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THEATER DISTRIBUTION

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Preface

Since America's first major deployment of combat forces during the Spanish-American War, United States forces have faced constant and consistent patterns of combat service support challenges. Ports of embarkation and debarkation become overwhelmed, shipments are sidetracked, units lose visibility of their in-transit equipment, and deliveries of critically needed supplies are delayed.

The Army is now primarily a continental United States (CONUS)-based force, but with global responsibilities. As a result, the centerpiece of current Army doctrine is force projection. Recent operations in the Mideast, Somalia, Bosnia, and elsewhere, demonstrated that Army forces can rapidly deploy units and materiel to an area of operations. However, these operations also demonstrated that in-theater management and distribution of large volumes of combat service support resources was still challenging. Maintaining in-transit visibility and accountability of cargo and efficiently delivering it from ports to units proved difficult.

The purpose of this manual is to provide authoritative doctrine by which the Army theater distribution system supports the conduct of operations at all echelons and across the full range of military operations. This manual also provides the basis for theater distribution system training, organizational, and materiel development. The target audience is the units and commands that provide in-theater combat service support (CSS) and units supported by those organizations.

This manual focuses on CONUS-based force projection. It is designed to assist Army service component commanders, Army force commanders, theater support command commanders, logistics support element commanders, and other Army CSS personnel and their staffs in translating requirements and needs into combat service support in joint, multinational, and interagency environments. This manual implements relevant joint doctrine, incorporates lessons learned from recent operations, and conforms with Army capstone doctrine. Additionally, it links Field Manuals 100-5, 100-7, 100-10, 100-15, 100-16, and 100-17 series manuals with joint and other Army capstone manuals. This manual is focused on Army distribution operations in the near-term, although it also provides some information on developments which will affect distribution in the future. Though the theater support command discussed in this manual is an approved concept, actual organizations may not yet exist. Until then, echelons above corps support commands should adapt the principles in this manual to fit existing structures.

The proponent of this publication is Headquarters, United States (US) Army Combined Arms Support Command (CASCOM). Send comments and recommendations on Department of the Army (DA) Form 2028 to Commander, US Army Combined Arms Support Command and Fort Lee, ATTN: ATCL-C, Fort Lee, Virginia, 23801.

Throughout this publication the term "combat service support" is used in the context of the definition found in FMs 100-5 and 100-10.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

Chapter 1

Power Projection

"We are more and more an expeditionary force; strategic air and sealift, complemented by our pre-positioning initiatives, must be our number one priority."

General John M. Shalikashvili
Former Chairman, Joint Chiefs of Staff

FM 100-7 defines "power projection" as the ability of the US to apply any combination of economic, diplomatic, informational, or military instruments of national power. Projection of military force is a critical component of our power projection capability.

SECTION I. - MILITARY FORCE PROJECTION

1-1. Until the end of the Cold War, a keystone of Army doctrine was *forward presence*. In Europe, for example, the United States (US) Army maintained two corps and robust theater sustainment capabilities. In addition, large stockpiles of supplies and equipment configured to unit sets were pre-positioned to equip reinforcing forces deploying from the continental US (CONUS). On the ground in Europe, a theater Army area command (TAACOM) provided logistics command and control (C2) in the communications zone (COMMZ). This was a very robust headquarters. Using a network of area support groups (ASGs) and a variety of other subordinate commands, a TAACOM provided continuous, responsive C2 throughout the COMMZ. In addition, there were other functional commands, such as the personnel command (PERSCOM), medical command (MEDCOM), transportation command (TRANSCOM), engineer command (ENCOM) and finance command (FINCOM), that provided functionally oriented support to the theater of operations.

1-2. The end of the Cold War generated a changing world environment that has diminished the probability of a prolonged, large-scale conventional war. The National Security Strategy of Engagement and Enlargement emphasizes worldwide engagement and the enlargement of the community of free market democracies. This new national security strategy calls for flexible and selective engagement in response to a broad range of activities and capabilities to address and help shape the evolving international environment.

1-3. A central strategic concept in the National Military Strategy of the United States is power projection. Power projection includes the ability of the United States armed forces to deploy air, land, and sea forces to any region in the world and sustain them for missions spanning the operational continuum. US requirements for military force projection include emphasis on rapid deployment of combat power and military operations designed to terminate conflicts as quickly as possible on terms that are favorable to the US and its allies. Within that framework, the Army's contribution to force projection is the demonstrated ability to rapidly alert, mobilize, and field a force that is deployable, lethal, versatile, expandable, and sustainable.

SECTION II. - THEATER STRUCTURE

1-4. To understand theater distribution, it is important to understand what a theater is and how it is structured. A theater is a geographical area outside the continental United States (OCONUS) for which a commander of a unified command is assigned military responsibility (Joint Publication [JP] 1-02). From the strategic context, it is a required level of international military cooperation or the degree of necessary dedicated US military resources. These perspectives may influence how the Army conducts operations in each theater.

THEATER OF WAR

1-5. When the National Command Authorities (NCA) authorize combat operations, a joint forces commander (JFC), with NCA and Joint Chiefs of Staff (JCS) approval, delineates a strategic theater of war. Part of a theater may be in a state of war, while other areas remain in conflict or peace (see Figure 1-1).

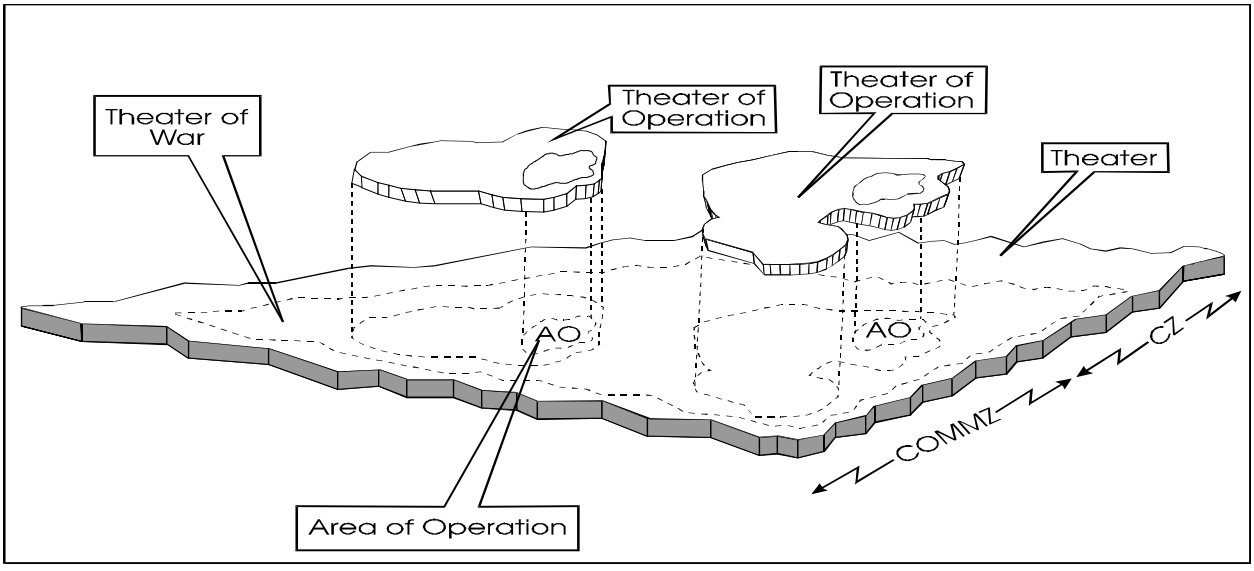


Figure 1-1. Theater Organization During War

THEATER OF OPERATIONS

1-6. If the JFC determines that he should subdivide his theater of war to contend with more than one major threat, he may designate subordinate theaters or areas of operations (AOs) and joint task forces (JTFs) to engage each major threat. The theaters of operation refer to those portions of an area of war necessary for military operations and for the administration of such operations for extended periods.

COMMUNICATIONS ZONE

1-7. The communications zone (COMMZ) extends from the rear of the combat zone (CZ) in the theater of operations to the CONUS base. Its size may vary depending on the size of the theater of operations, size of forces required for operations and sustainment, depth required, lines of communications (LOC), enemy capability to interdict and disrupt sustainment operations, geography, and political boundaries. Within the COMMZ, the combatant/JTF commander normally establishes a theater base. The combatant/JTF commander usually locates the theater base at the junction of the various intratheater and intertheater LOC. It typically contains combat service support (CSS) facilities required to support the theater such as aerial and sea ports of debarkation (APOD/SPOD), marshaling areas, storage areas, theater staging bases, movement control points, and CSS headquarters and units. It also includes airfields and air bases, transitioning land forces, theater missile defense forces, the theater rear headquarters, and strategic reserves.

SECTION III. - ARMY SUPPORT IN THEATER

1-8. Force projection doctrine and the structure of the theater influence how the Army provides CSS in the theater. The Army service component commander (ASCC) supports the theater combatant commander by conducting Army operations to support or attain his objectives. For detailed discussion of ASCC functions and responsibilities refer to Field Manual (FM) 100-7.

ARMY SUPPORT STRUCTURE

1-9. Operations in Somalia, Haiti, Bosnia, and elsewhere clearly demonstrated a need to establish CSS infrastructures in places where they do not exist. Building the support structure occurs after considering mission, enemy, terrain and weather, troops, time available, and civil considerations (METT-TC); strategic lift; pre-positioned assets; host nation support (HNS) and other applicable agreements; and other factors of the logistics preparation of the theater (LPT) process. Commanders tailor their forces to meet the demands of specific crises. Key considerations are selecting a support structure appropriate to the mission and time-phasing its deployment. Balancing combat, combat support (CS), and CSS forces during deployment is crucial because commanders must seek to gain the initiative

early, protect the force, support the force, and simultaneously prepare for future operations. The CSS force must be regionally oriented, flexible, and properly tailored.

1-10. To satisfy this need, the Army developed a modular concept for opening theaters. Modularity allows for deploying only those capabilities needed for a particular mission. Typical theater-level early entry modules (EEMs) needed during the initial stages of deployment include C2, transportation, engineer, supply, personnel, finance, maintenance, port-opening, and medical modules; and strategic logistics cells from the United States Army Materiel Command (AMC), the US Transportation Command (USTRANSCOM), and the Defense Logistics Agency (DLA). These EEMs may be grouped under a task force called a theater force opening package (TFOP). Once on the ground, the TFOP can operate air and sea ports, prepare routes for onward movement, negotiate with the host nation (HN) for real estate needed for marshaling areas and staging bases, provide initial sustainment and medical support, coordinate movements within the theater, and accomplish other support missions as specified by the ASCC. The TFOP is discussed in greater detail in Chapter 4 and Appendix A of this manual.

1-11. The ASCC/Army force (ARFOR) commander assembles and tailors modules to support the force, based on the mission assigned to it by the JFC. The support structure starts with a nucleus of minimum essential support functions and capabilities focused on force generation within the theater. As the deployed force grows, the support structure gains required capabilities. The theater support structure must provide support to the engaged forces; to units in or passing through the COMMZ; and to other units, activities, forces, and individuals as the JFC directs.

1-12. For limited operations, the ASCC/ARFOR commander has several options for commanding COMMZ support operations as discussed in FM 100-7. In larger, more mature operations, the complete TSC headquarters and required functional commands may deploy. For more details on the TSC refer to Chapter 3 of this manual and FM 63-4 (to be published). Figure 1-2 depicts command relationships of the TSC and the ASCC/ARFOR, Army supporting elements, and elements of the other Services.

