brigade signal company is authorized one JNN, two CPNs, and a data package, it was actually fielded just one JNN and one CPN. Moreover, the maneuver brigade signal companies are authorized more than twice the overall capability of signal nodes that our type of company is authorized. This limitation of node resources is alleviated by the vast network commercialization that has taken place. In effect, even though our JNN and CPN are currently filling in the gaps in commercial communications, both nodes are currently being used at less than twenty percent of their intended capacity. Because the theater information systems goal is to provide all customers in Iraq with enterprise services, it has also become our company's goal to accomplish a transition of tactical services for our customers to commercial domain services.

A significant example of Iraq commercialization is currently taking place at FOB Delta. This camp has become a focal point for FOB expansion in southern Iraq, and the network commercialization effort is becoming more and more of a critical piece as Delta grows. Currently, a core mission of the 44th Signal Battalion is to commercialize FOB Delta, including the area where our company's JNN is providing tactical communications support. The company JNN platoon's mission is to provide voice and data network services for brigade sustainment units and C2 nodes at Camp Delta. The JNN platoon and the 44th Signal are focusing commercialization efforts, by working together to migrate our supported units from the tactical network to the commercial network, over the coming months. These efforts will help guarantee a seamless integration of our supported units to the commercial network, and also help standardize the work to expand the subnetwork that supports our own sustainment assets at FOB Delta. Currently, the JNN platoon is leading an effort for network expansion and standardization at the central hangar/warehouse for logistical operation and FOB Delta.

Key mission: Support the tactical and commercial network customer (end-user services)

Our traditional mission has evolved from providing merely network support, to also providing end-user support on both sides of the network. Because our tactical nodes provide support at remote areas where there are gaps in commercial communications, there is seldom a unit S6 shop to provide end-user support.

In particular, our brigade S6 shop focuses primarily on supporting the enterprise network, because their primary customers C2 on this network. This leaves our company Soldiers to manage end-user support on the tactical side. For example, our JNN platoon provides an information management officer, information assurance, and workstation troubleshooting support to over 30 subscribers at FOB Delta.

Our support for the end-user does not stop with the tactical network. There is no authorized battalion S6 for the STB, and the decision was made to dual-hat our company executive officer as the STB S6. The decision to make this a dual position, has ultimately paved the way for the automations experts in our company to provide expert services to the STB command and staff and separate companies. This also allows the brigade S6 shop to focus on supporting the brigade staff and subordinate battalions.

Even though our mission is to support brigade assets, this additional mission has helped us become an integral component to the STB as well. For example, our Soldiers were responsible for installing a LAN for the STB command and staff from scratch. In my discussions with other sustainment brigade signal company commanders, other like companies have adopted similar information technologies support structures to their STBs.

Signal support along a continuum

In analyzing whether the capability added to a sustainment brigade by a modular signal company is sufficient enough to support command and control of its critical missions, one must take into consideration the actual deployed environment. As our armed forces conduct operations in foreign countries, the deployed environment usually evolves from expeditionary to sustained over time. In recent deployments, communications

support trends have evolved with the environments and mission sets, by gradually transitioning from a tactical to a commercial/enterprise network environment. Different regions of Iraq are further along in the continuum than other regions.

In the case of southern Iraq, most operating bases are fairly commercialized in places where sustainment units operate. The signal nodes that were fielded to our signal company, under the current mission set, are more than adequate to provide tactical communications where commercialization lacks. In some cases, tactical communications assemblages are used to provide temporary solutions to units during migration to new facilities on an operating base. All in all, there is no question that the provided signal company capability to the current environment for sustainment units is more than adequate.

The other brigade-level sustainment units in other regions of Iraq are also at various points in the continuum of providing commercial versus tactical communications. One sustainment brigade signal company currently uses its tactical assets to provide supplemental DSN services to its brigade headquarters, in addition to access of various Army Battle Command Systems.

Signal support in an expeditionary environment

Looking at signal support along a continuum gives rise to the question of whether a modular tactical signal company is sufficient to support a sustainment brigade in an expeditionary manner. This question cannot truly be answered due to the fact that modular sustainment units are not battlefield-tested in an expeditionary environment. However, valid points can be drawn from recent experiences and recommendations can be produced.

At its core, the modular signal capability is nominal, with no room for providing a robust and expanded network. Assuming that no commercial or other means of voice and data communications are available for C2, the JNN becomes the centerpiece of support. The sustainment brigade headquarters, the extensive support operations section, and the special troops battalion would all have to be centrally located so that the JNN alone could provide support. In this situation, the brigade S-6 shop and the signal company would play an enormous role of providing a multi-level local area network with associated domain services. This would include installing and operating commercial servers to provide e-mail exchange services, share-portal services, and other domain services.

The other core requirement would be that any battalion or other subordinate unit must bring their own command post node into theater, so that it would have voice and data services to communicate with the brigade elements connected to the JNN. The signal company would have one or two CPNs which it could bestow to subordinate battalions, but this would immediately take away the only redundant communications for command and control at the brigade level.

If a sustainment brigade does not have to task its CPN(s) to subordinate battalions, then the CPNs could also be used to accompany forward logistics elements or other forward task force nodes if they are deployed to support another portion of the battlefield. It is recommended that a CPN and a CAISI/VSAT both be deployed with a FLE, so that one assemblage can provide C2, and one can be used to conduct logistics requisitions and create reports. The more CPNs that a sustainment brigade has at its disposal, the more FLEs it can send out with the vital communications it needs.

In any possible scenario for a sustainment brigade in an expeditionary environment, its options are still significantly limited with the nominal additional capability of the new modular signal company equipment. In any event, voice and data communications are unlikely to be redundant and will have a single point of failure in an initial-entry set. This issue can be best alleviated by fielding more CPN teams to the sustainment brigade signal companies. If this does not occur, then the other solution is for sustainment brigades to work with other units across the Army to task organize additional CPNs to deploying units.

Concluding remarks

The solution of applying

1SG Laraine Range and CPT Jason Daugherty are the command team for 7th Signal Company, 7th Sustainment Brigade.

modular unit concepts to constantly evolving deployed mission sets, allows for greatly increased flexibility to signal units which permanently support sustainment brigades. Signal company Soldiers work hand-in-hand with logistics units, whether deployed or not, and they can continually evolve their understanding to provide better support to the customer.

Wherever the communications focus effort is for the sustainment brigade, there will always be signal Soldiers to support these endeavors. More significantly, support units now have an initial entry tactical signal capability to support their C2 capability anywhere in the world.

As modular signal companies continue to activate and mature throughout the Army, the essential concept to note is that each unit must tailor its capabilities to support a unit's current mission, and at the same time maintain the flexibility to adapt to changing mission sets and converging net-centric technologies.

The JNN-N system is a good initial capability system to provide tactical voice and data communications for sustainment brigades. The system would be much more robust if more assemblages were fielded to the signal companies prior to an expeditionary deployment.

For units operating in a stable environment, an enterprise package is preferred as the primary network, while the JNN serves is an excellent tactical augmentation for gaps in communications. In a sustained environment, and in an increasingly net-centric world where the Army conducts more and more of its business over IT infrastructure, more robust tactical and enterprise solutions will continue to be in higher demand.

CPT Daugherty is the company commander of the 7th Signal Company, Special Troops Battalion, 7th Sustainment Brigade. The unit is currently stationed at COB Adder and FOB Delta, Iraq, and serving in support of Operation Iraqi Freedom 07-09. His previous duty assignments include maneuver battalion S6, node center platoon leader, and multi-channel tactical satellite platoon leader. Previous tours include Operation Iraqi Freedom I and III. Daugherty received his commission from the United States Military Academy.

Acronym QuickScan

ABCS – Army Battle Command Systems
C2 – command and control
CAISI – Combat-Service-Support Automated Information Systems Interface
COB – Contingency Oerations Base
COP – Combat Outpost
CLP – Convoy Logistics Patrol
CPN – Command Post Node
DSN – Defense Switched Network
EWO – Electronic Warfare Officer
FLE – Forward Logistics Elements
FOB – Forward Operating Base
IA – Information Assurance
IED – Improvised Explosive Device
IMO – Information Management Officer
IT – Information Technology
JNN – Joint Network Node
JNN-N – Joint Network Node–Network
MSR – Main Supply Route
MTOE -- Modified Table of Organization and Equipment
NETOPS – Network Operations
PSD – Personnel Security Detachment
RTO – Radio Telephone Operator
SPO – support operations
STAMIS – Standard Army Management Information System
STB – Special Troops Battalion
VSAT – Very Small Aperture Terminal

RTO's Academy uses Signal community e-University resources

to train Soldiers on Iraqi battlefield

By CPT Jason Daugherty

Imagine for a moment that you are a Soldier on a team assuming a primary mission to conduct route security patrols or convoy logistics patrols on dangerous roads in Iraq. You are also expected to communicate on tactical radio equipment on which you never trained prior to deployment. This scenario is fairly common for many Soldiers currently deploying.

The rapid demand for increased capability of tactical radio communications for deployed Army warriors has brought a variety of new technologies directly to units in Iraq and Afghanistan. New equipment fielding of tactical radios and other communications devices are being distributed to modular Army units during preparation for deployment, and in some cases, after units have arrived on the battlefield.

In a rush to get the latest equipment to Soldiers who are about to, or are already in the fight, adequate training on communications equipment prior to operation on the road is somewhat neglected. Soldiers learn the basics of these new communication systems, and they get on with the mission. Furthermore, signal Soldiers are expected to be the subject matter experts and facilitate the training of these new signal systems.

These Soldiers may be nominally able to conduct training themselves before they are expected to share the knowledge.

Over the past several years, the Signal Regiment has worked relentlessly to globalize its ability to provide training and learning of tactical communications and information technology. This has taken the form of distance learning, e-universities, and access to knowledge and information available via the Internet. On a fluid battlefield where new C2 systems continue to rapidly multiply, signaleers are relying more on web-based resources to provide training required to get operators ready on new and unfamiliar equipment.

One such example of this trend is currently taking place at Contingency Operating Base Adder, in Southern Iraq. At COB Adder, the 7th Sustainment Brigade hosts an RTO Academy, whose mission is to provide tactical communications training for brigade Soldiers. 25U Signal System Specialists from the 7th Signal Company provide training in both classroom and hands-on environments. Since December 2007, the RTO Academy has used interactive training materials, provided by the signal community, to train several hundred brigade Soldiers at COB Adder. This directly enhanced the brigade's ability to conduct convoy logistics patrols, and thus keep Soldiers safer on the battlefield.

The 7th Sustainment Brigade deployed to Iraq in October of 2007 to replaced the 82nd Sustainment Brigade. Signal Soldiers from the 7th Signal Company quickly assumed the mission of providing radio training via an academy that originated while the 82nd Signal Company was deployed. The 7th Sustainment Brigade sought to expand the capabilities of what communications training could be offered, and 7th Signal Soldiers took the lead on this effort by increasing the types of equipment it could offer training for.

Essentially, the RTO Academy at COB Adder has become the focal point for on-the-ground training for all forms of tactical communications used by 7th Sustainment Brigade units on the battlefield. This includes the AN/VRC-152 Harris radio sets, now popularly used as radio communications for CLPs; the single-channeled ground-to-air radio systems family of radios; blue force tracker and maneuver tracking system; communications security data transfer devices (Automated Net Control Devices and Simple Key Loaders); land navigation systems (Precision Lightweight GPS Receivers and Defense Advanced GPS Receivers); and intercom systems inside tactical vehicles.

SSG Michael Browley, COB Adder RTO, gives instruction and observes as SGT Michael Correa (right) troubleshoots the AN/VRC-152 Harris radio system.

On a fluid battlefield where new C2systems continue to rapidly multiply, signaleers are relying more on web-based resources to provide training required to get operators ready on new and unfamiliar equipment.

"The RTO Academy is truly a mobile and agile school," claims instructor SGT Deon Peterson. "There is no permanent place of instruction," he adds. Instead, the academy has integrated itself to perform classes wherever training needs to take place. The academy's other two primary instructors are SGT Eland Jones and SSG Michael Browley.

In addition to providing separate unit-level training, the RTO Academy is also a component of the 7th Sustainment Brigade's CLP Academy and the 142nd CSSB's CLP Academy. The proliferation of CLP academies has flourished over the last few years for support units. They provide a methodology for support units to conduct CLPs on the main routes, by training the latest techniques, tactics and procedures and also teaching counter-IED measures. The RTO Academy is allotted an entire day to train Soldiers during the week-long CLP Academy for the 142nd CSSB, one of the brigade's subordinate battalions.

At the brigade's CLP Academy, RTO Academy personnel perform evaluation to determine areas for CLP teams to improve for communications, and then academy personnel have allotted time to train them on these focused areas.

The biggest limitation to provide sound training for the RTO Academy is lack of resources. Most of the tactical equipment we conduct training for, simply does not exist in the signal company. In addition, some of the newer types of equipment, such as the Harris AN/PRC-152 radio system, was never used by any company personnel prior to deployment.

The academy's platoon sergeant, SSG Paul Aquino, established a relationship with key personnel at Fort Gordon, paving the way for substantial training aid support for classroom training. Aquino worked with employees of the Signal Regiment's University of Information Technology and the LandWarNet e-University - Lifelong Learning Center, by providing requirements for training needed in Iraq. In turn, key personnel worked diligently to provide a training computer disc encompassing comprehensive and interactive training for each type of tactical communications equipment used.

The RTO Academy uses the training materials as the core curriculum during formal classroom instruction. When available, these training materials are used along with classes on stand-alone systems inside classrooms. The materials serve as a guideline for teaching Soldiers and operators how to perform important functions on the equipment. The final step in the training process includes hands-on training on equipment in actual vehicles Soldiers operate during CLPs.

Since December 2007, the RTO Academy has used the interactive training materials to provide instruction on a weekly basis at COB Adder. Key personnel at Fort Gordon who directly contributed to this endeavor are: Patrick Baker, chief of Training for the University of Information Technology, and Mike Sizemore, Floyd Orial, and Clark Solomon from the Lifelong Learning Center.

RTO Academy poses with Brigade Personnel Security Team after a training session.

In February 2007, personnel from the 7th SB and 7th Signal Company conducted two impacting phone conferences with key leadership from Fort Gordon. These conferences included discussions with BG Jeffrey Foley, commanding general, U.S. Army Signal Center and Fort Gordon; COL Michael Cordes, director of Training for the Signal Center; CSM Thomas J. Clark, command sergeant major for the U.S. Army Signal Center and Fort Gordon; SGM Paul Cyr; and SGM Edgardo Ramirez, Directorate of Training, and the personnel who provided the training materials.

The leadership noted that they see the RTO Academy as an extension of how the signal community is reaching out to Soldiers on the battlefield to ensure they can communicate effectively. It was reiterated that the signal community at Fort Gordon stands ready to further assist in the communications training of Soldiers deployed worldwide.

The 7th Sustainment Brigade continues building a relationship with personnel from the University of Information Technology and the Lifelong Learning Center by requesting materials on two fronts. First, the RTO Academy works to obtain additional training materials for other systems essential to battle-tracking and C2 for the brigade, such as the command post of the future. Additionally, the organizations are working to provide materials for information technology and network training for brigade signal Soldiers. The 7th Signal Company looks to expand its own internal network academy by incorporating training materials provided by the LandWarNet e-University - Lifelong Learning Center.

As the Army continues to field command and control systems to support the ongoing convergence of tactical and enterprise communications into one integrated net-centric environment, the urgency to provide on-demand training materials for these systems will continue to increase. The on-line collaboration and access to materials from the Signal community at Fort Gordon have already set the foundations for prolonged success, and will continue to be critical as technical aptitude becomes increasingly important to all

Soldiers in the Army, Signal or not.

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C2 – command and control
CAISI – Combat-Service-Support Automated Information Systems Interface
CLP – convoy logistics patrol
COB – Contingency Operating Base
COMSEC – communications security
CPOF – Command Post of the Future
CPN – Command Post Node
CSSB – Combat Sustainment Support Battalion
DAGR – Defense Advanced GPS Receiver
DSN – Defense Switched Network
EWO – Electronic Warfare Officer
FLE – Forward Logistics Elements
FOB – Forward Operating Base
IED – Improvised Explosive Device
IT – Information Technology
JNN – Joint Network Node
JNN-N – Joint Network Node–Network
MSR – Main Supply Route
NETOPS – Network Operations
PLGR – Precision Lightweight GPS Receiver
PSD – Personnel Security Detachment
SINCGARS – Single Channeled Ground to Air Radio System
SKL – simple key loader
SPO – support operations
STAMIS – Standard Army Management Information System
STB – Special Troops Battalion
TTP – techniques, tactics, and procedures
VSAT – Very Small Aperture Terminal

Signal Support in Counterinsurgency Operations

By LTC Steve Birch

The publication of FM 3-24 *Counterinsurgency* in December 2006 immediately preceded the announcement of the surge of forces in support of ongoing combat operations in Iraq. The intent of the surge was to get the security situation to a point where Iraq could achieve some political growth.

This article examines signal support requirements in COIN operations, assess the performance of the signal regiment in the conduct of COIN and offer some lessons learned. Before examining specific signal issues, I will review some overarching principles of counterinsurgency operations. The following is extracted from *FM 3-24.*

The intent of the surge was to get the security situation to a point where Iraq could achieve some political growth.

Counterinsurgency operations are a component of full spectrum operations. COIN is a combination of offensive, defensive and stability operations with the proportion of effort changing over time and in response to the situation. This can also vary by geographic area and echelon. COIN operations require synchronized application of military, political, economic and civic actions.

There are five overarching requirements for successful COIN operations:

♦U.S. and Host-Nation military commanders and the HN government must together devise a plan for attacking the insurgent's strategy and focusing the collective effort to bolster or restore government legitimacy. (Collaboration)

♦ HN forces and other counterinsurgents must establish control of one or more areas from which to operate. HN forces must secure the people continuously within those areas. (Physical Occupation)

♦ Operations should be initiated from the HN government's area of strength against areas under insurgent control. The host nation must retain or regain control of the major population centers to stabilize the situation, secure the government's support base, and maintain the government's legitimacy. (Population as Key Terrain and Center of Gravity)

♦ Regaining control of insurgent areas requires the HN government to expand operations to secure and support the population. If insurgents have established control of a region, their military must be eliminated and political apparatus rooted out. (Direct Action)

♦ Information Operations must be aggressively employed to influence the perception of HN legitimacy and obtain support for COIN operations.

Signal Support Requirements

Signal support requirements in COIN operations can be identified only when understanding the operational characteristics of COIN. Effective communication is critical

between organizations in order to maintain synchronization of effort. There are five major types of organizations that we must communicate with:

- ❑ **Ourselves**
- ❑ **Coalition and Interagency Organizations**
- ❑ **Host-Nation Government Agencies**
- ❑ **Host-Nation Military and Police Forces**
- ❑ **Local Population**

Understanding the information exchange requirements (who needs to exchange information between each other and what information needs to be exchanged) is important. The five groups listed above are the "who" in the information exchange requirement. Once we know who needs to communicate, we next need to determine how they communicate and what information they need to exchange. All of the groups are important because they are all part of the COIN fight.

COIN operations increase signal support requirements because of an expanded amount of requirements. The increase in units living among the population exceeds our organic equipment levels. COIN also introduces interoperability issues with the HN and coalition partners due to a lack of standardization. Network interoperability and integration is best accomplished at the enterprise level. When no enterprise solution is available, the force can revert to liaison team exchanges or other local solutions.

Single-channel voice communications with coalition partners is essential in the conduct of combat operations. The risk of fratricide is increased when language barriers or system interoperability problems prevent ground-to-ground or ground-to-air communications when United States and coalition forces share operating environments.

Interoperability with HN government, military and security forces offers similar challenges and solution options to those of coalition partners.

Communication with the local population can be accomplished using the civil communication network. The ability to communicate with the population is proportional to civil communications infrastructure. In Iraq, the robust cellular network existing in urban areas provides outstanding ability for communications while the lack of infrastructure in rural areas requires more face to face interaction.

Baseline communications requirements.

The following list of capabilities has emerged as the standard baseline expected at any fixed geographically isolated location: (Typically a company level patrol base or combat outpost):

♦ **Secure single-channel voice** (FM, HF or TACSAT)
- o Command and Control
- o Fire Support
- o MEDEVAC

♦ **Blue/Red Situational Awareness** (Blue Force Tracker, FBCB2)
- o See yourself and see the enemy
- o Limited text messaging

♦ **Secure Voice and Data**
- o Email
- o Web Portal Access
- o Secure Telephone
- o Collaboration tools (CPOF, CIDNE)

♦ **Non-secure voice and data** (Provides connectivity to local population and essential Soldier services)
- o Email
- o Voice

♦ **Streaming Media** (Emerging as a standard capability) (Provides real time situational awareness and force protection)
- o Unmanned Aerial Vehicle (Shadow, Raven)

The baseline is robust yet entirely appropriate for COIN. The fight requires shared situational awareness; access to intelligence databases; communications with agencies and organizations that support COIN (Corps of Engineers, State Department, contractors, local government officials). Patrol bases and combat outposts are the front line in the COIN fight. They are located at the center of gravity of the COIN fight.

The current brigade combat team organization provides secure broadband connectivity down to the battalion level. Since COIN is predominantly a company level fight, the company becomes the lowest echelon requiring support. Not all companies will operate from patrol bases, but current experience indicates up to three additional locations per maneuver battalion are the norm. A rough estimate for a BCT would be to plan for supporting up to 12 locations.

A command post node or equal capability alone is not sufficient for the patrol base or combat outpost. The ability to communicate within the coalition, to HN military and civil authorities remains unresolved. The solution for this shortfall can be as simple as exchanging liaison teams, procurement of equipment (cell phones) or using enterprise level solutions.

Solving the capability shortfall

There are three courses of action to solve the shortfall in equipment required to support COIN operations:

❖ Status Quo. Accept the risk of not being able to conduct COIN operations and fill requirements with Operational Need Statements and other procurement actions as the situation dictates.

❖ Fill shortages of equipment by redistributing equipment within the formation or augment the brigade combat team with equipment from expeditionary signal battalions.

❖ Change the current organizational design for BCT. Augment the current BCT signal company with a pool of equipment in order to meet requirements.

The current COIN fight is being waged with a combination of the first two courses of action. Units have assembled available equipment to meet the emerging requirements. The third course of action has been explored, but not exercised. The issue in changing the design is in determining which solution is right for the long term.

We are not equipped to execute COIN with only organic assets. Only with the augmentation of the BCT signal resources can the requirement be met. The division assumes the responsibility to plan and resource the BCT so they can execute their missions.

Performance of the Signal Regiment in the current COIN fight

The troop surge and movement of combat formations from large forward operating bases to combat outposts and patrol bases defined the real transition to COIN. While in a limited position to begin the transition to COIN, a shortfall of equipment and people existed. Multi-National Corps-Iraq recognized that teaming between Network Enterprise Technology Command, the corps signal brigade, divisions and brigade combat teams would be required to accomplish the mission. Even with a teaming approach, the race to establish patrol bases continues to exceed the resources available to support them. Fully one year into the surge, not all patrol bases have broadband connectivity.

The failure to accurately identify the number of patrol bases requiring support continues to place the regiment on the backside of the resource curve. The success of patrol bases among the population has increased the desire for more patrol bases. Complicating the failure to accurately identify the end state is the long delivery timelines for equipment. The agility of our units far exceeds the agility of the acquisition community to resource the fight.

