

Successful mission command requires fully integrated tactical operations center

By MAJ Phil Burns

At the 2011 Tactical C4 Conference, the National Training Center Signal Training Support Team reported that brigade combat team S6 sections are falling short of successful rotations at NTC.

Only three of 32 BCT S6 sections were recently evaluated as “successful” in systems validation and integration of mission command applications throughout the tactical operations center environment.

In other words, 91% of the BCT S6 sections were not successful.

Commanders hold S6 sections responsible for the successful integration of the transport layer with mission command applications, so Signal practitioners must organize to support commanders’ demand for an integrated TOC.

While this statement may shock a few, this is hardly the first time that we have heard of this trend. The first integration crisis reached its peak in December of 2007. According to the 2007 CAC Tasking Order, “Officers and NCOs are not currently trained either in the institutional domain or during new equipment training to use battle command systems in an integrated fashion.”

When MCS 6.4 testing with 4th Infantry Division occurred in 2004, units procured their own servers. Every unit had a different set of hardware and software for the TOC server. In 2005, clients for the command post of the future were fielded without a supporting server infrastructure at unit-level. This led to ad hoc, unit-level server acquisition, which led to initial integration challenges. This prompted the product manager for tactical battle command to take matters into their own hands in order to develop and standardize server support packages, which were fielded under the monogram of Battle Command Common Services. While this intervention by PM TBC was timely and necessary, overall integration training shortfalls were not addressed until 2008 after the Combined Arms Center issued a formal task order, calling for the development of digital master gunner and battle command integrator courses.

This integration void has not improved significantly over the past four years. Recently, the FORSCOM Commander, GEN James D. Thurman, witnessed 83 field service representatives supporting 1st Armor Division’s 4th Brigade, during its rotation at NTC. GEN Thurman remarked that this level of FSR support is unacceptable and unaffordable.

It was clear during General Thurman’s visit that Soldiers could not adequately operate, integrate, and maintain their CPOF, Blue Force Tracker, and Army Battle Command Systems. Skill atrophy appeared to be an issue given that units are in the habit of plugging into or falling in on fixed infrastructures in theater with FSRs providing skilled technical support. One JRTC observer affirmed this trend by stating that for some units, the configuring of BCCS server stacks at JRTC grinds to a halt when FSRs depart for the day.

The current integration crisis is a lot deeper than the issues discussed at the outset. The issues mentioned above are not the problems in themselves but rather symptoms of the overall problem. During a meeting with the Program Executive Office for Command, Control and Communications – Tactical, GEN Thurman began to address the problem by asking the question of who is the “gatekeeper” that validates capabilities to ensure network interoperability. To get at this question, the CAC Commanding General, LTG Robert Caslen, stated that Signal is in the best technical position to integrate the transport layer with mission command applications.

On 22 April 2011, MG Alan Lynn, the 35th Chief of Signal, accepted Signal’s new mission to integrate the transport layer with mission command applications.

Outlining clear lines of responsibility is the first critical success factor that supports Signal’s new mission. Signal owns the infrastructure of servers and networks that integrate Mission Command applications. Mission Command owns Mission Command applications that run on Signal’s infrastructure. The synchronization of key stakeholder requirements is a dual responsibility of Signal and mission command,

and Figure 1 illustrates this dual responsibility (see acronym list for clarification of Figure 1's acronyms).

Ensuring the integration of mission command application data on Signal's infrastructure is a critical subset of Signal's new mission. This goes beyond just connecting the CAT-5 cable to the client system. Mission command application users are responsible for the installation, operation, and user-level troubleshooting of their respective applications. This new direction does not mean that Signal will write mission command applications. Instead, Signal will ensure coordinated helpdesk support to mission command applications to troubleshoot mission command application data integration problems. Signal provides service and support to mission command application integration throughout the TOC. Training Signal Soldiers

and leaders is the second critical success factor that supports Signal's new mission. The identification of potential training challenges impacting this new mission is critical. Training challenges fall into three categories: operational, individual and institutional. A training challenge at the operational level occurs when units do not train their Signal team throughout the ARFORGEN cycle. S6 sections must garner command support for their training to include mission command application users deploying their respective systems to digital training exercises. Establishing a leader or an organization with the responsibility of training, readiness and oversight is critical for this success.