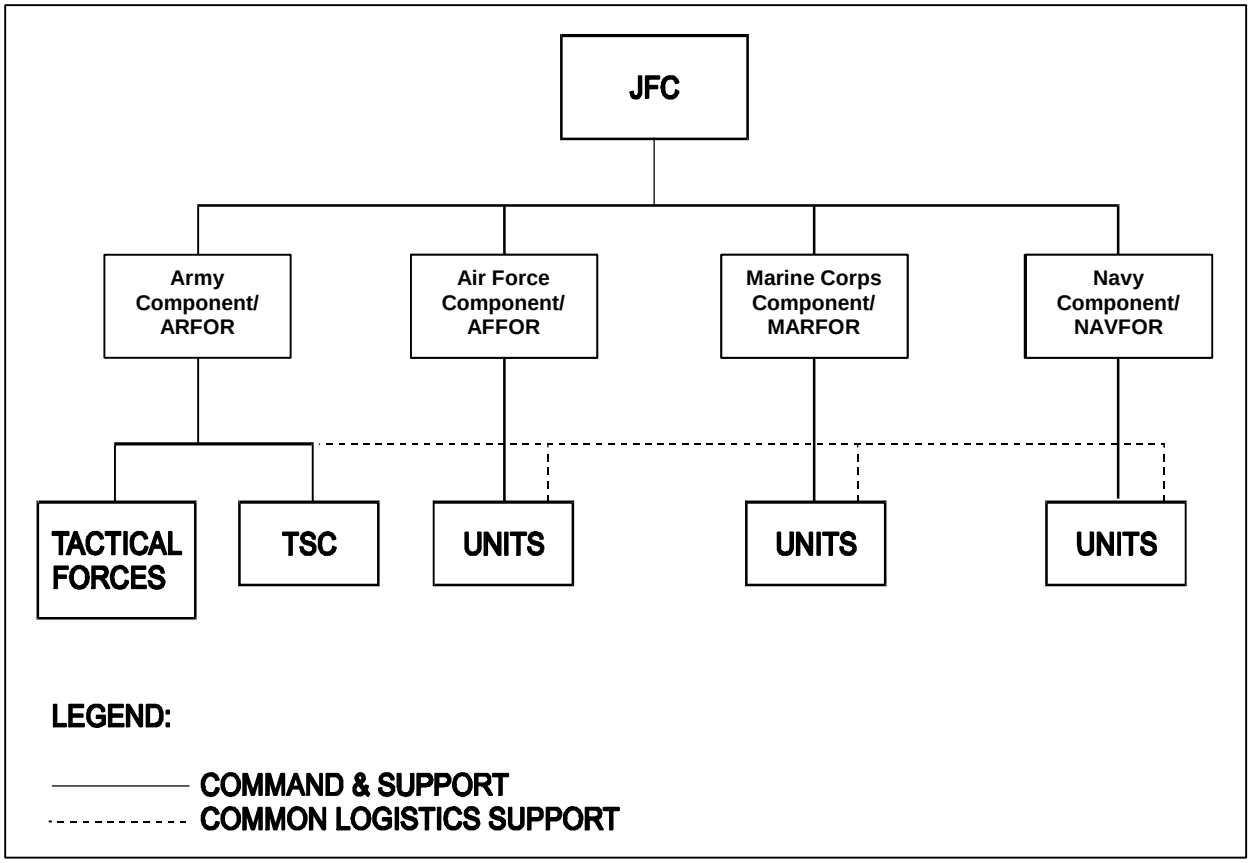


Figure 1-2. Representative Joint Forces Relationships

CSS IMPLICATIONS OF MILITARY FORCE PROJECTION

1-13. Our ability to project power with the most capable forces, at the decisive time and place, relies on a focused CSS system that is responsive, flexible, and precise. Focused CSS provides rapid crisis response, tracks and redirects assets en route, and delivers tailored CSS packages directly to strategic, operational, and tactical levels of operations. It is fully adaptive to the needs of our dispersed, mobile forces and provides support in hours or days versus weeks. It enables joint forces to be mobile, versatile, and projectable from anywhere in the world.

1-14. CSS functions must incorporate information technologies to transition from the rigid vertical organizations of the past. Modular and specifically tailored CSS packages must evolve in response to wide-ranging contingency requirements. Service and Defense agencies must work jointly and integrate with the civilian sector, where required, to take advantage of advanced business practices, commercial economies, and global networks. Active and reserve CSS forces, prepared for complete integration into joint operations, must provide CSS as long as necessary.

1-15. Information technologies in support of theater distribution and velocity management, enhance airlift, sealift, and pre-positioning capabilities. This enhancement ensures the lightening of deployment loads, assists to pinpoint CSS delivery systems, and extends the reach and longevity of systems currently in the inventory. The combined impact of these improvements will be a smaller, more deployable, and capable force.

Chapter 2

Force Projection Distribution Environment

"In order to make assured conquests it is necessary always to proceed within the rules; to advance, to establish yourself solidly, to advance and establish yourself again, and always prepare to have within reach of your army your resources and your requirements."

Frederick the Great
Instructions for His Generals, II (1747)

The Army CSS system anticipates support requirements for future operations and works towards acquiring the personnel and materiel resources and other capabilities to meet those requirements. It then distributes those resources to support forces both during peacetime training and throughout all stages of force projection operations. As depicted in Figure 2-1, it first supports the mobilization and deployment of forces to a theater. These forces include a modular CSS force, with an adequate C2 structure, sequenced to arrive early in the theater, and incrementally built to meet the needs of the supported force as it flows into the area.

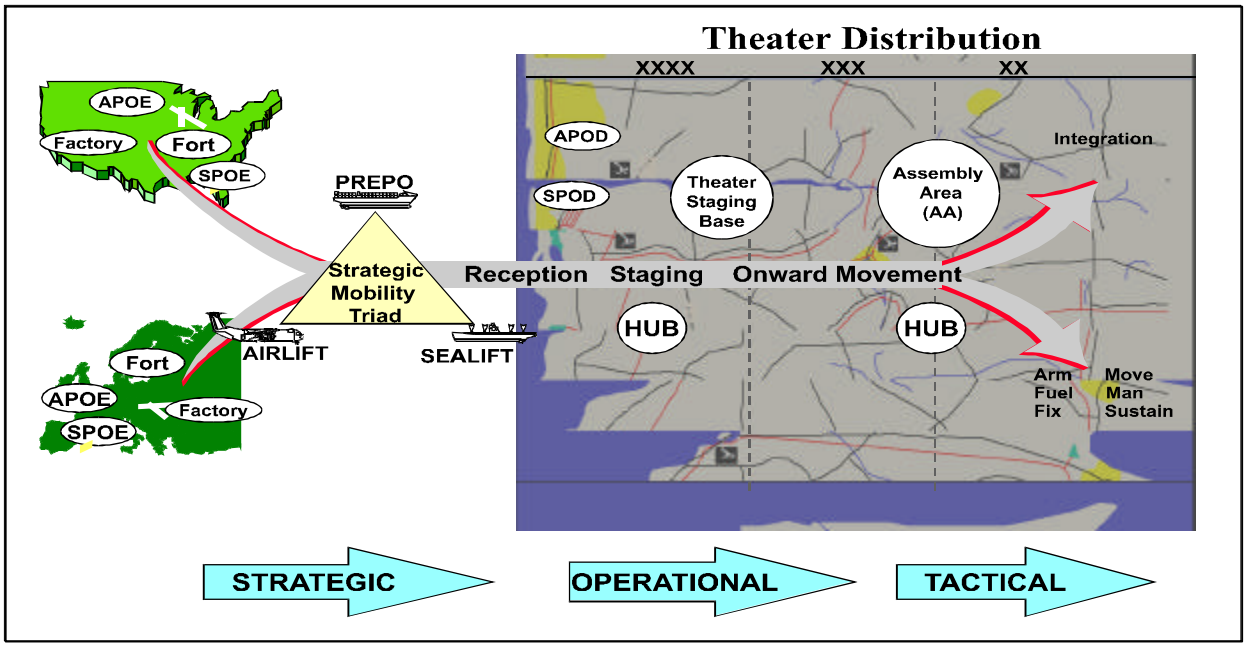


Figure 2-1. Force Projection and Follow-On Sustainment

2-1. The CSS force focuses initially on establishing the CSS infrastructure for force generation. Such support includes sustainment support to early entry elements. Support includes all aspects of CSS to include maintenance, transportation, combat health support (CHS), supply, personnel/personnel services support, field services, contracting services, and Class A agent support.

2-2. Finally, the system meets the significant demands placed on it during post- conflict operations and reconstitution, redeployment, and demobilization of forces once objectives are met. The CSS system must be flexible enough to provide support to operations ranging from small unit operations in remote sites to theater-wide, high operational tempo (OPTEMPO) combat operations.

SECTION I. - THE STRATEGIC ENVIRONMENT

2-3. Strategic support elements fill the distribution pipeline with personnel and materiel resources and the capability to provide services required by the supported JFC. They conduct industrial operations, maintain the industrial base, provide information services, provide strategic-level services (such as depot supply and maintenance and defensewide base operations support), and manage strategic stockpiles (such as Army pre-positioned afloat [APA] assets). Their focus is to –

- Determine support requirements at global and regional levels.
- Acquire resources while forging strategic alliances.
- Coordinate industrial base activity.
- Integrate personnel, financial management, materiel, services, and distribution management information systems of the Army with other military Services and governmental agencies.
- Provide base support and services.
- Maintain national-level medical services and facilities.
- Determine requirements for stockpiling and pre-positioning resources afloat and on land around the world.
- Deploy and maintain forward presence forces.
- Identify mobilization and demobilization requirements and resources.
- Provide strategic mobility.

2-4. National strategic-level CSS elements are the links between strategic and operational bases. They consist of agencies and organizations from the private sector, Department of Defense (DoD), and other government agencies.

PRIVATE SECTOR

2-5. The Army depends primarily on private industry as the foundation for military materiel production. Therefore, the defense industrial base has a significant impact on major theater wars (MTWs) and short wars due to the long lead times required to build up the industrial base. Active plants and production lines have some capability to surge. Repair parts manufacturers may be able to surge production for items that sustain deployed weapons systems. Active end-item production lines are sometimes used to obtain urgent critical parts and subsystems. National policy makes use of commercial materiel as much as possible.

DEPARTMENT OF DEFENSE

2-6. DoD resources include factories for producing ammunition, tanks, and engines; arsenals, depots, and other facilities; equipment; and skilled personnel.

DEFENSE LOGISTICS AGENCY

2-7. Although each Service plays a large role, DLA is DoD's focal point for efforts related to the industrial base. DLA is responsible for providing consumable items of supplies and services that the military Services commonly use. Its responsibilities include worldwide integrated management of subsistence, petroleum, and property disposal operations. DLA provides logistics and service support to the Services through its supply centers and agencies.

2-8. DLA procures, stores, and distributes items to support the military Services and other customers. In addition, the agency buys and distributes hardware and electronic items used in the maintenance and repair of military equipment. The Services determine their requirements for supplies and other materiel and establish their priorities.

2-9. DLA provides contract administration services to all DoD components and administers and supervises –

- The Federal Catalog System.
- The Defense Personal Property Reutilization Program, including worldwide disposal of excess personal property, recovery of precious metals, and disposal of hazardous waste.
- The DoD Industrial Plant Equipment Reserve.
- The Defense National Stockpile.

2-10. DLA provides reutilization and marketing services in the COMMZ. Initially, salvage and excess materiel destined for the Defense Reutilization and Marketing Office (DRMO) is collected in the corps and division areas as the situation permits. As the theater matures, DLA-directed activities may use HNS to assist in evacuating this materiel to the COMMZ for inspection, classification, and disposal.

US TRANSPORTATION COMMAND

2-11. USTRANSCOM provides common-user airlift, sealift, and terminal services to deploy, employ, and sustain US forces on a global basis. In addition, it provides in-transit visibility (ITV) to joint forces. Its three transportation component commands are the Army's Military Traffic Management Command (MTMC), the Navy's Military Sealift Command (MSC), and the Air Force's Air Mobility Command. These subordinate commands remain under the combatant command (COCOM) of USTRANSCOM in all contingency operations. When forward deployed in a joint operational area (JOA) the USTRANSCOM may place elements of these commands under the tactical control (TACON) of the JFC/TSC.

2-12. MTMC is the single manager for military traffic, land transportation, inland waterway, common-user containers, liner service and CONUS-originating Special Assignment Airlift Mission (SAAM) validation, and common-user ocean terminals within CONUS, except for those specific secretary of defense (SECDEF)-assigned functions that require operations OCONUS. This includes the management of JOA common-user ports. MTMC's general functions are to –

- Provide traffic management for CONUS freight movements by commercial carriers.
- Command and operate common-user military ocean terminals assigned by DoD.
- Provide worldwide traffic management for DoD personal property movement and storage program.
- Provide transportation planning to the JCS, military Services, and the unified and specified commands supporting the Joint Operations Planning and Execution System (JOPES).

For further information see JP 4-01.5.

2-13. MSC operates as the single manager for ocean transportation and for intercoastal service. MSC's functions are to –

- Provide ocean transportation support to DoD components as required through US-owned or contracted equipment.
- Serve as the single point of contact (POC) with ocean carriers concerning the negotiation of ocean rates, terms, and conditions of ocean transportation.
- Maintain and operate an ocean transportation service for movement of personnel, cargo, bulk petroleum, and mail.
- Provide transportation planning support to JCS, unified and specified commands, and military Services in support of JOPES.

2-14. Air Mobility Command is the single manager for all strategic and intertheater fixed-wing common-user transportation. It consists of controlled transport aircraft, and the personnel, facilities, and equipment necessary to support operations. Its functions are to –

- Provide airlift to DoD components as required.
- Operate a worldwide passenger reservation system for travel via DoD transport aircraft, commercial contract airlift, and the Civil Reserve Aircraft Fleet (CRAF).
- Operate common-user ports and air terminals at US Air Force (USAF) installations and commercial airfields.
- Provide transportation planning support to JCS, unified and specified commands, and military Services in support of JOPES.

US ARMY MATERIEL COMMAND

2-15. AMC performs assigned materiel and related functions for research, development, test and evaluation; acquisition, logistics support, and technical assistance for materiel systems; and other materiel-acquisition management functions. It provides Army national-level maintenance support and serves

as DoD's single manager for conventional ammunition. AMC's missions include –

- Provide equipment and services to other nations through the Security Assistance Program.
- Develop and acquire non-major systems and equipment.
- Provide development and acquisition support to program managers.
- Maintain the industrial mobilization capabilities necessary to support the Army.
- Manage Army pre-positioned stocks (APS), less Class VIII, worldwide.
- Manage the Logistics Civil Augmentation Program (LOGCAP).

2-16. AMC also manages operational policies, programs, objectives, and resources associated with operational projects worldwide. All of the above functions and capabilities are available to the ASCC/ARFOR through the AMC logistics support element (LSE). (See FM 63-11 for information on the LSE.)