MNC-I acted quickly to identify standard material solutions for the expanding number of patrol bases. The standardized approach to defining the requirements provided the Army and acquisition community a chance to respond. A clearly defined standard for capabilities helps because the requirement can be planned for. While a standard solution for providing network connectivity was established, the speed of establishing patrol bases on the ground caused pursuit of alternative options such as commercial radios.

The real heroes in building a network to support COIN are our BCT S6s. They have to build a network that meets the unique requirements of their operating environment.

The existing network shows the collaboration and sharing of equipment between many units at different echelons. Shortfalls at the BCT and below level have been filled with equipment from other brigades, the division signal company, corps signal brigade or Network Enterprise Technology Command battalions. The level of teamwork in the regiment is a positive indication of the willingness of units to work together to accomplish the mission.

The redistribution of command post nodes provided immediate flexibility for those units moving off the FOB. In many cases, the robust infrastructure of a FOB allowed the battalion headquarters to transition to strategic infrastructure. The arrival of expeditionary signal battalions further expanded the amount of interoperable equipment that could be task organized to support BCT units. Commercial Internet Protocol based radios are assisting in trying to meet the requirements. Where no broadband communications are available units operated with single channel radios.

All echelons have a role to play in the planning and execution of signal support in COIN. The battalion S6 must ensure that the communications equipment on the patrol base is functional. He must also work to assemble available ancillary equipment. His mission is primarily to execute communications with the assets available.

The real heroes in building a network to support COIN are our BCT S6s. They have to build a network that meets the unique requirements of their operating environment. The BCT S6 must decide on the manner of connecting the patrol base (line-of-site or satellite), attempt to resource automation systems (blue force tracker, computers, CPOF machines, telephones) and work to identify equipment shortfalls so that the division can work to resource them. The BCT is the service provider for email, collaboration portals and access to fire support, medical evacuation and close air support.

The division responsibility is to assist in network integration, provide resources and technical assistance ensuring the network is fully connected to the Global Information Grid. The corps and NETCOM have responded by reallocating assets and bandwidth to support the BCT fight. Every echelon has a part to play in conducting COIN operations.

The actions by program managers in providing equipment to meet the COIN requirement and other actions by the MNC-I have expedited the arrival and distribution of equipment for units in the fight. While many patrol bases started out with only frequency modulation radio and a blue force tracker device, they have continually grown in capabilities over time.

Lessons learned

Accurate identification of requirements is critical. This is easier said than done. The real lesson here is to understand that you need to establish a requirement early so that the process of resource generation can begin. It is also important to ensure that requirements are defendable, logical, and prioritized. Integrity counts and priorities for providing signal support should match the commanders overall priorities.

Constant collaboration and communication is essential at all levels. The sharing of ideas, exploration of options and openness provide for a better climate of cohesion. Issues should not fester at any level and leaders must work to provide solutions or options.

We are not currently organized for COIN without augmentation. Frequency modulation radio and blue force tracker are not sufficient for COIN. COIN requires robust communications at the company level.

Interoperability and network integration is essential in the COIN environment. Challenges working with the HN and coalition partners exist, but can be addressed in many ways. The minimum solution is the exchange of liaison teams.

Combat communications remains the number one priority. Units must be able to successfully exercise push-to-talk equipment in order to conduct combat operations. The ability to call for fire, conduct fire and maneuver and call for a medical evacuation is essential at every level and for every Soldier.

Higher headquarters is responsible for fighting for resources, integrating networks, and ensuring the brigade and battalion S6s have the equipment they need to accomplish the mission.

In closing, the U.S. Army is conducting COIN operations as we speak. We are developing the doctrine for signal support every day and our Soldiers are accomplishing the difficult missions in an excellent manner. We must recognize that our BCTs are not currently configured to conduct COIN without augmentation. Understanding the information exchange requirements will provide the signal planner with a start point for planning signal support.

LTC Birch is currently serving as the G6 for Multi-National Division Center and the 3rd Infantry Division in Operation Iraqi Freedom. He started his career as an armor officer in the 5ID. He commanded a company in the 122nd Signal Battalion, 2ID and later served as a brigade S6 and battalion executive officer for the 121st Signal Battalion, 1ID.

Acronym QuickScan

BCT – Brigade Combat Team
C2 – Command and Control
CPOF – Command Post of the Future
CIDNE – Combined Information Data Network Exchange
COIN – Counterinsurgency
FBCB2 – Force XXI Battle Command, Brigade and Below
FM – Frequency Modulation
FOB – Forward Operating Base
GIG – Global Information Grid
HF – High Frequency
HN – Host-Nation
ID – Infantry Division
MNC-I – Multi-National Coalition-Iraq
MEDEVAC – Medical Evacuation
NETCOM – Network Enterprise Technology Command
TACSAT – Tactical Satellite
UAV – Unmanned Aerial Vehicle
U.S. – United States

Recommended changes to signal structure of the BCT

By MAJ Tom Schwab

The overall purpose of this point paper is to capture some of the issues with the signal structure in the brigade combat team and make recommendations for change and improvement. This paper is based on the operational experience of a brigade S6 during his train-up and 15-month deployment to the Afghanistan Theater in support of Operation Enduring Freedom VIII.

Problem Statement:

Define a modified table of organization and equipment that properly supports sustained combat operations for the communications systems and Soldiers in the BCT. This MTOE facilitates communications, operations, and clear lines of responsibility, maximizes training and career progression, and ultimately provides the brigade commander with agile, reliable, and secure communications which will enable him to conduct effective battle command.

Background:

Under the legacy division MTOE, the brigade S6 was responsible for tactical radio systems and retrans teams. He would pass his network requirements to the signal battalion which in turn would plan and manage the network. The signal battalion would ensure the small extension nodes teams, node center platoons, and companies were trained, maintained, and ready (see Figure 1. Legacy Division/Maneuver Brigade Relationship). The signal companies had a habitual support relationship with the maneuver brigades and generally knew the brigade S6's expectations. When the signal battalion was dissolved under modular transformation, the network operations—a section of the signal battalion S3 shop responsible for planning and managing the network—was transferred to the signal company. This reorganization placed the signal company in a precarious position because while it works for the Special Troops Battalion, it should receive its signal guidance from the BCT S6. The signal battalion electronic maintenance shop was completely dissolved and only a two-man team was assigned to the signal company. This team does not have the proper training, equipment, or manpower to effectively support all the BCT's electronic maintenance requirements, given the complexity and size of the operational environment.

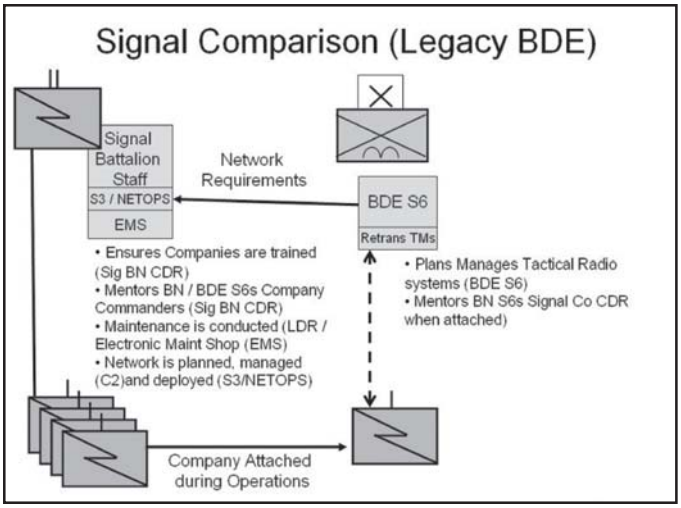


Figure 1. Legacy Division/Maneuver Brigade Relationship

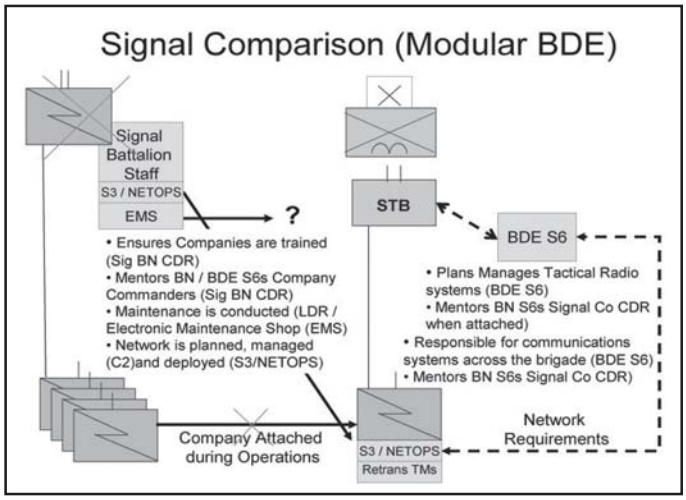


Figure 2. Modular Division/ Modular Brigade Combat Team

Now under the modular brigade structure, the brigade S6 has to pass his network requirements to the NETOPS, the signal company, and the STB (see Figure 2. Modular Division/Modular Brigade Combat Team). This creates an overly bureaucratic process and does not facilitate effective and responsive command and control of signal forces within the brigade. It can also become a problem when the STB and signal company commander have different priorities than the brigade S6. When this occurs, the NETOPS will answer to its boss and rater—the signal company commander—who in turn will do the same to his boss—the STB commander—leaving the BCT S6 to deal with the repercussions. The brigade commander will hold the S6 responsible for all communications requirements and performance, as he should; however, the brigade S6 does not have the necessary command authority or relationships to ensure unity of

effort and prioritization of the resources that impact the brigade's network.

Topic: NETOPS
Issue: Assignment of the NETOPS.
Discussion: The network and operations, a portion of the old signal battalion S3 section, is assigned to the signal company (see Figure 3. Network Planning Management and Command and Control). Under this current modular structure, C2 of the network is very convoluted because battalions are now reporting their network status and requesting communication security and frequencies from a company, not from their higher headquarters, the brigade. Movement of the NETOPS

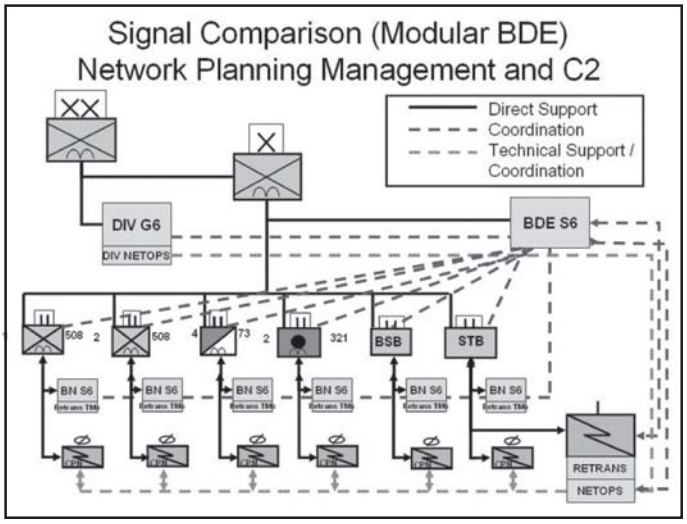


Figure 3. Modular Brigade Network Planning Management Command and Control

from the division signal company to the G6 section has already occurred at the division level (ref. *Chief of Signal Sends message 08-006* dated Nov. 9, 2007). A similar change in MTOE needs to occur at the brigade level.

Recommendation: Move the NETOPS section to the brigade S6 section to facilitate the brigade S6's ability to plan, manage, and C2 the brigade's communication network (see Figure 4. Recommended MTOE Changes).

Editor's note: *Force Design updates: 8.1 (Division Signal Structure) is approved by DA and Force Division 6.2 (BCT Signal Structure) is pending approval by VCSA.*

Topic: Command Post Node Teams
Issue: Assign the command post node teams to the signal company.
Discussion: Assigning the CPN team to the battalions is not effective. Battalion commanders now own these assets and don't always want to re-task organize them, even when it is the best course of action to support the brigade's scheme of signal support.

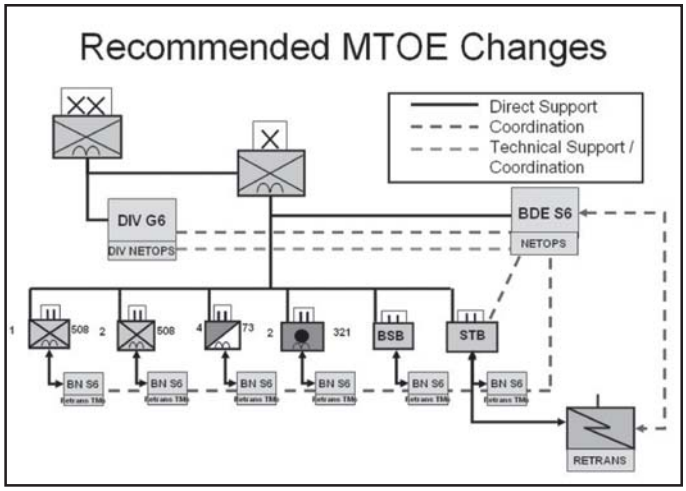


Figure 4. Recommended MTOE Changes

Training and maintenance are an issue as well. With CPN teams assigned to battalions, the owning battalion commander is responsible for ensuring his Soldiers are trained and ready; however, many brigade commanders will turn to the brigade S6, as the senior communications officer in the brigade to ensure the teams can communicate effectively. The issue is the brigade S6 has neither direct control over these teams, nor does he have assigned personnel with the right skill sets to develop an effective training plan. The signal company possesses the necessary personnel and control, but again the signal company does not currently work directly for the brigade S6. Therefore the brigade S6 has to work with the NETOPS and signal company to develop a training plan and hope the command backs him when CPN teams fail to show up for training.

Recommendation: Assign the CPN teams to the signal company and the signal company commander can ensure teams are trained, equipment is maintained and that the Soldiers are ready (see Figure 4. Recommended MTOE Changes).

Topic: Manning
Issue: The BCT S6 needs a deputy/plans and operations officer.
Discussion: Under the current MTOE, an infantry brigade combat team, the BCT S6 section is only authorized 10 Soldiers, including the S6 himself (see Figure 5. Current Brigade S6 Structure). With increased planning and operational requirements, in a decentralized counterinsurgency environment, recommend adding an operations/plans officer who can serve as the deputy brigade S6 (see Figure 8. Recommended Brigade S6 Structure). Ideally, this officer serves as a battalion S6 and then signal company commander first. The BCT S6 must support two command posts with the capability to conduct planning and operations. With only one signal officer assigned, the brigade's signal planning requirements are not met. The brigade S3 section, along with all other staff sections, have the ability to conduct

simultaneous planning and executing at both command post locations—tactical operations center and tactical assault command post. The brigade S3 section has a plans officer -O4, operations officer -O4 and the brigade S3 also an O4 and numerous captains. Therefore, they can effectively operate out of two command posts and conduct planning and operations twenty-four hours a day. The S6 section does not currently have this capability.

Recommendation: Add a deputy/plans and operations officer to the MTOE. (Below Figure 5. reflects the current BDE S6 MTOE structure.)

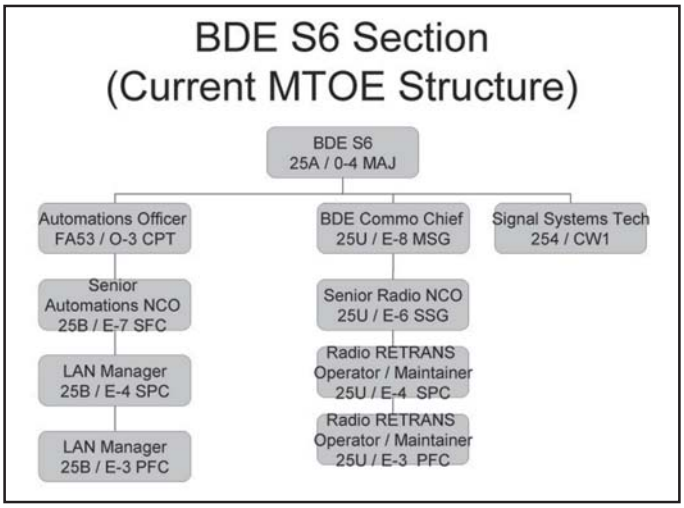


Figure 5. Current S6 Structure

Topic: NETOPS restructre

Issue: Restructure of the brigade NETOPS.

Discussion: Under the current MTOE structure, the NETOPS has one chief warrant officer 250 wide area network warrant officer in charge of a nine-man section (see Figure 7. NETOPS Current MTOE Structure). This

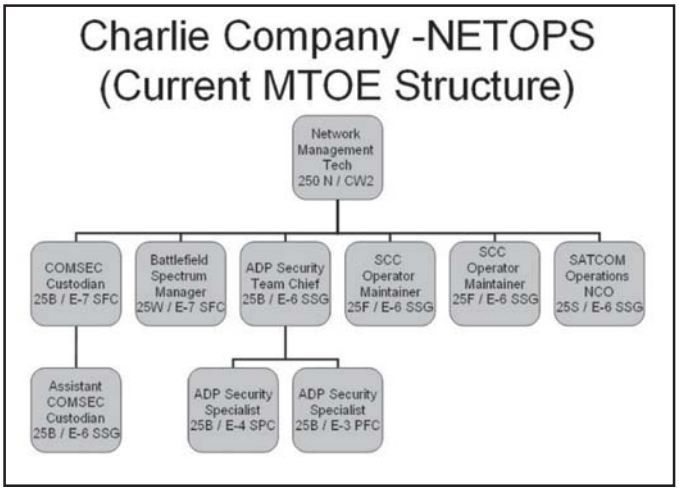


Figure 7. NETOPS Current MTOE Structure

section has a wide range of responsibility and is not properly manned to conduct uninterrupted network planning and management on a 24 hours-a-day, seven days-a-week basis.

Recommendation: Recommend breaking the NETOPS into two main functional areas: an automations section headed by the functional area-53 officer, O-3 and a signal operations section headed by a 25A signal officer, O-3 (see Figure 8. Recommended Brigade S6

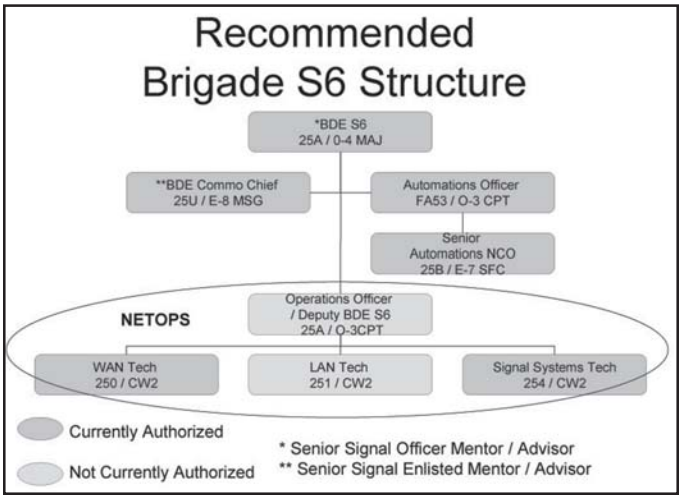


Figure 8. Recommended Brigade S6 Structure

Structure).

Topic: NETOPS

Topic: Structure NETOPS 250 WAN

Issue: Structure of the brigade NETOPS and the 250 WAN warrant officer's role.

Discussion: Under the current structure, the 250 WAN tech is the operations officer for the NETOPS. With the introduction of an operations officer, recommended above, the WAN tech would be subordinate to the operations/deputy brigade S6 officer (see Figure 9. Recommended Brigade Structure). The 250 WAN tech would retain control of both 25S satellite operator-maintainer and 25F Network Switching Systems operator-maintainers.

Recommendation: Recommend the 250 WAN Technician be subordinate to the operations/deputy brigade S6 officer. Recommend changing both of the NSS operator-maintainer billets to sergeant first class positions (see Figure 10. Recommended WAN Structure). This change would allow for better career progression by allowing the NCOs to move from the E-6 JNN section sergeant position to NETOPS and then back

to the platoon sergeant position.

Topic: Manning

Issue: FA-53 officers and the addition of a 251 local area network management warrant officer.

Discussion: Making the functional area 53 officer the only technical officer in the brigade creates many challenges. First, most FA-53 officers are not prior signal officers, so they cannot easily operate as the deputy brigade S6 in his absence. The FA-53 officer at brigade level needs to be viewed as a second lieutenant in the FA-53 branch. This is his first step in this area and he

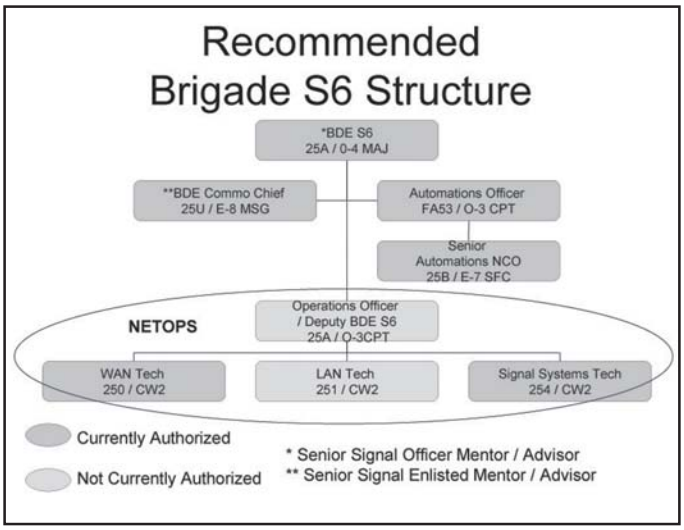


Figure 9. Recommeded Brigade Structure

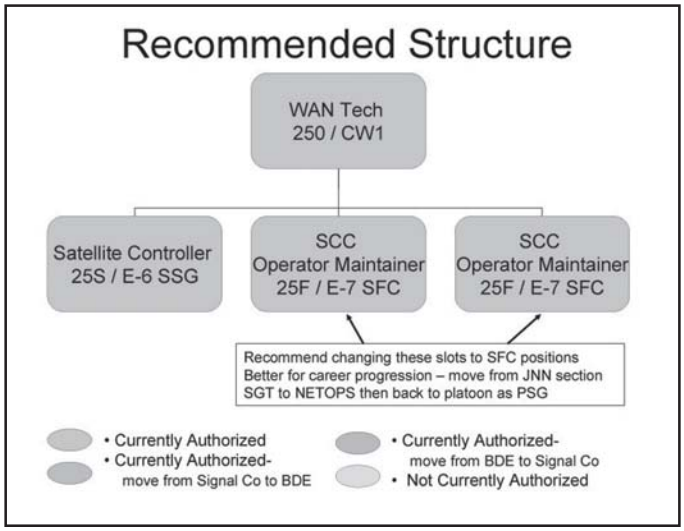


Figure 10. Recommended WAN Structure

may not have the automation experience or background to handle an entire brigade's automation requirements for planning, managing, and executing. Adding a 251 LAN warrant, can help in training and mentoring the new FA-53 officer and oversee the brigade's automation requirements. This structure also allows an automation expert to deploy with the brigade TAC.

Recommendation: Add a 251 LAN warrant who can assist the FA-53 officer in his duties and provide the experience and training a junior FA-53 will need (see Figure 11. Recommended Brigade S6 Structure).

