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UNDERSTANDING NETCOM AND ITS ROLE IN THE 21ST CENTURY

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ABSTRACT

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In October of 2002, the Army combined two Army level signal support organizations to create the Network Enterprise Technology Command/9th Army Signal Command (NETCOM/9th ASC). The creation of NETCOM/9th ASC is critical to the Army's efforts in the accomplishment of network centric/information dominance goals that directly support transformation efforts. This project examines the reasons why NETCOM/9th ASC was created, reviews its unique organizational structure and mission, and outlines its role in the Army's overarching transformation in the 21st century. Although the research reveals that NETCOM/9th ASC's strategic plans and objectives are nested to support the Army's transformation efforts, the lack of Army senior leader familiarity with this organization could put at risk some of the programs that support the implementation of its strategic plans. Recommendations are offered to address the organization's identity crisis as well as possible resource shortfalls. More importantly, the facts discovered during the research will provide senior/strategic leaders with a broad understanding of this organization and how it impacts Army operations and transformational efforts from the Business Mission Area to the Warfighting Mission Area.

UNDERSTANDING NETCOM AND ITS ROLE IN THE 21ST CENTURY

> NETCOM must enable force projection and delivery of decisive combat power through engineering, operating, sustaining, and defending the Army's Global Information Grid…
>
> —Brigadier General Carroll F. Pollett[1]

In October of 2002, the Army's department wide transformation program merged the 9th Army Signal Command with the Army Information Command to create the Network Enterprise Technology Command/9th Army Signal Command (NETCOM/9th ASC). This activation restored centralized enterprise-level management over the Army's information systems and created a single voice for Army network operations.[2] Although this was a significant change to how the Army manages its information systems and networks, few in the Army noted this important milestone. In an informal survey of students attending the Army War College for the academic year 2007, less than 5% of the students were familiar with NETCOM. In addition, a large majority of students who had familiarity with NETCOM/9th ACS were Signal Corps Officers. After discussions with senior signal leaders concerning this topic, it was determined that the lack of familiarity and understanding with respect to this important organization extends far beyond the students at the Army War College to the Army's most senior leadership. This lack of familiarity and understanding is somewhat surprising considering that NETCOM/9th ASC is fully engaged across the spectrum of conflict and at every level of command from strategic to tactical and is key to the Army's transformation efforts. From providing the strategic information systems in the business mission area to delivering large bandwidth information systems solutions to the operational and tactical warfighter in support of the Global War on Terror, NETCOM/9th ASC provides critical enabling communications functions for the Army.

In today's advanced information based operating environment, senior leaders at every level need to have a working knowledge of the capabilities of this important organization if they are to continue to effectively leverage information technology (IT) as part of the Army's transformation efforts. As the Army's senior leaders make strategic decisions with respect to resource management, it is important they understand the key aspects of NETCOM/9th ASC's mission and its impact on Army Transformation. NETCOM/9th ASC is actively involved with numerous ongoing IT projects that are in direct support of key initiatives that support Army Transformation such as: Modularity, Re-basing, and Information Dominance. To magnify this point, during a recent address at the Army War College, General Abizaid stated, "That Al Qaeda was a network-centric organization that leverages IT to wage war against the West. The United States Military needs to adopt network-centric capabilities to defeat this threat." [3] This paradigm

shift will create new challenges for strategic leaders, planners, and warfighters. The Network Enterprise Command/9th Army Signal Command is central to the Army's efforts in this important area. This paper examines the reasons why NETCOM/9th ASC was created, reviews its unique organizational structure and mission, and studies the linkages between its strategic plans and the Army's overarching transformation efforts. In addition, this paper provides possible solutions to address the organization's current identity crisis and shortfalls in key aspects of its strategy.

NETCOM/9th ASC's History, Mission, and Organizational Structure

Before discussing the current NETCOM/9th ASC, it is helpful to review the origin of this organization. NETCOM's historic roots can be traced back to the end of World War I (WWI). During that time period, the Army struggled to create an organization that was responsible for providing strategic and theater-level communications to deployed forces. In the post WWI period, continued advancements in communications technology combined with the increasing importance of communications systems and networks on military operations caused the Army to experiment with numerous Tables of Distribution and Allowances (TDA) organizations and Tables of Organization and Equipment (TOE) units to provide the necessary command and control over these critical communications functions. As a result of this experimentation, a number of organizations and units, through a process of activations and deactivations, were organized to manage the Army's strategic and theater level communications infrastructure. The weakness of this strategy became apparent as the world moved into the technologically advanced information age. Due to the significant increases in information technology systems during the 1980s, the Army's Information Systems Command (ISC) was created to manage the Army's strategic information networks. This TDA organization served as the lead element to provide command, control, and limited protection of the Army's information network. The Army Signal Command a (TOE) organization provided critical communications connectivity from the sustaining base to the theater-level commander. These separate organizations did not provide an integrated approach to delivering communications services or managing the Army's communications network. This approach created numerous inefficiencies at the network management level and numerous challenges in the allocation of communications services for the Army users. In the later part of the twentieth century, the 9th Army Signal Command evolved as the organization to be the single operator and manager of the Army's information and communications networks in an attempt to merge the functions of both the TDA functions of ISC and the TOE functions of the Army Signal Command.[4] A few years later, the 9th Army Signal

Command was redesignated as the Network Enterprise Command/9th Army Signal Command. This hybrid organization fully incorporates TDA and TOE functions and is responsible for all Army strategic and theater level communications at the enterprise level. Under this new construct, the NETCOM/9th ASC was assigned as a direct reporting unit under the Army Chief Information Officer (CIO)/G6. The centralization of these functions created a greater unity of effort that enabled senior signal leaders to effectively leverage the new synergy of this organization to provide enhanced Army strategic and theater-level services to the strategic leadership and its warfighters. Today, there are 8,500 soldiers and 3,600 civilians that comprise NETCOM/9th ASC.

