

New expeditionary Signal battalion model provides greater capabilities

CPT Corris L. Bullock and
SFC (Ret) Patrick Marshall

On 2 March 2011, the Army chief of staff approved a plan redesigning the expeditionary Signal battalion.

The redesign came as a result of an intensive assessment of the Signal Regiment. The purpose of the assessment was to identify weaknesses in the ESB design and provide solutions giving maneuver commanders and joint task force headquarters required network services for mission accomplishment.

One critical objective of the redesign is to leverage the success of the highly deployable small-team model created by the joint communications support element. This means that each ESB will be

capable of expanding command post coverage from 30 to 69 points of presence.

Leaders at the U.S. Army Signal Center of Excellence are developing a force design update to document the improved battalion design to support deploying forces that do not have organic Signal capabilities. These systems will also support both homeland defense and civil support missions in response to national emergencies.

The Expeditionary Signal Battalion-Enhanced model will provide a more modular expeditionary capability to commanders across all echelons, equipping them with a full range of network services utilizing an everything-over-Internet protocol network architecture. The

primary objective of the ESB-E is to leverage emerging commercial technologies to improve transportability by employing communication systems that are smaller, lighter and more user-friendly. This approach makes the ESB-E more "manpower efficient" and allows increased flexibility to support more CPs than today's ESB.

These new enhanced systems will provide: non-secure and secure internet protocol router data, video teleconferencing, voice over internet protocol, secure voice over internet protocol, global broadcast system, top secret/sensitive compartmentalized information, coalition data, wireless access points, military and commercial radio bridging, defense red switch network, and defense switch network.

ESB-E will incorporate a team methodology to support this new concept. Commanders will have the ability to deploy their teams in three distinct packages to provide communication support; large, medium or small. The ESB-E will have modular TOEs developed for the team level, allowing unit type codes to be assigned for each type of team. These team level UTCs used in the Joint Planning and Execution System will allow request for forces to be specific to the capability required, instead of having to request whole companies or a whole battalion.

The large package will provide connectivity for subscribers in a JTF-HQ or may supplement a corps or division HQs. It will utilize quad-band satellite reach-back capability



Projected ESB-E Capabilities

- Smaller/lighter systems
- Enables improved transportability
- Leverages emerging COTS technologies
- Easier to use - Manpower efficient
- Provides higher flexibility to support more CPs



Medium Command Post - 17

- VoIP/Data
- Enclaves (SIPR, NIPR, Colorless Core, TS/SCI, Coalition/JIIM)
- Video - 2 Systems each capable of Secure and Non-Secure Connection
- Satellite - Hub Spoke & Mesh connectivity (Tri-Band)
- 2 LOS Transit Case systems - 32 MB Data Rate
- Transit Case TROPO
- Transportable (C-130, Organic Vehicles, Transit Case - Max size is 4 man lift)

Large Command Post - 1

- VoIP/Data
- Enclaves (SIPR, NIPR, TS/SCI, Colorless Core, Coalition/JIIM)
- Video - 2 Systems each capable of Secure & Non-Secure Connection
- Satellite - Hub Spoke & Mesh connectivity (Quad-Band)
- 4 LOS Transit Case systems - 32 MB Data Rate
- Transit Case TROPO
- Transportable (C-130, Organic Vehicles, Transit Case - max size is 4 man lift)

Small Command Post - 51

- VoIP/Data
- Enclaves (SIPR, NIPR, Colorless Core, Coalition/JIIM)
- Video - 1 Systems each capable of Secure and Non-Secure Connection
- Satellite - Mesh connectivity (Tri-Band)
- 1 LOS Transit Case systems - 16 MB Data Rate
- Transportable (C-130, Organic Vehicles, Transit Case -Max size is 2 man lift)

ESB-E will support up to 69 CPs

operating in both the military and commercial bands (C, X, Ka, and Ku). In addition, this package will have a lighter, modernized commercial-off-the-shelf version of tropospheric scatter radio systems capable of operating in the Ku and C bands. The TROPO assets can be task organized to provide beyond-line-of-site network extension for small POPs, or for other organizations as required. The large package will also be capable of leveraging aerial layer communications as well as LOS connectivity to support stationary CPs.