Topic: LAN Management Structure

Issue: Help desk operations and LAN management

Discussion: The LAN is the most complex piece of the brigade communications structure. 4th Brigade Combat Team had an average of 200 systems in command post one - TOC and 75 systems in its command post two - TAC. The brigade had multiple servers to manage 24/7, a help desk to operate, and information security to manage, as well as, wiring the command

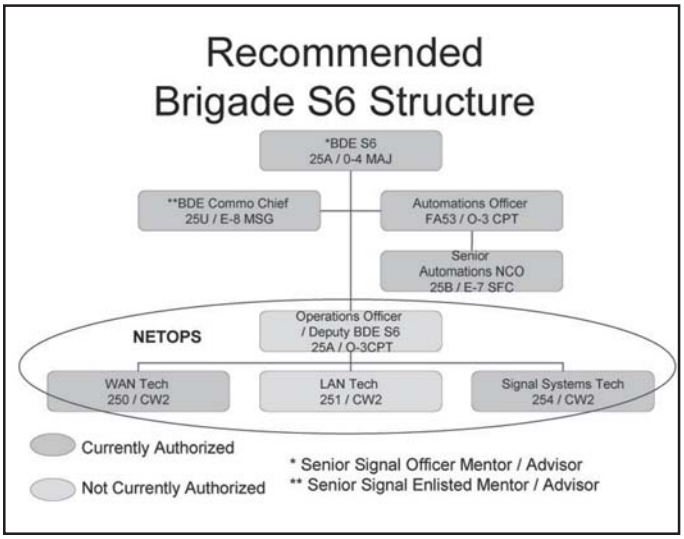


Figure 11. Recommended Brigade S6 Structure

posts when moves were conducted. Two CPs must be supported 24 hours-a-day, seven days-a-week. Wiring, managing, and maintaining all these systems-at two different locations 24 hours-a-day, seven days-a-week are challenges with the current structure. Recommend adding a LAN tech warrant officer to oversee this area. He would provide the technical expertise and manage all automation in the brigade and mentor battalion S6s along with the brigade S6. Recommend adding two server non-commissioned officers to manage the brigade's servers, a help desk NCO-in-charge who manages the work load of the help desk and ensures continuity between day and night shift. I recommend adding a help desk NCO who is in charge of the help-desk Soldiers and manages and prioritizes trouble tickets during the shift. Add a 25B help desk Soldier, who would be the front line of the help desk and take care of trouble tickets. Career progression for 25B would be to start at a battalion or on a command post nodes team,

and then move to the help desk. As a sergeant, this Soldier would start as the helpdesk shift NCO, and then move to the ADP security specialist or server NCO. (Recommend changing the current automation data processing security slots from one E-4 and one E-3 to two E-5s. To be effective in this position, the Soldier needs experience – therefore, he must be an E-5 minimum). Then they can switch back and forth between the security team chief, server NCO, and senior help desk NCO to gain enough experience to be the senior automations NCO as an E-7. The senior automations NCO is responsible for all automations in the brigade and mentoring all automations Soldiers.

Recommendation: Add a Senior Help Desk NCOIC and Help Desk NCOs to support two command posts (see Figure 13. Recommended LAN Management Structure).

Topic: NETOPS

Issue: Structure of the brigade NETOPS and the 254 signal systems tech

Discussion: By current duty description, the signal systems tech is responsible for communications systems in the brigade with the exception of the WAN,

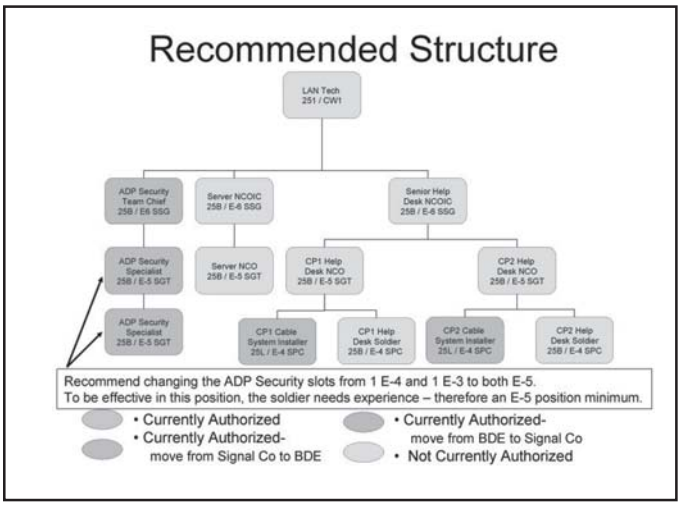


Figure 13. Recommended LAN Management Structure

which falls on the 250 warrant – WAN manager. The responsibility of the signal systems tech is too broad. He can focus on one or two areas and master them. That is why we recommend he drops responsibility for the LAN and retains the tactical radio focus with COMSEC, frequency management and other systems such as global broadcast system and blue force tracker. He will also be responsible for mentoring battalion S6s, along with the brigade S6.

Recommendation: Recommend the signal system tech works for the brigade signal operations officer (see

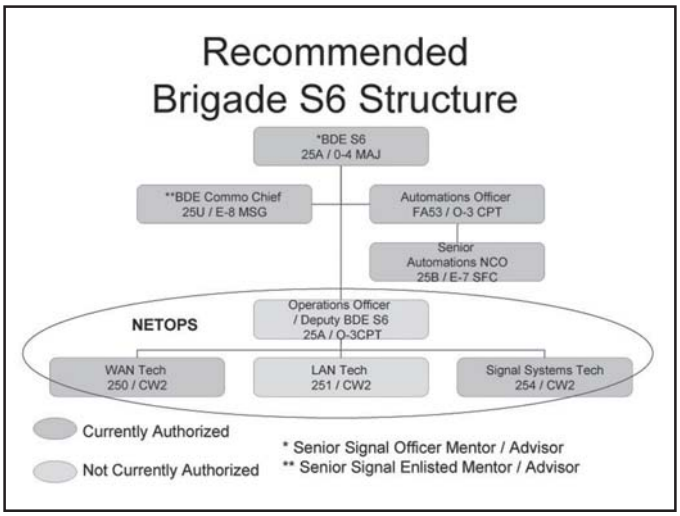


Figure 14. Recommended Brigade Structure

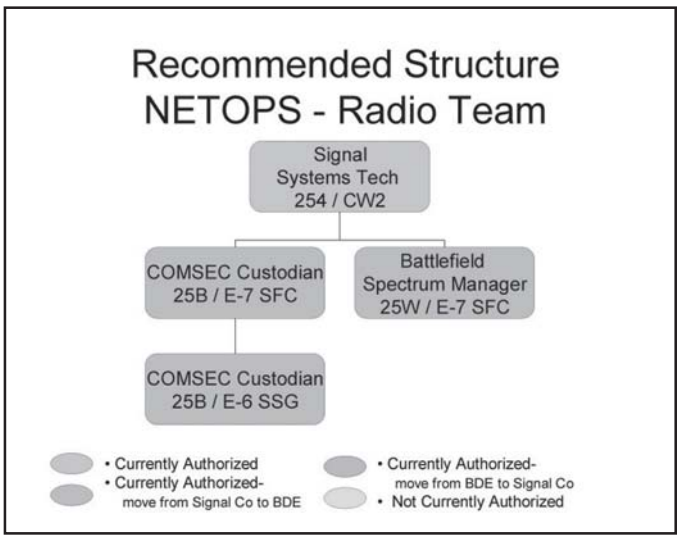


Figure 15. Recommended Structure NETOPS - Radio Team

Figure 14. Recommended Brigade Structure) and the COMSEC custodians and the battlefield spectrum manager works for the signal systems tech (see Figure 15. Recommended Structure NETOPS - Radio Team).

Topic: Signal Company Structure

Issue: Change the structure of the signal company to align with mission requirements.

Discussion: The signal company's current structure only has the two Joint Network Node platoons (see Figure 16. Current Signal Company Structure). We recommended adding a tactical radio platoon to the company organization to provide overall support the brigade's radio requirements. The CPNs would be moved to the signal company as discussed earlier and

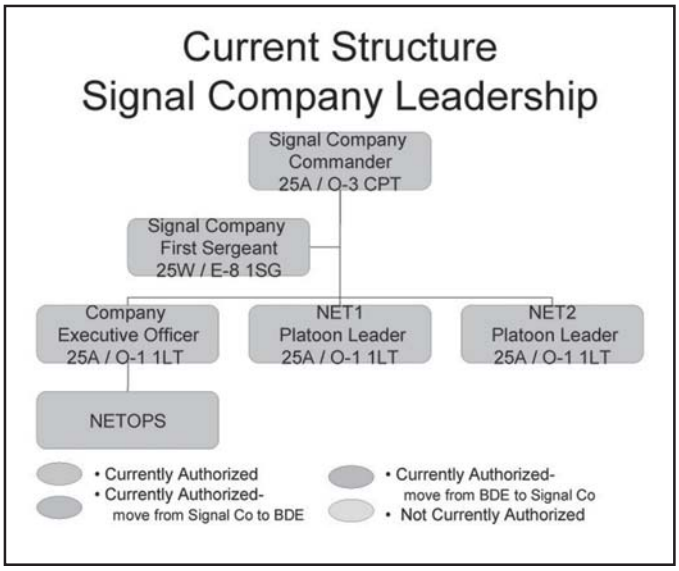


Figure 16. Current Signal Company Structure

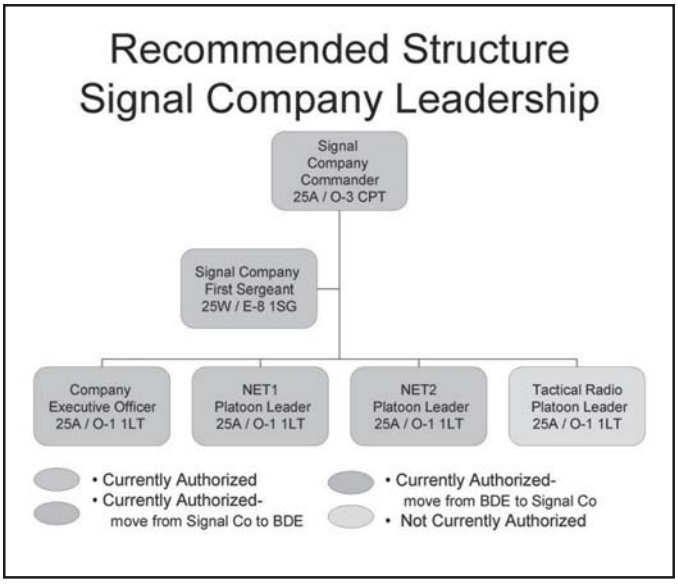


Figure 17. Recommended Signal Company Structure

the NETOPS would be assigned to brigade. Command post platforms have been added to the MTOE, yet no additional manning has been added to maintain these systems. The system consists of four shelters, two per command post, one for CP1 - TOC and one for CP2 - TAC. The platoon would also include the three retrans teams (see Figure 17. Recommended Tactical Radio Platoon Structure). The signal company would then be aligned more toward three support platoons and a headquarters platoon. The two network support platoons would each have one JNN and, ideally, four CPNs. Three CPNs would support the battalions and one as a spare to allow flexibility. Also recommend adding two radios operator maintainers 25Us to man, operate, and maintain the brigade's CPPs. One pair of CPPs stays with CP1 -TOC and one goes forward with the CP2 - TAC.

Recommendation: Reorganize the signal company and add an additional tactical radio platoon and two additional radio operator maintainers to manage the two CPPs (see Figure 18. Recommended Tactical Radio Platoon Structure).

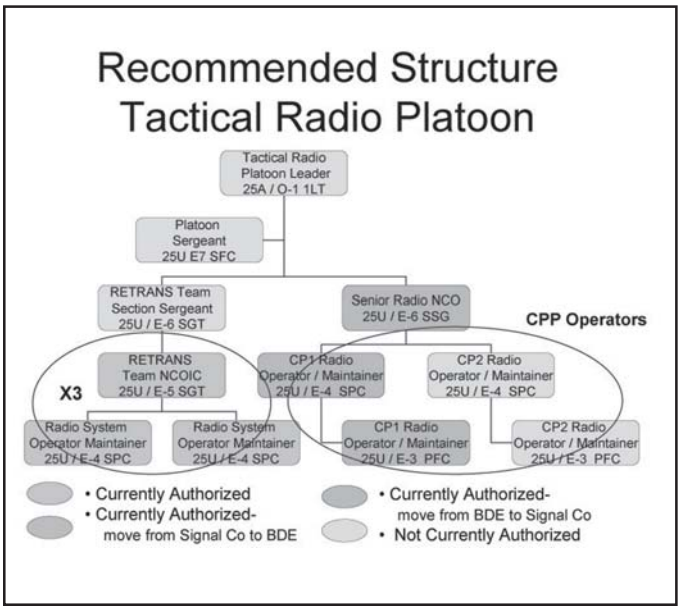


Figure 18. Recommended Tactical Radio Platoon Structure

Topic: Signal Company Restructure
Issue: Reorganize the NET/JNN Platoons
Discussion: Reorganize the NET platoon with the one JNN and four CPN teams under each platoon. This would allow one platoon leader to be forward with command post two TAC, maneuver battalions, and their assigned CPN teams. The platoon leader for net platoon two will back at command post one TOC and with the battalions that traditionally have more of a rear area mission (see Figures 19. and 20. Recommended NET Platoon Structure).

Recommendation: Recommend adding the CPNs to the NET JNN Platoons.

Topic: Signal Company Structure
Issue: The signal company does not have the required personnel and the correct skill sets necessary to support the electronic maintenance requirements of the signal company and the brigade.
Discussion: Recommend adding a maintenance team NCOIC, (25N3P) to oversee and manage the brigade's signal maintenance program. Recommend adding a senior SATCOM operator/system maintainer 25S2P to oversee all satellite and LOS systems and a senior transmission system operator/maintainer 25Q2P

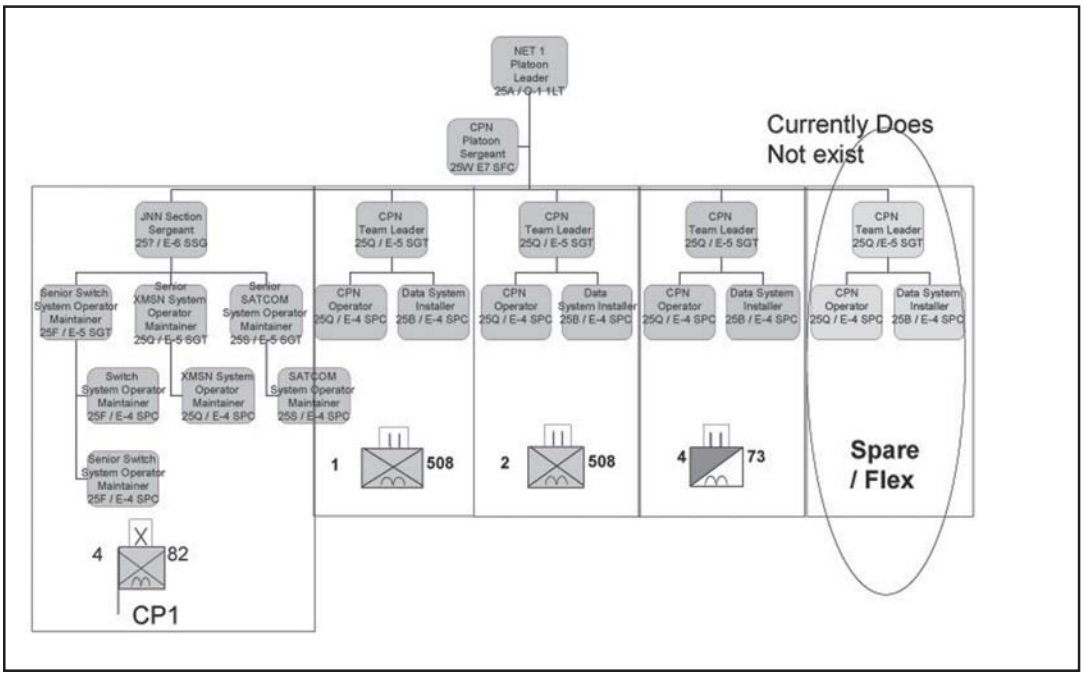


Figure 19. Recommended Structure NET Platoon 1

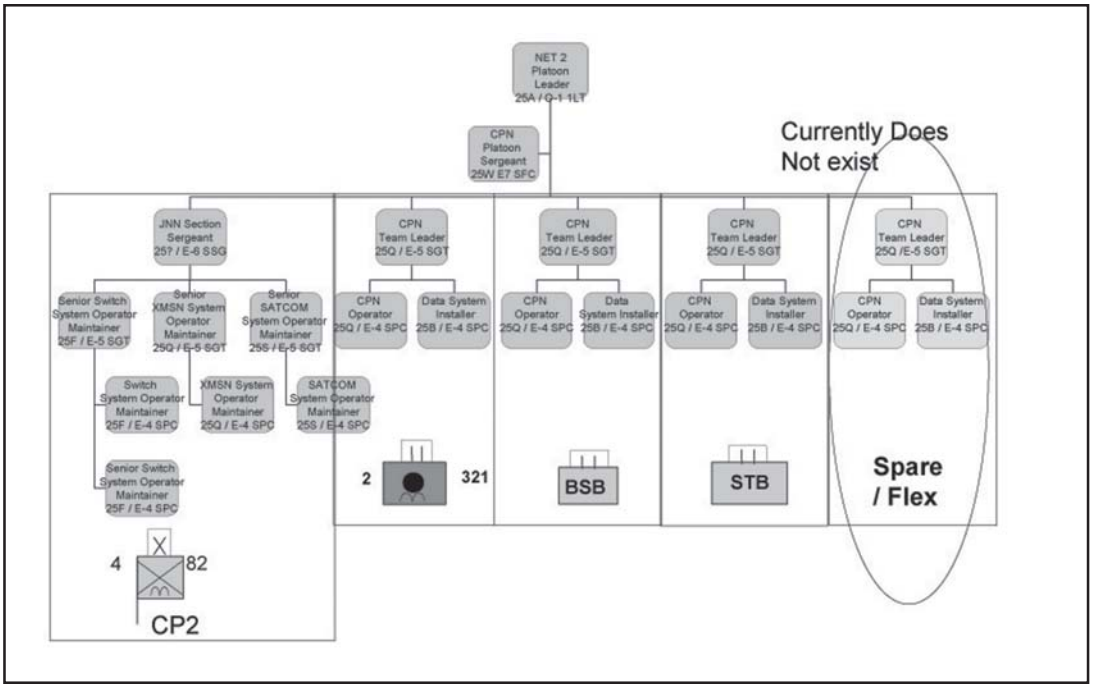


Figure 20. Recommended Structure NET Platoon 2

to oversee and manage the maintenance brigades CPNs. Recommend adding a logistics automation specialist, 92A2P and two logistics automation specialists 92A1P. The logistics automation specialists would split their duties: one would work with the signal company to meet all its JNN, CPN, and signal company maintenance parts, and prescribed load list needs, as well as, keep track of the maintenance status and spare parts kits. The other logistics automation specialist would work with the brigade S6 section and meet all their parts and battery requirements. They will keep track of all equipment orders. The final position needed is a unit movement NCO 42A2P. This NCO will assist in moving the entire signal company for deployment and intra-theater movement (see Figure 21. Recommended HHC for the Signal Company).

Recommendation: Add a maintenance section, a

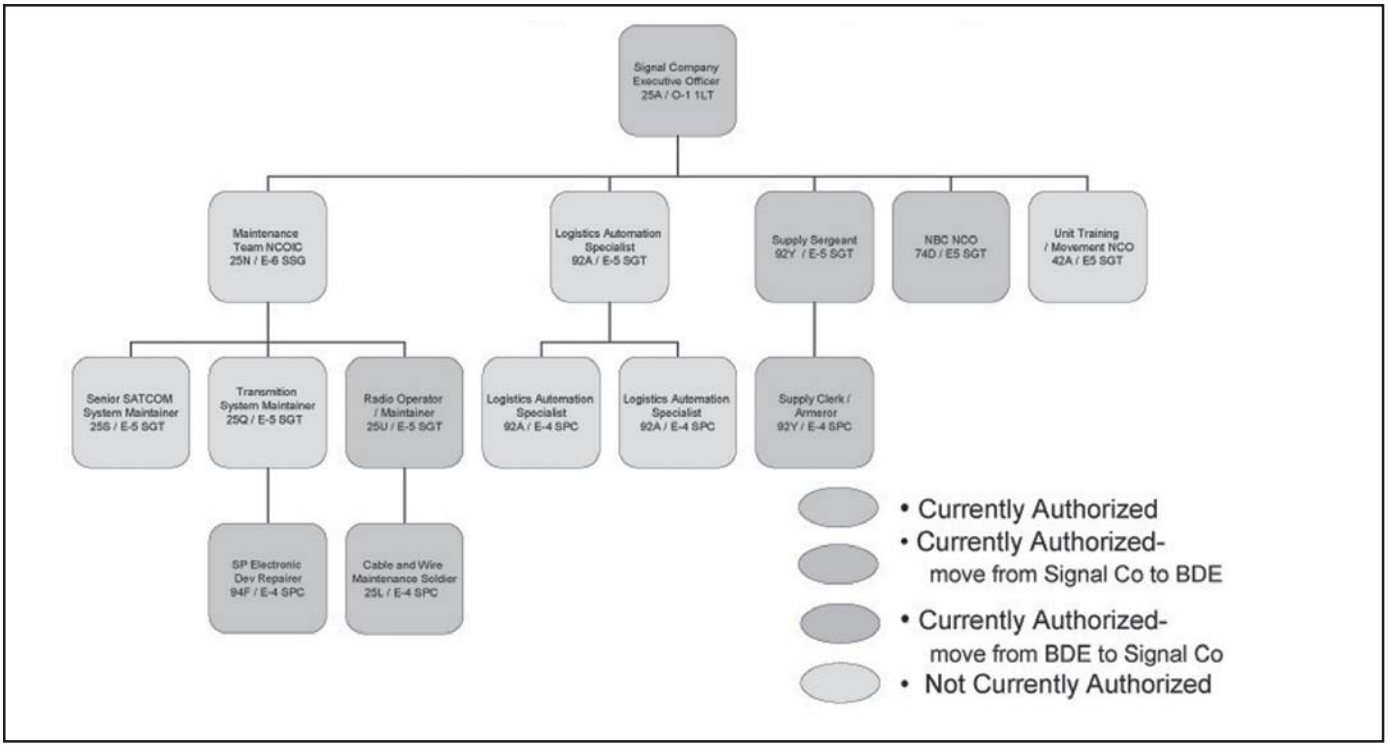


Figure 21. Recommended Structure for HHC Signal Company

unit logistics automation section, and a unit movement NCO to HHC/signal company.

Conclusion:

With the introduction of the Modular Brigade concept and the fielding of new technologies, such as the JNN and CPNs, the brigade signal company is expected to provide seamless, secure, and reliable communications support to the brigade commander enabling him to conduct effective battle command. However, the personnel and structure do not currently support this effort. The changes recommended in this paper attempt to streamline command and control of the brigade's communications architecture and align duties and responsibilities along logical lines. Additionally, the changes outlined in this paper will provide a better career path that promotes development and growth and provides flexibility and depth.

MAJ Schwab is currently assigned as the S6 for 4th Brigade Combat Team, 82nd Airborne Division where he has spent the last 14 months in Afghanistan in support of Operation Enduring Freedom VIII. His previous assignments include cable and wire platoon leader, C Company 304th Signal Battalion, Korea; node center platoon leader, and company executive officer, 51st Signal Battalion Fort Bragg and battalion S6, for 2-319th Field Artillery, 82nd Airborne, Fort Bragg. Schwab commanded Delta Company, 1st SATCOM Battalion Camp Roberts, Calif., and served as an observer-trainer with Operations Group Charlie, Battle Command Training Program, Fort Leavenworth. He is a graduate of Command and General Staff College.