In today's information-based environment, fully understanding the Network Enterprise Command/9th Army Signal Command's mission statement and organizational structure is important to the Army's senior leaders. This awareness is especially critical for senior military leaders attempting to leverage the expertise of an organization that is critical to the Army's transformation effort in support of the Net-Centric Initiative.

NETCOM/9th ASC's mission statement is: "Execute globally based and expeditionary communications capabilities to enable Joint and combined battle-command, leveraging the information grid to ensure the extension and reach back capabilities to the Warfighter; while operating, engineering, transforming, and defending the Army's LandWarNet enterprise across the full spectrum of network-centric operations and warfare."[5] This mission statement clearly describes both the TDA and TOE functions that comprise the organization's broad and complex charter. Additionally, this statement depicts the multiply responsibilities of NETCOM/9th ASC that transcend the strategic, operational, and tactical levels of battle-command. To gain a better appreciation of this organization's complex mission statement one must briefly study the organization's participation in Operation IRAQI FREEDOM (OIF).

From the sustaining base to the greater Baghdad area, the soldier and civilian workforce of NETCOM/9th ASC provided the Army and the Joint/Interagency team with one of the most robust and reliable command and control communications network ever fielded in the history of warfare. This impressive communication network (providing secure and unclassified voice, data, and video services) required the seamless integration of NETCOM/9th ASC's TDA and TOE functions in order to extend strategic-level communications and information services to the operational and tactical warfighter. This task was accomplished through the numerous fixed station and deployable organizations and units that comprise NETCOM/9th ASC. The missions and functions of these organizations and units range from the protection of information systems to extending communications links and information services from the sustaining base to the

theater of operations. During OIF, fixed station NETCOM/9th ASC organizations and units expanded the Army's sustaining base communications infrastructure to accommodate the additional support requirements for the deployed forces. NETCOM/9th ASC's expeditionary signal forces deployed into the area of operations (AO) and extended critical theater-level command and control communications to Army, Joint/Interagency, and Coalition units throughout Kuwait and Iraq.   At the height of combat operations during OIF, NETCOM/9th ASC had deployed one expeditionary signal brigade headquarters that provided operational control over six expeditionary signal battalions. These expeditionary units provided the largest majority of communications bandwidth to key headquarters in the AO to include the Coalition Provisional Authority, the Iraqi Survey Group, and Combined Joint Task Force 7 Headquarters. At the conclusion of combat operations, these units initiated the first steps toward the commercialization of the tactical strategic communications infrastructure, so it could be later transferred to government contractors. Even today, NETCOM/9th ASC organizations and units continue to expand both the sustaining base as well as the theater's communications infrastructure, while continuing to rotate high-quality expeditionary signal units to the AO in support of ongoing stabilization operations in Iraq and Afghanistan. This organization's participation in OIF is only one of many examples of the impressive capabilities, vast scope, and numerous responsibilities of this complex organization.   NETCOM/9th ASC's mission in support of OIF provides a perfect segway to discuss its complex organizational structure.