OTHER GOVERNMENT AGENCIES

2-17. Many government agencies outside of the DoD have a major impact on Army distribution, including the Office of Management and Budget (OMB), General Accounting Office (GAO), Federal Emergency Management Agency (FEMA), Environmental Protection Agency, and General Services Administration (GSA). For more details, refer to JP 3-08.

SECTION II. - THE OPERATIONAL ENVIRONMENT

2-18. Operational CSS ties tactical requirements to strategic capabilities to accomplish operational plans. Army support at this level is integrated into the total support package required to conduct joint/multinational campaigns and other military activities in a JOA. Geographic JFCs have many options when establishing their theater support systems. They may use uni-Service, cross-Service, common-Service, or joint-Service support arrangements. The geographic JFC assigns support responsibilities based on the type of Service support agreement. He may use either the dominant-user or the most-capable-Service concept as discussed in Appendix B.

2-19. The seams separating operational CSS from strategic and tactical are often indistinguishable. Support personnel at the operational level are cognizant of the JFC's theater strategic perspective and the requirements at the tactical level. Army commanders at the operational level must be prepared to operate in unified, multinational, and interagency operations. Based on METT-TC and JFC guidance, the ASCC/ARFOR commander develops an organization capable of executing CSS tasks and directing the integration of CSS to effectively support the campaign plan.

2-20. Army forces often operate in support of non-DoD civilian agencies in achieving objectives associated with the economic, political, and informational elements of national power. In some cases, these interagency operations may require support from the Army's distribution system. Army CSS personnel

coordinate with other involved agencies to ensure effectiveness and efficiency in the total support effort within the limits of Title 10, DoD directives, interagency agreements, and applicable federal laws.

2-21. Operational support forces may be augmented with representatives from other Services to integrate support to and from other Services. The JFC designates which Services provide common support to joint forces. They may need to interface with support elements of allied forces, coalition forces, and other agencies to synchronize support operations.

2-22. To smooth the seams between the operational and strategic level, elements of the national strategic-level sustainment base deploy and integrate into the operational-level support force. DLA and AMC support the JFC as members of the integrated theater support structure. DLA contingency support teams and the AMC LSE provide POCs for supply support, distribution, and services such as contract administration support, reutilization, and marketing services. Other strategic agencies that may deploy elements as components of the integrated support force may include USTRANSCOM, the US Space Command, the Army and Air Force Exchange Service (AAFES), the Department of Transportation (US Coast Guard), and the National Imagery and Mapping Agency (NIMA).

2-23. In many scenarios, host nation support (HNS), contractors, multinational partners, and local procurement provide operational and tactical support. HNS agreements fulfilling the JFC's requirements for support need to be pre-negotiated. Such support arrangements must be integrated into the distribution plan and coordinated with other Services, allies, and coalition partners to prevent competition for resources and to ensure high priority requirements are met. HNS may include functional or area support and use of host nation facilities, government agencies, civilians, or military units. DoD/Department of the Army (DA) civilians and government contractors also provide support. For command and control purposes, DoD/DA civilians and some contract personnel may be assigned to operational support organizations within the LSE.

2-24. Support planners must incorporate support provided through contracting into the theater support plan. Contracting may be an effective force multiplier for supporting forces throughout all phases of an operation. Such support may come from systems contractors, theater support contractors, or external support contractors. Systems contractors provide support through pre-arranged contracts awarded by program managers and the AMC. They support specific materiel systems throughout the system's life cycle. Theater support contractors support deployed operational forces under pre-arranged contracts awarded within the mission area by contracting officers serving under the direct contracting authority of the theater principal assistant responsible for contacting (PARC). External support contractors support deployed forces under pre-arranged contracts or contracts awarded during the contingency to support the specific mission. Contracting officers awarding these contracts are not under the contracting authority of the theater PARC or the systems officers under program managers or AMC. For example, AMC provides commercial depot support through contracts of its commodity

commands. Its Logistics Augmentation Program (LOGCAP) office also provides external support contractors through its pre-arranged umbrella contract. With all contracted support, it is critical that the efforts of all contracting personnel (Army elements, other Services, and nations) are fully coordinated so that resources are attained economically and applied most effectively to meet the prioritized requirements of the joint/multinational force commander.

2-25. The operational level of CSS is the focus for the majority of future general support operations. Key elements of the Army's distribution system located at the operational level include dedicated transportation, general support supply, sustainment maintenance, Level III medical (with in-theater hospital facilities), and personnel support elements. Direct support elements also support forces operating in this area. Many of the stocks to support the AO are stored within the operational level, allowing CSS units at the tactical level to remain as mobile as possible. Total asset visibility (TAV) and dedicated transportation support are critical to reduce CSS reaction time, lower maintenance downtime, and optimize stockage levels on the battlefield. The ITV piece of TAV allows distribution managers to plan for and execute CSS operations through the use of timely and accurate information regarding the flow of supplies and unit equipment. The Movement Tracking System (MTS) provides a capability to redirect in-transit assets to weight the battle (see Chapter 6 for further discussion). Support at this level includes common support to joint and multinational forces as required.

SECTION III. - THE TACTICAL ENVIRONMENT

2-26. Tactical CSS is the synchronization of all CSS activities required to sustain soldiers and their systems. CSS providers at this level may support joint and multinational military forces. Tactical forces deploy with their organic CSS units. The bulk of the CSS organizations at the tactical level are made up of these units. However, as at the operational level, HNS, joint and multinational sources, DoD/DA civilians, and civilian contractors may provide some support. Habitual relationships continue to exist between supporting and supported units. The tactical-level supporter's focus is manning, arming, fueling, fixing, moving, and sustaining the soldier and his equipment.

2-27. Tactical-level support personnel provide support to the battle commander. All CSS activities are synchronized to sustain soldiers and their systems and to remove obstructions to the tactical commander's scheme of operations. Tactical CSS is tied to the tempo of operations. Telemetry (measuring and transmitting OPTEMPO data) applied to both soldiers and equipment can aid in anticipating future CSS requirements.

2-28. Tactical CSS elements provide coordinated, tailored warfighter support. They control inventories, maintenance, transportation, personnel, medical, finance, and field services necessary to satisfy specific tactical requirements.

Chapter 3

Fundamentals of Distribution

"The more I see of war, the more I realize how it all depends on administration and transportation...It takes little skill or imagination to see where you would like your army to be and when; it takes much more knowledge and hard work to know where you can place your forces and whether you can maintain them there."

General A.C.P. Wavell
Quoted in Martin Van Creveld's *Supplying War, Logistics from Wallenstein to Patton*, 1977

The common thread that linked coalition forces success during the Persian Gulf War was the CSS effort of transporting, sustaining, and maintaining the force. This success was largely due to the unprecedented host nation/military "brute force" CSS effort that served as the theater distribution system.

The Army can no longer afford the inefficiencies of the mass and stovepipe-oriented CSS system that spawned the "brute force" theater distribution effort of the Persian Gulf War. Leveraging available automation and information technology, supporters can now attain the visibility, control, and capacity management capabilities required to transition from a mass and stovepipe system based on functionality to a distribution-based CSS system.

SECTION I. - THE DISTRIBUTION SYSTEM

3-1. Distribution is that functional phase of logistics which embraces the act of dispensing materiel, facilities, services, and the process of assigning military personnel to activities, units, or billets (JP 1-02). It includes all actions performed to deliver required resources (units, materiel, personnel, and services) to, from, and within a theater. Distribution is more than a logistics function; it is an operational art that encompasses all CSS disciplines and functions (see Figure 3-1). It involves synchronizing all of them to generate the focused CSS that provides the right resources at the right time and place.

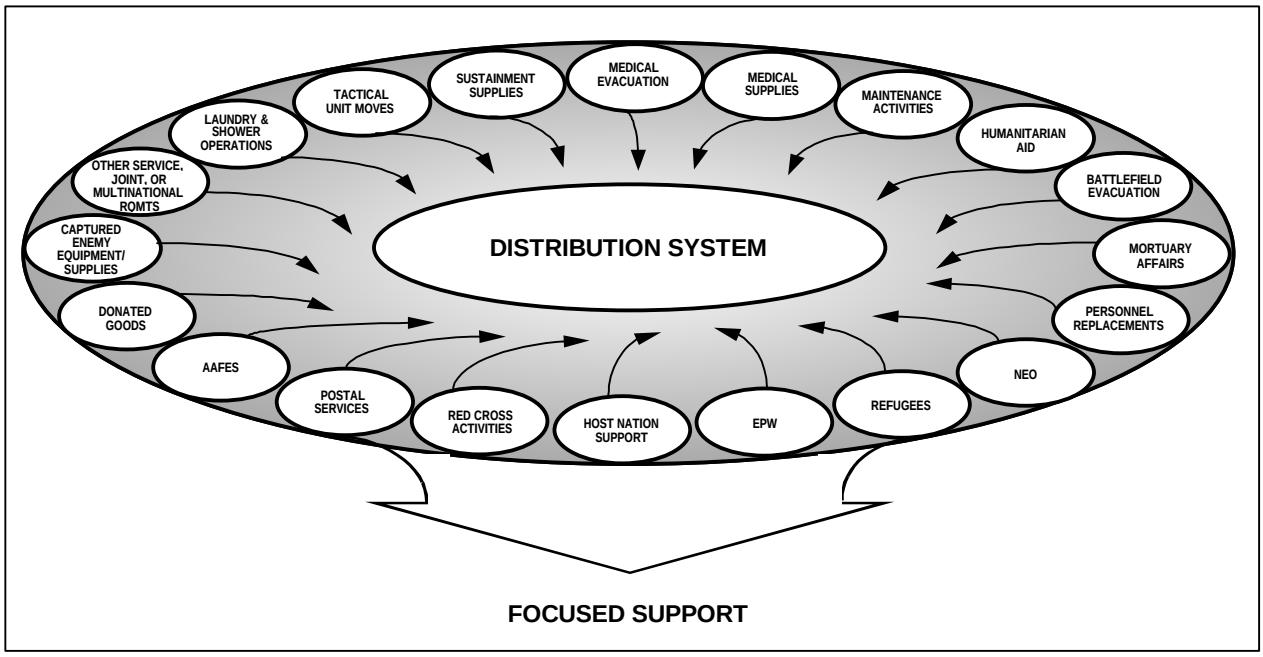


Figure 3-1. The Operational Art of Distribution

3-2. The distribution pipeline is the channel through which the military conducts distribution operations. As depicted in Figure 3-2, it represents the end-to-end flow of resources from supplier to consumer. Resources enter the pipeline at the national strategic or operational level and exit as direct and general support (DS/GS) to tactical forces on the battlefield. Within the pipeline, these resources pass through a complex framework of integrated national/theater-level communications, automation, physical, and resource networks that comprise the distribution system.

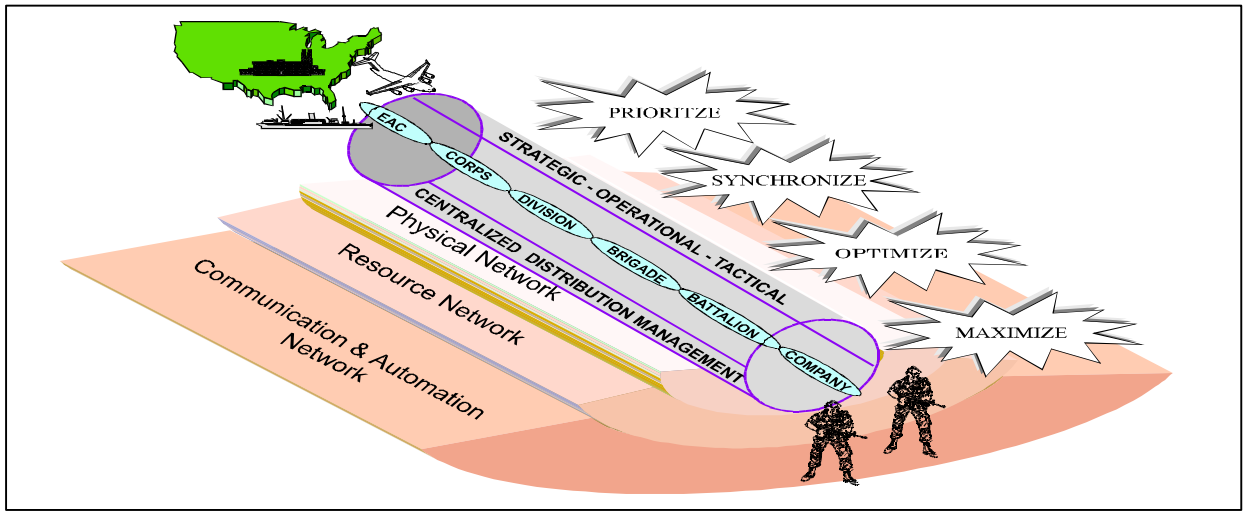


Figure 3-2. The Distribution Pipeline

3-3. The communications and automation networks of the distribution system flow information throughout the strategic, operational, and tactical levels. Using a combination of communications and automation technologies, these networks provide TAV/ITV critical to ensure efficient and effective distribution operations. Emerging automated information systems/technology (AIS/AIT), management information systems (MIS), and Global Combat Support System-Army (GCSS-Army) will further enhance timely and accurate information flow within the system. A more detailed discussion of current and emerging communications/automation networks and systems supporting the distribution system is contained in Chapter 6 of this manual.