Acronym QuickScan

ADP – Automation Data Processing
BCT – Brigade Combat Team
BFT – Blue Force Tracker
C2 – Command and Control
COIN – Counter-Insurgency
COMSEC – Communications Security
CP1 – Command Post One
CP – Command Post
CP2 – Command Post Two
CPN – Command Post Node
CPP – Command Post Platform
EMS – Electronic Maintenance Section
FA-53 – Functional Area-53
FOB – Forward Operating Base
GBS – Global Broadcast System
IBCT – Infantry Brigade Combat Team
JNN – Joint Network Node
JNTC-S – Joint Network Transfer Capability – Spiral
LAN – Local Area Network
LMR – Land Mobile Radio
MTOE – Modified Table of Organization and Equipment
NCO – Non-commissioned Officer
NCOIC – non-commissioned officer-in-charge
NET – Network
NETOPS – Network Operations
NSS – Network Switching System
OEF – Operation Enduring Freedom
PLL – Prescribed Load List
SATCOM – Satellite Communications
SEN – Small Extension Nodes
STB – Special Troops Battalion
TAC – Tactical Command Post
TOC – Tactical Operations Center
WAN – Wide Area Network

Tail of the surge – *tip of the spear*

By MAJs Gina Thomas and Ron Cohen

The Iraqi Theater of Operations is a young and maturing network that will challenge any signal officer far beyond any field problem. The ITO has constantly changing network operation rules and procedures that impact a signal officer's ability to meet the needs of his/her commander. On the flip side, the ITO will truly develop young and old S6s with network improvements and procedures and doctrine development. Additionally, the garrison infrastructure of most forward operating bases provides for a well-balanced network between strategic and tactical.

One of the first hurdles to get over as a new S6 in the ITO is the garrison mentality of the network. Being in a combat zone and learning to deal with little to no control of that network to meet the commander's needs is tough for most S6s to accept. Yes, there will be collocated operating bases and remote locations that challenge any S6 with connectivity that can only be provided by a command post node or AN/50 to communicate. But, for the masses, the network architecture is rather robust for such a young theater and controlled by the technical control facility and enterprise operations.

TF XII (12th Combat Aviation Brigade) has been in Iraq for six months. The unit's original mission was in Balad supporting corps. The network architecture at Balad is extremely robust although there are significant differences between the east and west side of camp and the Army and Air Force networks. At Taji, where TF XII moved after receiving a change of mission, the network lacks some of the robustness that Balad provided. I can tell you any network an S6 falls in will provide him/her opportunity to improve it. The difference between network improvements on forward operating bases is how network upgrades are approved and implemented. Balad's approving authority is a Joint Communications-Iraq board consisting of Army and Air Force personnel. In contrast, the BCT S6s in concert with the TCF officer-in-charge run the Taji Communications-Iraq board. Additionally, Balad Joint Communications-Iraq took on the responsibility of site surveys and requisitioning of equipment for projects when approved. At Taji, the burden of procuring project materials and equipment rest on the BCT S6.

One of the benefits in the ITO is the ability to procure new automation equipment. The corps realizes this is a maturing network and lacks the architecture of more mature garrison facilities. Funds are available and to request new automation equipment only requires a Communications and Signals Staff validation board packet. TF XII has submitted at least a dozen or so packets valued at more than 1.25 million dollars for life cycle replacement, new automation requirements, automation supplies, and more. One note is that acquiring Land Mobile Radios is nearly impossible. After six months in theater, TF XII has yet to receive any radios even after Department of the Army G3 approved the unit's operational needs statement, and corps' plan to distribute 40,000 EF Johnson LMRs has stalled.

A final note about some of the aggravations a S6 will experience is the difference in how the TCFs are run. One of the most significant issues units face when moving in the ITO is that each TCF requires a computer to be baselined even if the computer is on the same domain – iraq.centcom. This requirement became such an issue that during an open discussion at the corps quarterly signal conference the Joint NetOps Control Center-Iraq officer-in-charge, BG Hawkins, ordered C6 to resolve this matter and the differences in requirements from one FOB to another. I can say that after the analysis which involved many BCT S6s – little has changed and the fight with the TCF continues.

The Iraqi theater provides any S6 challenges and many opportunities to develop skills. Setting aside a tactical network mentality has to be the first lesson learned by every S6. The theater is maturing and implementing long term network improvements and operations must be the focus while supporting the fight outside the wire.

I would like to agree, there are many challenges that an S6 will face in the ITO. Foremost, three key areas:

1) Reset/Regeneration of equipment and train-up of personnel,
2) Reception, staging, and onward integration in Kuwait, and
3) Movement into area of responsibility, setup, and transition to steady state operations.

However, it is critical for the brigade or battalion S6 to be prepared for the unexpected and never lose focus of the priorities of the tactical network. Last minute changes in battle space, repeated movement of TOC locations or "jumping the TOC," and requirements to provide service and equipment to elements above modified table of equipment in an ever increasingly stressed frequency

spectrum environment are just a few of the battles a S6 must face while managing a tactical network.

A brigade combat team through the miracle of modularity has become essentially autonomous in that they operate their own piece of the network and their own communications security account. The BCT now provides services to the brigade and subordinate elements that were previously provided by the Division Signal Battalion. When you also bring into account the additional unexpected challenges that a communications staff officer must be prepared for, the S6 job becomes more complicated than ever.

When 3rd BCT arrived in theater we were informed that we would conduct a "non-traditional RIP." Typically, units conduct a relief-in-place with the outgoing unit in preparation for the Transfer of Authority to the newly arrived unit.

3rd BCT deployed as the "surge" draw down began - transitioning five BCTs out of theater and leaving no unit to RIP with officially. We arrived to Taji and quickly learned that although the surge was ending - space on Taji was tight with nearly 17,000 Soldiers on site. We were forced to occupy a building that had been gutted by the previous tenants in an area that had little to no quality of life for our Soldiers in relation to the rest of the units on the FOB.

Figure 2. Three BCT TOC Setup on North Taji in Baghdad.

In addition, 3rd BCT left Fort Carson with a number of automations equipment shortfalls, including a lack of sufficient hand-held radios that operate in the FM frequency range for compatibility with single-channel-ground-to-air radios, switches, laptops, and VoIP phones. Despite the conditions, we worked continuously day and night to set up the tactical operations center. Within weeks of arrival the Stryker Brigade established its headquarters in an empty warehouse on North Taji and facilitated battalion movement into battle space.

We now operate in a counter insurgency environment, where we combine offensive, defensive, and stability operations in an attempt to achieve the conditions required to establish effective governance, essential services, and economic development. In this operational environment intelligence information is filtered from the bottom up, from dismounted patrols on the ground relaying information over frequency modulation back to the joint security station, combat outpost or patrol base in sector or from concerned local citizens relaying tips over cell phones to battalion TOCs. All of this information is brought in at the company level, analyzed, and sent up to the battalion for further analysis and targeting; key to this is adequate communications systems in place at the lowest level.

Communication requirements at the company have changed from traditional FM and Force Battle Command Brigade and Below – Lower Tactical Internet to now requiring secure Internet Protocol router/non-secure Internet Protocol router/voice over Internet Protocol (Upper Tactical Internet) and the ability to conduct collaborative meetings and input significant activities over the network from the bottom up. Every Soldier is a sensor, which increases the number of

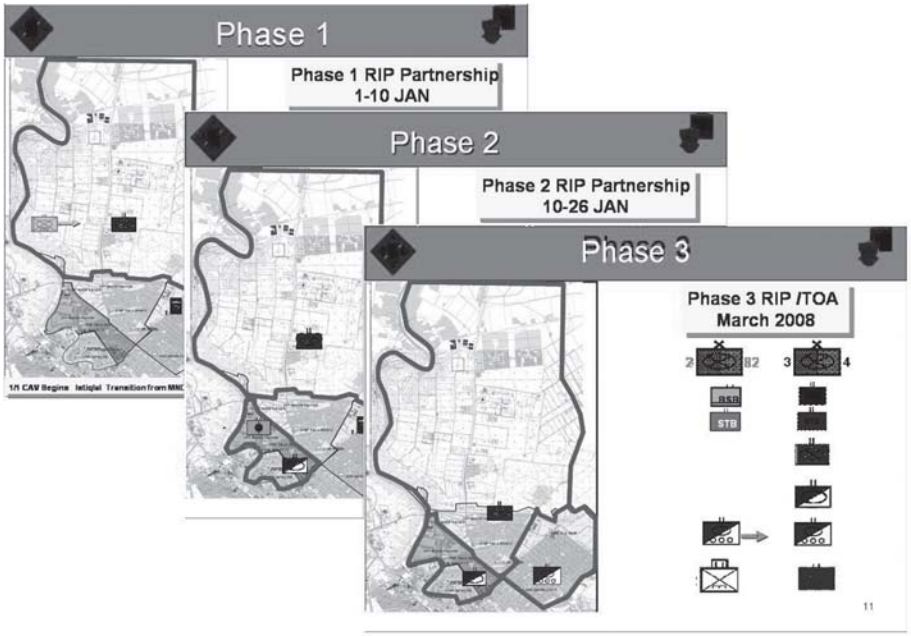


Figure 1. Depicts the Surge Transition for three BCT 4th Infantry Division as they assumed the equivalent of two BCT's battlespace.

Figure 3. An SIPR Point of Presence sits outside a battalion headquarters providing communications support where MTOE equipment was not available.

information injection points into the network. Companies now, more than ever, need the ability to adequately share information, filter that information to higher echelons, and conduct non-lethal targeting to home in on the insurgents.

Current MTOE authorizations for radios and computers do not adequately meet requirements nor do they adequately provide the network transmission capability at the company level. The joint network transport capability system stops at the battalion level with the command post node Ku satellite band Terminal Trailer and a V1 line-of-sight system, but what do we have for the company level? In addition, coalition forces continue to partner with Iraqi Army units to help increase the strength and presence of the Iraqi Army. The BCTs are typically responsible with resourcing the mlitary transition teams, national police transition teams, embedded provincial reconstruction teams and other enablers that support both lethal and non-lethal operations.

In recent months the Multinational Division-Baghdad commanding general directed that all COPs and JSSs have NIPR/SIPR/VoIP capability, as well as having adequate Morale, Welfare, and Recreation access for the Soldiers. Also as BCT and battalion headquarters begin to push off the FOBs and out into sector to facilitate continuous counter insurgency operations, the demands of collaborative applications such as command post of the future, Adobe Connects (Breeze) collaboration meetings and the SharePoint portal file sharing system will, challenge S6s at all levels to provide these capabilities to their commanders. To date we have resourced these requirements with commercial-off-the-shelf, SIPR, Point of Presence, Virtual Satellite Aperture Terminals, or dismounted LOS systems connected into data packages outfitted with switches, routers, and Cisco Call Manager Express to provide these capabilities. However these resources were acquired through operational needs statements, and purchase requests, and commitments that took months to process.

The bottom line is a commander shouldn't have to worry about communications, their job is to command and control, our job is to facilitate with adequate systems and with the outstanding signal Soldiers who make up our great Army.

Figure 4. SPC Samuel Newman, SPC Jose Lozoya, and SPC Travis Davis from B Co, 3STB stand in front of Joint Network Node 6770 equipment outside 3BCT TOC on North Taji.

MAJ Thomas serves as the brigade S6 for 3rd Brigade Combat Team, 4th Infantry Division out of Fort Carson, Colo. Currently deployed within the Multi-National Division - Baghdad area of operations for a 15 month tour.

MAJ Cohen was assigned to 12th Combat Aviation Brigade three weeks before he deployed to Kuwait. He has been assigned to 311th Military Intelligence Battalion, Fort Campbell; 44th Signal Battalion, 7th Signal Brigade; 3ID where he served as G6 Plans Officer

for 19 months and D/123rd company commander during OIF I; Georgia Southern University APMS; and 12th CAB as the BDE S6.

Acronym QuickScan

BCT – Brigade Combat Team
BFT – Blue Force Tracker
BSTB – Brigade Special Troops Battalion
C2 – command and control
C6 – Communications and Signals Staff
CFT – Cross Function Team
COB – Collocation Operating Base
COIN – Counter Insurgency
COMSEC – Communications Security
COP – Combat Outpost
CPNs – Command Post Nodes
CPOF – Command Post of the Future
DCGS – Distributed Common Ground System
ePRT – embedded Provincial Reconstruction Team
FBCB2 – Force Battle Command Brigade and Below
FOBs – Forward Operating Bases
ID – Infantry Division
ITO – Iraqi Theater of Operations
JCOOM-I – Joint Communications-Integrator
JNCC-I – Joint NetOps Control Center-Iraq
JNTC – Joint Network Transport Capability
JNTC-S – Joint Network Transport Capability – Spiral
JSS – Joint Security Station
LMRs – Land Mobile Radios
MiTT – Military Transition Teams
MND-B – Multi-National Division - Baghdad
MTOE – Modified Table of Organization and Equipment
NETOPS – Network Operations
NIPR – Non Secure Internet Protocol
NPTT – National Police Transition Teams
OIF – Operation Iraqi Freedom
ONS – Operational Needs Statements
PB – Patrol Base
PR&Cs – Purchase Requests and Commitments
RIP – Relief in Place
RSOI – Reception, Staging, and Onward Integration
SIGO – signal officer
SINCGARs – Single Channel Ground Airborne Radio System
SIPR – Secure Internet Protocol
SPOP – SIPR Point of Presence
STT – Satellite Terminal Trailer
TCF – Technical Control Facility
TF XII – Technical Control Facility 12
TOC – Tactical Operations Center
TPE – Theater Provided Equipment
VOIP – Voice over Internet Protocol

Overcoming communications challenges of 07 surge

By MAJ Mitchell McKinney

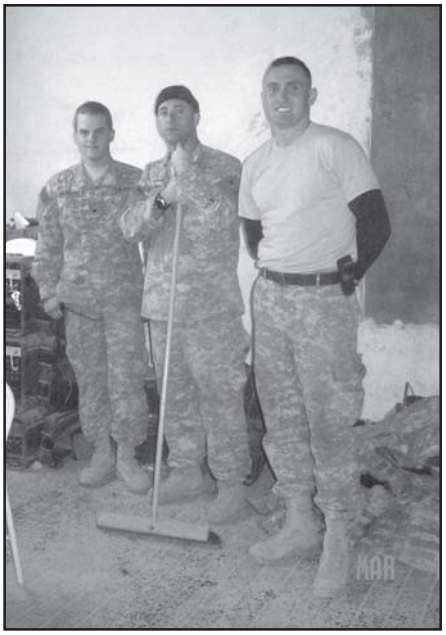
In the summer of 2006, Iraq was precariously perched on the brink of civil war. The nation's government desperately struggled to overcome ethnic differences as the deadly rift between Sunni and Shia Muslim factions raged out of control. In response, President George W. Bush and his military advisors devised a plan to surge additional American forces into the most volatile areas of Iraq. The 'Surge,' as it has been labeled, brought the total number of United States forces in Iraq to its highest levels since the initial invasion in 2003.

The first unit to deploy as part of the Surge of 2007 was the 2nd Brigade Combat Team, 82nd Airborne Division (known as the Falcon Brigade or Falcon Brigade Combat Team). Organic to 2nd Brigade Combat Team was a group of communications specialists responsible for establishing and maintaining the brigade's vital communications network. In order to sustain the brigade's communications systems, these individuals had to overcome numerous obstacles, including modularity, antiquated communications equipment, and continuously changing missions.

In the summer of 2006, the Falcon Brigade, an Airborne Infantry Regiment with a proud military lineage, was in the process of transforming into a modularized brigade combat team. On June 26, 2006, the 325th Airborne Infantry Regiment officially became known as the 2nd Brigade Combat Team. Name transformation aside, the Falcon Brigade was ill equipped to transform into a modular BCT, especially with regard to the brigade's communications infrastructure. Specifically, the Falcon Brigade lacked automations equipment, had an overburdened higher command, and operated off a dysfunctional doctrinal template. Fortunately, the American spirit was alive and well and the brigade was filled with extremely competent signaleers, motivated and eager to overcome any challenge in order to provide continuous communications to warfighters expected to operate in the most austere and lethal environments.

The ramp up for deployment began with a modularization process that was conducted in conjunction with a battalion sized deployment to Iraq in support of the Special Operations Command. The fielding of equipment and training of Joint Network Transfer Capability – Spiral brought an entirely new capability to what was previously an Airborne Infantry Regiment dependent on personally carried radios. Following that process, the unit immediately conducted several short-term equipment validation exercises and within six months was expected to rotate through the Joint Readiness Training Center in January 2007. Surprisingly, the mission was hastily changed to a deployment to Iraq with less than two weeks notice.

During the Christmas Exodus, the brigade was ordered to deploy to Kuwait in preparation for a possible deployment to Iraq. This unexpected news abruptly ended the holiday festivities for most of the Soldiers assigned to the Falcon Brigade and required them to end their Christmas vacations in order to deploy. Within two weeks of being ordered to the Middle East, the majority of the BCT was in Kuwait preparing for combat operations in Iraq. The Falcons were directed to incorporate numerous external units into a new organizational team including a Department of State embedded Provincial Reconstruction Team, psychological operations



(Above) The 2nd BCT, 82nd Airborne Division, known as the Falcon Brigade, or Falcon BCT, deployed as part of the first of five surge brigades load for deployment to stabilize Adhamiyah and Sadr City, Iraq. (Right) Joint Network Node 7748 team cleans up at Adhamiyah command outpost.

units, civil affairs personnel, Air Force teams, U.S. Marine Corps Intelligence personnel as well as U.S. Navy Electronic Warfare Operations personnel.

By mid-January 2007, the Falcon BCT had moved into Iraq and was assigned the task of stabilizing Adhamiyah and Sadr City, two highly volatile and contentious areas of north eastern Baghdad. Prior to the unit's arrival, the U.S. presence in north eastern Baghdad was extremely limited and grossly inadequate to control the area. This area had been previously treated as an 'economy of force' which meant there was precious little intelligence available about the area's 2.3 million residents or its government.

In order to effectively dominate the operational environment COL B. Don Farris, commander of 2nd BCT, established his headquarters at Camp Taji, Iraq, and pushed more than 85 percent of his force into Adhamiyah. Farris' aggressive plan of action posed a number of problems for the brigade's signaleers. Those problems were compounded as the brigade morphed into a cross function team that included non-doctrinal subordinate units and augmentees, Civilians, transition teams, and Iraqi Security Forces.

Throughout the Falcon Brigade's Operation Iraqi Freedom rotation, most units within the Multi-National Division-Baghdad positioned their command posts on larger forward operating bases, which provided them with a strategic infrastructure based on fiber-optic connectivity. Although the Falcon Brigade established its brigade headquarters in empty warehouses on Camp Taji, Iraq (a large FOB with a strategic infrastructure), the unit was initially unable to operate on the strategic network. As the first of five Surge brigades, the Falcon Brigade left Fort Bragg with a number of automations equipment shortfalls, including a lack of Cisco switches and inferior equipment. These deficiencies from a capabilities perspective initially precluded the Falcon Brigade from operating on the strategic network, which put the unit months behind its sister units on the same FOB.

The Falcon Brigade's initial struggles to establish a functioning headquarters capable of supporting four maneuver battalions operating and residing in a forward battle space was made worse by a shortage of Theater Provided Equipment. When compared to the other nine MND-B controlled BCTs, the Falcon Brigade's communication infrastructure was grossly lacking. Specifically, with regard to computers and Voice over Internet Protocol phones, each of the different Brigades averaged 900 computers and VoIP phones compared to fewer than 200 for the Falcon Brigade. In order to overcome this virtual shortfall in leadership expectations for its command and control capabilities, the unit ordered millions of dollars of equipment, which eventually brought the unit's C2 capabilities online with its sister units.

In order to change the outcome of this desperately important fight for downtown Baghdad, the Falcons changed the way they approached the fight itself. As other units were consolidating their assets on large FOBs, the 2nd Brigade Commander, COL B. Don Farris instructed his units to push at least 85 percent of their personnel into the battle space! He called for the units to conduct their fight around the clock and expected every battalion to pursue a "day job, night job". The day job consisted of non-lethal effects based missions which were executed to improve the way the Iraqi civilians viewed Coalition Forces and more importantly, how they viewed their own Iraqi soldiers and police. The night job focused on employing kinetic operations against insurgents and terrorists in support of the strategic line of operation. Farris' "day job, night job" mantra provided the brigade with a balanced formula

COL Don Farris, commander 2nd BCT, and LTC Richard Kim, exit the first meeting with Sadr City mayor.

to effectively dismantle a well equipped and highly lethal insurgency in Adhamiyah, while isolating Sadr City. Through timely intelligence, quick strikes and constant presence, the Falcon Brigade successfully detained more than a thousand criminals and insurgents, including almost 150 high value targets. As the surge progressed, Sadr City, the potentially politically strategic flash point crammed with more than 1.2 million impoverished Iraqis, remained quiet as the mixed neighborhoods of Adhamiyah began to flourish as never before seen since the fall of the Saddam Hussein regime. This was only possible by the commander's decision to live amongst the people of Baghdad.

In order to meet the commander's intent, the signal community again had to push its personnel and equipment past the limits of standard Army doctrinal expectations. The brigade separated its Warfighter Information Network-Tactical Increment 1 Nodes and implemented line-of-sight connectivity for every battalion headquarters in sector. This required a drastic deviation from the newly established modularity doctrine and the sharing of battalion signal assets (equipment and personnel) throughout the CFT. This uncomfortable separation meant that battalion commanders were separated from their communication personnel and their command post nodes.

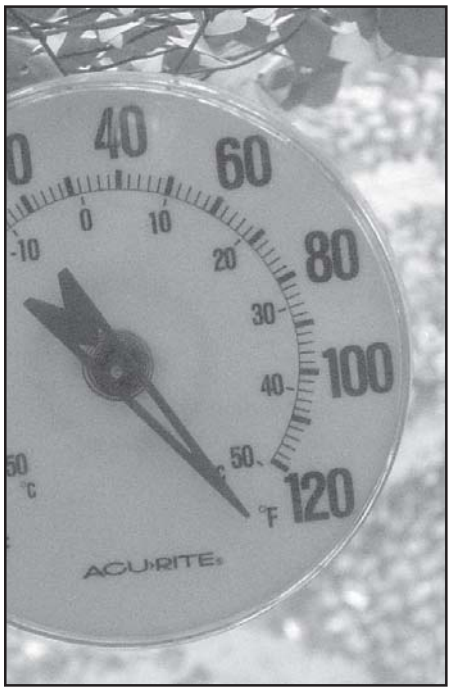
The addition of command post of the future and the distributed common ground system systems in conjunction with the SharePoint Portal and Adobe Connect (Breeze) incorporated an increased bandwidth requirement that the JNTC-S was not fielded to support, therefore the unit relied heavily on the strategic fiber infrastructure on Camp Taji provided by Multi-National Force-Iraq, as well as, high bandwidth line-of-sight connections to achieve a level of collaboration never before achieved by a tactical brigade level unit. The complexity of the network in Iraq today increases with each subsequent rotation and is only outpaced by combatant commanders' expectations and demands for further improvements.

Added to the complexity of the communications architecture was the fact that many of the radios Soldiers were fielded don't talk to each other. For instance, Army systems like the blue force tracker system and the Force Battle Command Brigade and Below system whose purpose is to reduce fratricide incidents and improve leader situational awareness, do not seamlessly talk to each other and were both present in the unit's battle space in equal numbers.

Additionally, the hand-held radios teams used to talk to each other were not compatible with each other and were always in short supply. In fact, even though the unit was fielded almost 1,000 EF Johnson Land Mobile Radios, they were initially not authorized for use off the FOBs and when that restriction

Tactical TOC baptism in Iraq.

