General TCF Closure Tasks

in the U.S. Army Signal Corps

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The 198th Expeditionary Signal Battalion (ESB) provided unparalleled communications support to the warfighters during its 2013–2014 deployment to Afghanistan. The ESB provided tactical satellite communications, network operations expertise, and cable and wire services. This National Guard Battalion is comprised of three units from Delaware and a fourth from South Carolina. The Battalion faced the unique challenge of learning how to close a Technical Control Facility (TCF). The Battalion met this daunting task with detailed preparation and coordination, effectively closing four TCFs.

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Left: The interior of a Technical Control Facility (TCF), which provides local services such as e-mail, sharepoint, telephone routing and file storage.

Below: A mini-TCF previously located at Forward Operating Base Pasab in Afghanistan is shown divided in half in order to be shipped off site. The missing section is the mirror image of the rightmost displayed section. A TCF supports NIPR, SIPR and CX-I nonsecure and secure Internet and combined information-exchange services.
Photos by the author

A TCF provides network services to large user bases in tactical and strategic environments. E-mail, file storage, phone routing, host-based security system (HBSS), active directory (AD) and domain name system (DNS) are key services delivered to users while units are deployed tactically. A TCF can be fixed or modular and miniature to medium size. A miniature TCF can service up to 4,000 customers while a medium-size TCF can service up to 20,000. A typical TCF allows customers to access non-secure internet protocol router network (NIPR), secure internet protocol router network (SIPR) and the combined enterprise regional information exchange system—Afghanistan (CX-I). During this deployment, the 198th ESB retrograded four modular TCFs—three miniatures and one medium. The TCFs were packed up and shipped to other locations via ground and air movement. The services they provided were replaced with a customized tactical solution that encompassed a smaller footprint.

During the initial preparation of a closure, it is imperative that the Battle Space Owner is intricately aware of all facets of the plan and the expected impact on warfighter communications. The challenge is to ensure that the user's services are not interrupted during their migration to either local or regional hub sites, such as Kandahar Air Field in Afghanistan. To accomplish this objective, a temporary set of computer servers and file servers must be created from scratch with theater-provided equipment. The data stack is configured to each site's specific needs and deployed at the tactical out site

where the TCF in question was identified for retrograde. Redundant fiber and category 5/5e/6 network cable must be run from every location at the Forward Operating Base (FOB) to the new data stacks, all while ensuring the TCF network remains intact.

Once redundant or backup services and connections are established on site, the Signal community within the Regional Command comprising the TCF, determines if the installed custom data stack will provide enduring services, or if a portion or all of those services will be fully migrated to a major hub site. There is a level of risk associated with not terminating network services locally. If the FOB is nearing complete closure, then it's more practical to migrate services to a distant hub and prepare for a complete closure at that location.