NETCOM/9th ASC is headquartered at Fort Huachuca, Arizona, and has units assigned in 104 locations worldwide. NETCOM/9th ASC has multi-national and multi-theater areas of responsibility.[6] The organization is commanded by a Major General and has the traditional compliment of Personal, Special, and Coordinating Staff members. It also maintains a small staff presence in the National Capital Region (NCR) for close coordination with the Army's Chief Information Officer. Additionally, the organization is authorized two Brigadier Generals that serve as Deputy Commanding Generals for Support and Operations. The Command Group also has a Senior Technical Director (Senior Executive Service Officer) who is the technical decisionmaker for evolving technology and migration strategies, standards, and investment options.[7] In addition to the Command Group and the Staff, NETCOM/9th ASC also consists of two subordinate organizations; The Army Global Network Operations and Security Center (GNOSC) and The Enterprise Systems Technology Activity (ESTA). NETCOM/9th ASC's unique organizational structure is shown at below (Figure 1).

```
                    NETCOM/9ᵗʰ ASC
                    CG  ☆☆              ──────  Personal Staff

   Deputy CG                              Deputy CG
   Operations ☆                           Support ☆

    Army      NCR/G6                       SR Tech (SES)
    GNOSC     Ops Cell

   Subordinate Units                       ESTA

                    Chief of Staff

                    NETCOM Staff
                    G1, G2, G3, G4, G8, &
                    Special Staff
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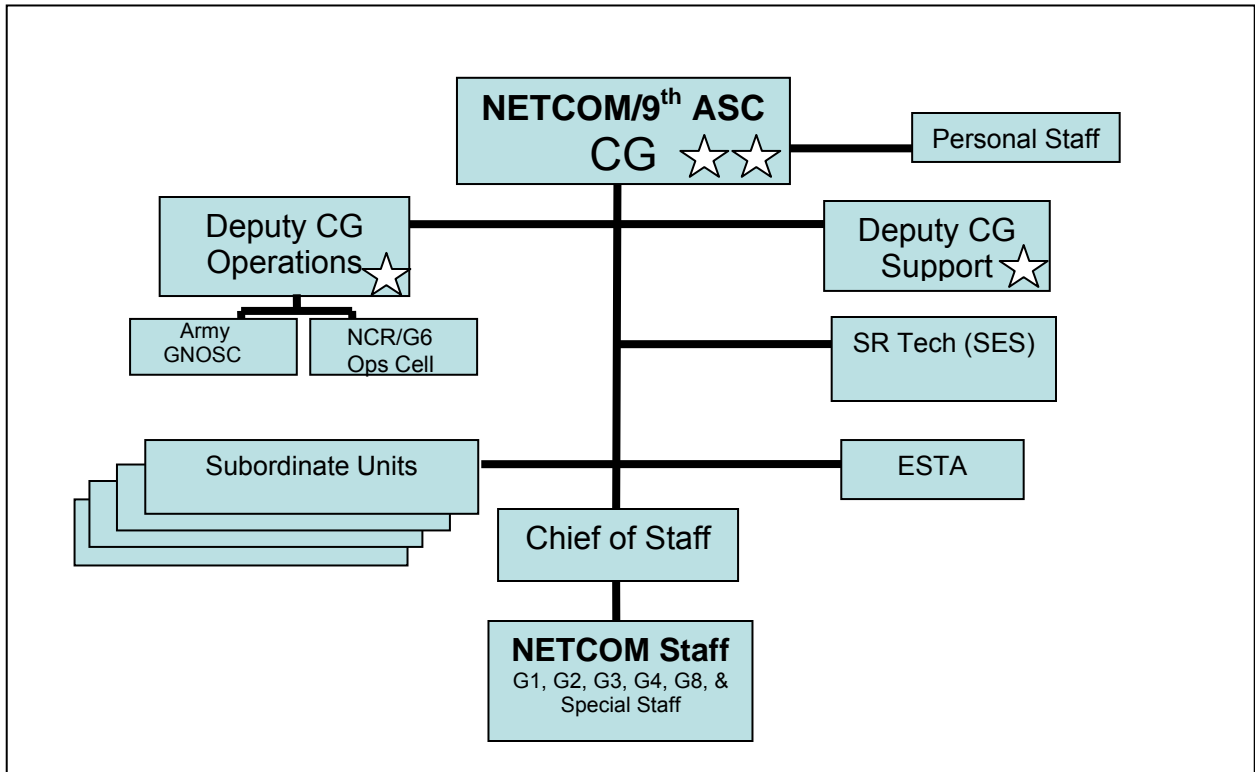
Figure 1. (NETCOM/9ᵗʰ ASC Organization Structure)

GNOSC and ESTA provide unique enterprise level technical solutions, network protection, and technical control over the Army's portion of the Global Information Grid (GIG). The Army GNOSC operates, controls, and defends the strategic and theater-level enterprise across the full spectrum of network-centric operations.[8] Through proactive computer network defense and the technical control of a number of regional theater and functional Network Operations Centers, the GNOSC serves as the gatekeeper to external information networks such as Joint, Coalition, and the Internet. Additionally, the Army GNOSC is the Army's entry point to Joint Task Force – Global Network Operations for Network Operations and availability of Army Enterprise Systems.[9]

The other organization in the NETCOM/9ᵗʰ ACS is the Enterprise Systems Technology Activity. ESTA develops, implements, and integrates the global command, control, communications, computers, and information management enterprise architecture with the secure network operations framework. It provides operational interface from the NETCOM Regional Chief Information Officers into the NETCOM/9ᵗʰ ASC headquarters.[10] This organization is directed by a Senior Executive Service Officer and is responsible for all Army enterprise level configuration management directives for strategic and theater-level communications networks. Additionally, this organization provides centralized management of

the Army's leased long-haul and base telecommunications programs. Its Spectrum Management Directorate provides the DOD with technical studies and reviews through the Military Communications Electronics Board Frequency Panel. In addition to these organizations, NETCOM/9th ASC has numerous subordinate organizations and units positioned around the globe.

NETCOM/9th ASC's subordinate organizations are a mixture of augmentation TDA functional organizations, regional commands, fixed stationed signal units, and tactical expeditionary signal units (Figure 2).
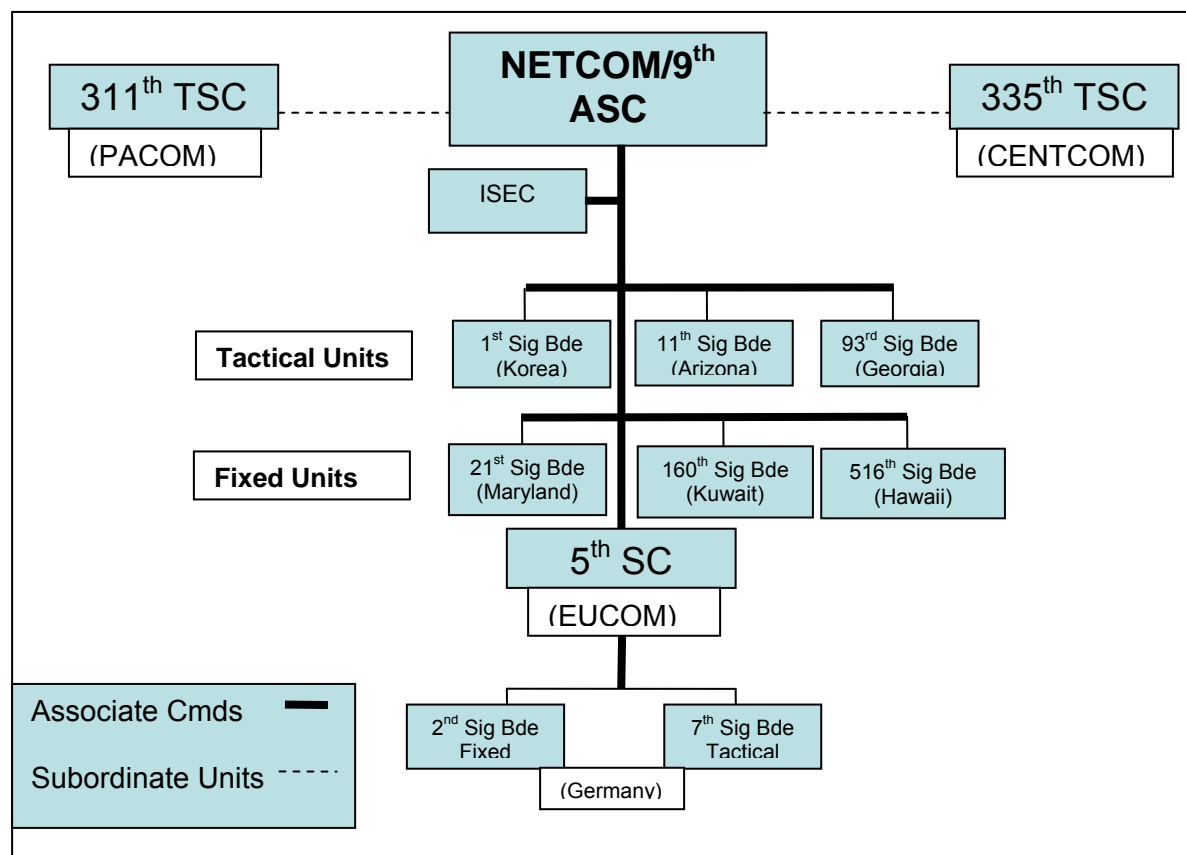

Figure 2. (NETCOM/9th ASC Subordinate Units)

These organizations are stationed worldwide and have a significant physical presence in the following countries: Germany, England, Italy, Belgium, Netherlands, Honduras, Qatar, Saudi Arabia, Kuwait, Bahrain, Korea, and Japan. NETCOM/9th ASC's augmentation TDA organizations are responsible for installing, maintaining, and managing the Army's fixed strategic communications backbone network, while the expeditionary signal units extend the strategic network and related services to the theater and operational commanders. The following units provide theater-level command and control of organizations and units that provide strategic and theater level communications services to commanders.

The 5th Signal Command is directly subordinate to NETCOM/9th ASC, while the other units, 311th Theater Signal Command and the 335th Theater Signal Command, are associate commands. The relationship of the associate commands to NETCOM/9th ASC is based on the technical control of the information network rather the traditional senior to subordinate command and control relationship. 5th Signal Command is headquartered in Manheim, Germany. This mission of this command is to provide strategic and theater-level services in support of United States Army Europe and the European Combatant Commander. This unit is commanded by a Brigadier General; the commander is also dual-hatted as the United States Army Europe G6. The 5th Signal Command exercises operational control over one fixed strategic and one tactical expeditionary brigade located in Germany.

The associate command of the 311th Theater Signal Command is headquartered in Hawaii. Its mission is to provide theater level strategic and theater-level services in support of United States Army Pacific and the Pacific Combatant Commander. This multi-component unit is commanded by an active-duty reserve Major General; the commander is also dual-hatted as the Army Service Component Commander G-6.   The other associate command is the 335th Theater Signal Command headquartered in Kuwait. The mission of this command is to provide strategic and theater-level services in support of United States Army Central Command and the Central Command Combatant Commander. This multi-component unit is commanded by an active reserve Major General.