CPT Jason Arnold on Command Outpost Apache roof. LOS connectivity for each battalion headquarters was established. WIN-T Inc 1 Nodes had to be separated because of equipment shortfalls. Eventually this was overcome.



The heat if the Iraqi summers often reached 120 degrees.

was lifted, they were still incompatible with the radios mounted in vehicles. This caused much frustration that was only overcome by the ingenuity and resourcefulness of the unit's dismounted patrols through sheer determination, planning and will power.

More frustration was faced by all brigade-size units throughout Iraq as they attempted to overcome the cumbersome organizational structures they were doctrinally saddled with at the onset of the modularization conversion. Almost every unit changed its structure to place the network operations section under the BCT S6.

The seemingly haphazard placement of the NETOPS under the brigade special troops battalion forced the dalcon brigade to create a knowledge management group, chaired by the BSTB Commander, LTC James G. Zellmer. The Falcon Knowledge Management team included all brigade communications leaders and eventually solved numerous organizational structure issues. In addition to the frustrations associated with poorly designed organizational structure, the unit achieved unprecedented results by overcoming the heat of an Iraqi summer where temperatures commonly exceed 120 degrees and dealing with the tragic loss of life which comes all too often in a war torn land teetering on the verge of civil war.

As the 15-month deployment dragged on, it became apparent that the Falcon Brigade was making an important contribution to the overall security situation in Baghdad. As businesses and schools began to reopen, displaced families returned and attacks on coalition and Iraqi forces dramatically decreased, it became apparent that life and stability was returning to Adhamiyah. The resurgence of peace made it extremely difficult for insurgents to openly operate in Adhamiyah without being brought to justice or killed. At some point during the surge of 2007, reporters stopped talking about a civil war in Iraq and began to focus on economic and political reconciliation. The Falcon Brigade was able to drastically change the landscape in Adhamiyah and Sadr City because information flowed continuously throughout the CFT. This allowed subordinate units to operate in conjunction with one another in furtherance of the commander's intent.

The communications architecture that enabled command and control of the Falcon CFT was not planned and was never envisioned by Farris prior to the deployment but it was necessary to ensure success.

That network architecture and all of the functionality it brought with it flattened the organizational structure to the point where the brigade commander could pass along his intent across all levels of his command simultaneously as well as pass information to the unit's higher headquarters. This complex, redundant and highly reliable architecture was connected by some of the most highly motivated signal Soldiers who refused to allow one life to be taken due to an inability to communicate.

These signal Soldiers will undoubtedly look back one day and feel great pride because of their achievements during the Surge of 2007.

MAJ McKinney has served the Army for more than 20 years. He has been an enlisted infantryman and aeroscout observer attaining the rank of staff sergeant. After graduating from Officer Candidate School, he served as a signal officer in the 4th Infantry Division, 75th Ranger Regiment, XVIII Airborne Corps and has been assigned as the brigade S6 at 2nd Brigade Combat Team, 82nd Airborne Division since March 2006.

ACRONYM QUICKSCAN

BCT – Brigade Combat Team
BFT – Blue Force Tracker
BSTB – Brigade Special Troops Battalion
C2 – command and control
CFT – Cross Function Team
CPNs – Command Post Nodes
CPOF – Command Post of the Future
DCGS – Distributed Common Ground System
ePRT – embedded Provincial Reconstruction Team
FBCB2 – Force Battle Command Brigade and Below
FOBs – Forward Operating Bases
JNTC-S – Joint Network Transfer Capability – Spiral
LMRs – Land Mobile Radios
MND-B – Multi-National Division - Baghdad
MND-F – Multi-National Force - Iraq
NETOPS – Network Operations
OIF – Operation Iraqi Freedom
TPE – Theater Provided Equipment
U.S. – United States
VoIP – Voice over Internet protocol

C4 support in Afghanistan OEF VIII

By LTC Patrick Dedham and CJ6 staff

The 82nd Airborne Division G6 deployed to Afghanistan in January 2007 and served as the Combined Joint Task Force CJ6 until April 2008 for Operation Enduring Freedom VIII. The fifteen months as the CJ6 team was extremely challenging, rewarding, educational, and at times, frustrating. This article highlights some of the key lessons learned and observations acted on in order to improve command, control communications, and computers support to the CJTF. The actions taken by the CJ6 team were an attempt to create a positive effect on the battlefield in Afghanistan using C4.

Expanding the network to the lowest level:

Network connectivity must be expanded to the lowest level in a counter-insurgent fight. If the network is pushed low enough and used the right way it can be an effective combat enabler. It is about flattening information so that we can become quicker in moving data to information, which leads to decision making, finally resulting in action. We do not want information to move through bureaucratic tactical chains of command – squad, to platoon, to company, to battalion, to brigade, to division or the other way around before action is taken. We want everyone to see the information at the same time so that anyone who can take action on the information immediately does so.

The network was pushed to platoon level in Afghanistan, when possible, during OEF VIII increasing the amount of C4 nodes from 68 to 98 in 15 months. These non-standard systems provide network connectivity allowed the CJTF to continue to push combat forces to forward locations where the enemy had freedom of movement before.

With these systems, the forward tactical commander had access to the intelligence and operational systems that allowed for real-time application on the battlefield. They provided access to battle command, situational awareness, common operational picture, database retrieval and input, biometrics, target recognition, and unmanned aerial vehicle streaming video. These systems also allowed the task force commander to rapidly disseminate complex information and plans across a widely distributed force. In essence, it allows for the massing of information to apply combat power most effectively in order to accomplish the commander's objectives. The effect is improved communications and faster access to information.

A division is not authorized systems like the secure Internet Protocol router point of presence terminal or traffic terminal at the company level. Therefore, we had to procure the systems in theater and take personnel out of units that were not signal Soldiers in order to provide personnel to operate the systems. Also the systems were not available for training prior to deployment.

It should be a priority that the C4 systems and the personnel to operate the systems are part of a division's Modified Table of Organizational Equipment in order to provide network connectivity to at least the company level.

Full motion video to the action level:

Moving the network to the lowest level allowed the CJTF to distribute intelligence, surveillance, and reconnaissance information, such as full motion video, to the action level.

The distribution of FMV from Unmanned Aerial Vehicles such as Warrior-A, Shadow, and Predator to the lowest level significantly helped to reduce sensor-to-shooter time in order to target more effectively. In Afghanistan, the CJTF acquired and deployed Global Broadcast Systems to all battalion command posts that controlled battle space, procured Digital Video Broadcast-Receive Communications System production suites from Defense Systems Information Agency to push Shadow and Warrior-A FMV feeds into the GBS network, and used the persistent surveillance dissemination system of systems to compress the video so that it could be distributed throughout SIPRNET in the CJOA-A.

The effect was improved situational awareness and overall reaction time across the CJTF. The authorization of GBS-IP suites to every maneuver battalion should also be a top priority in the Army.

The distribution of FMV to the lowest level through secure Internet Potocol router network using PSDS2 was a challenge. The training provided in the Joint Network Node fielding was inadequate with respect to the installation, operation, and maintenance of multicast networking. Multicast traffic is the bearer for much of the traffic of the network and is the only way that video transits the network. Consequently, issues like Protocol Independent Multicast, Multicast Source Discovery Protocol and Class D Addressing are critical to mission success but are still viewed as a backwater topic. This needs to change. Further, we urgently need training and fielding of tools that will allow us to manage and view multicast traffic. The training provided for content networking, particularly video, was non-existent before we got to theater. This is a significant shortfall given that we see video dissemination via JNTC-S multicast, GBS multicast, and DVB-RCS multicast.

We must increase the quality and quantity of multicast training provided to the units fielding JNTC-S and provides multicast tools and training to the field. The Army must provide an integrative training program that trains the network operations at all levels how to IOM video systems and how to integrate them via multicast networks, and finally all maneuver battalions must be fielded GBS-IP suites.

The Afghanistan network is predominantly satellite based because of the distances and terrain. Lots of network capability was wasted at our battalion-size forward operating bases because large files had to traverse satellite links when the information was only being sent internally to the FOB.

C4 ISR Integration:

It is important to note a common issue we continuously ran into during our time in Afghanistan. That is the issue of C4 ISR non-integration.

Several intelligence, surveillance, and reconnaissance assets such as FMV platforms, SIGINT platforms, and Unmanned Ground Sensors (Image Intelligence), are incredibly valuable assets for the war-fighter that could create a greater positive effect if they were better integrated into the common C4 networks. Instead, the majority of ISR platforms feed information to a point, usually behind a steel door, on an independent network instead of a common network like SIPRNET, which would make them much more distributable.

The energy and time consumed in procurement, engineering, and training the procedures for integrating ISR assets, such as the Shadow UAV, at the division level is enormous. ISR assets must be fully integrated into commonly used C4 networks before they are delivered to units so that the information the ISR assets provide can be widely distributed. Program management control measures must be developed to ensure integration into C4 networks so that the information provided by ISR assets are delivered to a network instead of just to a point.

Forward deploying information services:

The Afghanistan network is predominantly satellite based because of the distances and terrain. Lots of network capability was wasted at our battalion-size forward operating bases because large files had to traverse satellite links when the information was only being sent internally to the FOB.

E-mail servers are maintained at the brigade combat team level because battalions do not have the personnel to operate and maintain the servers. When an e-mail, with a large attachment, is sent internal to a FOB it must traverse a satellite link to hit the e-mail server only to be distributed back to the FOB it came from.

To save resources we installed file servers at the battalion FOBs; now they simply send a link directing the receivers to the information, which is on the file server at the FOB. Other services such as biometrics, virtual email exchange servers, and map servers are and could also be deployed forward to improve information dissemination.

Implementing network acceleration:

A key problem in satellite-based data communication is network lag due to TCP performance problems. The "TCP problem" is a major reason applications, such as Outlook, take a long time to load. A second problem is a growing appetite for applications such as FMV, biometrics, and command post of the future that require maximum data capacity managed above the IP layer. This reality means that you have to manage the network at application layer in order to add

capacity and visibility to JNTC-S. The Turbo IP appliance was an attempt to address this but was inadequate to our needs here in the CJOA.

CJTF-82 enabled the network to drastically exceed the designed load by two methods: installation of expand accelerators and refining our quality of service. Through these methods we have seen throughput for the battalion level command posts increase by 30 percent on average allowing us to deploy more services to the battalion CP.

JNTC equipped network operations and engineering sections should be trained to manage layer 4 traffic appliances, such as Expand, Cisco WAAS and Riverbed. These platforms should be included in the CJOA to, first, get a handle on layer 4 to layer 7 traffic metrics and to optimize, to the greatest degree possible the traffic. Essentially digging where it matters so that we can improve what really counts – the services on the network not just the network.

Coalition information sharing:

In Afghanistan there are three distinct coalition partner layers; the Global Counter-Terrorism Force, the International Security Assistance Force, and the North Atlantic Treaty Organization. Each of the coalition partners are in different security enclaves causing them to operate on different networks. In order to facilitate information flow in this environment we came to the conclusion that you must do three things:

1. Products must be written for release.
2. The units must have trained Foreign Disclosure Officer/ Representatives
3. Constant air-gapping of information to different networks must be executed
4. And finally, the fourth way to improve information flow within a coalition environment is technical solutions have to be developed.

In Afghanistan the most significant technical solution that we developed was CENTRIXS Voice over Internet Protocol telephone calls from and to ISAF VoIP. We were able to stand-up e-mail guards between ISAF-S and CENTRIXS but they were problematic. In a perfect world there would be a network DMZ with cross domain feeders for all the disparate networks for all services – to include our own networks - Joint Worldwide Intelligence Communications System, SIPR, etc.

C4 Infrastructure:

The communications infrastructure at FOBs was the number one C4 support problem in the CJOA-A. These problems were created by years of unexpected growth, lack of materials and the lack of skills by tactical signal Soldiers implementing quick tactical solutions to remedy network problems.

To improve base communications infrastructure across the CJOA-A, the mission of the 25th Signal Battalion was expanded to include base communications support at FOBs Salerno and Fenty in order to provide outside plant and inside plant support, and provide help desk support for the base. Additionally, we hired infrastructure specialists to provide training and support for Soldiers and the FOBs Fenty, Sharana, and Salerno. The Soldiers who were trained could then push out to other smaller FOBs to help improve infrastructure. Also many C4 infrastructure projects through DCS-SWA were funded over the 15 months valued at about $8 million plus 19 major projects valued at $214 million to improve the infrastructure in the CJOA-A.

OEF requires more strategic signal forces to improve the communications infrastructure. The addition of an OSP/ISP company or platoon would greatly improve support in the CJOA-A. Tactical Soldiers do not have the requisite skill sets required to establish permanent communications solutions. Pre-deployment training was conducted on fiber optic cabling – however you just run out of Soldiers because of the scope of the problem. Having a cable/wire organization at division level would make a significant difference.

Use of commercial networks:

In order to extend connectivity to the lowest level we took advantage of the Afghanistan Wireless Communications Company microwave networks. The AWCC network provides line-of-sight transmission that we tunnel our SIPR, NIPR, and CENTRIXS networks through. We began to establish three hubs at Bagram, Fenty, and Salerno that will be used to draw SIPR, NIPR, and CENRIXS services to smaller FOBs that are in the same area.

For Afghanistan the use of line-of-sight transmission will provide improved lower latency connectivity than satellite and will help the growth of local development. Only after a short time the effect of improved connectivity and growth in local development was realized proving that the use of commercial networks for United States forces was a viable option.

Information assurance and computer network defense:

Users are typically indifferent in how they maintain their PCs; information assurance professionals are habitually draconian in their mitigation measure implementation as a first action rather than as a matter of last resort; program managers do not approach system/ tool development with a holistic approach to IA; and policy guidance from Department of Defense/ Department of the Army lacks the appropriate application of specificity to standardize tools and protocols while providing flexibility for implementation and execution.

(1) **Users.** Users need to be educated to treat the PCs they use in the same manner they treat their personally owned vehicles and individual weapons. Most people do not understand the details of the internal combustion engine or the science of ballistics, but easily

recognize they have a personal responsibility to take an active role in maintaining their equipment if they want to get to work on time or hit the targets at which they aim. Users should approach PCs with the same mindset, but often purposefully install unauthorized software for personal reasons, don't know if their PCs have up-to-date anti-virus definitions, and are unaware of how, when, or if they are patched for security vulnerabilities.

Combined Joint Task Force-82 J6 staff.

(2) **IA Professionals.** The tenets of IA are confidentiality, integrity, availability, authentication, and non-repudiation. Most IA personnel view their job to protect the network as a requirement to focus nearly exclusively on security. This perspective is much too narrow, moves focus off the tenets, and elevates the state of the network above the purpose of the network – which is to provide data and data services to the war-fighter. Availability is almost universally the first tenet sacrificed by IA personnel on the altar of security.

(3) **Program Managers.** Programs of record seem to be fielded with the polar opposite approach to IA exhibited by IA professionals. Availability is elevated above all other tenets which often results in the development of such brittle source code that subsequent security patches released for vulnerabilities in the underlying operating system cannot be applied lest they break the program software. As well, the continued use of known vulnerable communication protocols and development on networks that do not mimic actual battlefield conditions indicates a general lack of awareness of current DoD/DA IA efforts.

(4) **Policy.** Guidance from higher is often unnecessarily vague and results in the development of disparate practices at lower levels based on differing interpretations of the same regulations. Very often, "what right looks like" at the highest level of DoD is exactly "what right looks like" at the lowest level. While some good technical guidance is available (i.e. STIGs – Security Technical Implementation Guides), topics for which a well-known standard procedure would be expected (i.e. how to safely/securely move data from NIPR to SIPR) instead remain a bit of a mystery to users and are implemented in various ways at different DoD locations.

IA is not just a section in CJ6. It is an aspect of war-fighting that deals with managing the risk associated with operating networked information systems and corresponding data services. IA needs command attention similar to the Safety program in order to mature the users, IA professionals, programs, and policy.

Information systems:

Use and procurement of web-based applications is an important point when it comes to information system selection. The operation and maintenance of client-based systems such as ABCS and CPoF is much more difficult and costly than web-based applications.

These systems are fantastic in the functionality and capability they bring to the war-fighter. However, trouble-shooting is difficult and often cannot be accomplished with client systems at locations that do not have FSR support. Travel within the Afghan CJOA result in several days lapse to rectify problems. For the most critical systems then, we are required to have FSR support at multiple locations. Systems which are web-based typically only require FSR support at the central server location. Users gain access from all over the CJOA and any problems are dealt with at the server location. Because the FSR is on site or can remote access into a server, issues can be handled immediately.

A web-based approach eliminates the need to configure user computers. Often this means that access can be provided to out of theater users (for the right reasons) when required as well.

Where possible, DoD should migrate to and pursue procurement of systems that are accessed by a web interface. Units will experience simplified and responsive service. Also, DoD must identify the core functions that information systems must fulfill, clearly mandate the information systems that will be used, and stay ahead of technology making sure that those information systems are the best technology can offer.

The lessons learned and observations described in this article do not capture everything learned during our fifteen month deployment. However, they do represent the key issues that we were able to identify and apply solutions in order to provide the best possible C4 support to the CJTF.

LTC Patrick Dedham has served in leadership and staff positions from platoon through division level in the 304th Signal Battalion, Special Operations Command, 25th Infantry Division,

Human Resources Command, White House Communications Agency, and three tours in the 82nd Airborne Division. His deployments include Uphold Democracy in Haiti, Desert Shield/Storm, Operation Iraqi Freedom, and Operation Enduring Freedom in Afghanistan. Dedham was the Coalition Joint Task Force J6 during his recent 15 month deployment to Afghanistan. He was responsible for C4 support to the CJTF consisting of seven brigade-size organizations.

Acronym QuickScan

ABCS – Army Battle Command System
AWCC – Afghanistan Wireless Communications Company
BCT – Brigade Combat Team
C4 – Command, Control, Communications, and Computers
CENTRIXS – Combined Enterprise Regional Information Exchange System
CIA-AN – Confidentiality, Integrity, Availability, Authentication, and Non-repudiation
CJOA-A – Combined Joint Operations Area-Afghanistan
CJTF – Combined Joint Task Force
CPoF – Command Post of the Future
DA – Department of the Army
DISA – Defense Information Systems Agency
DMZ – Demilitarized Zone
DoD – Department of Defense
DVB-RCS – Digital Video Broadcast-Receive Communications System
FDO/FDR – Foreign Disclosure Officer/ Representatives
FMV – Full Motion Video
FOB – Forward Operating Bases
FSR – Field Support Representative
GBS – Global Broadcast Systems
GTCF – Global Counter-Terrorism Force
IA – Information Assurance
IMINT – Image Intelligence
IOM – Installation, Operation and Maintenance
ISAF – International Security Assistance Force
ISP – Inside Plant support
ISR – Intelligence, Surveillance, & Reconnaissance
LOS – Line-of-Sight
JNN – Joint Node Network
JWICS – Joint Worldwide Intelligence Communications System
MTOE – Modified Table of Organizational Equipment
NATO – North Atlantic Treaty Organization
NETOPS – network operations
NIPR – Non-secure Internet Protocol Router
OEF – Operations Enduring Freedom
OSP – Outside Plant
PM – program manager
POV – Personally Owned Vehicles
PSDS2 – Persistent Surveillance Dissemination System of Systems
SIGINT – Signal Intelligence
SIPR – Secure Internet Protocol Router
SPOP – SIPR Point of Presence
STIGs – Security Technical Implementation Guides
TCP – Tactical Command Post
TT – Traffic Terminal
UAV – Unmanned Aerial Vehicle
UGS – Unmanned Ground Sensors
VoIP – Voice over Internet Protocol

A tale of two admins

By Bennett Hayth

When the network goes down, many times, it ends up being a wide area network link dropping packets or a break in a fiber backbone cable somewhere in the organizations network. When the WAN team repairs the break or reconfigures a router interface to allow traffic to pass again, they are dubbed heroes for fixing the network and life goes on.

But, what about the server administrators, the guys in the cold and noisy environmentally controlled spot known as the server room? The true unsung network heroes who many times go overlooked are the server administrators. They go about their task day after day ensuring that many of the taken for granted, local area network services are functioning properly. Services such as Domain Naming Service, Microsoft Exchange, Dynamic Host Configuration Protocol, Microsoft Active Directory, Microsoft SharePoint Servers just to name a few. But what happens when the entire server administration staff has 100 percent turnover every 12 to 15 months? How much of the enterprises ins and outs, quirks, and custom configurations are lost between the passing of responsibilities from one unit to the next? To compound things, what happens when no documentation or historical records on configuration management exist?

What follows is a brief tale of what can happen.

Configuration management, documentation, and knowledge of the network are key elements to the overall administration and data management of an enterprise environment.

When we took over from the outgoing unit, one of the first questions I asked their administrators (admin) was, "Where is the domain documentation?" The cold hard fact was that the current admins were the domain documentation, and so were those before them.

We had a few weeks to fit 12 months of custom configurations

and server management history into our heads and hope nothing was missed. So, we began our task and started to write down everything, noting what problems happened during the relief-in-place with regard to critical services in the enterprise.

We almost welcomed trouble. For the outgoing unit it was a pain to fix, but for us it was a way to learn something critical to our job and to the future survival of the network. Like every unit before us, we had two weeks to learn everything we could about the management of this division headquarters' network that had been pieced together through five units, over the last four to five years.

WO Hung Tran works on the NIPR stack in the MND-B Data Center.

The day of the transition of authority was like buying a used car – "as is with no warranty." I took over the keys to the server room as our own and asked the out going admin one last question, "What are the passwords to the built in domain admin and Directory Service Restore accounts?" The built in domain admin account is the only account that cannot be locked out in a Microsoft Active Directory Domain and the Directory Service Restore password is used to restore active directory in times of disaster. The answer I got was not what I was looking for at all. The passwords were not known by the outgoing unit and probably were not known by their previous unit.

Now, the Directory Service Restore password is not a big deal, we changed it on all the domain controllers and stored it in a safe in case of a disaster. The domain admin password is a whole different problem. No one can be sure what services are running in the domain using that account.

If you change the password, services using the account will stop and without documentation of what services are running, no one knows what may quit working. Another dilemma is, if you don't change the password and someone or some application (most of the time an improperly configured scan engine) locks out the entire user account database (to include all the domain admins) in the domain, then you have to go to an alternate method of unlocking the accounts. This situation in and of itself is not really a huge problem for most admins since the directory service restore console can be used to unlock accounts in a disaster but, in times of crisis we would be in a much better situation knowing the password and having access to the domain via the built in domain admin account. Additionally, it is one password and account that should be protected to prevent unauthorized access but, protecting it through obscurity is not the most preferred method. There are also many other tasks in active directory that require the actual domain admin account. We picked a slow day to change the passwords and held our breath. Fortunately, there were no ill effects and all was well. The users rejoiced as mail continued to flow.

The day of the transition of authority was like buying a used car – "as is with no warranty." I took over the keys to the server room as our own and asked the out going admin one last question, "What are the passwords to the built in domain admin and Directory Service Restore accounts?"

Shortly after TOA, we decided to document the data flow and times of backup jobs on all the servers in order to eliminate any conflicts for bandwidth on the server virtual LAN or in processor use by a server performing multiple jobs at the same time. Once the documentation was completed, all the backups seemed to be planned and well thought out. The prior administrator did a great job creating a service account to conduct all the backup operations using NT Backup as the enterprise solution.

