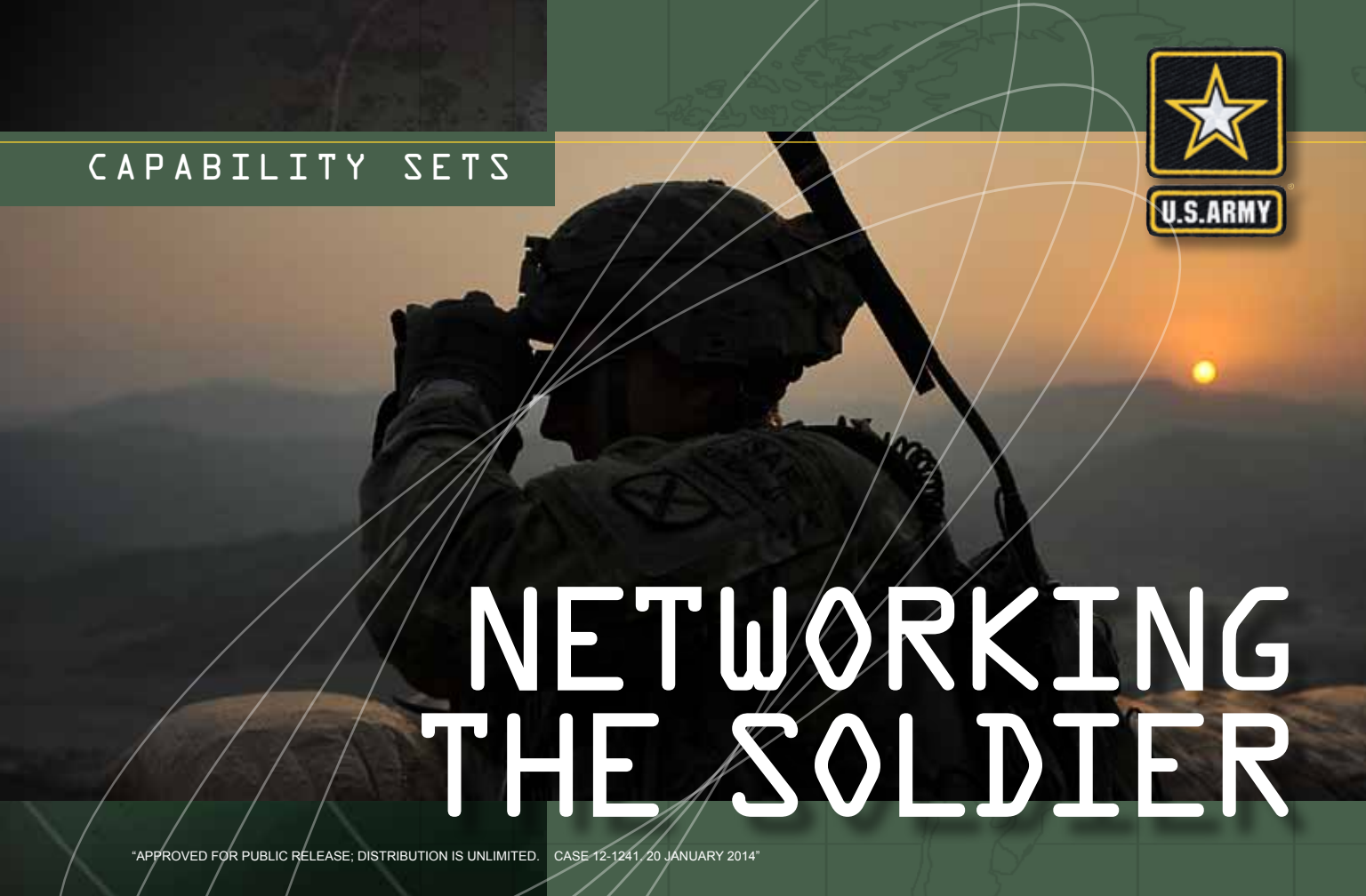
CAPABILITY SETS



NETWORKING THE SOLDIER

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DID YOU KNOW THAT CS FIELDING PROVIDES AN INTEGRATED NETWORK SOLUTION SUPPORTING MISSION COMMAND REQUIREMENTS FOR THE FULL RANGE OF ARMY OPERATIONS?