A medium package will provide communications support for brigade CP-sized elements. The medium's primary focus will be functional brigades which include: Air Defense Artillery, Chemical, Medical, Military Police, etc. The transit cased configuration will make the system easier to transport and keep pace with frequently displacing brigade size headquarters.

The medium package will have terrestrial capabilities to access an at-the-halt network. It will utilize COTs based tri-band satellite communication capability supporting X, Ka, and Ku bands. The SATCOM technology will be interoperable with standard theater entry point, TELEPORTs and regional hub nodes, leveraging existing gateways to access services. The medium package will also deploy the same COTS based TROPO radio systems capable of extended range operation in the Ku and C bands.

The small package will provide communications support for a battalion CP-size elements. A small package will have the flexibility of supporting a huge range of missions through its ability to scale up network capabilities needed to support forward operating bases, maneuver company CPs, and non-maneuver CPs. The primary transport of the small package will be COTs transit-cased tri-band

SATCOM terminal supporting X, Ka, or Ku bands as well as a transit-cased terrestrial LOS transmission system.

The Army approved an "ESB-E Proof of Concept" be conducted in fiscal year 2012 at Fort Bliss, TX, and the 86th ESB has been identified as the unit to support this effort. During this process the TRADOC Capability Manager - Network and Services will work with the user-community, the materiel developer, and Headquarters Department of the Army to ensure the requirements and materiel solution are developed to support this concept.

The ESB-E concept will transform the Signal Regiment and present opportunities for the Regiment to incorporate emerging technologies needed to support our nation during peacetime and in wartime operations.

CPT Corris L. Bullock serves as the Warfighter Information Network-Tactical Increment 1 Lead for TRADOC Capability Manager - Network and Services, Fort Gordon, Ga. Prior to his selection as a FA 51 (Acquisition Corps Officer), he served as the Battalion S6 for 716th MP Battalion (101st Airborne Division), Fort Campbell, Ky from December 2007 to March 2009. CPT Bullock's education includes an executive Master of Business Administration in information systems and a Bachelor of Science in information systems.

SFC (R) Patrick Marshall served more than 22 years in the U.S. Army as a telecommunications chief. In his last assignment with the 63D Signal Battalion, he served as the S3 NCOIC and network planner during Operation Iraqi Freedom in 2003-2004. He is currently a network analyst for the Signal Center of Excellence, Fort Gordon, Ga. TRADOC Capabilities Manager - Network and Services. He holds a Bachelor of Science degree in electronic systems management from Southern Illinois University.

ACRONYM QuickScan

ATH - At-The-Halt
BLOS - Beyond Line of Site
COT - Commercial off the Shelf
DRSN - Defense Red Switch Network
DSN - Defense Switch Network
EOIP - Everything-Over-Internet Protocol
ESB - Expeditionary Signal Battalion
ESB-E - Expeditionary Signal Battalion-Enhanced
FDU - Force Design Update
FOB - Forward Operating Base
GBS - Global Broadcast System
HD - Homeland Defense
JCSE - Joint Communications Support Element
JTF-HQ - Joint Task force Headquarters
NIPR/SIPR - Non-Secure and Secure Internet

Protocol Router
POP - Points of Presence
RHN - Regional Hub Node
SATCOM - Satellite Communication
SVOIP - Secure Voice Over Internet Protocol
SIGCoE - Signal Center of Excellence
STEP - Standard Theater Entry Point
TS/SCI - Top Secret/Sensitive Compartmentalized Information
TROPO - Tropospheric
VTC - Video Teleconferencing
VOIP - Voice Over Internet Protocol
WIN-T - Warfighter Information Network-Tactical
WAP - Wireless Access Point