Figure 2 provides an excellent example to program unit-level Signal training from the reset phase of a reset/train force pool to the available

phase. In a perfect world, this would allow sufficient time to establish training and facilitate team development. As we generally do not live in a perfect world, developing a command supported Signal training plan is a significant challenge.

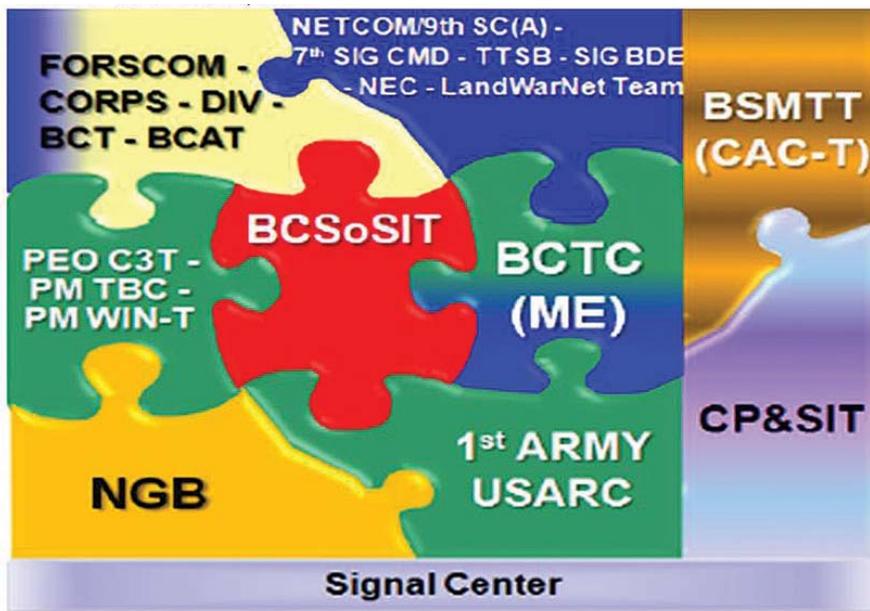
What is not discussed in Figure 2 is the need for mission command application users to deploy their systems at all brigade field training exercises and other digital exercises, and faults must be introduced in order to teach advanced troubleshooting techniques.

Implementing Signal training allows Signal leaders to discover equipment shortfalls. A rotation at NTC is not the time to learn advanced troubleshooting techniques, to discover equipment shortfalls, or to learn how to configure BCCS server stacks.

S6 sections must train their Signal team prior to a rotation at NTC or JRTC. Measurable success metrics must be established, such as a timed metric for the establishment of common services supporting mission command applications. Metrics must be command supported and enforced. As a supporting effort in improving this training challenge, the installation campus network must be improved. The network enterprise centers must support and understand Signal team training objectives. This has been a recent focus of NETCOM and FORSCOM G6. This is a key enabler to success in Signal team training at homestation. Finally, S6 sections must ensure systems are IA-compliant.

An individual training challenge occurs when Signal Soldiers and Leaders do not

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Signal / Mission Command

Figure 1 - Synchronization of Resources

conduct self-proficiency training. AR 350-32, Army Foundry Intelligence Training Program, is a regulatory process that shapes a Soldier into the Army intelligence mold. AR 350-32 states that the purpose of the foundry program is to enable, "... select Army personnel to learn new intelligence skills and sustain and improve their technical, analytical, and foreign language skills to execute intelligence missions successfully."

While LandWarNet eUniversity hosts online training, it is not the authoritative source for all Signal training. The S6 Community of Purpose website hosts Signal training, and certification requirements are spelled out in DoD 8570.01-M, Information Assurance Workforce Improvement Program. While efforts are ongoing to get at individual sustainment training, Signal would do well to establish a truly centralized individual sustainment training program that is leader enforced.