3-4. The physical network of the distribution system consists of the quantity and capability of fixed structures and established facilities available to support distribution operations. It includes factories, airfields, seaports, roads, railroads, inland waterways (IWW), pipelines, terminals, road and railroad bridges/tunnels, and buildings. The resource network consists of the people, materiel, and machines operating within and over the physical network of the distribution system. It includes a mix of uniformed and civilian (US/HN government, military, and contractor) organizations and equipment. The combined physical and resource networks make up the infrastructure of the distribution system. Infrastructure capacity (net capability of the combined physical and resource networks) establishes the finite capacity of the distribution system.

3-5. The national strategic level of the distribution system is well established. Sustainment base national providers routinely operate within a mature infrastructure with fixed platform automation and global communications capabilities. Their focus is on anticipating requirements and pushing resources into the distribution pipeline. Production lead time, resource limitations, service capabilities, and strategic transport constrain the distribution system at this level.

3-6. As the distribution pipeline flows from the sustaining base to the soldier on the battlefield, the distribution system's capacity and capability to support resource flow become more constrained (see Figure 3-3). Within a theater, the distribution system is sensitive to available HN infrastructure and communications capabilities. Few potential theaters of operation possess infrastructure and communication network capabilities equal to those at the national strategic level. Joint/multinational military forces and the civilian population share whatever HN infrastructure and communications capabilities exist. In addition, the JFC's operational plan, force caps, and strategic lift constraints may limit the amount of US military resource network capabilities that can be deployed to the theater to augment HN infrastructure capability. These factors lead to inherent imbalances in distribution system capacities at the national strategic and theater strategic, operational, and tactical levels.

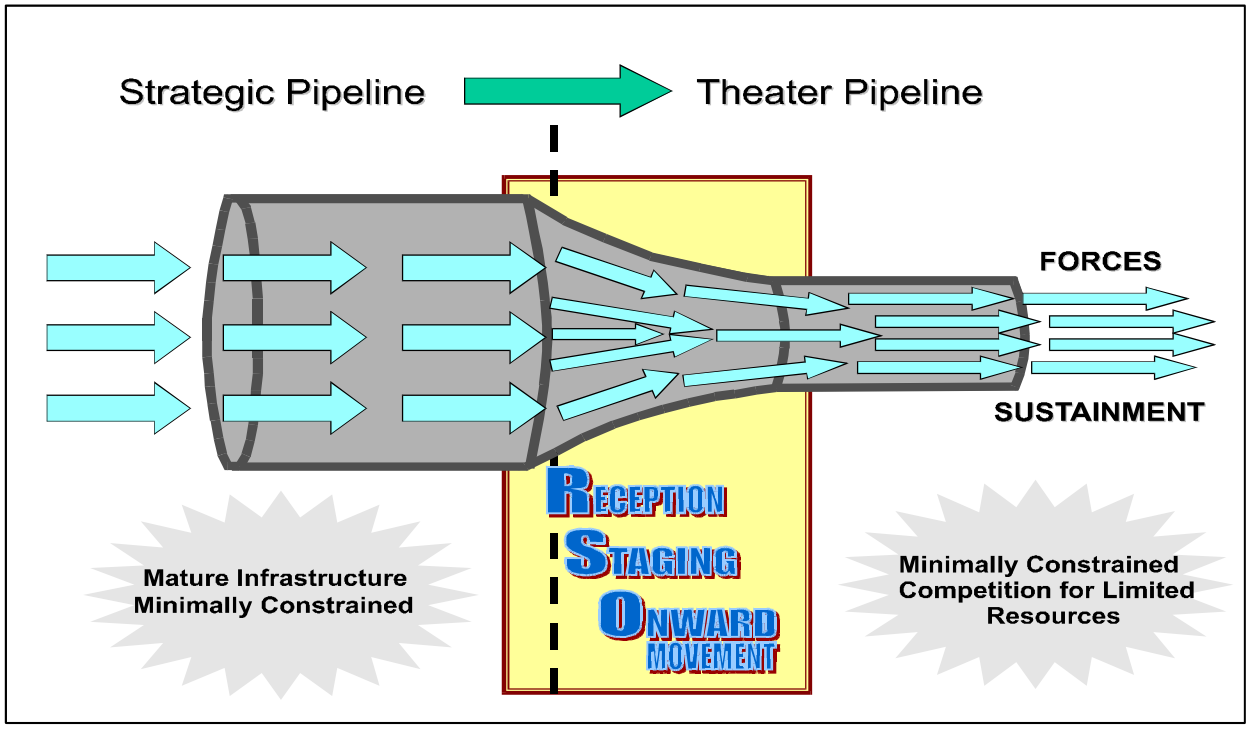


Figure 3-3. Theater Distribution Challenge

SECTION II. - PRINCIPLES OF DISTRIBUTION

3-7. The operational art of distribution is the centerpiece of the end-to-end continuum of a distribution-based CSS system. Distribution is described in JP 4-0 as a function of visibility, management, and transportation. A distribution-based CSS system, includes not only the visibility, management, and transportation of resources flowing through the CSS pipeline, but also of the networks that comprise the distribution system. Thus, the operational art of distribution is also a function of the critical capabilities of visibility, capacity, and control. These critical capabilities are reflected in the five interrelated principles that guide the dispensing of resources through a distribution-based CSS system. The five principles are listed below. When properly employed, these principles enhance the agility of the force. When the distribution manager has visibility of resources and the capability to quickly to get them to where they are required, the commander has the ability to act and react faster than the enemy does.

CENTRALIZE MANAGEMENT

3-8. Centralizing management is essential to efficient and effective distribution system operations. It involves the integrated end-to-end visibility and control of the distribution system capacity and distribution pipeline flow. Designated distribution managers in distribution management

centers (DMCs) of the support operations element at each support echelon manage distribution operations and coordinate and synchronize movement of supplies, personnel, and unit equipment. Materiel management and movement control operations at each echelon are synchronized under the plans and policy office and DMC of the support operations element.

OPTIMIZE INFRASTRUCTURE

3-9. Optimizing infrastructure is essential to maintaining balance within the total distribution system. As discussed earlier, system infrastructure dictates the finite capacity of the distribution system. This principle involves the ability of distribution managers at each echelon to maintain visibility of the infrastructure under their control, and to reallocate or acquire physical and resource network capabilities to meet changing requirements.

MAXIMIZE THROUGHPUT

3-10. Whenever possible, national strategic-level CSS elements use throughput to prepare resources for direct, time definite delivery to a supply support activity (SSA) or assembly area (AA) in an AO. Throughput distribution bypasses one or more echelons in the supply system to minimize handling and speed delivery forward. A distribution-based CSS system emphasizes the use of containerization (within MHE constraints), to include palletization and packaging, to accommodate the AO and improve velocity. Velocity is achieved through the throughput of resources from the sustaining base to tactical-level support organizations.

MINIMIZE FORWARD STOCKPILING

3-11. The velocity of a distribution system reduces the reliance on large stockpiles of resources within an AO. Under this principle, forward stockpiling complements the time definite delivery of resources through the distribution system. It involves the ability to provide the minimum essential stockpiles of supplies and minimum services required to begin operations in a theater, and to augment the continuous and seamless flow of resources within the CSS pipeline. This principle includes the use of APS.

MAINTAIN CONTINUOUS AND SEAMLESS PIPELINE FLOW

3-12. The principle of continuous and seamless pipeline flow involves the application of all other distribution principles to produce the end-to-end continuum of a distribution system. The integrated CSS/C2 automation and communications networks of the distribution system provide the strategic, operational, and tactical connectivity that allows the distribution management structure the capability to maintain continuous and seamless pipeline flow.

Chapter 4
Theater Distribution Operations

"At the various levels, the commander must depend upon a single, professional logistician to integrate and coordinate the overall logistics effort to assure effective and efficient support."

James A Houston
"The Sinews of War," Army Logistics, 1775-1953

An effective and efficient theater distribution system depends on the integrated efforts of the many elements of the distribution structure throughout all the stages of a force-projection operation.

SECTION I. - DISTRIBUTION STRUCTURE AND RESPONSIBILITIES

4-1. Organizations at all levels from combat brigades through US government agencies operate within the resource network of the distribution system. COMMZ distribution functions are intrinsically joint and may also be multinational.

4-2. The theater distribution system enables US forces to request, receive, sort, maintain, distribute, retrograde, and control the flow of resources among the points of reception, issue, or retrograde within the CSS pipeline. At the theater strategic level, the JFC is responsible for maintaining an effective distribution network consistent with each Service's intratheater policies and procedures. A wide range of options are available to meet a JFC's requirements. His choice depends on the type and size of theater and the strategic objectives. He may also direct subordinate Service components to manage and operate their own distribution systems. He may establish a logistics readiness center (LRC) and/or a series of joint boards and management centers. These joint activities establish policies and set priorities ensuring the flow of resources to support the joint/multinational campaign (see Appendix B).

4-3. The Army theater distribution system provides the ASCC/ARFOR commander the ability to command and control the reception, staging, and onward movement of all resources while maintaining TAV through communications and information systems. The ASCC/ARFOR commander normally establishes a TSC in the COMMZ to orchestrate the Army theater-level distribution system.

4-4. The TSC is the critical link between strategic agencies and commands (such as, USTRANSCOM, DLA, and AMC) and units performing Army distribution in theater. Each TSC, corps support command (COSCOM), and division support command (DISCOM) has a support operations section to coordinate battlefield functions directly associated with distribution. The plans and policy element of the support operations section focuses on operation plan (OPLAN)/operation order (OPORD) development. It coordinates with the DMC, functional commands/ organizations or functional staff elements, and control centers for input to the CSS annexes of the documents. As explained later in this manual, the plans element of the DMC, with input from all functional commands/organizations, control centers, and other elements of the support operations section and DMC, develops the distribution plan. The operations element of the DMC coordinates with functional organizations/staff elements and control centers for situational awareness of current distribution operations.

4-5. Management functions at each echelon mirror each other (Figure 4-1). DMCs provide current information on location of mode assets and movement of critical supplies along main supply routes. They provide staff recommendations to direct, redirect, retrograde, and cross-level resources to meet distribution mission requirements.

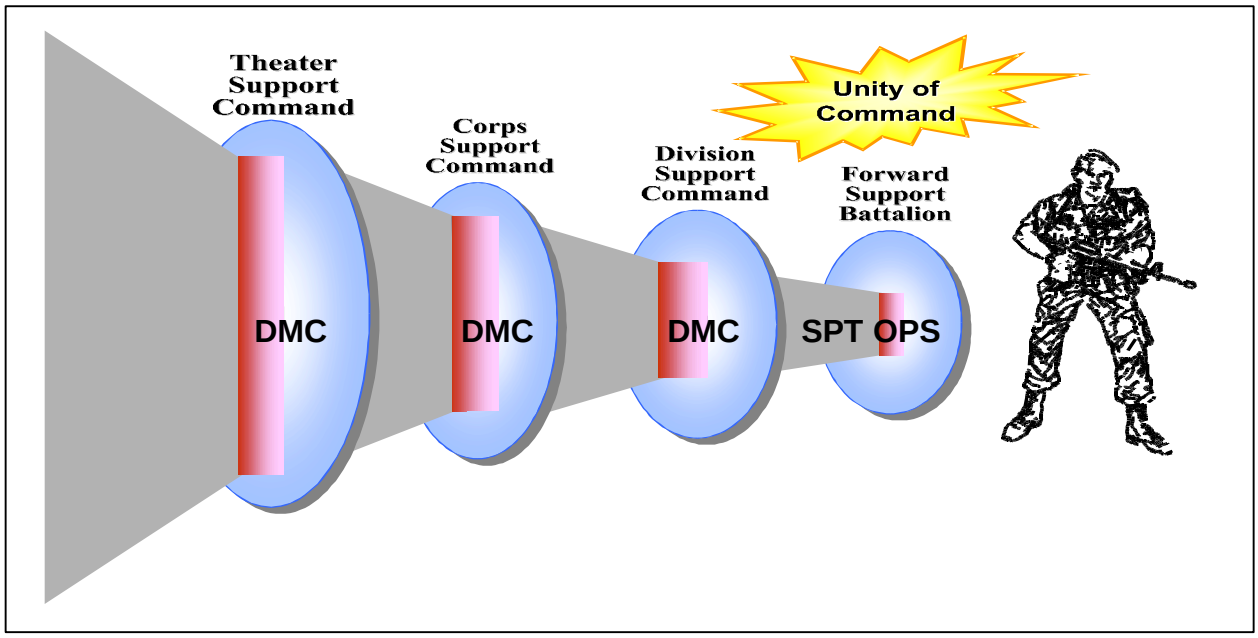


Figure 4-1. Distribution Management Echelons

4-6. The TSC is a versatile command structure. It employs EEMs and functional and follow-on C2 elements to provide support at the operational-level (see FM 63-4). TSC mission requirements may include supporting joint organizations and civilians; providing strategic, operational, and tactical interfaces; maintaining the distribution pipeline; and enhancing distribution

operations. A key TSC planning responsibility is developing, in coordination with the ASCC/ARFOR staff and functional commands, a distribution plan. The TSC updates the distribution plan as task organization changes.