> CAPABILITY SET MANAGEMENT

The network is critical to connecting our forces and empowering our Soldiers and leaders with the right information at the right time to make decisions. Capability Sets consist of networked mission command systems, enablers and training that are delivered through a synchronized system of systems process to provide connectivity throughout the Brigade Combat Team. Integrated network capabilities are distributed throughout a combat formation and its support elements, from the brigade command post to the commander on the move to the dismounted Soldier. This process, known as Capability Set Management, is a significant departure from the previous practice of fielding systems individually and often to only one element of the operational force at a time.

> CAPABILITY SETS AND THE NIE

Capability Sets are shaped and validated by the Network Integration Evaluations (NIEs). NIEs are semi-annual field exercises conducted in a realistic operational environment at Fort Bliss, Texas, and White Sands Missile Range, N.M. During the last two and a half years of NIEs, the Army has integrated and assessed industry and government systems, leveraging the Soldiers of the 2nd Brigade, 1st Armored Division (2/1 AD) executing realistic mission threads including combined arms maneuver, counterinsurgency and stability operations. Test data and Soldier feedback from the NIEs – each iteration building on results from the previous event – enabled the Army to establish an integrated network baseline based on a hybrid integration of satellite-based communications and terrestrial networking radios. NIEs have not only allowed for Soldier-driven evaluations and assessments of network technologies, they have also aided the Army in development of Tactics, Techniques and Procedures for CS 13 and 14. Lessons learned from NIEs have been applied as the Army works to field, train and sustain Capability Sets, and as each NIE is completed the Army will continue to refine this process.

> CAPABILITY SETS

The Army began fielding the first Capability Set, CS 13, in October 2012 and has completed fielding to four brigade combat teams (BCTs) and two division headquarters. CS 13 is now supporting the U.S. mission in Afghanistan by allowing Soldiers to share critical information over vast distances and challenging terrain, even as fixed network infrastructure is dismantled during U.S. and coalition retrograde operations. CS 13 systems provide mobile satellite and radio capability for commanders and Soldiers to take the network with them in vehicles and while dismounted as they conduct security assistance and advisory missions.

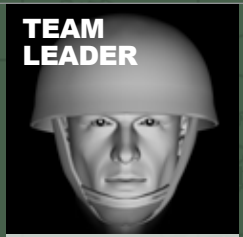
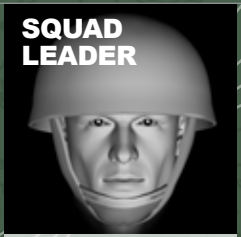
CS 14 builds upon CS 13 by offering additional range, new applications and other improvements. CS 14 elements are being fielded to a mix of infantry and Stryker brigades and select divisional headquarters.

Major systems making up CS 13 and CS 14 include Warfighter Information Network-Tactical (WIN-T) Increment 2, Joint Capabilities Release/Joint Battle Command-Platform, smartphone-like Nett Warrior devices, upgraded mission command applications and tactical radios that include the Rifleman, Manpack and AR/PNC-117G.

“THE ENHANCED SITUATIONAL AWARENESS GIVEN TO US BY THIS SUITE OF TECHNOLOGY HAS ALLOWED US TO MAINTAIN A ‘DIGITAL GUARDIAN ANGEL’ AS WE CONDUCT OUR ADVISING DUTIES AND MISSIONS.”

> MISSION COMMAND BY ECHELON

CAPABILITY SETS PROVIDE AN INTEGRATED, VALIDATED NETWORK BASELINE THROUGHOUT THE BRIGADE COMBAT TEAM.