An institutional training challenge arises when schoolhouses are not scheduled or funded to receive new equipment that coincides with operational fielding of new equipment as required by AR 350-1. Often there is a large gap between

the operational fielding of new equipment and the corresponding new equipment issuance at proponent schoolhouses.

If the Army's force stabilization system is factored into the equation, the above gap grows considerably. According to AR 600-35, personnel replacement ensures that "Soldiers will remain with the unit for the duration of the unit's lifecycle, arriving during a Reset Phase of a Reset/Train Force Pool and departing during the next Reset Phase or later." This policy allows for a 36-month personnel assignment window goal; however, a 24-month personnel assignment window is generally the norm. This creates a one-year gap, because TRADOC Regulation 350-70 states that the development of institutional training must coincide with the new equipment fielding in order to provide trained replacements for units first equipped with the new system. If programs of instruction require revamping due to changes in NET, it is conceivable that schoolhouses would graduate Soldiers who can install, operate and maintain the new system at the end of a 36-month cycle. Because iterative changes to systems are expected, it is anticipated that Soldiers will arrive to units "out-of-date," causing an additional training burden at the unit. Resourcing must be

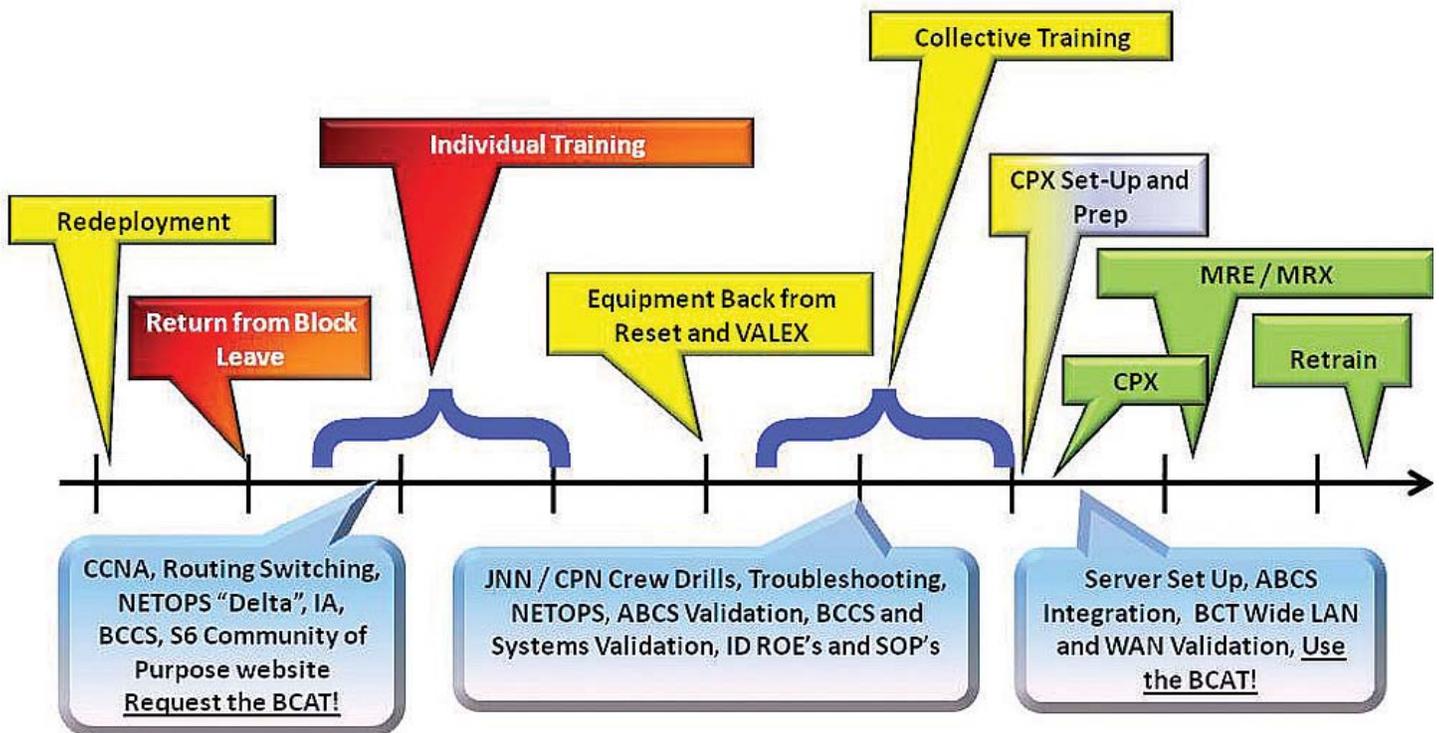


Figure 2 - Training Your Signal Team

revised to ensure timely fielding of new equipment to proponent schoolhouses.

A related institutional training challenge occurs when the basis-of-issue plan feeder data doesn't accurately reflect integrating training requirements. The BOIPFD may be a new term for some, and it is often underrated.

The significance of the BOIPFD should not be overlooked, because the BOIPFD impacts doctrine, organization, training, material and personnel portions of the DOTMLPF. The BOIPFD forms the basis of developing new equipment training, technical manuals, and troubleshooting guides, which ultimately inform system training plans and POIs. This is where operator and maintainer decision points are made as well. Tables of organization and equipment eventually reflect duty positions and new equipment placement based off the BOIPFD. The BOIPFD can also be used to inform critical task/site selection boards, establishing MOS responsibility for that piece of equipment.