4-7. At the direction of the ASCC/ARFOR commander, individuals and tailored elements from the Army strategic-level organizations may be attached to the TSC. They interface with various strategic support organizations and agencies. AMC logistics assistance office (LAO) elements who provide support to deploying units coordinate with the AMC LSE attached to the support command to facilitate the flow of information.

4-8. The support operations section of the TSC has primary responsibility for Army distribution management at theater-level. A DMC operates within the TSC support operations staff structure. The DMC, the functional commands/directorates, and control centers orchestrate the distribution of all classes of supply and services, and personnel movements supporting the deployed force. The DMC considers the impact of unit movement requirements on the distribution system. Other Services and DoD materiel managers work with these Army elements to perform joint distribution management for the deployed joint force as directed by the JFC (refer to Appendix B). The support operations section coordinates with materiel, personnel, movement, finance, engineer, and medical managers, and liaises with elements from other Services. The DMC provides current priorities for distribution/redistribution activities to the movement control agency (MCA) and materiel management center (MMC). Support operations section and DMC missions are discussed in FM 63-4.

4-9. Area support groups (ASGs) and functional commands/organizations serve as principal "distribution operators" in the COMMZ. An ASG is organized with the appropriate mix of functional CSS organizations necessary to perform its area support mission.

4-10. A materiel management team (MMT) from the TSC MMC and a movement control team (MCT) from the TSC MCA support an ASG. The ASG interfaces with other functional COMMZ organizations, such as personnel, finance, transportation, and petroleum groups, and medical, engineer, and military police brigades establishing an efficient distribution system.

4-11. Within the combat zone, the COSCOM provides support to corps units and other units, Services, or allies as directed. The COSCOM commander is the corps senior logistician and provides C2 for corps distribution operations. He performs his distribution responsibilities through the COSCOM support operations officer.

4-12. The COSCOM support operations section coordinates CSS battlefield functions directly associated with distribution. The CSS plans branch of the support operations section focuses on OPLAN/OPORD development. It coordinates with the DMC, functional staff branches in the support operations section, corps movement control battalion (CMCB), corps materiel management center (CMMC), and the medical logistics battalion for input into the support annexes of the documents. The distribution plans branch of the DMC coordinates with other elements of support operations, the MMC,

movement control personnel, and functional organizations to develop and maintain the distribution plan. It coordinates with the same elements as the plans branch in order to provide situational awareness of current distribution operations. FM 63-3 provides a detailed discussion on the COSCOM.

4-13. Corps support groups (CSGs) and functional medical, transportation, personnel, and finance groups/brigades make up the major corps-level distribution operators. CSGs may be designated as CSG (rear [R]) or CSG (forward [F]). The CSG(R) is organized with corps support battalions (CSBs), functional battalions, transportation units, and other functional units as required. The CSG(R) maintains corps stocks, less Class VIII. The CSG(R) may have an MMT from the CMMC and a MCT from the CMCB to assist in materiel and movement management. The CSG(R) commands or interfaces with other functional corps or COSCOM organizations, such as ordnance, transportation, quartermaster, and medical logistics battalions, to establish an efficient distribution system.

4-14. The CSG(F) is organized with multifunctional CSBs and provides DS to its assigned division and non-divisional units operating in the division and corps forward area. A distribution-based CSS system expands the focus of CSG(F) support to include greater emphasis on direct distribution to maneuver brigade areas. The CSG(F) may also have an MMT from the CMMC and a MCT from the CMCB to assist in materiel and movement management. For more discussion of CSG operations, refer to FM 54-30.

4-15. Depending upon the size of the corps, the senior medical organization within the corps may be a medical brigade or a medical group. Medical brigade/group staff officers establish CHS policies for the command. They coordinate plans, policies, and procedures for CHS operations in support of corps forces with the COSCOM support operations staff. The modular structure of the medical brigade/group CHS organization allows medical resource managers to rapidly tailor, augment, reinforce, and reconstitute CHS elements. The corps CHS organization is designed to acquire, receive, and sort casualties; provide emergency medical treatment; evacuate for further treatment; and distribute health service logistics.

4-16. If three or more functional transportation battalions are included in the corps force structure, a transportation group may be attached to the COSCOM. The transportation group headquarters from EAC force structure provides command, staff planning, and control of the operations of attached transportation battalions and truck units in support of a corps force. The transportation group focuses on providing corps-wide transportation support of tactical operations within the parameters of the established corps distribution system.

4-17. The corps also includes a personnel group and a finance group. As discussed in Appendix C, these organizations, along with the assistant chief of staff, personnel (G1) staff, coordinate with other distribution managers to effect distribution of such resources as personnel replacements, mail, and finance services. FM 12-6 discusses personnel support, and FM 14-100 covers financial management operations.

4-18. The DISCOM provides CSS to all organic and attached elements of the division, including supervision and management of information, materiel, and transportation. The division support operations section serves as the DISCOM staff element responsible for managing distribution within the division AO. The division support operations officer is the primary distribution manager for the division. A DMC is established within the division support operations section of the DISCOM. While the DISCOM DMC operates at a smaller scale than the TSC and COSCOM DMCs, the basic functions are essentially the same. The DISCOM DMC is the fusion center for distribution information. It leverages technology to provide the DISCOM commander and the rest of the staff with timely information. This section performs distribution management of all classes of supply, materiel, and services within the division. A unique consideration for the DISCOM DMC is that the division movement control and materiel management elements operate as parts of the same staff as the DMC; they are not separate commands as is the case at corps and echelons above corps (EAC). The DISCOM DMC focuses on the distribution pipeline as it extends into the division area. In addition, the DISCOM communicates priorities to materiel and movement control staff personnel and directs the establishment of the distribution flow within the division to include lateral redistribution and retrograde. As at the corps level, the DMC works with personnel and finance elements to coordinate distribution of those resources.

4-19. The main support battalion (MSB), aviation support battalion (ASB), forward support battalions (FSBs), and in the redesigned division the division support battalion provide division-level support to divisional units located within their areas of responsibility (AOR). The support operations section of these battalions performs the distribution management function for the supported units. The support operations officer workloads the subordinate companies based upon support requirements of the supported units. Support operations personnel maintain visibility of materiel flow.

SECTION II. - DISTRIBUTION IN FORCE PROJECTION OPERATIONS

4-20. Preparation of the Army theater distribution system begins before deployment. Predeployment activities are those actions commencing from the point of alert notification to the actual deployment of equipment, materiel, and personnel to an AO. During this period, the tactical commander's CSS concerns are with the final preparations of equipment and personnel for movement. Commander-in-chief (CINC) and ASCC/ARFOR commander concerns include improving the readiness of the deploying force and ensuring that the appropriate support structure is deployed to support the force. The ability to simultaneously conduct both missions, prepare the force and deploy the force, mandates an agile and adaptable distribution system.

4-21. The actual mobilization and deployment of forces from CONUS/OCONUS power projection platforms based upon JFC requirements are primary responsibilities of national strategic-level CSS elements of the distribution system. As the time-phased force deployment data (TPFDD) is developed, coordination is made between the JFC and USTRANSCOM. Coordination includes allocating transportation assets to the ports of embarkation (POEs) and load planning/uploading of personnel, equipment, and initial sustainment stocks (ammunition basic loads [ABLs], unit basic

loads [UBLs], combat prescribed loads, combat authorized stockage lists [ASLs], and/or operational loads).

4-22. Strategic-level supply and personnel organizations provide timely responses to deploying unit requisitions for personnel, supplies, and materiel to bring unit readiness up to requirements. This includes canceling or modifying open requisitions. Supply sources unitize cargo in single consignee packages and apply automated manifest systems (AMS) and radio frequency (RF) tagging to maximize throughput and prevent unnecessary opening of containers as they flow through the distribution system. GSA, DLA, and AMC update unit "ship to" addresses in the DoD Activity Address File (DODAAF), including creating new break-bulk point DoD Activity Address Codes (DODAACs). This is critical for tailored units and units employing split-base or modular operations.

4-23. USTRANSCOM provides transportation control at aerial ports of embarkation (APOEs) and seaports of embarkation (SPOEs). Departure airfield control groups (DACGs) and port support activities (PSAs), provided by units and installations in conjunction with the Air Mobility Command and MTMC, process forces and materiel, and aid in loading strategic lift. Proper bar-coding, AIT, container documentation, and cargo manifests are prepared to expedite reception in the AO.

4-24. The AMC, force providers (US Army Forces Command [FORSCOM], US Army, Europe [USAREUR], and US Army, Pacific [USARPAC]), and USTRANSCOM maintain transportation control number (TCN)/unit line number (ULN) ITV over resources flowing from power projection platforms to the theater ports of debarkation (PODs) and provide TAV information exchange with the theater distribution system.

4-25. During predeployment, the support operations staff of the designated TSC, in conjunction with the ASCC/ARFOR and JFC staffs, refines the plan for the LPT (see Chapter 5). The LPT plan, developed in coordination with the intelligence preparation of the battlefield (IPB), is essential to the overall development of a comprehensive distribution plan and the configuration and sequencing of CSS forces in the TPFDD. A significant element in this process is the accurate identification and timely sequencing of the mix of CSS functional modules of the TFOP.

4-26. Described in greater detail in Appendix A of this manual and in FM 63-4, the TFOP is a modularly configured, theater-level, early entry support task force. It is tailored, based upon LPT and distribution plan requirements, to provide the critical Army force capability required to open and initially operate the Army theater distribution system. Figure 4-2 depicts the functional mission profile of the TFOP. EEMs of the TSC headquarters, TSC MMC, and TSC MCA, and forward deploying modules from functional commands, AMC, DLA, and USTRANSCOM provide split-base C2 and distribution management. Functionally oriented theater force opening modules (TFOMs) open and operate the initial distribution system.

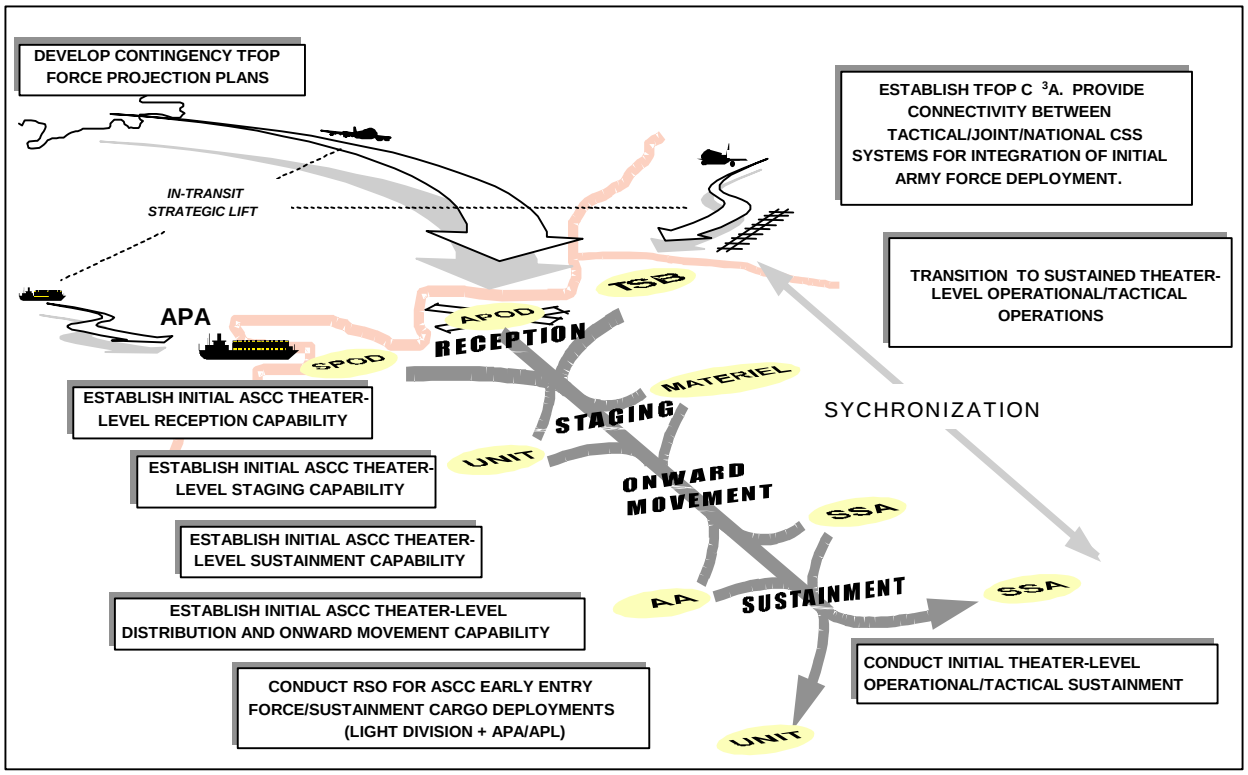


Figure 4-2. Theater Force Opening Package Functional Mission Profile

4-27. Early deployment of the TFOP is essential to the continuous and seamless flow of the CSS pipeline into and within the theater. Without the theater-opening capabilities provided by the TFOP, the ASCC/ARFOR commander does not have the resources required to augment the capacity of the theater infrastructure or the critical visibility and control to manage the Army theater distribution system.