The problem with the service account they created was the name the unit used. The account name was customized to represent an association with their unit. On its own, this is not a big deal but, it is also not a best business practice since it was running the backups enterprise wide, we could either spend the time developing a script to change the account name on all the backup jobs or just leave it. We opted to yield to the problem and moved on. At least we would have a reminder of the previous unit and it would be with us everyday of our deployment.

One thing we did discover during our backup documentation effort that might have potentially lead to disaster was backup jobs that were failing. Both domain controllers, on the low side, had NT Backup

jobs that had not run successfully for six months. What that meant for us was that all of our current user accounts in active directory were not backed up anywhere. Not a good thing if your directory service partition gets corrupt, but how often does that happen - right? Not something I am going to bet my career on, so we began to investigate.

Figuring out why an NT Backup job did not run correctly can be like a homicide investigation. You have tons of clues and a dead body (in our case a failed backup job) with all the usual suspects. Our investigation pointed to public enemy number one, a server that was no longer on the network or had been renamed in the past. A reference on the "run line" of the NT Back configuration on both domain controllers was still pointed to an old, non-existing server so NT Backup could not mount the target location for the backup media.

I had to ask myself, could we avoid problems like this with change control and domain documentation or are we doomed to administration by "discovery learning." We immediately repaired the jobs and ran the backup. Again, the users rejoiced and mail continued to flow.

A week or so passed and we continued to analyze our enterprise environment. One area of focus was an intense look at our Microsoft Exchange and the service level it provided to our users. Our high side network was built as a Microsoft Cluster for Exchange and was designed to provide the five 9s operational up time (99.999 percent). It was a two node cluster with a typical configuration for each message store that was indexed by user last name with multiple message stores spanning the two virtual exchange servers. The first thing we noticed was that the exchange cluster was not failing over as it should for at least one node within the cluster. However, even in its degraded state, it was providing the required mail service to the user base. Once we started to dig into the internal workings of the cluster and exchange, what we found were some large Exchange Data Base files. The EDB files were filled with old mail and inactive account mailboxes. Our largest EDB was 190 gigabytes and our smallest was 60 gigabytes. With EDB files that large, backup operations were taking two to three days just for the message stores.

Many accounts on the exchange were inactive and still being sent mail from various distro lists, better known to the exchange admin as spam. Since they were not being checked by the user, no one was cleaning out the mailboxes. We set the mail box size policy to 512 Mega bytes for "prevent both send and receive" in order to reduce growth of inactive mailboxes from spam.

Another problem was that the log files were growing large between backups, sometimes forcing the related message store to dismount. We all know what happens when a user cannot get their mail, (life as we know it could end!) So, we began to purge accounts and mailboxes, but to our surprise, the EDB file did not shrink at all. A Microsoft Field Support Representative was contacted to assist in developing an action plan to reduce the size of the exchange database. One of the things he noted was that a normal "online" defragmentation of the EDB does not reduce the size of the database file.

The first action we took was to conduct backups twice a week to ensure that the message store would not dismount due to log files becoming too large. We didn't want the exchange to interfere with operations because users couldn't check their mail. The second thing was to start a slow and methodical "online" defragmentation of the message stores. Normally, the message store must be dismounted and defragged with essential /d Database_Name. In a combat environment where there is no week-end or end of the business day, to do maintenance, a custom method had to be developed. The Microsoft FSR provided us with a simple and very effective solution: create a new message store and move all the mailboxes we wanted to keep, and then remove the old message store.

An action plan was developed, mailboxes were moved, and the exchange was defragged. Backups began to take less time and the cluster service started to failover properly. But our work was not yet complete as we noticed another issue that needed our attention. The global policy for mailbox storage needed a long overdue review. Previously, the policy was set to 100 megabytes per mailbox store, per user, to prevent the user from sending mail when the mailbox got larger than 120 Mb, and nothing was set for the "prevent send and receive." The no setting on prevent send and receive was the root cause of mail boxes being bloated with old mail.

Many accounts on the exchange were inactive and still being sent mail from various distro lists, better known to the exchange admin as spam. Since they were not being checked by the user, no one was cleaning out the mailboxes. We set the mail box size policy to 512 Megabytes for "prevent both send and receive" in order to reduce growth of inactive mailboxes from spam. Our low side exchange environment had a bigger problem; just one Microsoft patch away from total failure. The operating systems (C:\) partition on one of the exchange servers was down to 500 megabytes of storage space left on the drive.

The servers had been installed back in 2004 when the required partition size for Windows Server

2003 was less than current requirements. After many patches and one service pack later, what you end up with is a server with a C:\ partition that is almost full. To complicate matters, the server was the first in the exchange enterprise and hosted the MX records for the domain.

Another problem relating to the same exchange environment on the low side was Outlook Web Access with Public Key Infrastructure using the Common Access Card. As it was configured at TOA, only users on one of the two exchange servers could get access to Outlook Web Access through the Microsoft Internet Security and Acceleration server.

An action plan was developed to overcome both of the problems in one configuration change cycle. The plan called for a third exchange server to be brought on-line and all user accounts moved off the failing server. The failing server had some hard-drive space freed up once it was no longer hosting a message store. The server was then converted to act as a front-end exchange server for the enterprise. Additionally, the server was configured for Constrained Kerberos Delegation, allowing all users in the enterprise access to Outlook Web Access. Mail could now be viewed in a web browser using a CAC card. Our users continued to rejoice. However, the rejoicing meant nothing to the admins who asked themselves if all of this could have been avoided through proper configuration management, enterprise documentation, and data management.

After the dust settled on our exchange action plan, we started to look closely at the Group Policy Objects in active directory and what they really did for the enterprise. GPO are most notably known to users as the restrictions put on their office computer that prevent them from doing things they like to do on their home computer. GPO management is one of the things where documentation is worth one-millionth to the power of infinity in its weight in gold. Spending hours on end trying to guess what is in a GPO and why it was made can be a daunting task. Luckily, Microsoft came to the rescue with the Group Policy Management snapin for Microsoft Management Console.

... many of the problems that were experienced could have been avoided through configuration management and enterprise documentation through the years. Network documentation is a key element to the overall administration and data management of an enterprise environment.

Even with the added benefit of advanced tools, understand what all the GPOs are doing and why they are doing it is still a task. For instance, one of the first things that we noticed were those GPOs linked to organizational units, but not enabled. So, we had to ask ourselves, do we feel lucky? Should we enable the GPOs and wait for the phone calls from users? (Of course not.)

We read the setting, one after another and tried to guess the logic of why the GPOs were created in the first place. The real problem did not present itself at first but, after a few hours of study, it became clear. The method previous admins had used for exempting some users and computers from GPOs were to block inheritance. A better method and BBP would have been to use GPO filtering and not allow exempt computers and users the ability to read and apply the selected GPOs. One of the GPOs that had been totally disabled was the Department of Defense mandatory setting for computers to lock after a set period of inactivity; the mandatory screen saver. After a quick configuration management meeting with our information assurance team, we promptly enable the setting and, within 90 minutes, started receiving calls and mail requesting we remove the setting. As an admin, I will do many things to help a user, but going against DoD policy is not one of them. Users complained but, like many other things they became familiar with the procedure and learned to survive with the safeguards in place.

The last thing worth discussing was the previous unit's planning for further growth of the enterprise and their continuity of operations plan. Planning for this aspect of the enterprise was done well however, the plan totally unraveled when the building slated for the COOP site was given to another unit. We quickly found ourselves back at the initial planning phase and the Service Level Agreement for the COOP was relooked. The amount of redundancy the previous unit promised their users changed from what we would be required to provide.

The original plan called for a warm site with an amount of downtime for recovering data from backups. The new plan was a hot site with all services running and ready to cut over in a moments notice. As with the exchange cluster, a Storage Area Network expert was called in from Dell to examine the feasibility of creating a hot site and an active/passive instance of three separate single instance databases (Exchange, SharePoint, and CPOF). We had several hurdles to overcome before it would be feasible to implement this level of advanced configuration.

First, we would need to determine how to do a password reset on the fiber switches that supported the SAN for the high side exchange server. Again, Dell SAN engineers to the rescue!

Secondly, while conducting the password reset, the Dell engineer informed us our SAN was old and

no longer manufactured by Dell. In order to have an active/passive instance of exchange, we would need to upgrade to a newer SAN at both sites.

The last and most obvious problem was the lack of a site to begin work or even conduct a site survey. When you take into account the fact that the previous unit had already purchased hardware for their plan, you end up with a huge configuration management nightmare. We had hardware for a COOP that did not match the requested SLA and no building to place it into. The SLA for the COOP from the previous unit was changed to be a much higher level of availability for our user base. Users don't know what a COOP is so they would not care until all their data was gone, but even then mail would still flow.

In closing, many of the problems that were experienced could have been avoided through configuration management and enterprise documentation through the years. Network documentation is a key element to the overall administration and data management of an enterprise environment.

Unfortunately, this problem is not a military specific problem. Many businesses go by day after day with no enterprise documentation at all. They do not give a second thought as to what would happen if all the admins quit at once. Sure, they could hire new admins, but how many days of downtime could the business survive before the network outage forces them out of business. And the users, well they would be out of a job and the mail would no longer flow.

In our case the results could be much more catastrophic. Commanders and staffs rely on the availability of the network and the security of their data in order to command and control combat operations. As we continue to rotate units in and out of the combat theater, more attention must be paid to properly documenting any and all changes to the networks supporting the division headquarters.

It does not matter if it is the exchange server, Sharepoint Portal, or our Army Battle Command Systems, proper documentation is the key to maintaining the network and recovering from any crisis that comes about. Our G6s and FA53s must demand it.

Acronym QuickScan

ABCS – Army Battle Command System
Admin – administrators
BBP – Best Business Practice
CAC – Common Access Card
COOP – Continuity of Operations Plan
CPOF – Command Post of the Future
DHCP – Dynamic Host Configuration Protocol
DoD – Department of Defense
DNS – Domain Naming Service
EDB – Exchange Data Base
FSR – Field Support Representative
GPO – Group Policy Objects
IA – Information Assurance
ISAS – Microsoft Internet Security and Acceleration
LAN – Local Area Network
MMC – Microsoft Management Console
MX – Mail Exchanger
OWA – Outlook Web Access
PKI – Public Key Infrastructure
RIP – Relief-in-place
SAN – Storage Area Network
SLA – Service Level Agreement
TOA – Transition of Authority
VLAN – Virtual Local Area Network
WAN – Wide Area Network

Terms:

NTBackup – Microsoft Technet Backup & Restore Software

MAJ Hayth is currently assigned as the division automation officer for 4th Infantry Division G6. His previous duty assignment was as the brigade automation officer for 1st Brigade Combat Team, 4ID.

LandWarNet update

Training updates from the Directorate of Training, 15th Signal Brigade and Leader College of Information Technology, Fort Gordon, Ga.

By LandWarNet staff

Introduction

The Signal Center is leading the way in transforming the Army's approach to training by ensuring its Soldiers and leaders have 24x7 access to state-of-the art distributed learning materials to support LandWarNet Operations. Moreover, service members across the force, regardless of Army activity or service branch, have benefited from our unique approach to and application of dL.

It combines traditional schoolhouse instruction and the latest dL methodologies to create a blended environment that supports the Soldier regardless of location and/or training environment. LWN eU Signal hosts over 580 downloadable products in 47 separate learning areas; including 32 high-end simulators (19 are Signal specific in content) and 100 computer based training products.

The web portal also provides access to Signal technical and professional documents, Presentations, and manuals that have relevance to and training application for the entire Signal Corps.

Supporting Distributed Learning and the learner

Supporting the learner via dL is the primary focus of LWN eU (https://lwn.army.mil) and LWN eU Signal (https://lwneusignal.army.mil). The challenge is getting the learner ready and motivated to learn and providing information on resources to enhance the skill sets of the learner.

The Distance Education Branch, University of Information Technology, Directorate of Training has risen to meet those challenges by providing a "one-stop shop" area to access a Training/Distributed Learning Resources category folder from the Download section of LWN eU

Signal. By using the materials in the online resource folder, Soldiers can improve their preparedness (or unit's preparedness) to maximize the return on dL. Additionally Soldiers and Civilians can obtain the latest Army eLearning course offerings list from the resource folder.

Download these supporting materials from the Training/Distributed Learning Resources category from the download section of LWN eU Signal:

1. How to be a successful distance learner

Description: How to Be a Successful Distance Learner provides best practices for the distance learner to apply in maximizing their learning experience.

2. How-to-guides for netiquette, note taking, mind mapping, and question stems

Description: Provides four guides with best practices for communicating on the net, note taking, mind mapping, and using stem questions to deepen understanding

3. Army e-learning brochure

Description: Highlights the training value and registration process for Army e-Learning. See what other Soldiers and DA Civilians are saying about their Army e-Learning experiences.

4. Army e-learning program list – 11/12/2007

Description: A list of all courses that can be accessed on Army eLearning website as of Nov. 12, 2007. Visit Army eLearning on the web at: https://usarmy.skillport.com/SkillPortFE/login/usarmylogin.cfm

5. Distributed fact sheet

Description: Highlights facts about Army dL.

6. Distributed Learning delivering training, anywhere, anyplace

Description: Highlights the role dL plays in today in improving Army training, enhancing force readiness, and supporting Army transformation by exploiting current and emerging dL technologies and methods.

The following activities are encouraged at the individual and organizational level to support dL.

❖ Distribute the support materials electronically to all of your Soldiers and Civilians

❖ Post fact sheets and other resources on your bulletin boards

❖ Read the dL Star at http://www.dls.army.mil/DLSTAR.pdf. to find out the Army's latest dL initiatives (Subscribe to the dL Star by email at distributed.learning@us.army.mil)

❖ Talk with Soldiers and Civilians about the merits of using dL resources

For more information on dL or to discuss ways to utilize dL to meet your training needs or challenges, contact A.J. Mason, Instructional Systems Specialist at aj.mason@us.army.mil / 706-791-8674 or DSN 780-8674 at the Distance Education Branch.

LWNeU Unit Universities continue to offer customized training for your unit's specific training requirements

What is a Unit University?

A Unit University is a customizable website used to provide commanders, training staffs and Soldiers with access to the most up-to-date training and training products for their unit missions. Unit Universities provide direct access to Training and Doctrine Command approved military occupational skill training, downloadable training products (computer-based training, simulators, interactive multimedia instruction products), and current links to other available training sites.

What kind of training is available?

Unit Universities provide training staff and Soldiers with direct access to the same course training materials, presentations and documents used in the Signal Center's resident school training environment. Also available to your Unit University is the LWNeU-Signal knowledge repository, which is a current collection of over 600 downloadable products organized in 47 separate learning areas including 32 high-end simulators, 100 CBT products, also signal technical and professional documents, presentations and manuals. The LWNeU-Signal knowledge repository also provides the Regiment with an upload capability for Soldiers to upload local and unit developed training content to share across the Regiment.

2/348th CSS Soldiers in Puerto Rico use their

Examples of training content that can be immediately loaded onto a Unit University range from typical 25B tasks in Information Technology and networking to installing, operating and maintaining a Joint Network Node. All training content posted comes from resident course programs of instruction at Fort Gordon. In addition to the training content developed by Fort Gordon, the LLC staff can link your Unit University directly to the most current sources of training for Battle Command Systems such as ABCS, ASAS, BCS3 and CPOF, as well as, Logistics Information Systems that include MTS, PBUSE, SAAS-MOD, and SAMS-E.

Who's using the LandWarNet Portals and Unit Universities?

Currently there are more than sixty units with more than 3,000 registered Soldiers receiving Signal training via their own customized Unit University. Unit University sizes range from brigades to squads. In total, more than 7,500 Soldiers use the LandWarNet-e-University training portals each month for training.

7th Signal Company RTO Academy, LSA Adder, Iraq – use their Unit University to teach critical tasks on radio and maneuver control and tracking systems to newly deployed Soldiers in Iraq.

Recent Unit University additions to the LWN-eU Extension Campus include: XVIII Airborne Corps, 11th Signal Brigade, 316th Sustainment Command (Exp), 4th ID, 295th Signal Network Support Company, 501st Sustainment Brigade(Korea), 3rd Infantry Division G-6 (Iraq), C Company 1st BCT 10th Mountain Division, and the 7th Signal Company RTO Academy, LSA Adder, Iraq.

Unit Universities can deliver training that cannot be obtained locally to forces in Army Force Generation reset, sustainment, or deployed in Theaters of Operation. Individual Soldiers with a valid Army Knowledge Online account can access their Unit University anywhere they can connect to the Internet.

Can you add locally created unit training to your Unit University?

Yes, many units also use their Unit Universities to host unit created training, information briefs and command briefs.

How long does it take to build a Unit University page for my unit?

Your Unit University can be fully loaded with training and operational within three days.

Five reasons why your unit needs a Unit University:

1. **Availability:** The training is available to your unit and Soldiers regardless of their location. Soldiers can train at home station, in a theater of operations, at their residence, or anywhere there is access to the internet.

2. **Training cost reduction:** No need to spend manpower or funds to stand up and manage a separate Information Technology training system for your unit – there are no unit costs for LandWarNet eUniversity unit universities.

3. **Reduction in training planning time:** Fort Gordon LLC Staff locates, organizes and loads your unit's requested training content. Unit Universities allow your training staff to focus on training the unit – not on how/where to get training material.

4. **Unit training status monitoring:** Blackboard LCMS features provide commanders and training managers the tools and ability to monitor, track, and assess training at the unit or individual Soldier level.

5. **Relevant training:** Unit universities give units and Soldiers a single location to access the most up to date training developed by the Signal Center and the Joint Signal community.

To find out more information or to request a Unit University, contact Clark Solomon, LWN-eU Signal Extension Campus coordinator, clark.solomon@us.army.mil, DSN 780-2571 or commercial (706) 791-2571.

State-of-the-art support for Army Force Generation

Interactive multimedia instruction greatly enhances and standardizes instruction for AC and RC units throughout the Force when self development, sustainment, refresher and remedial training are conducted. The following Virtual/PC Based Simulators are available or will be made available via LandWarNet eU (https://lwn.army.mil) and LandWarnet eU Signal (https://lwneusignal.army.mil) web portals to facilitate communications equipment operations training:

FIELDED SIMS

1. **Phoenix Upgrades (Alpha Version)**
   Fielded: JAN 08
   Target Audience 25S
2. **Phoenix Upgrades (Bravo Version)**
   Fielded: JAN 08
   Target Audience 25S
3. **JNN Upgrades (Spiral 5-7)**
   Fielded: DEC 07
   Target Audience 25N
   STT Upgrades (Spiral 5-7)
   Fielded: DEC 07
4. **Target Audience 25Q, 25S**
   CPN Upgrades (Spiral 5-7)
   Fielded: DEC 07
   Target Audience 25B
5. **Baseband Upgrades (Spiral 5-7)**
   Fielded: DEC 07
   Target Audience 25N
6. **JNN Upgrades Lot 9 (Spiral 8)**
   Fielded: DEC 07
   Target Audience 25N, 25 B
7. **CPN Upgrades Lot 9 (Spiral 8)**
   Fielded: DEC 07
   Target Audience 25B
8. **Baseband Upgrades Lot 9 (Spiral 8)**
   Fielded: DEC 07
   Target Audience 25N
9. **85/93**
   Fielded: APR 07
   Target Audience 25B, C, F, L, P, Q, S, U, W, 250N, 251A, 53A, 25A, LT/CPT
10. **SATCOM Hub (Spiral 5-7)**
    Fielded: MAR 07
    Target Audience 25S
    Baseband Hub (S 2-4)
    Fielded: FEB 06
11. **Target Audience 25N**
    JNN (S1)
    Fielded: OCT 05
    Target Audience 25N
    BN-CPN (S1)
    Fielded: OCT 05
    Target Audience 25B
12. **KU (S1)**
    Fielded: OCT 05
    Target Audience 25Q
13. **DTOC**
    Fielded: OCT 05
    Target Audience 25B
14. **TIMS (ISYSCON)**
    Fielded: OCT 05
    Target Audience 25B
15. **HCLOS**
    Fielded OCT 05
    Target Audience 25Q
16. **GSC-52**
    Fielded: JAN 04
    Target Audience 25S
17. **BSN**
    Fielded: OCT 04
    Target Audience 25F, Q, P
18. **FBCB2**
    Fielded: OCT 03
    Target Audience 25U
19. **TRC-173**
    Fielded: NOV 01
    Target Audience 25P, Q

For more information on the status of virtual/PC based simulator training products, contact MAJ Chuck Dugle, chief, Simulations Branch at DSN 780-8681 or commercial at (706) 791-8681.

Acronym QuickScan

ABCS – Army Battle Command System
ARFORGEN – Army Force Generation
ASAS - All Source Analysis Sytem
BCKS – Battle Command Knowledge System
BCS3 – Battle Command Support Sustainment System
CBT – Computer-based Training
CPOF – Command Post of the Future
dL – distributed Learning
FBCB2 – Force XXI Battle Command, Brigade-and-Below
LLC – Lifelong Learning Center
LWN – LandWarNet
LWN-eU – LandWarNet eUniversity
MTS – Movement Tracking System

Doctrine update

Updates in Signal doctrine from Directorate of Combat Developments, Army Signal Center, Fort Gordon, Ga.

FM 6-02.43, *Signal Leaders Guide*

By Roger Spears

FM 6-02.43, *Signal Leaders Gu*ide

As the Army evolves into a task-organized modular fighting force, with the latest technological capabilities to fight on arrival while leveraging joint and coalition capabilities to win conflicts, our emerging joint, Army and signal doctrine must also evolve and remain relevant to a force that will continue to transform over the next decade.

The Army's transformation into a modular fighting force presents new challenges for signal organizational structure and the Soldiers responsible for supporting it.

Army doctrine development has undergone a major transformation as lessons learned, observations and feedback from Soldiers help refine and update signal publications. The recently published FM 3-0 (*Operations*) and FMI 3-0.1 (*The Modular Force*) have codified this new doctrine and unit structure at the Army level.

Signal doctrine must also capture the new signal modular organization structure and the employment of new enhanced signal equipment and network capabilities.

The Signal Regiment must ensure the Army modular force has the capability enhancements for the Army LandWarNet and remain focused on enabling Soldiers from the "first tactical mile" all the way back to the operational base. The fielding of WIN-T increment 1, which provides the first enhanced capabilities required for LandWarNet, eliminated outmoded communications systems and began integrating emerging commercial and military technologies and concepts.

In order to keep pace with the technological advances and organizational restructuring, signal doctrine must remain relevant, responsive and flexible. In order to meet this goal the Regiment has revised the scope of several doctrinal products.

A critical doctrinal reference for all signal leaders at every echelon will be FM 6-02.43, *Signal Leaders Guide*, which is near completion. This manual was traditionally targeted to the junior signal officers and non-commissioned officers, but with the latest revision the content has been scoped into a comprehensive guide for all signal Soldiers who will reflect the modular requirements and capabilities of the entire Signal Regiment. FM 6-02.43 will incorporate parts of FMI 6-02.45, *Signal Support to Theater Operations*, and draft FMI 6-02.50, *LandWarNet Operations: Corps and Below,* to provide an all encompassing guide for signal leaders and Soldiers.

FM 6-02.43 will address the Army's portion of the Global Information Grid, LandWarNet, and key roles and responsibilities that are critical to signal Soldiers at all echelons of employment.

Tactical networks are no longer separate from the strategic structure as the systems employed at the tactical level rely on strategic network connectivity to operate effectively during all phases of operations. FM 6-02.43 will cover signal support and the signal leader roles and responsibilities at all echelons from theater to the maneuver battalion S-6.