Incomplete BOIPFD adversely impacts training when NET requirements are not clearly defined. Corresponding shortfalls in institutional training generally does not lag to far behind. For these very reasons, the BOIPFD for the next generation server consolidation initiative known as BCCS (AN/TYQ-155(V)1) is being reviewed by Signal Center of Excellence's Force Requirements Branch (FRB), TRADOC Capability Manager for Global Network Enterprise, TCM for Network and Services, and Office Chief of Signal with help from TRADOC Capability Manager for Mission Command's C2 cell. Currently the BOIPFD for the AN/TYQ-155(V)1 does not identify NET or sustainment training. An initial DOTMLPF assessment indicates that this omission obscured who should receive BCCS training. Recipients of NET must be clearly identified to ensure the right population receives the right training.

Providing timely solutions is the third critical success factor. The SIGCoE has set events in motion. An initial DOTMLPF assessment was conducted on 21-22 June 2011 at Fort Gordon. As stated earlier, SIGCoE's FRB and OCOS in coordination with Mission Command Center of Excellence's FRB have begun to analyze BOIPFD for BCCS servers supporting Mission Command application integration. SIGCoE's FRB in coordination with OCOS and the Maneuver Center of Excellence developed and staffed with ARCIC FDD, a Force Design Update, redesigning the BCT and Multi-Functional brigade S6 sections IAW

the NETOPS Construct. Under this Construct, S6 sections will have well-staffed Network Assurance and Content Management cells. The FDU will authorize one CW3 Network Defense Tech (255S) within the S6 Network Assurance cell, which will provide senior leadership to ensure Mission Command applications are integrated in a secure manner.

A recent Functional Area Assessment at SIGCoE has identified a solution to bring back TRO to Signal elements across the force, earmarking Expeditionary Signal Battalions - Enhanced and Tactical Theater Signal Brigades to perform this function. Along with ESBs - Enhanced and TTSBs, division G6 sections will have "Battle Command Assistance Team" capabilities to provide additional TRO support. This will help to reverse the loss of TRO support provided by divisional Signal battalions as the Army moved to a modular force and Signal companies were parsed out to BCTs and M-F brigades. FORSCOM's BCATs are critical to provide training and readiness support to BCTs and M-F brigades until the TRO concept is realized.

An initial review of POIs is underway by the 15th Regimental Signal Brigade, training developers, and SIGCoE Quality Assurance Office in order to ensure courses support the mission to integrate Mission Command applications with the transport layer. The goal is to develop skills-based POIs with a clear end state to truly integrate the transport layer and MC applications. Two courses - the Brigade S6 Staff Course and the Signal Digital Master Gunner Course - have yet to be fully entered into the Army Training Requirements and Resources System, but both courses begin to get at the heart of training the technical and leadership skills necessary to manage Mission Command application integration. Work is underway to evaluate the feasibility of establishing an ASI for graduates of the Signal DMG Course, which could facilitate personnel assignments decisions of this trained workforce.