	TEAM LEADER	SQUAD LEADER	PLATOON LEADER / SERGEANT	COMPANY COMMANDER
				
MCEC* REQUIREMENTS	Voice, PLI, SA	Voice, PLI, SA, C2	Voice, PLI, SA, C2, maps & control graphics, orders, SITREPs	Voice, PLI, SA, C2, maps & graphics, orders, SITREPs, sensor data, video
CONNECT TO	Soldier, TL, SL, PL	Soldier, TL, SL, PL	Soldier, TL, SL, Co Cdr	Plt Ldrs, Co TOC, Bn Cdr,/TOC, Fires, Log Spt, JIIM
NETWORK REQUIREMENTS	FM voice, GPS, data	FM voice, GPS, data	FM voice, GPS, data	Internal/external C2 voice, SIPR, video, sensor links
NETWORK EQUIPMENT	Nett Warrior	Nett Warrior	Nett Warrior, HMS MP, MBITRS	WIN-T: SNE/Mobile PoP JTRS: MNVR, HMS MP, Nett Warrior, JCR/ JBC-P BFT2

* MISSION COMMAND ESSENTIAL CAPABILITIES

COMPANY TOC	BATTALION COMMANDER	BATTALION TOC
Voice, PLI, C2, SA, maps & graphics, orders, SITREPs, whiteboard, sensor data, video	Voice, PLI, C2, SA, maps & graphics, orders, SITREPs, sensor data, video	Voice, PLI, SA, maps & graphics, orders, SITREPs, whiteboard, sensor data, video
Plt Ldrs, Co Cdr, Bn Cdr/TOC, Fires, Log Spt, JIIM	Co Cdrs/TOCs, Bn TOC, Bde Cdr/TOC, Fires, Log Spt, JIIM	Co Cdrs/TOCs, Bde Cdr/TOC, Fires, Log Spt, JIIM
Internal/external C2 voice, SIPR, NIPR, VoIP, video, sensor links	Internal/external C2 voice, SIPR, video, sensor links	Internal/external C2 voice, SIPR, NIPR, VoIP, video, sensor links
MC Systems JTRS: MNVR, HMS MP, Req: ATH WIN-T PoP/COTS	WIN-T: Mobile PoP, MC Systems, Nett Warrior JTRS: MNVR, HMS MP, JCR/JBC-P BFT2	WIN-T Inc 2 /SMART-T/ GBS/Trojan Spirit/CSS VSAT/ MC/PAO-NET/ TRC-190 (V3)/ JCR/ SINCGARS/ JBC-P/SC TACSAT/ HF Radio/JTRS

CAPABILITY SETS DELIVER ALL OF THESE TECHNOLOGIES, INTEGRATED ACROSS ALL ECHELONS FOR SEAMLESS NETWORK CONNECTIVITY THROUGHOUT YOUR BRIGADE COMBAT TEAM FORMATION.

> CAPABILITY SET INTEGRATION & TRAINING

A Capability Set is not an Army Program of Record (POR); it is a fielding of an integrated combination of Army network PORs and commercial-off-the-shelf (COTS) industry solutions. Industry solutions have either been sent to theater in a previous response to an urgent need or have demonstrated merit at the NIEs and were then integrated into the network baseline. Most network systems are being integrated onto vehicle based platforms, specifically MRAP All Terrain Vehicles (M-ATV), MaxxPro, Stryker and HMMWV platforms, depending on the configuration and mission of the receiving unit. Capability Set equipment is versatile and can be tailored to different platforms and scenarios in order to meet the needs of the commander.

Drawing on lessons-learned from the first units fielded with CS 13, the Army established a new System of Systems training concept that embraces instruction on integrated systems capabilities, leverages Soldier knowledge and creates an underlying familiarity with how the equipment supports operations. The training includes an overview course so commanders understand the network as an integrated combat multiplier and not just a collection of separate signal capabilities, as well as “crew drills” that cross-train a collective crew on CS 13 systems -- both mounted and dismounted -- to ensure an overall understanding of how the systems function as a group in various mission scenarios. The right mix of technology and training will continue to evolve as the Army works to simplify the network, making it easier to use, train, maintain and sustain.