In addition to these major units, NETCOM/9th ASC has the command and control of The United States Army Activity-Intelligence and Security Command. This command is under the operational control of The United States Army Intelligence and Security Command and provides support concerning the management of secure and non-secure communications to Headquarters Department of the Army and the National Security Agency. The next tier of units that are subordinate to NETCOM/9th ACS are responsible for the Army's fixed strategic communications infrastructure.

There are four fixed station strategic communications brigades in NETCOM/9th ASC's portfolio.   These units are strategically located in North America, Europe, Asian Pacific Rim, and the Middle East. The mission of these units is to provide strategic and theater level information services and joint communications services to the National Command Authority, Interagency, Joint and Army users around the world. The 2nd Signal Brigade is headquartered in Manheim, Germany, and is a subordinate unit of the 5th Signal Command. Its mission is to provide strategic and theater-level services in support of Northern Alliance Treaty Organization, United States Army Europe, and other Joint Forces in the theater. This unit has numerous

subordinate signal elements stationed throughout the European theater.   The 21st Signal Brigade is headquartered in Fort Detrick, Maryland. Its mission is to provide global information services to enable battle-command from the President of the United States to the warfighter and other federal agencies.[11] This unit has signal elements stationed throughout North America. The 516th Signal Brigade is headquartered in Hawaii. Its mission is to provide strategic and theater-level services to the United States Army Pacific Command and the Pacific Combatant Commander. The commander of this unit is also dual-hatted as the United States Army Pacific Command G6. This unit also has numerous signal elements throughout the Asian Pacific Area of Responsibility. The 160th Signal Brigade is headquartered in Camp Airifjan, Kuwait. Its mission is to provide strategic and theater-level services to the United States Central Command combatant, non-combatant, coalition, allied forces, and other United States Government Agencies.[12] This unit has numerous signal elements supporting reception, staging, onward-movement, and integration in Kuwait, while supporting the theater requirements of United States Forces in a number of regional countries. The final tier of units that are subordinate to NETCOM/9th ASC are the tactical expeditionary signal brigades that extend the strategic network to the theater of operations.

There are four tactical expeditionary signal brigades under the control of NETCOM/9th ASC. These units are located in North America, Europe, and the Asian Pacific Rim. The mission of these units is to extend strategic and theater-level services from the sustaining base to the area of operations in support of the operational and tactical commander. When deployed, these signal units are normally located near or in direct support of the theater-level headquarters and units. The 11th Signal Brigade is headquartered at Fort Huachuca, Arizona. Although in the past, this unit was traditionally aligned to support Central Command Contingencies; its new mission is to provide expeditionary signal forces to extend the strategic and theater-level services for all Combatant Commanders Contingencies. The 93rd Signal Brigade is multi-component unit headquartered in Fort Gordon, Georgia. This unit has a hybrid mission of providing fixed station strategic command and control communications for the United States Army South and the Combatant Commander South. Additionally, this unit provides general support expeditionary signal forces to extended strategic and theater-level services in support of Combatant Commander's Contingencies. This unit is also charged with the mission of providing communications support to all Homeland Security Contingencies. The 7th Signal Brigade is headquartered in Manheim, Germany, and is a subordinate unit to the 5th Signal Command. Its mission to provide expeditionary signal forces to extend strategic and theater-level services to support United States Army Europe and European Combatant Commander's

Contingencies. The 1st Signal Brigade is headquartered in Yongsan, Korea. This unit also has a hybrid mission to provide fixed station strategic and theater-level services for the Korean Theater as well as expeditionary signal forces to extend strategic and theater-level services in support of Korean Theater operations and other Pacific Combatant Commander Contingencies. As described previously, the organizations and units that comprise NETCOM/9th ASC are critical to the Army's current strategic and theater-level communications services requirements.

<u>The Army's Way Ahead and NETCOM/9th ASC's Role in the 21st Century</u>

The Army's Statement on the Posture of the United States Army 2007 provides a current operational assessment of the United States Army, but more importantly this document provides important strategic guidance concerning the future of America's Army. This strategic guidance addresses future force capabilities, funding priorities, and quality of life concerns. As part of the strategic guidance concerning the building and maintaining a campaign-quality modular force with joint and expeditionary capabilities for today and tomorrow, there are six supporting initiatives. The first of the six initiatives is to Develop Operational Capabilities in the Army's LandWarNet. This key initiative recognizes the Army's increased reliance on network centric operations and its long-term commitment to improve the information capabilities of the force. A more detailed explanation of the LandWarNet Initiative is found in Addendum G of the Army Posture Statement and provides some additional insight into this important operational capability.