The designation of the division and corps as modular warfighting headquarters employing a tailored force based on mission requirements has downsized the traditional signal battalion to a signal company supporting the division and corps headquarters elements. This tailored modular force that makes up these corps and divisions will have its own organic communications and network capabilities or receive support from pooled signal theater assets. This means that each modular brigade combat team will have its own organic signal company for support.

With the elimination of a signal battalion structure, the G-6 and S-6 now become the focal point for signal support requirements. FM 6-02.43, *Signal Leaders Guide*, will address the challenges these changes pose as the G-6 and S-6 organizations are restructured to support the modular construct, as well as, the responsibilities and coordination now required for LandWarNet employment. This FM will also outline the roles of the signal company commander and support personnel in relation to the G-6 and S-6.

When WIN-T Increment 1 is fully fielded approximately 45 percent of deploying units will not have organic communications. These units will be supported from pooled theater assets and will impact operations at all levels as units are attached to modular headquarters as the mission dictates. For instance, elements of a theater functional brigade, which do not have organic communications may, be attached to a division or corps for an operational mission.

This would entail signal support from theater signal forces requiring coordination between the supported unit G-6 or S-6 and the supporting signal unit S-3. FM 6-02.43 will address this strategic theater support structure to include fixed regional hub nodes and network service center-regional elements and the impact these elements have on the mission planning at all levels as well as the advantages provided by strategic forces and networks in support of the warfighter.

FM 6-02.43 will reference

commonly needed information on signal and retransmission site reconnaissance, signal input to the MDMP, considerations for electromagnetic spectrum operations, and an overview of fielded communications systems and network services and capabilities. The manual also addresses C-E maintenance and captures the impacts on maintenance procedures and responsibilities as they relate to Army two-level maintenance policies.

FM 6-02.43 will be published in the summer of 2008, along with other doctrinal publications slated to be published during that same time.

These publications will provide the foundation for relevant signal doctrine to fully support and adapt with Army doctrine as the objective force is reached.

As we develop and refine our products, they will be posted to the Army Knowledge Online, U.S. Army Organizations/TRADOC/Schools/Signal Center/CRDD/Concepts & Doctrine Branch/Doctrine Section portal at URL https://www.us.army.mil/suite/portal.do?$p=135039. (AKO username and password required with CAC login).

We encourage you to contact us and provide feedback on the doctrine products we are developing to ensure that signal doctrine remains relevant during the transformation process. As stated in past articles, this effort is too large and too important to be done in a vacuum. You can contact us via e-mail at signal.doctrine@us.army.mil, or by phone.

POCs for Signal Regiment Doctrine development are:

Roger Spears, DSN 780-6506, Commercial 706-791-6506
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Rick San Miguel, DSN 780-6506, Commercial 706-791-6506

Mr. Spears works for Janus Research Group, Inc. supporting the Doctrine Section of the Signal Center's Capabilities Development and Integration Directorate. He is a retired Army sergeant major with assignments including both echelons above and below corps signal units.

Acronym QuickScan

AKO – Army Knowledge Online
BCT – brigade combat team
CAC – common access card
C-E – communications and electronics
FMI – field manual interim
MDMP – military decision making process
WIN-T – Warfighter Information Network-Tactical

TCM update

Updates from Training and Doctrine Command capabilities managers for networks and services including satellite communications, tactical radio and Warfighter Information Network-Tactical

TCM-Network & Services

WIN-T Increment 1 Update

By Douglas Kuehl

The Joint Network Node program is now called Increment 1 of Warfighter Information Network-Tactical. This change occurred in June 2007 as a result of the Department of Defense restructuring of the WIN-T program. There are now four Increments of WIN-T. Increment 1 (former JNN) is structured to support the maturing technology insertions from the WIN-T program.

Increment 1: Former JNN program – Networking At-The-Halt (Spiral 1 to Lot 9)
Increment 1a: Extended Networking At-The-Halt (Lot 10)

- The former JNN program with Ka military satellite communications capability

Increment 1b: Enhanced Networking ATH

- This is LOT 10 (above) with the addition of the Net Centric Waveform and Colorless Core Capability

Lot 9 activities:

In December units reported incidents of water leakage into the electronic enclosure of the satellite transportable trailer. Water leakage and temperature fluctuation caused moisture to condense onto the electronics and other surfaces within the electronic enclosure which cause a hazardous condition, but fortunately there were no injuries reported. The Increment 1 Product Manager and the contractor team quickly developed a kit to stop the leakage. These kits have been distributed and installed on the effected systems.

In February the decision was made to field JNN systems to the Corps level. I Corps will receive three Spiral 9 JNN systems and STTs during a June to August 2008 training and fielding window.

The 146th Expeditionary Signal Battalion is the first National Guard unit to receive JNN systems. The 146th is currently involved in their training window which is conducted from February to June. ESBs are fielded four JNN shelters, 24 Battalion Command Post Nodes, two Single Shelter Switches and 28 Satellite Transportable Trailers.

Lot 10 activities:

In September 2007 the Lot 10 contract was awarded to General Dynamics to build and field both the baseband and the SATCOM systems for the Army. These Increment 1a systems include the Ka SATCOM upgrade and unit fieldings are scheduled from June 2008 to December 2009.

The first fielding of these Lot 10/Increment 1a systems is to 5/2 ID (previously known as SBCT 7) located at Fort Lewis. Their training and fielding window is from June to September. Following this fielding, the unit will receive an Operational Assessment from the Army Test and Evaluation Command in late September and will also participate in an Initial Operational Test and Evaluation in October which will also include elements of I Corps and 1st CAV DIV to ensure interoperability and operational effectiveness of this system.

Mr. Kuehl is with TCM-NS and supports WIN-T Increment 1.

Army Key Management System 2008 Update

By Allen Walton or Allen Transou

The Army Key Management System is a fielded system composed of three sub-systems, Local Communications Security Management Software, Automated Communications Engineering Software, and the Data Transfer Device with Common Tier 3 software. Product Manager Network Operations-Current Force has developed a DTD replacement, the Simple Key Loader that is being fielded over a five-year plan FY05-FY10. AKMS was fielded to the Army under the umbrella of the objective National Security Agency Electronic Key Management System; the AKMS fielding has involved several LCMS software upgrades. LCMS version 5.1 is currently ongoing testing along with the Common User Application Software and the Common Loader User Application Software, which are software applications that will ride on LCMS and provide the capability to implement black key distribution.

LCMS and ACES courses are two weeks in length and are available via the Army Training Requirements and Resources System. Both courses are under going revision to accommodate software enhancements required to support current and future acquisitions.

Pilot testing is ongoing using 11 strategic and tactical COMSEC accounts to validate the fielding of LCMS v5.1, CLUAS v5.1, and CUAS v5.1 versus LCMS v5.03, CLUAS v5.03, or CUAS v5.03. ACES version 1.9 is under development to support FBCB2/BFT requirements.

The SKL training is available through Interactive Multimedia Instruction, provided as part of the fielding package. PdM NETOPS-CF and the Signal Center Directorate of Training are coordinating the development of an SKL plan of instruction to integrate into the courses where fill devices are taught as a peripheral piece of equipment.

SKL training is also available on LandWarNet e-Univerity for unit universities.

The AKMS local management device with key processor will begin a transition to the Department of Defense Key Management Infrastructure beginning in fiscal year 2010 timeframe. KMI was developed to accommodate the products and services that are being developed under the DoD Cryptographic Modernization Initiative. The goal is to develop an integrated, consolidated, automated capability for requesting, producing, delivering, and monitoring the status of all cryptographic products and related information as needed to support the uniformed military services, the intelligence community, and civilian government agencies. KMI envisions an evolutionary migration from the current labor intensive, fragmented, and closed KM architecture to one that is highly automated, unified, and extensible. The target is to define a single framework for modernizing and unifying the management of keys used to encode and decode information for services and agencies. DoD KMI is a supporting infrastructure.

KMI implementation is the steady rollout of capability increments to deliver time-phased CIs toward end-state IA objectives consistent with the overarching Global Information Grid and Cryptographic Modernization capability requirements.

KMI CI-2 will be the first increment in creating a single framework for modernizing and unifying the management of keys used to encode and decode information for use by the DoD and civil agencies in war and peacetime. KMI is a critical foundation element for ensuring an adequate security posture for national security systems by providing transparent cryptographic capabilities consistent with operational imperatives and mission environments. The starting point for KMI CI-2 will be to leverage EKMS Phase V capabilities as a baseline. New capabilities have been identified and will aid in a transformation from the current key management infrastructure to a new paradigm for key management via net-enabled operations (e.g. over-the-net keying).

As the developer of KMI, NSA is responsible for developing a KMI transition plan in partnership with the Services. The transition plan delineates how each component is be replaced, modified or sustained as the new capabilities of CI-2 become available.

The CI-2 mission is to provide key provisioning services for Networked End Cryptographic Units.

In the CI-3 timeframe, the intention of the DoD Key Management Infrastructure Program Office is to discontinue the use of EKMS Tier 0 and Tier 1 operations once FOC for CI-3 is achieved (Beyond FY2015.)

TCM N&S points of conctact for AKMS and KMI are Mr. Allen Walton or Mr. Allen Transou.

NetOps Update

By Wade Tate and Tori Carlile

The Tactical Services Manager Capability Production Document was initiated 2nd quarter fiscal year 2008 to address a gap in providing the Warfighter service management functionality. The effort will consolidate services management capabilities required to support Battle Command and Force XXI Battle Command, Brigade-and-Below. TCM serves as an integrated service management system tailored to simplify, streamline and consolidate tactical service management and associated NetOps required to establish, enable and maintain the changed modular field operations environment. TCM will manage net-centric enterprise services, application interoperability, infrastructure and network services to provide the full range of network-enabled service management capabilities across the LandWarNet to support Army operations.

The TCM Networks and Services is in the process of synchronizing and deconflicting Information Services with Warfighter application and information services requirements developers across TRADOC. Mobile Secriber Equipment and TRI-TAC, the network provided only transport services. WIN-T provides transport services plus information services for the Warfighter and his applications. The ongoing requirements synchronization and deconfliction is necessary to prevent duplication in requirements efforts across TRADOC and materiel development efforts across Army Security Agency (ALT).

The TCM just completed a crosswalk between the WIN-T Inc 2 CPD at the Department of the Army Headquarters level and the Maneuver Control System CPD at the Joint level. While no threshold requirements could be modified in the MCS CPD due to completion of Joint Readiness Oversight Council staffing, some additions and modifications were made to MCS Objective requirements. This change enables the MCS program to take advantage of WIN-T information services as they become fielded capabilities in the future.

The next requirements cross-walk slated to be conducted is between the WIN-T Inc 2 CPD and the Mounted Battle Command on-the-Move CPD. These two requirements documents define on-the-move required capabilities for mobile warfighter platforms. The requirements must be synchronized and deconflicted to ensure the requirements captured in the MBCOTM CPD take advantage of and do not duplicate the network and IS requirements in the WIN-T Inc 2 CPD.

The TCM Networks and Services requirements cross-walk will be a continuing effort. The intent is to synchronize and deconflict all network and IS requirements across the LandWarNet and Joint communities with respect to the WIN-T Inc 2 CPD. Similar efforts will take place in the future as the requirements for new WIN-T increments are developed.

Mr. Tate and Tori Carlile are Analysts and Systems Integrators for TCM-NS.

Services Manager Capabilities Production Document

The modernization of U.S. Army Forces with rapid deployment of state-of-the-art communications networks, information processing systems and the Warfighter's ever increasing need for critical information available only through direct access to remote, web-based distributed infrastructures has created a capability gap to monitor and actively manage these extremely technical networks, systems, processes and the associated applications which enable access to and the flow of critically needed information.

Through the Joint Capabilities Integration and Development System the TRADOC Capabilities Manager for Networks and Services has begun developing a Services Manager Capabilities Production Document. The proposed Services Manager CPD was initiated in second quarter of fiscal year 2008 to address the gap of providing the warfighter with service management functionality.

The effort will consolidate services management capabilities required to support Battle Command and Force XXI Battle Command, Brigade-and-Below, as well as, network information technology resources. The service manager will provide an integrated service management system tailored to simplify, streamline and consolidate tactical service management and associated network operations required establishing, enabling and maintaining the changed modular field operations environment.

The services manager will manage net-enanbled enterprise services, application interoperability, infrastructure and network services to provide the full range of network-enabled service management capabilities across the LandWarNet to support Army operations.

Mr. Righter is a Department of the Army Telecommunications Specialist with TCM N&S directorate. He can be contacted by email at william.righter@us.army.mil or at TCM Networks and Services 791-2721.

Acronym QuickScan

ACES – Automated Communications Engineering Software
AKMS – Army Key Management System
ASA (ALT) – Army Security Agency (ALT)
Assistant Secretary of the Army for Acquisition, Logistics and Technology
ATEC – Army Test and Evaluation Command
ATH – At-The-Halt
BC – Battle Command
BFT – Blue Force Tracking
BnCPN – Battalion Command Post Nodes
CI – Capability Increments
CMI – Cryptographic Modernization Initiative
COMSEC – Communications Security
CPD – Capabilities Production Document
CLUAS – Common Loader User Application Software
CT3 – Common Tier 3
CUAS – Common User Application Software
DoD – Department of Defense
DTD – Data Transfer Device
ECU – End Cryptographic Unit
ESB – Expeditionary Signal Battalion
EKMS – Electronic Key Management System
FBCB2 – Force XXI Battle Command, Brigade-and-Below
FOC – Full Operational Capability
FY – fiscal year
GIG – Global Information Grid
IA – Information Assurance
ID – Infantry Division
IOTE – Intial Operational Test and Evaluation
IS – Information Services
JCIDS – Joint Capabilities Integration and Development System
JNN – Joint Network Node
JROC – Joint Required Operational Capability
KM – Key Management
KMI – Key Management Infrastructure
LCMS – Local COMSEC Management Software
MBCOTM – Mounted Battle Command On-the-Move
MCS – Maneuver Control System
MSE – mobile subscriber equipment
NCES – net-centric enterprise services
NSA – National Security Agency
OA – Operational Awareness
OTNK – Over-The-Net Keying
PM NETOPS-CF – Product Manager Network Operations-Current Force
QFY – quarterly fiscal year
SATCOM – satellite communications
SKL – Simple Key Loader
SSS – Single Shelter Switches
STT – Satellite Transportable Trailer
TCM N&S – TRADOC Capabilities Manager for Networks and Services
TRADOC – Training and Doctrine Command
TRI-TAC – Tri Service-Tactical
TSM – Tactical Services Manager
U.S. – United States
WIN-T – Warfighter Information Network–Tactical

TCM-SNE

WGS launch ushers in new information dominance era

By Frank Stein

The U.S. Air Force launched the first of a new generation of military communication satellites Oct. 10, 2007, when an Atlas V booster carried a Wideband Global SATCOM satellite into space. WGS is a multi-service program that leverages commercial methods and technological advances in the satellite industry to rapidly design, build, launch, and support a constellation of highly capable military communications satellites. The WGS system is composed of three principal segments: space segment (satellites), control segment (operators) and terminal segment (users).

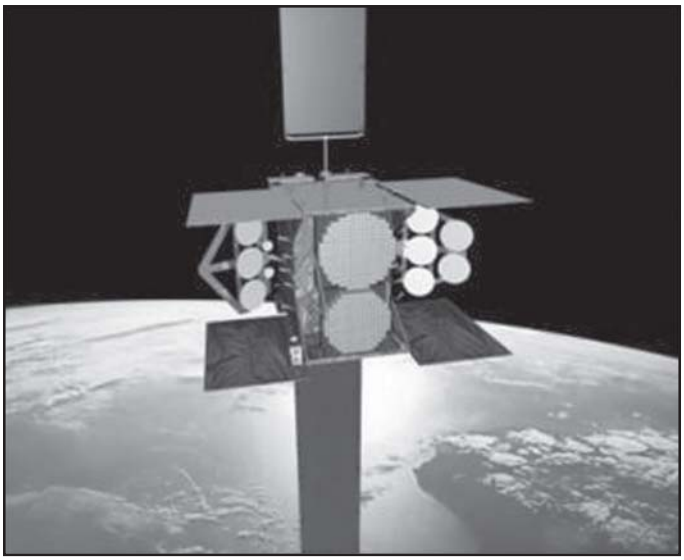
For the Army, as well as the other services, the WGS satellite will provide a quantum leap in communications bandwidth. It will augment and eventually replace the aging Defense Satellite Communication System which has been the Department of Defense's backbone for satellite communications over the last two decades. It will also replace the one-way Ka-band service provided by the Global Broadcast Service. Additionally, WGS will provide a new two-way Ka-band service.

With its first launch into geosynchronous orbit in 2007, WGS became the DoD's highest capacity communications satellite. A constellation of five WGS satellites will provide service in both the X and Ka-band frequency spectrums. The second and third WGS satellites are planned for launch later in 2008. Both the Delta IV and Atlas V Evolved Expendable Launch Vehicles will be used to boost the satellites to the correct orbit. Satellites 4 and 5 are anticipated for launch in 2011 and 2012.

These digitally channelized transponded satellites provide communications capacity, connectivity and flexibility for United States military forces, while maintaining interoperability with existing and programmed X- and Ka-band terminals. WGS will provide essential communications services for combatant commanders to command and control their tactical forces. Tactical forces will rely on WGS to provide high-capacity connectivity into the terrestrial portion of the Defense Information Systems Network.

WGS satellite general characteristics:

Primary Function: High-capacity military communications satellite
Primary Contractor: Boeing Satellite Systems
Satellite Bus: Boeing 702
Weight: Approximately 13,000 lbs at launch, 7,600 lbs on-orbit
Orbit altitude: 22,300 miles
Payload: Transponded, cross-banded-X and Ka-band communications suite
Antennas: eight beam, transmit and receive X-band



The U.S. Air Force launched the first of a new generation of military communication satellites, the Wideband Global SATCOM satellite, into space Oct. 10, 2007.

Phased arrays and 10 Ka-band Gimbaled Dish Antennas, one X-band Earth coverage
Capability: 39 125-MHz Channels via digital channelizer/router
Launch vehicle: Delta IV and Atlas V EELVs
Inventory: three on contract, two more planned
Unit Cost: Approximately $300 million

Editor's note: The MILSATCOM Systems Wing, Space, and Missile Systems Center at Los Angeles Air Force Base, Calif., is responsible for development, acquisition, and sustainment of the WGS Program and contributed to this article.

Mr. Stein is a contractor for DRS Technologies supporting Program Manager Defense Communications ans Army Transmission Systems and TRADOC Capabilities Manager SATCOM and Network Enterprise.

Acronym QuickScan

DISN – Defense Information Systems Network
DSCS – Defense Satellite Communication System
DSP – digital signal processor
EELV – Evolved Expendable Launch Vehicles
GBS – Global Broadcast Service
MILSATCOM – Military Satellite Communications
PM DCATS – Program Manager Defense Communications and Army Transmission Systems
RAS – Remote Access System
TCM SNE – TRADOC Capabilities Manager Satellite Communications and Network Enterprise-Training and Doctrine Command
UA – Unauthorized Access
U.S. – United States
WGS – Wideband Global SATCOM
WGSMS – Wideband Global Spectrum Monitoring System
WSOC – Wideband SATCOM Operations Centers

Army forefather's lessons help shape organization's future

By Josh Davidson

Before making key decisions on the future of the Program Executive Office for command, control, and communications-tactical, the Program Executive Office's management examined the Army's beginnings at the site of a significant turning point of the Revolutionary War.

On Nov. 12, 2007, they prepared for a staff ride that would take place the next day at the site of the Battle of Saratoga, N.Y. The battle concluded with the surrender of British GEN John Burgoyne on Oct. 17, 1777.

"Our behavior and expectations are founded in this period of time," BG Nick Justice, the PEO for C3T, told his staff during the preparations. "Even further back, they're founded in the British military."

Justice asked the leaders to focus on the dynamics of the battle during the staff ride and reflect upon the manner in which the battlefield actions played out. He also requested that they examine the way actions play out in their programs and today's Army, as it transforms its forces to modularity.

Modularity is a major restructuring of the entire Army, involving the creation of brigade combat teams that will have a common design and will increase the pool of available units for deployment.

"I think it's tremendously valuable for us to look around us and value the process that our forefathers went through," he said. "(And ask ourselves) is there a parallel with things that happened out here to the things that I am experiencing today? Especially, the complexity, ambiguity and just the lack of certainty of what took place (during the Battle of Saratoga)."

The PEO command, control - tactical's systems provide ways for the commander to plan his actions and the warfighter to coordinate logistics, track friendly Soldiers' movements through Global Positioning Systems and plan fires. It also has provided support during domestic natural disasters such as Hurricane Katrina.

COL (Ret.) James Johnson, who led the staff ride, identified its main focal points as terrain, leadership, interpersonal relations, along with the outcome that

occurs when competing leaders have differing opinions about the same organization.

"If we do our jobs out there, we're not going to be talking about history as much as we're going to be talking about something that just keyed in your head; that's going to help you understand what you're trying to do," Johnson said. "In the discussion, we can talk about history for a while, but then I want you to start thinking and making analogies and drawing parallels to things that are of interest to you."

Those would be developed further during an after action review and subsequent meetings, he said.

"If this is going to be a staff ride and not a tour, then you have to play your roles," he said.

A staff ride first involves touring the site of a major battle. After that, its participants are asked to talk about the battle's plans, orders, events, decisions, and individuals. They also assume the persona of one of the battle's primary participants.

If the staff ride's participants don't have a stake in the process, Johnson said his role becomes downgraded to that of a historian pointing out significant areas of the battle site.

To further prepare the staff, Johnson illustrated proper methods of decision making, by referring to the book *Judgment: How Winning Leaders Make Great Calls* by Noel Tichy and Warren Bennis.

Johnson, the executive director of the Hudson River Valley Institute of Marist College, Poughkeepsie, N.Y., told the leaders numerous judgment calls would be evident during the Saratoga campaign.

Some of the corporate executive officers sourced in the book identified their own instances of bad judgment as those where they misjudged cases during which their subordinates were involved with an inept or unethical action.

"Think about judgment here (during the battle) and see who is willing to make course corrections and who's prepared to say something is not quite going right, we need to change what we're doing," Johnson told the PEO C3T leaders. "Then, maybe you'll get some insight into what this new book is about in terms of good judgment."

Johnson also referenced lessons LTG (Ret.) Harold G. Moore passed on to his cadets. During the Vietnam War, Moore was U.S. Army officer in command of American forces at the Battle of Ia Drang. This was one of the war's first major battles between the U.S. Army and the People's Army of Vietnam. Moore's son, COL David Moore, who is assigned to the PEO C3T, as Project Manager for Battle Command, was in Iraq when the staff ride took place. Moore's lessons included these four aspects that a commander should think about during battle.

- Trust your instincts;
- Three strikes and you're not out. "This isn't baseball," Johnson explained. "This can be changed. In other words, there is something else you can do to improve the situation and then there's something else you can do to improve the situation."
- When nothing seems to be happening, it doesn't mean that nothing is happening;
- Take a moment for quiet reflection.

Johnson compared some of Moore's principles to those of the Saratoga commanders.

"You're going to see that these officers (at Saratoga) believed that they should lead by example, which put them at high risk," Johnson said.

A portion of leadership involves management, but it mainly is the way someone influences their staff to perform necessary tasks, he said.

Aside from organizational issues, Johnson told the leaders to think about tactical aspects of the staff ride, since they support warfighters in battlefield campaigns. He hoped to provide them with insight into terrain, tactical formations and the orchestration of three simultaneous attacks coordinated by cannon fire.

The PEO C3T held its first staff ride in August at New Jersey's Monmouth Battlefield State Park.