> SIMPLIFYING THE TACTICAL NETWORK

While CS 13 and 14 capabilities are giving commanders and Soldiers more information than ever, many systems are still too fragmented by functional area and not as intuitive as they could be for the user. Today's Soldiers expect the tactical network to provide the same seamless, intuitive experience as the communications devices they use in their everyday lives. The Army's priority is to simplify network and mission command capabilities to make it easier for Soldiers to get the information they need – anytime, anywhere, and on any device – with less training required.

Known as the Simplified Tactical Army Reliable Network, or STARNet, the network of 2015 and beyond will continue to simplify and improve upon today's capability sets. It will standardize maps, messaging and icons to provide a unified user experience, as well as transition standalone mission command systems to a web-based environment that delivers powerful warfighting systems as integrated "apps." The STARNet tactical operations center (TOC) will be smaller, more mobile and more agile while still supporting mission command. Aside from the operational benefits, simplifying the network will lead to cost savings by combining hardware and other infrastructure, reducing software development efforts and decreasing the number of field service representatives (FSRs) required to train Soldiers, troubleshoot systems and sustain the tactical network.

MOUNTAIN

WIN-T INCREMENT 2 ALLOWS US TO BE ON-THE-MOVE AND CONTINUE TO PASS MISSION COMMAND DATA TO LEADERS. IT ENHANCES OUR ABILITY TO BE MANEUVERABLE AND ACCOMPLISH THE MISSION.

> WIN-T INCREMENT 2

The Warfighter Information Network-Tactical (WIN-T) is essentially the Soldier's Internet, providing the tactical communications network backbone to which other networked systems need to connect in order to function. Fielded since 2004, WIN-T Increment 1 provides satellite-based, beyond line of sight voice, video and data down to the battalion level, with Soldiers having only to pull over to the side of the road to communicate. WIN-T Increment 2, first fielded with CS 13, is a major upgrade that introduces mission command on-the-move, allowing commanders to communicate continuously inside tactical vehicles. WIN-T Increment 2 also extends satellite communications to the company level, so the Soldiers closest to the fight have greater connectivity than ever before.

WIN-T Increment 2 also introduces self-forming, self-healing networking radios and enhances Network Operations (NetOps) tools for network planning and monitoring. Among WIN-T Increment 2's main elements for the BCT are the Tactical Communications Node (TCN), the Point of Presence (POP), the Soldier Network Extension (SNE), and the Vehicular Wireless Package (VWP). The TCN is the centerpiece and hub of the WIN-T network. As the main network support element for command posts and TOCs, the Increment 2 TCN remains connected as they "jump" to a new command post location. The WIN-T POP is the primary on-the-move configuration item installed on the tactical combat platforms of select commanders and staff officers at division, brigade and battalion echelons. WIN-T SNEs are installed in combat vehicles at select battalion and at company echelons. The final component is the VWP, which extends the WIN-T network to command post vehicles which are moving in convoy with the TCN.

> JCR AND JBC-P

The Joint Capabilities Release (JCR) is a key upgrade to the widely fielded Force XXI Battle Command Brigade and Below/Blue Force Tracking (FBCB2/BFT), which allows Soldiers in vehicles, aircraft and command posts to track friendly forces and exchange messages in order to synchronize operations and avoid fratricide. JCR equips Soldiers with the faster BFT 2 satellite network for improved accuracy of position location information, Marine Corps interoperability, secure data encryption and other features.

JCR is a “bridge” to Joint Battle Command-Platform (JBC-P), the next-generation software for FBCB2 that includes a totally redesigned user interface to be more intuitive for today’s Soldiers. JBC-P, which begins fielding with CS 14, allows Soldiers to access new applications as well as tools they rely on today such as Tactical Ground Reporting (TIGR). The JBC-P framework will also operate seamlessly with the smartphone-like Nett Warrior devices that deliver timely blue force tracking and situational awareness information down to dismounted Soldiers, helping display those Soldiers’ precise locations to their teammates on the ground and in vehicles and command posts.