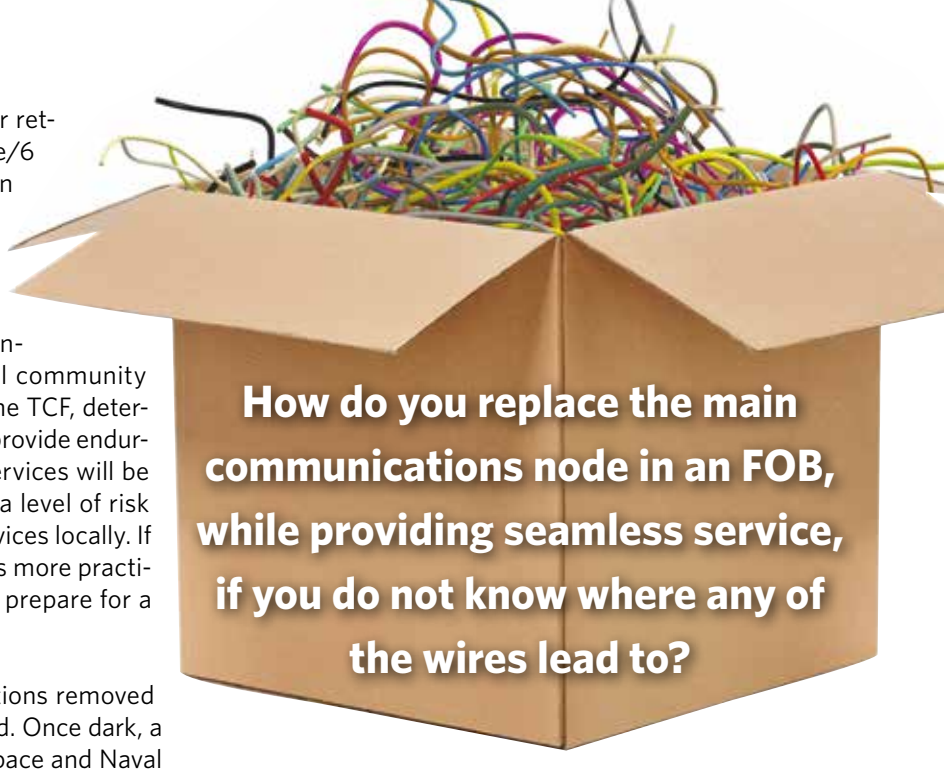
The TCF goes dark and all network connections removed when all site services are properly transferred. Once dark, a 198th ESB retrograde team augmented by Space and Naval Warfare Systems Command contractors arrive to dismantle the TCF. Although planning allows for several weeks for these actions, an efficient team, under the right conditions, can dismantle a TCF in four to five days and have the site totally clear. Proper planning with the network migration enables the well-trained retrograde team to work quickly at inventory, teardown and shipping.

FOB Spin Boldak TCF Closure

The FOB Spin Boldak TCF closure presented our team with a unique set of challenges. The FOB was comprised of an unlabeled cable backbone built by multiple units over several years. After years of operation and more than a dozen units stationed in this FOB, the network was a complicated mess. How do you replace the main communications node in an FOB, while providing seamless service if you do not know where any of the wires lead to? The FOB experienced constant fiber breaks due to unmarked cables being dug up and cut, and this resulted in loss of services. Furthermore, improper labeling increased the threat of cross-domain violations (CDVs). The situation was grim and unpredictable.

A cable and wire team was dispatched two months in advance of TCF closure to properly test, label and map the network diagram for the FOB. The four team members worked 12 to 16 hours a day to map and record every single wire going into and out of the TCF. It was painstaking but necessary.

The cable and wire mission consisted of a second critical objective: properly connecting all FOB locations in a logical and commercially modeled manner. Redundant fiber connections were redesigned and new physical network nodes were established throughout the FOB to facilitate a modern star topology. A star topology is a physical network configuration that allows for many redundant links in case of link breakage. It is very important to utilize this type of topology in the tactical environment in order to mitigate any combat-related damages to the network, including those from indirect fire or FOB infiltration via a vehicle-borne improvised explosive device (VBIED). If a line breakage occurs due to this sort of damage, the network would continue to function and the warfighter would continue to communicate during this critical event. More than 40,000 feet of networking cable were run to accomplish this task. The network made sense to the customer and administrator.



Concurrent with the cable and wire mission, a 198th ESB Network Engineering team was creating a data stack for deployment to the FOB. The data stack consisted of all the networking equipment, file storage and computing power required to locally provide file, voice, e-mail and print services on site. It was determined that HBSS, Active Directory and DNS services would be migrated to Kandahar Airfield. The migration of those services to Kandahar would be complete before the data stack was deployed.

After two months of cable and wire migration, and one month of assembling and configuring the custom data stack, the site was prepared to transfer services locally. The data stack was sent out with both a network-engineering (NetEng) and enterprise-operations (EntOps) team. The NetEng team was responsible for connecting the stack to the network and ensuring all connections to customers were complete. The EntOps team set up the services and ensured that the local communications team was properly trained on its operation. The cable and wire team was on standby to repair any connections that may have been overlooked during their two months of preparation.