Additional initiatives are ongoing with the Signal DMG. In August, the Signal DMG Course instructors will conduct verification and validation with PM TBC. Version 4 of the BCCS server stack is the focus of the V&V. This initiative by 442d Signal Battalion will allow SIGCoE to begin to get at validating requirements and tasks that impact Signal's new mission.

Senior Signal warrant officers have begun

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a holistic review of integration tasks. The Combined Arms Training Strategy must reflect Mission Command integration tasks to include BCCS. Clear metrics must be provided. Along with lessons learned, NET requirements must be reviewed and fed into the CT/SSB. The holistic review by Senior Warrant Officers is critical to inform the Signal Regiment and to clear up blurred lines of understanding. The conduct of CT/SSBs must be predictable and consistent. Developing clear standards is the first logical step.

The SIGCoE's Accelerated Capabilities Division is looking into the development of cellular applications that will aid the BCT S6 section's mission from network operations to Mission Command application integration. Imagine phone applications that provide one-touch access to technical manuals, troubleshooting guides, and checklists via an intuitive GUI or through liberal use of Quick Response code attached to clients and servers. Building these applications would mean validating existing technical manuals, troubleshooting guides, checklists, online training material, etc. This is worthwhile if it aids the S6.

Having an eye to the future is the fourth critical success factor. We must first focus on impacts of technological change to how we train to perform our mission, such as the 2001 Network Synchronization Workgroup II identified a critical need to collapse multiple server infrastructures within operational forces. Currently, the distributed server infrastructures for BCCS, the Distributed Common Ground System - Army, and the Warfighter Information Network - Tactical provide a level of complexity, which requires significant integration and training post-fielding. Figure 3 demonstrates an initiative to converge intelligence and informational server infrastructures into a common, scalable server infrastructure, improving operational effectiveness with an added benefit in reducing hardware fielding and replacement costs as well as reducing training requirements. Efforts by DoD to reduce contractor levels are the next future event to track. The use of contractors throughout DoD has undergone increased scrutiny lately. According to a recent Congressional Research Service report titled *Department of Defense Contractors in Afghanistan and Iraq: Background and Analysis*, 52% of DoD's workforce in Afghanistan and Iraq

Problem Statement: To support the Army Network Strategy current mission command applications and services must converge to improve operational effectiveness and **gain efficiencies in support of Army investments/POM Strategy. Convergence must enhance operational capabilities and relevancy, improve interoperability, and decrease time for development, certification, and fielding while reducing costs over time.**