> TACTICAL RADIOS OF CAPABILITY SETS 13-14

THE TACTICAL RADIOS THAT ARE BEING FIELDED AS PART OF CS 13 AND 14 USE HIGH BANDWIDTH "WAVEFORMS" TO SEND PACKETS OF DATA, VOICE, VIDEO AND IMAGES BETWEEN STATIC COMMAND CENTERS, VEHICLES ON THE MOVE AND EVEN DISMOUNTED INDIVIDUAL SOLDIERS ON PATROL. THE RADIOS CREATE MOBILE, AD-HOC NETWORKS, ALLOWING SMALL UNITS TO COVER MORE GROUND WHILE MAINTAINING SITUATIONAL AWARENESS BEYOND LINE OF SIGHT.

JTRS HANDHELD, MANPACK, SMALL FORM FIT (HMS) MANPACK

The two-channel, software defined HMS Manpack radio provides line-of-sight/ beyond line-of-sight communications through current and future higher bandwidth waveforms, enabling connectivity at the lowest echelons.

AN/PRC-117G

A wireless voice and data radio that allows troops to exchange large amounts of tactical data, such as video and biometrics. The radio can support small-unit operations and connect the tactical edge with forces at company level and above.

SOLDIER RADIO WAVEFORM APPLIQUÉ

A single channel, vehicle mounted radio running the Soldier Radio Waveform (SRW) that fits into one half of the Single Channel Ground and Airborne Radio System (SINCGARS) Combat Net Radio (CNR) vehicular mount. SRW Appliqué radios act as a conduit for voice and data between the dismounted Soldier, his unit and higher headquarters.

SINCGARS

A single channel, vehicle mounted radio running the Soldier Radio Waveform (SRW) that fits into the Single Channel Ground and Airborne Radio System (SINCGARS) Combat Net Radio (CNR) vehicular mount. SRW Appliqué radios act as a conduit for voice and data between the dismounted Soldier, his unit and higher headquarters.

SOLDIERS CARRY THE RIFLEMAN RADIO FOR VOICE CALLS AND SO THEIR PLATOON AND SQUAD LEADER CAN SEE THEIR LOCATION ON THE BATTLEFIELD. **SEE PAGE 21 FOR MORE DETAILS!**

ISAF
RANGER
MOUNTAIN
THALES

NETT WARRIOR

The Nett Warrior (NW) is an integrated dismounted leader situational awareness (SA) system for use during combat operations. The system provides unparalleled SA to the dismounted leader, allowing for faster and more accurate decisions in the tactical fight. With advanced navigation, SA, and information sharing capabilities, leaders are able to avoid fratricide and are more effective and more lethal in the execution of their combat missions.

The NW program focuses on the development of the SA system, which has the ability to graphically display the location of an individual leader's location on a digital geo-referenced map image. Additional Soldier and leader locations are also displayed. NW is connected through a secure radio that sends and receives information from one NW to another, thus connecting the dismounted leader to the network. These radios also connect the equipped leader to higher echelon data and information products to assist in decision making and situational understanding. Soldier position location information is added to the network via interoperability with the Army's Rifleman Radio capability.

All of this allows the leader to easily see, understand, and interact in the method that best suits the user and the particular mission. NW will optimize and integrate capabilities while reducing the Soldier's combat load and logistical footprint.

> RIFLEMAN RADIO

The Rifleman Radio brings the most communication disadvantaged users - the small unit down to the individual Soldier - into the Army network. Carried by platoon, squad and team-level Soldiers for voice communications, the radio can also connect with handheld devices to transmit text messages, GPS locations and other data. Through the Soldier Radio Waveform (SRW), the Rifleman Radio connects lower echelon Soldiers to one another and back to their leaders at the company level so they can rapidly exchange voice and data. Using these networking radios, small units can overcome previously insurmountable distances and terrain obstacles and stay connected down to the dismounted Soldier.

“THE VARIOUS PLATFORMS OF CS 13 GIVE US A DIGITAL REACH LIKE WE’VE NEVER HAD BEFORE.”

> NOTES

HTTP://PEOC3T.ARMY.MIL
WWW.ARMY.MIL/ASAALT
HTTP://INTEGRATION.ARMY.MIL/
WWW.DVIDSHUB.NET/FEATURE/NIE
WWW.BLISS.ARMY.MIL/BMC
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