OPENING THE THEATER

4-28. Upon arrival in the theater, the TSC MCA, TSC MMC, and TSC support operations, and functional command EEMs of the TFOP establish communications and automation links with joint and strategic level C2/CSS information systems to acquire visibility of the CSS pipeline. As a minimum, communications and automation connectivity is established with USTRANSCOM for visibility of strategic air flow and ship schedules and with AMC and USAMMA for visibility of APS.

4-29. In accordance with (IAW) the joint force guidance and theater contracting policy, the TFOP assesses and acquires available HN infrastructure capabilities identified in the LPT plan and updates the distribution plan. This includes directing the execution of required LOGCAP contracts by the AMC LSE module of the TFOP; activating HNS infrastructure agreements; and establishing initial HN contracts for supplies and services under the coordination of the principal assistant responsible for

contracting (PARC) to support the theater-level distribution plan. Utilizing acquired HN infrastructure and functional TFOM capability, the TFOP then "stands up" the nodes and arcs of the theater distribution network IAW the distribution plan and establishes initial ASCC/ARFOR theater reception, staging, onward movement, and sustainment capabilities.

4-30. In a theater distribution system all resources are throughput from the POD to the unit whenever possible. The distribution hub is the center of gravity for support at each echelon of support. The hub is the complex of capabilities at each echelon designed to enable throughput. It includes all the functional capabilities tied to distribution at the echelon. The support operations section of the associated support command/battalion is responsible for synchronizing those capabilities.

4-31. Within a hub are one or more distribution terminals for cargo. A distribution terminal (DT) segregates, consolidates, manifests, and stages cargo for delivery to customers over established routes according to a time definite delivery schedule. The distribution terminal uses cross-dock efficiencies to segregate and ship cargo to satellite SSAs and other nodes in the distribution system. The distribution terminal consists of a transportation cargo transfer element and a servicing MCT. Multi-consignee and frustrated cargo goes to the distribution terminal of the hub to be broken down into single consignee shipments and moved forward on a time definite delivery basis. Distribution terminals receive, sort, and unload containers for rapid distribution. These distribution terminals are transshipment points focused on receiving, sorting, documenting, and shipping cargo. They also redirect cargo as required. They are connected with SSAs and other nodes of the system to form the hub. DT operations include –

- Segregating, consolidating, manifesting, staging, and delivering cargo to customers over established routes according to a time definite delivery schedule.
- Preparing AMS cards and RF tags for cargo to ensure TAV/ITV from distribution terminal (DT) to the ultimate consignee.
- Receiving, repackaging, redistributing, and retrograding cargo.
- Coordinating mode asset, pallet, and container arrival and departure, and providing timely cargo ITV reports to CSS databases.
- Reading source data automation of cargo arriving and departing the DT.
- Staging and marshaling trailer loads for delivery.

4-32. Transition nodes are a critical part of the distribution system, and any changes to shipping information must be provided to distribution managers to ensure asset visibility is maintained. Distribution managers also manage the throughput capabilities of the hub by synchronizing the activities of mode operators with the flow and break-bulk capability of the distribution terminal.

4-33. Early in deployment, a TFOP movements control module, in conjunction with Air Mobility Command forward elements, opens a common-user APOD reception area. If the theater is supported by a sea line of communication (SLOC), MTMC is the seaport manager under the single port manager (SPM) concept for all common-user SPODs. The geographic JFC has several options available for the port operator, including use of a deployable transportation

group or MTMC, under a command arrangements agreement (CAA), using stevedoring contracts or host nation support.

4-34. Early in a force projection operation, supported JFCs regulate the transportation flow by ensuring that adequate support and reception assets, effectively coordinated through a theater reception plan, are either available at the POD or deployed early in the movement schedule to facilitate theater distribution and reception, staging, onward movement and integration (RSO&I). This will expedite the reception of personnel and materiel in the operational area. During force projection operations under hostile conditions, soldiers may have to perform many of the port functions. Once hostilities subside or cease, these types of activities may transition to MTMC-administered contract operations.

4-35. Terminal operations, line-haul, heavy equipment transport (HET), and movement control assets to provide surge sealift SPOD reception capability become available upon arrival of APA. Other terminal operations, mode operator, and movement control resources may establish inland rail and/or water terminals to support reception of resources flowing into the theater via land LOC.

4-36. Terminal operations, line haul and HET, supply, maintenance, and other required functional capabilities, along with TSC headquarters, MCA, and MMC EEMs establish the initial theater hub, including the distribution terminal. The TSC support operations element provides theater-level priorities to the distribution terminal for the TSC commander. The DT facilitates the time definite delivery of resources flowing through the theater end of the CSS pipeline. To enhance throughput and a continuous flow, the DT is centrally located. It is close to theater reception nodes and located to facilitate main supply route (MSR) routing established in the distribution plan.

4-37. Based upon strategic lift constraints and the need to minimize its overall footprint in the theater, the TFOP may rely heavily upon a combination of HNS and contracts to provide the onward movement of resources within the theater. All available modes of transportation are used in the distribution process. They include rail, motor transport, watercraft, intratheater air, and airdrop. Movement control TFOMs provide movement control capability under the direction of the TSC MCA. Organizations performing highway regulation functions emplace RF interrogators to maintain the ITV of resources moving to staging areas and unit AAs.

4-38. Force Provider modules and engineer forces, and/or contractors may establish staging areas, and supply TFOMs establish commodity-oriented SSAs for the staging of sustainment stocks. Consistent with the distribution plan, AMC and USAMMA transfer APS afloat/land to theater SSAs. The TFOP also employs a combination of HNS, contracts, and functional CSS TFOMs to establish the theater support base necessary to maintain the distribution system infrastructure and sustain distribution operations.

SUSTAINING THE THEATER

4-39. Even as the TFOP stands up the Army distribution system, the distribution pipeline flow of force projection resources begins to arrive at theater reception

nodes. At this point, the distribution system focus begins to shift from theater opening to theater sustainment. As depicted in Figure 4-3, theater sustainment is an interactive combination of force generation and force sustainment.

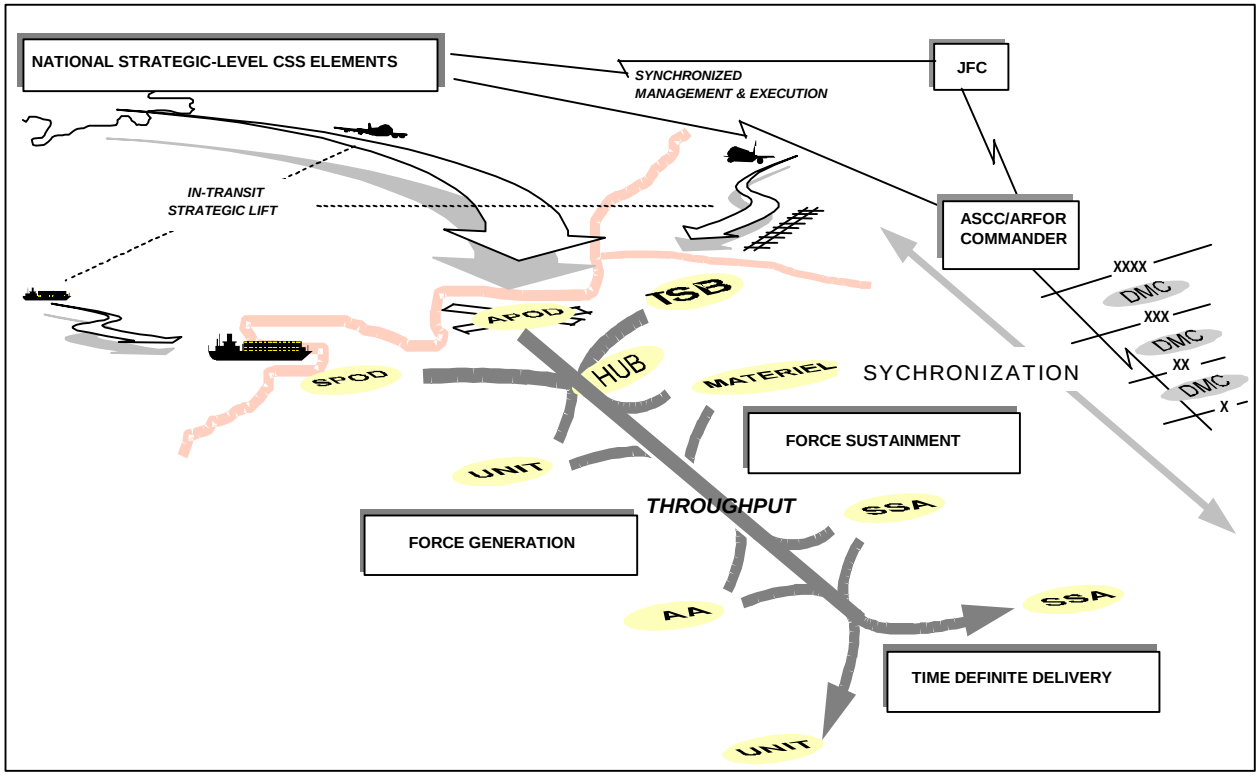


Figure 4-3. Theater Sustainment

4-40. Force generation includes all actions required within the distribution system to assemble deploying elements (personnel, equipment, unit cargo, and materiel stocks) into an operationally capable force. Units and their unit equipment flow from CONUS/OCONUS power projection platforms under separate ULNs to arrive in the theater by the JFC's required delivery date. Terminal operators, mode operators, and movement control personnel at theater reception nodes provide the initial visibility and movement of unit personnel, equipment, and supplies as they enter the theater. The TSC MCA coordinates development of the port clearance plan with the ASCC/ARFOR G3 and the TSC support operations element. HNS, contract, and TFOP cargo transfer elements may provide offloading and discharge operations at common-user APODs under the management of the Air Mobility Command. PSA elements assist in vessel discharge operations and staging at common-user SPODs while under the operational control (OPCON) of the port operator. HNS or stevedoring services contracts may augment discharge operations under control of the port manager through MTMC-administered contract operations. Unit personnel and cargo then flow through staging areas to tactical assembly areas (TAAs) where they are handed over to the ASCC/ARFOR commander and integrated into the theater force. FM 100-17-3 provides details concerning RSO&I and force generation.

4-41. As the theater develops, distribution system efforts shift to force sustainment. Functional command modules/directorates and the TSC DMC monitor force sustainment requirements and the developing capacity of the distribution infrastructure under the distribution plan. Corps and division CSS resources, integrated into the theater force through force generation, establish distribution management capabilities at their respective echelons. Additional DTs may be added to the distribution system at these echelons, reducing the workload of the theater-level DT and further enhancing the flow of resources in the theater. The TFOP matures to a fully capable TSC and other required commands operating under the ASCC/ARFOR commander.

4-42. Sustainment resources flow from national strategic-level CSS elements or local sources IAW support plans as modified by the TFOP support operations EEM. Whenever possible, strategic-level supply sources unitize cargo into single consignee packages consistent with the distribution plan and apply AMS and RF tagging to maximize throughput. They group this cargo together and palletize or containerize it for movement on strategic transportation assets. Shipment on strategic lift assets is based on maximum cargo-carrying capability of the assets. Resources flow through theater APODs and SPODs and are throughput directly to a unit's supporting supply support activity (SSA), stock locations, or to DTs for further action. Sustainment materiel designated for stockage normally bypasses the DT and is throughput to storage sites. Information is processed into the logistics information systems by the receiving SSA. Trailer transfer points (TTPs) may be used along MSRs/alternate supply routes (ASRs) or at DTs to facilitate continuous flow to SSAs. The DMC must maximize the utilization of intercoastal sealift, rail, and air capability to offset the effects of MSR/ASR destruction/interdiction. Sustainment materiel packaged for a single consignee is received, processed, and throughput directly to an SSA. Sustainment materiel packaged for multiple customers is separated at DTs, segregated by SSA and DODAAC, reconfigured, and then shipped to the appropriate SSA.

4-43. Air lines of communication (ALOC) continue to serve as the preferred means of emergency and critical materiel delivery to and within the theater. Delivery assets for personnel replacements and unit moves are coordinated by the personnel liaison element from the PERSCOM's theater personnel management center to the TSC DMC.

4-44. The movement of retrograde, to include maintenance evacuation of materiel, through the distribution system is accomplished in reverse order of sustainment from the tactical through strategic level. Retrograde equipment and materiel is consolidated at the lowest level SSA and reported through the support operations channels to the TSC MMC commodity manager for distribution instructions using source data automation devices. The SSA packages, documents with AMS cards, and RF tags retrograde items for shipment based upon distribution instructions received from the TSC MMC. Transportation requirements for retrograde are synchronized with onward movement/sustainment transportation requirements within the TSC DMC to maximize utilization of transportation platforms. It coordinates retrograde of unit equipment, personnel, and supplies with the MCA, MMC, and other functional organizations/directorates as required.