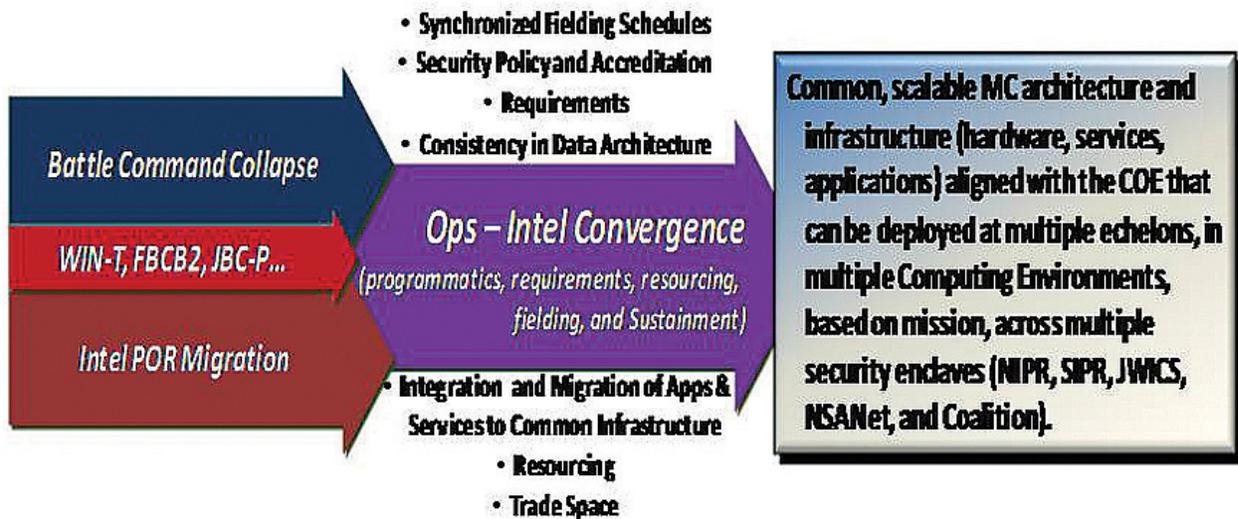


Figure 3 - Intel/Ops Convergence

consists of contractors. The same researchers contend that “Many analysts now believe that DoD is unable to successfully execute large missions without contractor support.”

If FSR support is reduced, impacts to Signal’s new mission must be evaluated to include any shortfalls in training that may exist.

Changes to the Signal Regiment human capital is the third area of focus. OCOS proposed a Signal Regiment human capital strategy. The strategy details a plan to recruit, develop, and utilize Signal leaders and Soldiers. The numbers of officers with technical degrees will increase at the frontend of recruitment.

For the first time, some key enlisted military occupational specialties will require an associate or bachelor degree to fill select technical fields. OCOS leaders are evaluating the

structure of Signal officer Branch 25 and merging Functional Area 53 and 24 into a new Functional Area 26. Also under consideration is the restructuring of nine enlisted Signal MOSs into three new MOSs: network support, network operations and transmission systems. These actions are geared to ensure Signal supports the requirement of the Army to conduct warfare in a global arena in an integrated fashion.

Conclusion

MG Lynn has taken the bold step to accept the mission to integrate the network with mission command applications, challenging us with the task to support this new mission. This will be a partnership with mission command and key stakeholders. Synchronization of capabilities is critical, and doctrine must reflect this new mission. Individual sustainment

training, operational training at units and institutional training at Fort Gordon must be relevant and support this new mission. Signal must remain flexible to anticipate changes to the mission or capabilities. Signal must organize to support commanders’ demand for an integrated TOC. In short, the work has just begun.

MAJ Phillip G. Burns currently assigned to TCM GNE, SIGCoE. He served as 2d Infantry Divisions Information Assurance Manager. He received a Master’s degree in Computer Information Systems at Georgia State University and served as the Graduate Business Association’s vice president of technology. In 2007, MAJ Burns graduated from the Information Systems Officer course at the U.S. Army School of Technology at Fort Gordon, Ga.

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ACRONYM QuickScan

BCAT - Battle Command Assistant Team
BCCS - Battle Command Common Services
BCSoSIT - Battle Command Systems of Systems Integration Training
BCT - Brigade Combat Team
BCTC - Battle Command Training Center
BOIP - Basis-of-issue plan
BOIPFD - Basis-of-issue plan feeder data
BSMTT - Battle Staff Mobile Training Team
CAC - Combined Arms Center
CP&SIT - Command Post and Staff Integration Team
CPOF - Command Post of the Future
CT/SSB - Critical Task / Site Selection Board
DOTMLPF - Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities
FORSCOM - Army Forces Command
FSR - Field Service Representative
JRTC - Joint Readiness Training Center
MCS - Maneuver Control System
M-F - Multi-Functional

NET - New Equipment Training
NGB - National Guard Bureau
NTC - National Training Center
PEO C3T - Program Executive Office for Command, Control, and Communications - Tactical
PM - Product Manager
PM TBC - Product Manager for Tactical Battle Command
PM WIN-T - Program Manager for Warfighter Information Network – Tactical
SIGCoE - Signal Center of Excellence
TCM GNE - TRADOC Capability Manager for the Global Network Enterprise
TCM N&S - TRADOC Capability Manager for Network and Services
TOC - Tactical Operations Center
TRO - Training, Readiness, and Oversight
USARC - United States Army Reserve Command
V&V - Verification and Validation