Mr. Davidson is a writer for Symbolic Systems Inc., Team C4ISR KC, Fort Monmouth, N.J.

Acronym QuickScan

PAVN – People's Army of Vietnam
PEO C3T – Program Executive Office for Command, Control and Communications Tactical

Self-development, professional reading

By LTC Kristin A. Ellis

"Crossing the Plains on an expedition to Utah [in the 1850s], MAJ Charles A. May searched the wagons in an effort to reduce unnecessary baggage. When he reached the wagons of the light artillery battery, CPT Henry J. Hunt proudly pointed out the box containing the battery library. 'Books?' May exclaimed in astonishment. 'You say books? Whoever heard of books being hauled over the Plains? What in the hell are you going to do with them?'. At that moment CPT Campbell of the Dragoons came up and asked permission to carry a barrel of whiskey. 'Yes, anything in reason, captain. You can take along the whiskey, but damned if these books shall go'." - William Skelton, *"An American Profession of Arms: The Army Officer Corps, 1784-1861"*

...Self-development, consisting of individual study, research, professional reading ... is consistent with an officer's personal self-development action plan and professional goals. Self-development is the key aspect of individual officer qualification that solidifies the Army leader development process."

-- Chapter 2 of DA Pamphlet 600-3 *Commissioned Officer Professional Development and Career Management*

LTG Paul K. Van Riper is a retired Marine. Van Riper served in both Vietnam and Desert Storm, and his personal decorations include the Silver Star with gold star, Legion of Merit, Bronze Star with "V" device, Purple Heart, and the Combat Action Ribbon with gold star. He is also a graduate of the U.S. Army's Airborne and Ranger Schools. Van Riper is a steely-eyed killer.

As the division commander of 18,000 Marines, Van Riper issued the following memorandum:

"The professional reading program is a key part of the continuous professional development that is necessary to develop the minds of our Marines … just as we expect our Marines to maintain their physical fitness, so should we expect them to maintain their mental fitness through a career-long professional reading program."

Van Riper has also observed that:

"The primary 'weapon' that officers possess remains their minds … books provide the 'ammunition' for that weapon."

Van Riper is a steely-eyed killer with a book tucked under his arm. He is warrior born of two main influences; the violent existence of a Marine tempered by the wisdom of a historian.

Roger Nye in his incisive study *"The Patton Mind"* (1993), writes:

"[Patton] has been celebrated as a highly energized and profane man of action – a doer rather than a thinker, many said. But he left behind the most complete record of exhaustive professional study of any World War II general – or any general in American history, for that matter. ... Patton acquired and used a military library for almost daily study of his profession and [employed a] system of marginal notes and file cards to develop his thinking about tactics, strategy, leadership, and military organization. Those thoughts were expressed in a stream of lectures, staff papers, and journal articles, and also in diaries, poetry, and finally in a classic book, *'War As I Knew It'*".

Chapter 2 of DA Pamphlet 600-3 *Commissioned Officer Professional Development and Career Management* states:

"Learning is a lifelong process. Institutional training and operational assignments alone do not ensure that Army officers attain and sustain the degree of competency needed to perform their varied missions. The profession of arms requires comprehensive self-study and training. Leaders must commit to a lifetime of professional and personal growth to stay at the cutting edge of their profession ... Every officer is responsible for his or her own self-development. Self-development programs include activities that stretch the individual beyond the demands of on-the-job or institutional training. Self-development, consisting of individual study, research, professional reading ... is consistent with an officer's personal self-development action plan and professional goals. Self-development is the key aspect of individual officer qualification that solidifies the Army leader development process."

So, in summary, self-development solidifies the Army leader development process, professional reading is a key aspect of the self-development process, and professional reading must be continuous, systematic, and conducted over a considerable period of time.

There are dozens of great reading lists to help you approach professional reading systematically.

The Chief of Staff of the Army has a reading list.

Senator Ike Skelton has a reading list. The Commandant of the Marine Corps has a reading list (an especially great reading list, because it starts with the E1 ... *Semper Fi*).

http://www.history.army.mil/reference/CSAList/CSAList.htm
http://www.house.gov/skelton/book_list_summaries.pdf
http://www.mcu.usmc.mil/ProDev/ProfReadingPgm.htm

The Commander of the Combined Arms Center, LTG William B. Caldwell, has three subject-specific Reading Lists: one on Counterinsurgency, one on Jihadism/ Militant Islam, and one on Cultural Awareness. Many of these works can be downloaded.

http://www-cgsc.army.mil/carl/resources/biblio/CAC_counterinsurgency.asp
http://www-cgsc.army.mil/carl/resources/biblio/CAC_militant.asp
http://www-cgsc.army.mil/carl/resources/biblio/CAC_cultural.asp

Are you deploying to Iraq or Afghanistan?

http://cgsc.leavenworth.army.mil/carl/resources/biblio/3acrart.asp
http://cgsc.leavenworth.army.mil/carl/resources/biblio/deploylist.asp
http://www.smallwarsjournal.com/documents/usmccoinreadinglist.pdf

Do you want to understand the war in Iraq without actually reading about Operation Iraqi Freedom? Thomas E. Ricks, the author of "Fiasco: The American Military Adventure in Iraq" has a Reading List. Ricks' "reading list" even includes a bonus DVD. And yes, movies should be part of your reading program: if you have never seen Leni Riefenstahl's 1935 movie "Triumph of the Will" ("Triumph des Willens"), then watch it tomorrow.

http://www.amazon.com/gp/richpub/syltguides/fullview/6PMKABCX1QEX/

If you don't think you have the time for professional reading, then you don't. As George Orwell said, "the quickest way of ending a war is to lose it, and if one finds the prospect of a long war intolerable, it is natural to disbelieve in the possibility of victory". Start now.

"Read to Think; Think to Fight; Fight to Win" - the U.S. Marine Corps.

"There is no excuse for any literate person to be less than three-thousand years old in his or her mind." - B. H. Liddell Hart, "*Why We Don't Learn From History*" (London, 1946)

LTC Kris Ellis is the commander of the 442nd Signal Battalion.

ACRONYM QUICKSCAN

CAC – Combined Arms Center
U.S. – United States

The unseen warriors

Army's Combat Camera

By Gordon Van Vleet

If you have ever seen video and still photos of America's Army in action while watching the nightly news, or while watching one of the many documentaries containing archive combat footage on television today, then you most likely have seen some of the extraordinary video and photos taken by one of the United States Army's unseen front-line warriors, the combat camera Soldier.

Under the operational control of the 21st Signal Brigade - the 55th Signal Company (Combat Camera), located at Fort Meade Md., is the only active duty Combat Camera company in the Army.

The photo documentation mission of the 55th stretches back more than 125 years. Since the 1880s, the Signal Corps has been taking photos for the Army. Then, in 1917, the Army Signal Corps established a Photographic Section responsible for both ground and aerial photography.

Today, the mission of the 55th is to provide tactical visual information support for operational and contingency missions in support of the Department of the Army, the Joint Chiefs of Staff, the Office of the Secretary of Defense, and Army and Unified Commands.

"In short, the mission of the 55th is to provide directed imagery that supports the decision making from the strategic level through the combatant commanders down to the tactical level," said MAJ Donald W. Reeves, 55th Signal Company commander,. "The 55th also has the mission to document all types of operations and events for historical preservation of the actions.

"The 55th is the only active duty Combat Camera unit in the U.S. Army, making it one of the lowest density and most unique units in the Army," Reeves said. "As the company continues to grow, it is transforming and integrating High Definition equipment which will increase and enhance the unit's abilities."

Not only does the company have a unique mission, it also has a dangerous mission. Since 2003, the unit has had five of its members awarded the Purple Heart, and more than 30 Soldiers received the Bronze Star."

"Our cameramen are deploying on missions everyday out of forward operating bases and combat outposts that put them in harm's way," said Reeves. "Most of our cameramen currently deployed in Operation Iraqi Freedom and Operation Enduring Freedom have earned a Combat Action Badge in their first month for being closest to the action."

Although the company only has about 180 Soldiers assigned, it isn't hard to find one who has been in the thick of the fight.

"There have been times when I found myself in very hot situations and had to ensure that I maintained situational awareness and contributed to the fight," said SGT Johnny Aragon, team leader. "The most recent was when the platoon that I was with got in a fire fight and we were soon surrounded. We had to fight our way through to higher ground, so that we could secure our objective. We completed our mission taking out two Taliban leaders while we suffered no casualties."

A rare photo of the photographer, as SGT Johnny Aragon, 55th Signal Company combat camera documenter, during a patrol in Afghanistan while attached to Combined Joint Task Force - 82.

Aragon, who has been in Southwest Asia 23 months out of the four years he has been with the 55th, said joining a new unit as a combat cameraman isn't always easy.

"Embedding into a new unit that has never worked with combat camera before can be difficult sometimes because I have very little time to prove myself. However, once they see that I am an asset on the battlefield as well as a documenter, I become one of their own."

Another combat camera Soldier, SGT Billy Brothers said every combat cameraman is a Soldier first.

"Our job can be just as dangerous as the Soldiers on patrol because we are out their with them, we feel the heat in Iraq with them, we feel the cold in Afghanistan with them, we are with them when they go out, and we are with them when they head back to the forward operating base."

The one thing about combat camera is their job is only half finished when the patrol is over.

"When you are done with the mission, unlike a lot of other Soldiers out there, you still have a lot of digital work to do," said Brothers, who has been a combat cameraman

Combat Camera NCOIC SSG Tyffani Davis shows her most recent digital photo to a group of children during her work with the Combined Joint Task Force – 82 in Afghanistan.

since November 2005. "Sometimes when you do a lot of missions, you rarely have free time to just relax and chill out. You get back from a mission and then you almost spend that same amount of time in front of your laptop, it can get stressful mentally."

Not only do 55th Soldiers support combat operations, they also support humanitarian missions.

"The 55th Signal Company stands ready to deploy to provide combat camera support for any other disaster world-wide, to include earthquakes, fires, floods, and hurricanes, such as Katrina and Rita," said MSG Samantha Shirley, 55th Signal Company first sergeant. "The last humanitarian mission we supported was in Bolivia in March 2007 after heavy rains caused major flooding throughout the country. We sent a two-person team to document the disaster and the subsequent relief efforts."

Shirley believes training is a big part of being a combat cameraman.

"Combat camera Soldiers face a multitude of situations based on the wide-range of missions that we support. Our Soldiers have to be ready to react to any situation in any environment; therefore, our training requirements are very broad.

"Our Soldiers are continuously enhancing and refining their documentary abilities while keeping up with technological advancements," Shirley said. "Not only do our Soldiers attend advanced technical training at the Defense Information School and Syracuse University, they are also trained on how to use a multitude of weapons including the M16, M4, M9, M240B, M203 and MK 19."

It takes an extremely dedicated and intelligent Soldier to be a Combat Cameraman, Reeves said.

"Many of our cameramen and women already possess bachelor's degrees and many are working toward master's degrees in their field.

"A combat cameraman has to have the maturity to be able to not only work independently of others with minimal supervision but also has to have the maturity to interact in most cases with senior military officers and coalition partners."

America's Army will continue to have boots on the ground wherever they are needed, from combat operations in Iraq and Afghanistan, to humanitarian and missions at home and abroad.

And, as long as there is a need to take photos or video to help meet mission objectives, or for preserving historical actions and acts, then Army's combat cameramen will be the Army Strong Soldiers, with their boots on the ground, who meet that need.

Mr. Van Vleet is withthe Public Affairs Office at Network Enterprise Technology Command/9th Signal Command, Fort Huachca, Ariz.

ACRONYM QUICKSCAN

OEF – Operation Enduring Freedom
OIF – Operation Iraqi Freedom

Baghdad Signal University graduates Iraqi army Soldiers

By SGT Lewis M. Hilburn

Camp Victory, IRAQ - Three students sit in a classroom learning basic networking. They are working towards the result of graduating from the course. Graduation was only five days away; however, this was day one of the course.

The Baghdad Signal University run by Task Force Thunderbird, offers five day courses in basic networking, advanced networking, fiber, very small aperture terminal, server administration and A plus certification, according to SFC Juan Rodriguez, noncommissioned officer in charge of the university.

"The goal of the Baghdad Signal University is to provide theater personnel a training opportunity to enable a more proficient execution of the mission," he explained. He went on to say the university is a catalyst in providing supplemental instruction for additional team chief and supervisor level training. The hands-on instruction for personnel enhances the classroom training, he said.

Rodriguez discussed the intent of the university, "It provides specific training on current and future equipment and methodologies, assists units and personnel with transitioning into theater, and provides personnel with additional instructor experience and knowledge to succeed."

Under the new supervision of Task Force Thunderbird, the university recently finished its' first course and Rodriguez could not be any happier. "It was a great feeling and of course we feed off of our feedback to improve each and every class thereafter," he said. This course is offered to anyone in theater he said, all branches, services and foreign militaries.

The BSU recently graduated its first class of foreign service members, three officers from the Iraqi Army. This would be the universities first class of foreign military students.

SFC David Mendoza explains basic networking during the class he taught to the Iraqi Army Soldiers.

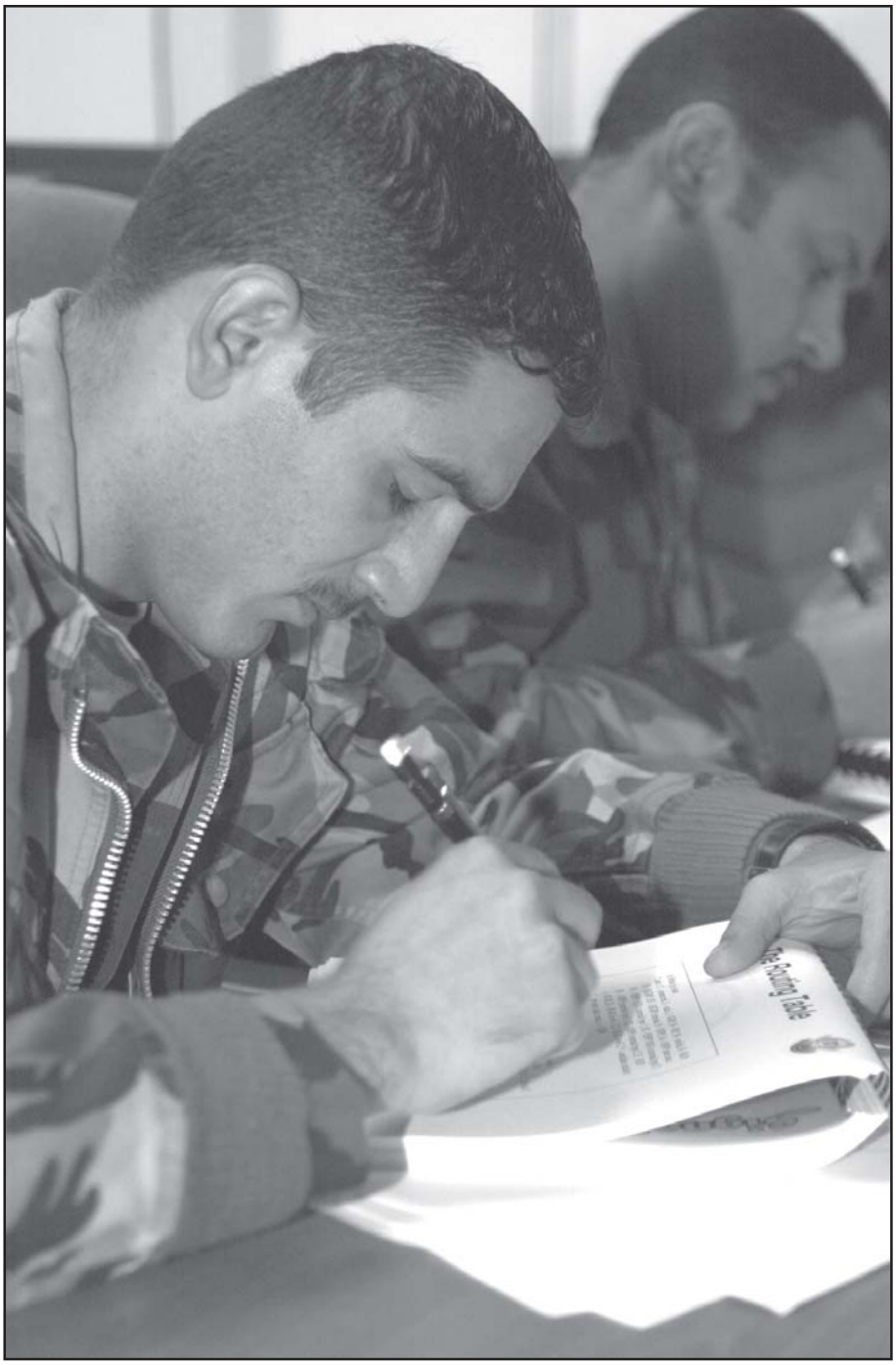
SSG James McDavid, instructor for the university, said the biggest challenge of teaching non-U.S. service members was the language barrier. Even with the use of an interpreter, the instructors still had trouble teaching their students. "In the beginning we would have to

explain the block of instruction four or five different ways for them to understand it," he said. However, once they got accustomed to barriers of communication they presented the information at a much faster pace, he added. So much so they were able to give the students more information in the same amount of time as a class comprised of U.S. service members.

"These officers already had a concept of basic networking where as most of the students we teach don't," he stated, "they were very smart and picked up on the course of instruction very quick." The instructors were able to give them more practical exercises. According to Rodriguez, the instructors felt really honored and blessed to have given this course of instruction to the foreign students.

The university does not want to stop there. They welcome the idea of teaching other foreign military members. "The goal of the university is to keep growing and spreading its knowledge base to those who want to learn," stated McDavid. The university also has another goal they want to try to achieve. Last year the university taught over 500 service members and Rodriguez said he wants to surpass that number this next year. "We are on track right now to train more than 600 students. Not only are we training more, but we have added more subjects than what the university previously taught; courses like A plus certification and very small aperture terminal ," he said.

By SGT Lewis M. Hilburn is a public affairs officer with Task Force Thunderbird.



2LT Zahir Abd Ali studies his notes prior to taking his exam.

Acronym QuickScan

BSU – Baghdad Signal University
U.S. – United States

Writing for your *Army Communicator*

Your interest in writing for the *Army Communicator* is appreciated. AC is published quarterly by the Chief of Signal at Fort Gordon, Ga.

Army Communicator is the U.S. Army Signal Regiment's professional magazine. The magazine explores trends in the Regiment and provides a place for Signal Regiment members to share good ideas and lessons-learned with their colleagues.

AC, as the Signal Regiment's professional-development magazine, is supported by article contributions from Signal Regiment members; *AC* depends on noncommissioned officers, officers, warrant officers, and Regimental Civilian employees to contribute quality articles on topics of interest to the entire Regiment.

We hope you consider sending us an article on Signal work that you and your unit are doing! To be more successful in getting your manuscript from raw manuscript to the published product, please see our writer's guidance and style manual found online at http//:www.gordon.army.mil/ocos/ac/. This information answers many questions and concerns, and it discusses our minimum requirements. There's a lot of material to absorb if you read everything, so we recommend that at a minimum, read the "How to submit an article" section before you submit your article. More detailed guidance beyond the general guidance is found on our manuscript-formatting webpage. If you have questions/concerns the writer's guidance doesn't answer, please feel free to contact the editor anytime. We look forward to reading your article. (Email address below.)

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Manuscript: 1,000- to 3,000-word original, unpublished manuscript submitted as simple word-processing document and with proper attribution to sources;

CD: Manuscript on a computer disk if submitting article with hard-copy, or as an email attachment if submitting electronically;

Bio: Author biographical sentences at article's end;

Acronym list following short author biography (in alphabetical order);

Art: Photos or illustrations submitted separate from the text (not embedded in the text), with each piece of "art" as an individual file in JPG or TIF format;

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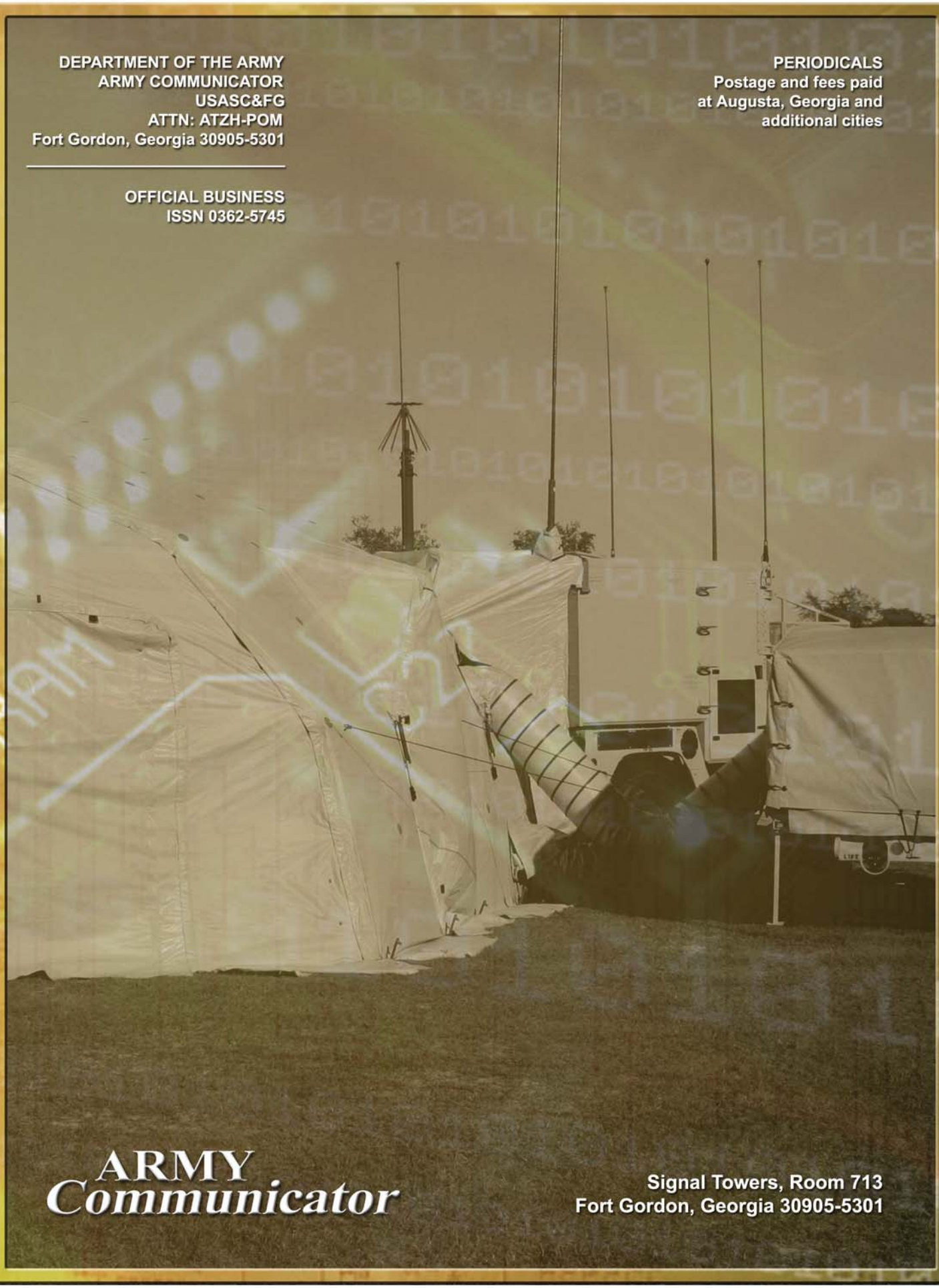

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