REDEPLOYING THE FORCE

4-45. Redeployment is the process of relocating deployed forces from a theater of operations to a new theater of operations for employment, or returning to their home or demobilization stations. It must be planned and executed in a way that facilitates the use of redeploying forces and sustainment equipment and supplies to meet new crises. Therefore, it is not just a retrograde operation. It is, in fact, a new deployment under which the theater of operations becomes a projection platform. The same operational phases, planning, and coordination actions required for deployment are also required for redeployment (see FM 100-17-5 for details covering redeployment).

4-46. During redeployment, the theater distribution system reception, staging, and onward movement orientation must shift from a forward to a rearward flow of resources. Based on JFC priorities, and in coordination with the ASCC/ARFOR and joint force logistics directorate (J4) staffs, the TSC support operations staff makes required modifications to the distribution plan to synchronize the assembling, reconstitution, and movement of resources to theater APOEs and SPOEs.

4-47. The TSC support operations section typically controls redeployment operations from AAs through redeployment assembly areas (RAAs) to APOEs/SPOEs. The TSC MCA couples unit movement requirements with USTRANSCOM strategic lift assets. The TSC support operations functional directorates and DMC work with the functional commands to coordinate and monitor medical, personnel, field services, maintenance, customs, and in some cases engineer support at AAs, RAAs, and APOEs/SPOEs. The TSC MMC ensures sustainment materiel, as well as adequate blocking, bracing, packaging, and tie-down materials, are available to expedite the flow of units departing the theater.

Chapter 5

Distribution Management and Planning

"Focused logistics will be the fusion of information, logistics, and transportation technologies to provide rapid crisis response, to track and shift assets even while en route, and to deliver tailored logistics packages and sustainment directly at the strategic, operational, and tactical level of operations."

Army Vision 2010

A fundamental precept of distribution management is to facilitate the fusion process that allows CSS commanders and staffs to synchronize distribution functions and focus support within an AO. This philosophy is embedded in the distribution management operations depicted in Figure 5-1 and discussed throughout this chapter.

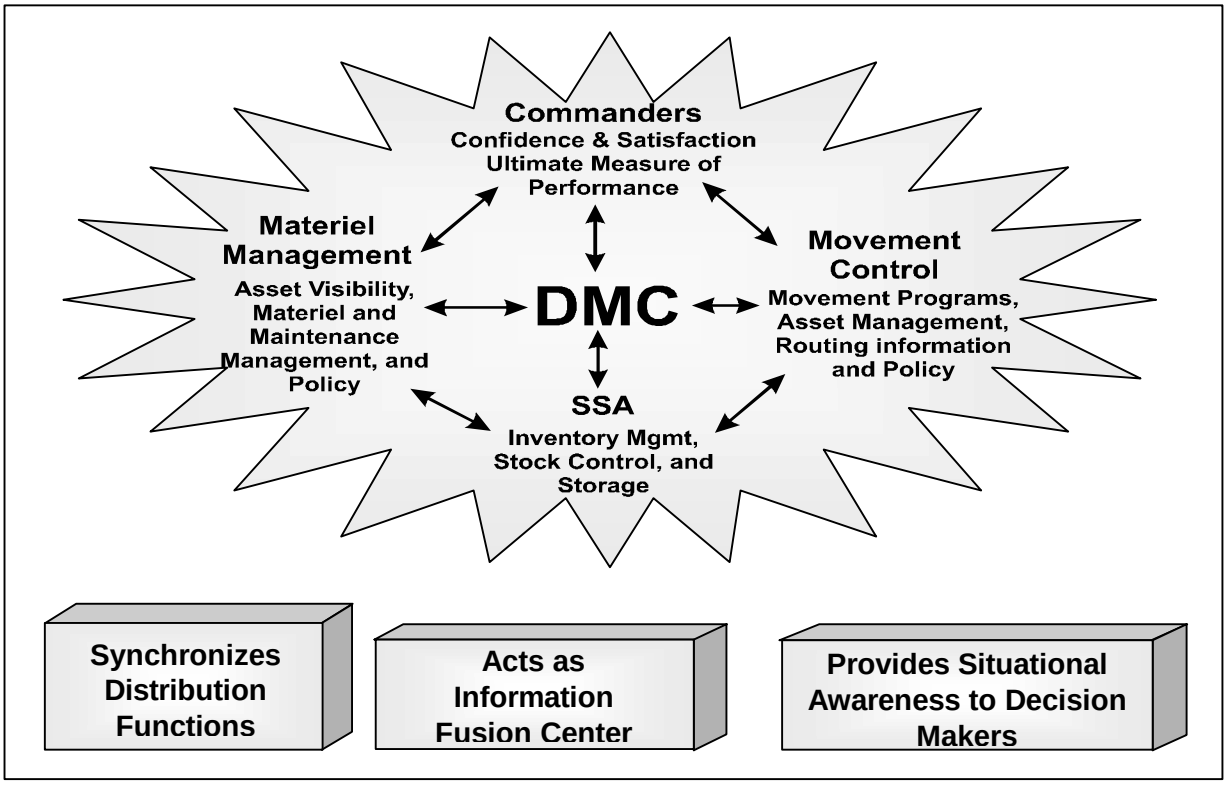


Figure 5-1. Distribution Management for Materiel

5-1. The DMC, along with other functional organizations/directorates and control center elements, is responsible for managing theater distribution by balancing the existing capabilities of the distribution infrastructure with the current and projected operational requirements. Capabilities and requirements have characteristically been discussed within functional stovepipes. Requirements have been measured in materiel release orders (MROs) and transport requests which satisfy local supply and transport customer demands. Other CSS disciplines such as the medical and personnel systems also placed requirements on the distribution system. Distribution managers did not have an effective system to fully synchronize all distribution activities. This historically has resulted in the sub-optimization of the overall distribution capability. To ensure distribution system responsiveness, the support operations elements must have visibility of the overall distribution requirement and must ensure that sufficient numbers of units are positioned and allocated along the system and at transition nodes. These units must have the proper equipment to load, transship, transport, and provide base and installation support to accomplish the distribution mission. With the materiel management and movement control backlog and shortfall reports, the commander's operations plans and priorities, and knowledge of the current situation, the DMC has the visibility and information fusion environment to assess the most critical support requirements. It can accordingly task materiel and movement centers with mission guidance and priorities that may adjust their day-to-day local priorities and efforts. This does not in any way suggest that the DMC will or should become a funnel or layer of command through which materiel or transport requirements must pass. However, the DMC must understand commanders' priorities and the capabilities of the functional units and focus on the seams and connectivity between functional elements to balance distribution capabilities.

5-2. The ability to calculate real world requirements and capabilities, for the time being, is derived through the age-old methods of taking and receiving reports and analyzing and synthesizing the various functional status reports. Until such time as courses of action (COAs) and more sophisticated decision support system (DSS) tools are available, the ability of the DMC to perform complex distribution management will rely on rock solid CSS providers, hard work, and the information fusion environment of the DMC.

SECTION I. - DISTRIBUTION MANAGEMENT FUNCTIONS

5-3. Distribution management is the process of planning and synchronizing the time definite delivery of materiel, equipment, units, personnel, and services to and within the AO. DMCs at each echelon in the theater work with CSS resource managers and movement controllers to –

- Provide an integrated distribution information network. Establish and maintain Army Total Asset Visibility (ATAV).
- Leverage all the available distribution infrastructure and optimize pipeline flow to meet requirements/priorities (velocity management theory and practices).

- Project distribution pipeline volume, flow rates, contents, and associated node and port handling requirements. Adjust pipeline flow and response to changing operational requirements.
- Integrate force generation and force sustainment operations. Integrate and prioritize unit moves and sustainment moves.
- Manage DT operations and the flow of multi-consignee shipments.
- Coordinate, align, and reconcile receipts of CSS resources with in-theater movement control operations.
- Ensure effective cross-leveling of supplies and efficient retrograde and redeployment of equipment, personnel, supplies, and services.
- Establish theater specific time definite delivery schedules for routine and high-priority requirements through the use of intratheater distribution and intertheater surface/air express networks.

5-4. In order to meet these requirements, distribution managers perform the functions discussed below.

ESTABLISHING AND MAINTAINING THE DISTRIBUTION PLAN

5-5. The establishment and maintenance of the distribution plan is the single most important aspect of maximizing throughput operations. The distribution management center maintains an accurate and viable snapshot of the distribution plan and recommends changes to it as operations evolve. Although the distribution plan is formally prepared as an integral part of the JOPES reporting process, the DMC (along with control centers and other elements of support operations) at each echelon must maintain visibility of the customers, support relationships, and resources located within its geographic AO. This customer and support information forms the baseline for the preparation of the distribution plan. This information also assists the DMC in determining where and to whom routing and diversion information for in-transit cargoes should be forwarded or directed. FM 63-4 has a template for a distribution plan.

5-6. As C2 elements and their associated support relationships change on the battlefield, the CSS community must keep abreast of these changes. Maintaining these relationships ensures that CONUS and theater supply and support shipping sources can package and ship materiel directly to units in the theater. This information allows the DMC, control centers, and support managers to maintain visibility and control of the distribution system. The ability of distribution activities to hold, divert, and redirect unit equipment, personnel, supplies and services, and other support to their ultimate delivery sites depends on distribution managers and commanders knowing who is supporting whom and where they are on the battlefield.

5-7. With information from C2 systems and with location information collected through the RF tag and tracker networks, the location of distribution activities can be rapidly and accurately obtained. Standard Army Management Information Systems (STAMIS), such as Standard Army Retail Supply System-Objective (SARSS-O), maintain this information as well as support relationships. However, they were not programmed to provide this

information in a simple or usable form. TAV systems are currently working to make this information readily available in a usable form. Until sophisticated systems are in place, much of the data will be gathered from various C2 systems like the Combat Service Support Control System (CSSCS) and Force XXI Battlefield Command, Brigade and Below (FBCB2).

5-8. The DMC, other TSC support operations elements, TSC MMC, TSC MCA, and the medical logistics management center (MLMC) build the distribution plan with input from the functional commands. They maintain access to joint and Service TAV information databases. This information provides the visibility to develop staff estimates that synchronize the multitude of operational missions associated with RSO&I. Their access to visibility of the force generation process (through JOPES) provides them the ability to plan and project unit movement of personnel and equipment with sustainment supplies through the theater distribution system. They match requirements and capabilities of resources available in the theater. In addition, the support operations staff and TSC MCA, in conjunction with the JFC's staff, select the staging/holding areas and position units along the LOC to support the flow of materiel and deploying units.

EFFECTING LATERAL DISTRIBUTION/RECONSIGNMENT

5-9. The DMC, through the management modules of GCSS-Army will, in the future, exchange information relative to the location of high-priority demands for the theater. The supply module will attempt to resolve requirements from within the stocks for which it maintains visibility. Inability to resolve shortfalls through local stocks will be referred to a manager for determination of alternative COAs. The management module will query both the maintenance module (to determine availability for issue) and transportation module (to determine the physical location) to obtain the most current status of like items in maintenance and in transit. Alternative COAs will be compared, and the "best" COA recommended for distribution manager consideration. Until GCSS-Army is fielded, there is a limited capability in SARSS-O to effect lateral redistribution of supplies. The ability to locate materiel in transit is currently available via Joint Total Asset Visibility (JTAV)/ATAV systems. The DMC coordinates with appropriate support operations/control center elements to effect redistribution.

MANAGING TRANSITION NODE CAPABILITY

5-10. There are numerous types of transition nodes with unique capabilities throughout the distribution system. The ability to know what resources are located at/or within a node is critical. Equally important is the ability to maintain the visibility of resources that are being transhipped at or are transiting a node. By monitoring the activity (through RF tags) at a node, the DMC can determine information about the node and the cargo flowing through it. This information can be used in capabilities analysis or to identify bottlenecks in the system. Technologies such as RF tags and interrogators provide accurate data on stock capacity and retention at a node. This information provides insights into a unit's true distribution capabilities. To ensure these conveyances are broken down and the cargo is

rapidly

distributed requires the use of distribution terminals. Distribution managers synchronize the activities of the node and mode operators and movement and materiel managers to maintain the velocity of the pipeline.

5-11. During force generation operations, other types of transition nodes include staging and holding areas. These nodes form as a result of both reception and retrograde operations for both personnel and cargo. They are described in FM 100-17-3. Each has a common tie to the distribution process in that it requires support and uses materiel assets, personnel, and supply and transportation resources. Distribution managers anticipate and manage the operational impact of these nodes on the overall distribution capacity of the network. The use of joint systems such as JOPES, JTAV, and Joint Personnel Asset Visibility (JPAV) are critical tools in maintaining visibility over the overall distribution process.

SYNCHRONIZING USE OF TRANSPORTATION NETWORKS

5-12. The volume of materiel and units that can transit the theater transportation network at any given time is fixed. Movement control organizations at each echelon have primary responsibility for the issuance of highway and road clearances. Support operations elements and movement control activities have a critical role in balancing and synchronizing the overall movements requirements in concert with the G3. They ensure that the operational planning occurring in support operations and the various functional operating centers is focused on operational missions and that the activities supporting commanders' priorities are synchronized. Critical operational areas of concern for the DMC are –

- Identification of significant variances between programmed movements and actual movements occurring throughout the distribution system.
- Resolution of conflicts between movement plans and program and the available network space for priority sustainment or unit movements.