Within one full week of concurrent operation with the data stacks providing primary services and the TCF providing back-up services, the mission was declared a success and the TCF went dark. Cables were cut between the TCF and the

FOB. The data stack was now the primary communication node for the FOB. A 198th ESB retrograde team arrived to dismantle the TCF within four days. Spin Boldak's TCF Closure was a complete success with no interruption in services to the warfighter.

TCF Closure Lessons Learned

There are a few lessons learned from the 198th ESB's four TCF closures:

A cable and wire team should be dispatched as early as possible with a representative from the NetEng team building the data stack. Collaboration between the cable team and the engineers was crucial in order to develop a logical migration plan. Depending on the state of the fiber network at the FOB, the cable and wire team must be on site anywhere from two weeks to two months. There was a large difference in network maturity and complication between FOBs. No two are alike.

Ensure users are properly informed. Scheduling authorized service interruptions (ASIs) are a key item of which we had to keep FOB and regional Signal Corp leadership informed. It is very important, overall, to develop face-to-face relationships with major FOB customers and Battle Space Owners. In our case, a 198th ESB site officer or noncommissioned officer in charge would personally engage key combatant commanders to inform them of the network status—an essential part of customer service.

Develop a well-rounded team of soldiers with skills in network, movement and heavy equipment operations. In our case, this resulted in total success. Through proper planning and team building, TCF closures can be seamless and painless transitions during a retrograde operation.

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MDAP/MAIS Program Manager Changes

With the assistance of the Office of the Secretary of Defense, *Defense AT&L* magazine publishes the names of incoming and outgoing program managers for major defense acquisition programs (MDAPs) and major automated information system (MAIS) programs. This announcement lists all such changes of leadership for both civilian and military program managers that occurred in recent months.

Defense Information Systems Agency

Russell Daul relieved **Salvatore Scaglione** as program manager for the Department of Defense Teleport program on May 12.

Army

Col. Courtney P. Cote relieved **Col. Timothy R. Baxter** as project manager for the MQ-1C Gray Eagle Unmanned Aircraft System Program on July 11.

Col. Robert M. Collins relieved **Col. Charles A. Wells** as project manager for the Distributed Common Ground System-Army Increment 1 (DCGS-A Inc 1) Program on July 23.

Col. Jong H. Lee relieved **Col. John R. Leaphart** as project manager for the Common Infrared Countermeasure (CIRCM) Program on July 31.

Col. James P. Ross relieved **Col. William R. Wygal** as project manager for the Airborne & Maritime/Fixed Station Joint Tactical Radio System (AMF JTRS) and Joint Tactical Radio System Handheld, Manpack, and Small Form Fit Radios (JTRS HMS) Programs on Aug. 19.

Navy/Marine Corps

Capt. Casey Moton relieved **Capt. John Ailes** as program manager for the Littoral Combat Ship Mission Modules (PMS-420) Program on July 28.

John Karlovich relieved **Robert Bond** as program manager for the Ground Air Task Oriented Radar (G/ATOR) Program on Aug. 1.

Air Force

Col. Kevin D. Hickman relieved **Col. James C. Baird** as program manager for the Small Diameter Bomb (SDB) Program on June 12.

Col. Douglas W. Roth relieved **Col. Brian S. Jonasen** as program manager for the CV-22 Osprey Program on June 13.

Lt. Col. Margaret Barker relieved **Lt. Col. Karl C Schloer** as program manager for the HC/MC-130 Program on June 15.

Col. Stephen G. Purdy relieved **Col. Rodney L. Miller** as program manager for the Advanced Extremely High Frequency (AEHF) Program on June 23.

Col. Peter K. Eide relieved **Col. Dale J. VanDusen** as program manager for the Advanced Pilot Trainer (APT) Program on July 1.

Col. Anthony W. Genatempo relieved **Col. Gregory M. Gutterman** as program manager for the F-22 and F-22 Modernization Increment 3.2B Programs on July 19.

Col. Christopher B. Athearn relieved **Col. William A. Ellis** as program manager for the Joint Air-to-Surface Standoff Missile (JASSM) Program on July 21.