To understand the LandWarNet concept one must first understand the Department of Defense's Global Information Grid or GIG. "The "Global Information Grid" (GIG) is a globally interconnected, end-to-end set of information capabilities, associated processes, and personnel for collecting, processing, storing, disseminating, and managing information on demand to warfighters, policymakers, and support personnel. The GIG includes all owned and leased communications and computing systems and services, software (including applications), data, security services, and other associated services necessary to achieve Information Superiority."[13] As detailed in the above definition, the Global Information Grid represents the collective information networks of all the service components, while LandWarNet is confined to the Army's portion of the GIG.   Addendum G of the Army Posture Statement defines the LandWarNet in this way. "A combination of infrastructure and services, it moves information through a seamless network and enables the management of warfighting and business information. LandWarNet will enable voice, video, and data to the edge of the tactical formations — ultimately pushing these capabilities lower and lower down to the modular Army's Brigades,

Battalions, and Soldiers. A robust LandWarNet will enable improved operational cycle times. This will create unprecedented levels of flexibility and agility for logistical support, actionable intelligence, and situational awareness, and for quality and speed of decisionmaking for enhanced Battle Command across the full spectrum of conflict (land and cyberspace) and support to natural disasters."[14]   Figure 3 clearly delineates the critical elements that comprise the institutional as well as operational aspect of the LandWarNet.
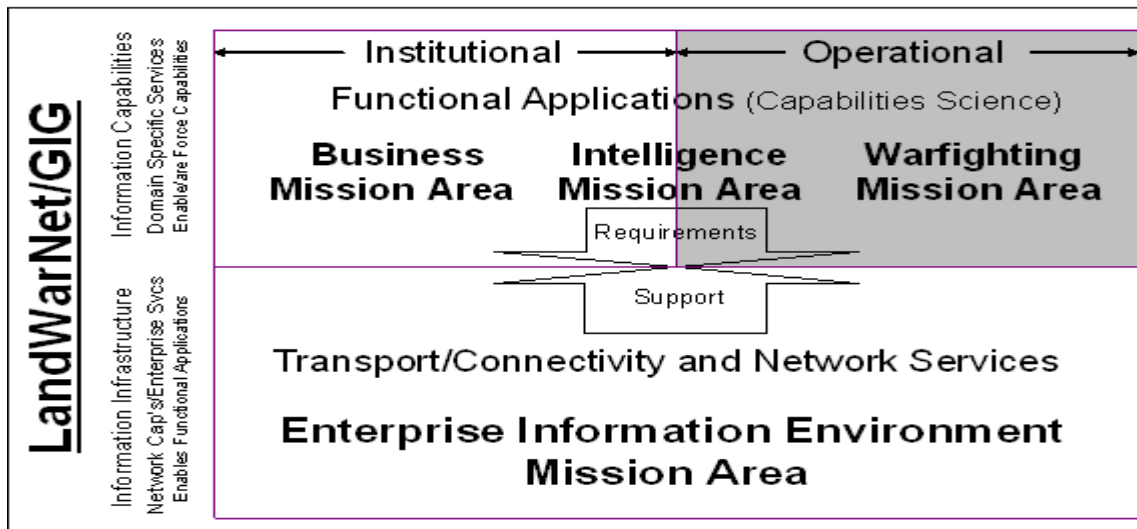

Figure 3. (LandWarNet/GIG) [15]

To successfully provide the LandWarNet services outlined in the above definition, the Army's Chief Information Officer (CIO) must establish a clear vision and provide the strategic direction to the Army and his direct reporting organizations and units. The Army's current CIO Lieutenant General Steven W. Boutelle is providing the Army's strategic guidance in this area by way of the Army CIO/ G-6 500-Day Plan. In addition to providing the vision for this concept, this comprehensive plan defines specific performance objectives and outlines a detailed road map that charts the path toward the future LandWarNet end state.

The CIO/G-6 500-Day Plan outlines six strategic goals to guide subordinate organizations and units. These forward-looking goals are outlined in the following:

- Develop and maintain a secure, seamless, interdependent LandWarNet network by leading development and enforcing the use of an integrated Enterprise Architecture;
- Lead Enterprise Integration to achieve decision superiority by transforming processes, applications, and data into network-centric capabilities across the Army;
- Protect and defend the Army's systems, networks, and information;

- Ensure Army information management and information technology investments maximize Joint and Army capabilities;
- Develop the Army's information technology and information management knowledge and skills to support mission needs;
- Deliver and integrated Enterprise Strategy that influences Joint and Army use of information management and information technology in furthering the warfighting capabilities. [16]

These broad goals are intended to assist subordinate commanders and civilian supervisors to successfully nest their unit and organizational goals with the CIO's vision and objectives. Because NETCOM/9[th] ACS is the only direct reporting unit to the Army's Chief Information Officer/G-6, its assigned organizations and units will be responsible for the implementation of the majority of these goals. In response to CIO's 500-Day Plan, the commander of NETCOM/9[th] ASC developed the NETCOM/9[th] Army Signal Command Campaign Plan.

The NETCOM Campaign Plan is fully integrated and completely nested with the CIO's 500-Day Plan and the Army's Campaign Plan. Due to the hybrid nature of NETCOM/9[th] ASC, the commanding officer, Brigadier General (P) Carroll Pollett, was required to effectively combine the operational lexicons of both the TDA and TOE elements of his organization in his Campaign Plan. Through the use of a comprehensive strategy map and a Mission Essential Task List (METL), his plan successfully links initiatives and supporting action plans to measurable objectives that support the Army's end state. The Mission Essential Tasks outlined in the NETCOM Campaign Plan are the following:

- Rapidly project trained and ready expeditionary forces to conduct joint and combined operations;
- Operate, engineer, integrate, and sustain the LandWarNet enterprise communications capabilities, at all echelons, to enable global and theater joint and combined operations;
- Conduct Network Operations within the Joint framework to enable assured information dominance and protected network-centric capabilities across the force;
- Deliver interoperable global enterprise services and standards, while establishing Tactics, Techniques, and Procedures in direct support of expeditionary forces;
- Integrate emerging technologies and transform to a modular and capabilities based force;
- Execute and leverage enterprise processes, utilizing the best business practices;
- Enhance well-being of the force. [17]

Each one of these tasks has a number of key performance objectives supported by a specific action plan. The Mission Essential Tasks in the NETCOM 9[th]/ASC Campaign Plan directly support key Army initiatives and clearly define NETCOM/9[th] ASC's critical role in the 21[st] century.

The nested Mission Essential Tasks outlined in the NETCOM/9[th] ASC Campaign Plan directly support five critical components of the Army's plan for information dominance for the warfighter.[18] These five components establish a solid foundation that will set the conditions to expand the Army's information infrastructure in support of transformational efforts. The five components are:

- LandWarNet;
- Information Technology on Installations;
- Army Knowledge Management;
- Information Assurance;
- Army Information Business Transformation.

In many of these areas NETCOM/9[th] ASC is the lead organization to ensure the overall success of the Army's long-term goal of Information Dominance.

LandWarNet

As mentioned previously in this document, developing and maintaining a robust and flexible LandWarNet is the cornerstone of the Army's network centric Information Dominance strategy. NETCOM/9[th] ASC's influence with respect to the LandWarNet extends from the sustaining base to the edge of the Army's tactical formations. NETCOM/9[th] ASC's responsibility includes providing the information infrastructure and Enterprise Management of the LandWarNet to enable Army support functions from the Business Mission Area to the Warfighting Mission Area. Currently, there are numerous ongoing initiatives to improve the LandWarNet at the operational and tactical levels. The initiatives supporting the LandWarNet as part of the sustaining base will be discussed later in this document with the other components.

To keep pace with Army modularity, NETCOM/9[th] ASC is in the process of dramatically improving the capabilities of its expeditionary signal forces. One such initiative is the Integrated Theater Signal Battalion (ITSB) or the future Expeditionary Signal Battalion (ESB). This program will standardize the battalion formations of all NETCOM expeditionary signal forces and dramatically improve the unit's ability to extend LandWarNet services to theater and tactical warfighters. These enhanced expeditionary signal units will be able to provide LandWarNet

services for 27 command posts from a Joint Task Force Headquarters to a functional theater support battalion. Additionally, due to the network-wide interoperability of signal equipment, these ITSBs can extend communications assets to the tactical formations to compensate for any network shortfalls at lower echelons. Currently, NETCOM/9th ASC's ITSBs are in the process of being repositioned to provide direct support to theater-level units as part of the Army's Global Basing Initiative.   In the future, these extremely capable units will be able to provide all LandWarNet services using everything over Internet Protocol (EoIP) technology. EoIP will provide a truly integrated communications network that will dramatically improve bandwidth utilization and enhance NETCOM's ability to manage the network at the enterprise level. These initiatives are only the first steps toward a future LandWarNet that will feature On Demand and On the Move capabilities. The next critical component addresses the enhancement of LandWarNet capabilities at the sustaining base by improving Information Technology on Army Installations.

Information Technology on Installations

The United States Army has identified 23 installations as Force Generation Platforms.[19] Strategic planners recognize that the Army's new modular formations required a modern 21st century communications infrastructure in order to rapidly and efficiently project forces from the sustaining base to the area of operations. For that reason, the Army's Installation Information Infrastructure Modernization Program (I3MP) was recently restructured to support the Army's Integrated Global Presence and Basing Strategy (IGPBS).[20] NETCOM/9th ASC continues to monitor the progress of the installation infrastructure enhancements at the enterprise level. Additionally, NETCOM/9th ASC is leading the Army's efforts in the implementation of numerous cost-savings initiatives through the use of emerging technologies and improvements in the installation communications connectivity. Through the consolidation of regional data centers, introduction of "thin client' architectures, and increased use of fiber-optic and wireless transport systems, NETCOM/9th ASC is setting the conditions for future information infrastructure enhancements. The synergy created from these initiatives will enable the Army's Force Generation Platforms to easily transition to the goal of an EoIP network that significantly enhances the networks capabilities. Just distributing large amounts of information through a communications network does not enhance the warfighter's ability to conduct operations unless this information can be properly managed to provide the warfighter knowledge. This is the goal of the Army Knowledge Management Program.

Army Knowledge Management

Army Knowledge Management (AKM) is a critical component to the Army's Information Dominance strategy. Even though NETCOM/9[th] ASC is not directly responsible for all AKM initiatives, its Enterprise Systems Technology Activity manages "army.mil" web site assignment of subdomains requested by other Army organizations and promulgates procedures to subdomain managers concerning the configuration management of servers, gateways, organizations, and individual users.[21] Additionally, the NETCOM/9[th] ASC's Global Network Operations and Security Center is responsible for monitoring all enterprise security management issues concerning AKM. Finally, as the AKM continues to expand the capabilities of the Army's Battle Command Knowledge System (BCKS), the cumulative impact of NETCOM/9[th] ASC's ongoing communications infrastructure initiatives and projects will ensure that BCKS is a combat multiplier in the future. This virtual one stop knowledge-based depository has three main components: Leader Network, Unit Network, and Warrior Knowledge Base that combine lessons learned, reference material, and collaborative leader tools into a superior knowledge management capability. In the future, the combination of these BCKS components will provide United States Army forces with a superior informational edge over any potential adversaries. To ensure the success of these knowledge-based capabilities, information security is vital.

Information Assurance

"Information Assurance (IA) is the cornerstone of the strategy for ensuring information dominance in a net-centric warfare environment."[22] NETCOM/9[th] ASC employs a defense-in-depth approach to network security. From user training to software and configuration management to active monitoring of communications gateways and ports, the Global Network Operations and Security Center monitors the 'networthiness' of the LandWarNet. As our adversaries become more adept in the use of information technologies, NETCOM/9[th] ASC is continuously improving the Army's Information Assurance posture.

Army Information Business Transformation

Unfortunately, like many other organizations, the Army did not have a comprehensive strategy for managing the information technology boom of the late 20[th] century. This lack of a unified strategy fragmented the Army's IT efforts causing the Army to waste significant resources developing redundant and stovepiped IT systems.[23] Early in the 21[st] century, the Army initiated numerous Information Business Transformation programs to reverse this trend and focus scarce resources on the development a fully integrated information network. One of

the key initiatives is the Army's Single Directors of Information Management (DOIM) program. This initiative attempts to standardize information technologies at all Army installations. In the short-term, this program combined with principles outlined in Lean Six Sigma will optimize the use of IT resources and improve overall network efficiency. As the Single DOIM concept moves forward, installation IT services and support will be regionally centralized under the control of NETCOM/9[th] ASC. This centralization initiative will create considerable resource savings that can be refocused on the enhancement of the LandWarNet. For the Army to be successful in the area, it is critical that it continues to apply the concept of business transformation to streamline its information management processes by providing soldiers and leaders with a centralized, accountable, worldwide-accessible knowledge-sharing information system. [24] NETCOM/9[th] ASC is currently playing a lead role in Army information management business transformation efforts. These efforts are critical to the Army's overall Information Dominance and transformation strategy.

Recommendations

NETCOM/9[th] ASC's unique mission and strategic planning directly supports the Army in today's GWOT and in its transformational efforts. As shown in this document, the NETCOM/9[th] ASC Campaign Plan is properly aligned and nested with the Army's objectives. Even though a coherent strategy exists there is no guarantee that the organization will be successful in fully implementing all aspects of its plan. To increase the chances of success, NETCOM/9[th] ASC should implement the following actions:

(1) NETCOM/9[th] ASC needs to immediately develop and implement an aggressive strategic communication information campaign. This campaign should employ a three-pronged approach with respect to both the target audience and the type of information provided. The specific target audiences include: key Army senior leaders and resource decision managers, senior warfighters and staff, and the general Army population. The contents of this campaign would include key information elements detailing NETCOM/9[th] ASC's organizational structure, mission sets, strategic plans and how these elements support the Army's current mission and transformational efforts. The plan's content needs to highlight the linkages between NETCOM/ 9[th] ASC's critical IT projects and Army programs relating to modularity, re-basing, and growing the Army.

Products defining the organizational structure such as the NETCOM Regulation 10-1 and the Campaign need to be widely distributed both externally and internally. In addition, the organization's web site should be enhanced to provide more useful organizational information

that describes how NETCOM/9th ASC impacts the Army's communications and information services at all levels.   Equally important to the external information campaign is NETCOM/9th ASC's internal efforts to increase the organizational goal awareness among it numerous organizations and units concerning the key tenants of the campaign plan. To confirm that the elements of the plan are fully understood all levels of the command; the NETCOM/9th ACS G-3 should require all internal organization and unit quarterly training briefs to describe how their plans and actions are nested with and fully support the key objectives in the NETCOM/9th ASC Campaign Plan. Increased awareness among key senior leaders and warfighters will increase the command's chances of receiving the resources and support necessary for the accomplishments of its key objectives.

(2) NETCOM/9th ASC needs to seek additional FY 08 funding for capability shortfalls in the Integrated Theater Signal Battalions. The Integrated Theater Signal Battalion or Expeditionary Signal Battalion (ITSB/ESB) is designed to support the theater level communications requirements in the Army's modular structure.   Due to limited funding and a lack of available modern signal equipment in the acquisition cycle, a significant amount of the Army's legacy Mobile Subscriber Equipment is being redistributed to ITSB/ESBs as a gap filler measure until more modern signal equipment is made available. Although this legacy equipment provides some capability, it would not be considered "net worthy" in the future EoIP environment.   Even though these units are still capable of extending current LandWarNet services to a limited number of key theater level command posts, the units will not be able to fully execute their intended mandate of providing enhanced LandWarNet services to 27 unit command posts until all the new equipment is fielded. Fully funding this project supports force modularity at the theater level and is key to the Army's transformation efforts.

(3) NETCOM/9th ASC needs to address problems in the Single DOIM strategy. Currently, NETCOM/9th ASC exercises technical control rather than operational control over the installation DOIMs and therefore cannot be expected to successfully manage the consolidation of all IT investments at the installation level. Although this technical control relationship worked in the past, the Army's decision to identify 23 installations as Force Generation Platforms has changed the nature of the relationship and requires that these strategic platforms to be under the central control of one responsible Army organization. Centralized control over these force generation platforms will ensure that these critical assets are "net worthy" and standardized to facilitate improved enterprise level network configuration and management procedures. The end result of this action will reduce operating costs and provide the enhanced network management and security needed to support network centric operations.

While these recommendations are not a panacea for the accomplishment of NETCOM/9th ASC's Campaign Plan, if executed correctly these recommendations should significantly improve the organization's chances in accomplishing its long-term goals. Any Army strategist is aware of the importance of winning the information war and how vital it is to the success of any cause or movement. In order to win the battle to secure vital resources, NETCOM/9th ASC needs to increase its visibility among its stakeholders at all levels if it is going to be able to support Army information technology transformation efforts in the future.

Conclusion

As one of the key organizations responsible for the LandWarNet, NETCOM/9th ASC plays a critical role in the Army's transformation to network centric operations. It is important that the United States Army has senior leaders that understand how to properly leverage information technology by investing the resources to improve the effectiveness of military operations. These leaders must support the efforts to execute a comprehensive transformation strategy that focuses the Army's efforts on achieving information dominance in the 21st century.

As discussed previously, NETCOM/9th ASC currently has the necessary leadership as well as comprehensive strategy to accomplish its task. Unfortunately, there are concerns that the organization may not have the necessary resources and authority to execute the strategy. NETCOM/9th ASC like the majority of the Army is already under significant pressure for funding. The organization is currently executing numerous internal resource savings initiatives in an attempt to fully fund current operations, while maintaining momentum toward the future LandWarNet goals and objectives. The proper resourcing of this organization's strategy is key to the Army's future success.

During a visit to the Army War College, the Army Chief Information Officer, LTG Boutelle made the following statement, "As a general rule, the United States Army and much of the U. S. Government does not leverage information technology very well, but due to our nation's overall strength we can compensate for this weakness. On the other hand, our adversaries use IT very well or they die." [25] NETCOM/9th ASC has a clear mandate and a critical role in the Army of the 21st century. The Army's strategic leaders and warfighters of today will be required to rethink how communications and information technology impact transformation efforts and future operations. Today, IT enhances the Army's combat power, but tomorrow the LandWarNet will be a critical weapon system. With the proper funding and mandate, there is little doubt that NETCOM/9th ASC will be successfully accomplish its current mission in support of GWOT, but

also lead the Army's efforts in many transformational tasks that support network-centric operations and Information Dominance in the 21st century.

Endnotes

[1] BG Carroll F. Pollett, "Leveraging Technology to Enhance C4I Capabilities," interview by Harrison Donnelly, *Military Information Technology* 9, no. 8 (2005): 21.

[2] *NETCOM Brief History Web Site*, available from http://www.netcom.army.mil/about/brochure/history.htm; Internet, accessed 6 December 2006.

[3] GEN John Abizaid, Comments during an Army War College Address, Carlisle Barracks, United States Army War College, February 2007, cited with permission of GEN Abizaid.

[4] Ibid.

[5] U.S. Department of the Army, *NETCOM Regulation 10-1* (Draft), (Fort Huachuca, AZ March 2006), 6.

[6] Ibid.

[7] Ibid., 11.

[8] Ibid., 4.

[9] Ibid.

[10] Ibid.

[11] Ibid., 8.

[12] Ibid.

[13] Francis J. Harvey and GEN Peter J. Schoomaker, *2007 United States Army Posture Statement*, (Washington D.C.: U.S. Department of the Army, 14 February 2007), Addendum G (LandWarNet), 1.

[14] Ibid.

[15] Francis J. Harvey and GEN Peter J. Schoomaker, *2006 United States Army Posture Statement*, (Washington D.C.: U.S. Department of the Army, 10 February 2006), Addendum C (LandWarNet), 1.

[16] LTG Steven W. Boutelle, *Army CIO/G-6 500-Day Plan (Update)*, October 2006, 3-7.

[17] BG Carroll F. Pollett, *NETCOM/9th Army Signal Command Campaign Plan*, May 2006, 4.

[18] Association of the United State Army, Institute of Land Warfare, Torchbearer National Security Report, "Delivering Information Dominance to the Warfigher," (Arlington, VA: Association of the United State Army, August 2006), 1.

[19] Ibid., 7.

[20] Ibid., 7.

[21] U.S. Department of the Army, *Information Technology Management*, Army Regulation 25-1 (Washington D.C.,: June 2004), 39.

[22] Association of the United State Army, Institute of Land Warfare, Torchbearer National Security Report, "Delivering Information Dominance to the Warfigher," (Arlington, VA: Association of the United State Army, August 2006), 11.

[23] Ibid., 13.

[24] Ibid., 14.

[25] LTG Steven W. Boutelle, Comments during the Army War College Leadership Day Seminar Discussion with AWC students, Carlisle Barracks United States Army War College October 2006, cited with permission of LTG Boutelle.