SYNCHRONIZING THE MOVEMENT AND SUPPORT REQUIREMENTS FOR NEO AND PWs

5-13. Commanders, support operations elements, and control centers play critical roles in the selection and placement of all nodes within the distribution system. While each of the functional centers recommends to the support operations element the individual units to be allocated to the distribution system infrastructure, the DMC has the responsibility to allocate and assign responsibilities within the system to –

- Influence the selection of prisoner of war (PW) and noncombatant (NC) holding areas to optimize support of these sites and their associated operations.
- Monitor noncombatant evacuation operations (NEO)/NC operations to determine the sufficiency of transportation and support.
- Synchronize and optimize retrograde transport to meet NC/PW evacuation requirements.

SECTION II. - COMPONENTS OF DISTRIBUTION MANAGEMENT

5-14. Distribution management operations are broadly described as a function of three critical components: visibility, capacity, and control. All require accurate, reliable, and up-to-date information.

VISIBILITY

5-15. Visibility is based on a continuum of CSS data from the sustainment base through the distribution processes of the distribution system (factory to foxhole). Visibility must begin at the point where resources start their movement to the AO, whether that is a depot, commercial vendor, storage facility, APS stockpile, or CONUS/OCONUS unit power projection platform. The information must be digitized and subsequently entered into the necessary CSS information systems. The next critical element to visibility is the capability to dynamically update that source data with information from subsequent CSS systems as to the transport; storage; maintenance; supply; and/or personnel, field, or medical service resource status until the resource reaches its ultimate destination. The information must be accessible to all users regardless of the military service or echelon of command requiring the data.

5-16. Visibility provides the distribution manager the ability to assess how well the CSS pipeline is responding to supported force needs. Distribution managers must gain and maintain visibility (items, personnel, units, transition nodes, and transport modes) at the earliest practical point in the management process. Visibility must be compatible with applicable management systems. Database elements are actively updated during the management process, allowing managers to operate with timely information.

PHYSICAL NETWORK VISIBILITY

5-17. Most critical to distribution management operations is visibility of the physical network and its capability to support distribution requirements. Visibility of the characteristics and associated restrictions of road, rail, water, and other transportation modes is crucial to numerous distribution decisions. The availability of buildings, hospitals, mills, fuel storage, and general storage areas can influence the overall capability to perform the holistic distribution mission. No matter how unique the function (supply, transport, maintenance, personnel, finance, medical, field service, and so forth), it is affected by the physical network of the distribution system.

RESOURCE NETWORK VISIBILITY

5-18. The location and capabilities of CSS units and their materiel and manpower resources are critical force multipliers. The resource network is comprised of US military, HNS , and contracted units, equipment, and other resources which overlay the physical network. The commanders, support operations elements, and control centers are responsible for arraying,

disbursing, and allocating CSS units and critical distribution equipment throughout the

physical network. The DMC must maintain visibility of the critical CSS capabilities available to the commander in order to apply them towards specific missions.

IN-TRANSIT VISIBILITY

5-19. ITV is visibility over those portions of the distribution system encompassing the flow of resources and units to the consignee, designated port, servicing air head, SSA, or other destination. This includes force tracking and visibility of convoys, containers/pallets, transportation assets, other cargo, and distribution resources within the activities of a distribution node. ITV is the most difficult to achieve. The automation and communication networks in the theater are routinely less capable than in CONUS. Therefore, distribution managers must know the key functions of each distribution activity and be able to identify related information available within distribution processes. ITV can be further divided into two areas, in-container/on-pallet visibility and en route visibility.

In-Container/On-Pallet Visibility

5-20. In-container/on-pallet visibility consists of detailed content information. It is the source data first established at the depot, vendor, or other source. Visibility down to national stock number (NSN), TCN, and requisition number level of detail must be maintained throughout the entire distribution process even when containers/pallets are unpacked and reloaded onto different transportation conveyances. AIT affords the opportunity to update databases which provide visibility of shipments. This level of detail allows systems like ATAV and JTAV to provide line-item detail.

En Route Visibility

5-21. En route visibility is the detailed visibility of movement platforms/transportation assets while they are mobile and underway. This visibility is provided in part through the use of aggregate commercial off-the-shelf technology. Containers equipped with RF tags and transportation assets equipped with Movements Tracking System (MTS) and similar AIT devices provide near-real-time visibility of movements today. Containers with RF tags pass interrogators, and transport assets equipped with MTS provide position reports throughout the distribution system. Specific shipment and movement information is combined to provide en route visibility and information on containers and their contents. This allows operators to redirect or retask distribution assets to respond to the changing dynamics of the distribution system. This form of tracking provides the distribution manager with the opportunity to see and receive current reports directly from the distribution system.

TRANSITION NODE VISIBILITY

5-22. Transition node visibility describes the visibility of activities within the distribution system. The physical network and the CSS resource capabilities in the theater determine the number and types of transition nodes. Regardless of the number or types of nodes, the cargo identity and its relationship to the transportation asset that is transporting it must be maintained correctly. These nodes present the greatest challenge to the distribution operator. It is where cargo and units change from one transport mode to another or where transportation assets are off-loaded and containers/pallets are reconfigured for further distribution.

CAPACITY

5-23. The integration of the full range of visibility information and the associated ability to control and allocate resources permits distribution managers to effectively optimize the finite capacity of the theater distribution infrastructure. Capacity is managed through the allocation and/or prioritization of resources among customers to balance distribution system capacity with theater support requirements.

5-24. As discussed in Chapter 3, distribution system capacity is a function of the physical and resource networks that make up the system infrastructure. It is the sum of available infrastructure capabilities, as constrained by the throughput capacity of the most limiting physical or resource network capability. Distribution system capacity is always finite in the near term, but never static. Factors such as conflict intensity, size and composition of the CSS force, sophistication of facilities, and other variables influence the capacity of a distribution system at any given point in time. Distribution managers focus on allocation and prioritization of resources in two general areas: short-term transaction management and long-term capacity management.

TRANSACTION MANAGEMENT

5-25. Transaction management operations deal primarily with the adjustments to existing distribution plans to maintain optimal system capacity. They represent the day-to-day system management associated with support operations at all levels within the distribution system. These operations may be programmed changes based upon previously anticipated alternative COAs, or they may be unprogrammed changes in response to dramatic changes. In either case, transaction management routinely involves the reallocation and/or reprioritization of resources to maintain optimal system performance against specific short-term requirements. Examples of transaction management operations include deconflicting unit and sustainment movements within the distribution network, diverting cargo or services to satisfy force requirements, and cross-leveling resources within the system to maintain total system balance.

CAPACITY MANAGEMENT

5-26. Capacity management deals with balancing distribution system capacity against evolving changes in theater support requirements. The

ability to anticipate distribution bottlenecks, disruptions, and changes in the

distribution operational scheme is a key factor in allowing the successful distribution manager to optimize a theater's distribution capacity. As opposed to transaction management, capacity management operations focus on programming changes in the system infrastructure to modify the finite capacity of the distribution system. Capacity management operations use visibility and control to anticipate distribution needs, provide the necessary resources at the right time, monitor CSS execution, and as necessary adjust the distribution system to avoid distribution problems. Effective capacity management minimizes the scope and impact of transaction management on distribution operations, and is a critical element in the distribution management planning process.

CONTROL

5-27. A distribution manager's ability to effect status changes within the system is as important as visibility and capacity are to successful distribution management. The responsiveness of a control process is comparable to the timeliness of management visibility. When changing directions, the manager includes time for the physical actions of the directional change to occur. Theater distribution managers use asset visibility, JFC policy, and Service cooperation to apply control measures to the theater distribution system. The JFC's staff and the designated CSS C2 headquarters perform theater distribution management.

5-28. Enabling technologies will determine how effectively the distribution system operates and maintains itself. The past decade precipitated a rapid advance in information technology. Situational awareness has improved significantly using a combination of current and emerging technologies. The challenge is to assimilate the wealth of available information and make effective and timely distribution decisions.

5-29. The DMC is the focal point for controlling the continuity of the Army distribution pipeline through situational awareness resulting from JTAV/ATAV. This awareness permits CSS managers to control the distribution of materiel, equipment, personnel, and soldier support resources. The DMC integrates various distribution functions into a more streamlined and efficient distribution system. It also integrates distribution management components into the overall CSS planning process.

SECTION III. - DISTRIBUTION PLANNING

5-30. Detailed planning for distribution operations is a key part of the environment of the distribution manager. Commanders, support operations elements, and control centers must operate far enough ahead to influence the flow within the strategic segment of the distribution pipeline. Success requires periodic monitoring of resource and movement transactions, knowledge of trends and performance, and knowledge of the commander's operational priorities. Planning makes future operations easier by

permitting subsequent, rapid, and coordinated action by the staff and by other elements of the command. It also keeps the command in a better position to respond to rapidly changing situations. Adequate, practical planning is essential to the success of distribution.

5-31. For CSS organizations to provide effective support, the CSS planner must thoroughly understand the mission, determine requirements, assess the capabilities of the supporting force, and apply resources against requirements resulting in the most responsive support possible. CSS staff officers and commanders must be proactive rather than reactive when determining support requirements. It is just as important for CSS personnel to be as actively involved and at the same level of intensity as it is for combat leaders and maneuver staffs.

5-32. Figure 5-2 depicts the interrelationship of the distribution plan with the LPT and the service support plan, with its associated annexes and appendices. At the strategic and operational levels, the OPLAN/OPORD provides operational mission information essential to development of the LPT. The LPT provides the data required to prepare the logistics estimate. This estimate draws conclusions and makes recommendations concerning the feasibility of various COAs and the effects of each COA on CSS operations. Once the commander selects a COA, the CSS planner uses the logistics estimate to develop the logistics portion of the service support plan along with the distribution plan to the OPLAN/OPORD. The LPT, service support plan, and distribution plan are living documents within the CSS planning triad that are changed, refined, and updated as a result of continuing estimates and studies.

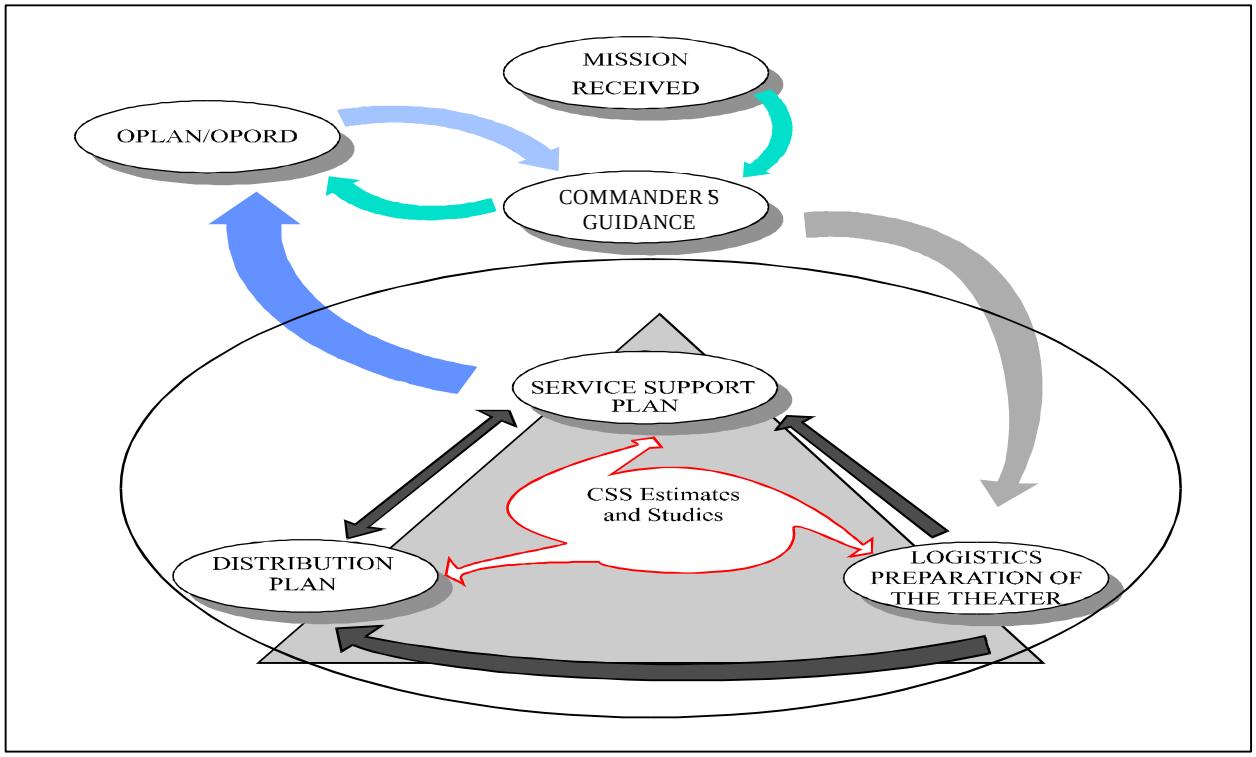


Figure 5-2. CSS Planning

LOGISTICS PREPARATION OF THE THEATER

5-33. The LPT includes all actions taken by CSS personnel to optimize the means of supporting the commander's plan. These actions include identifying and preparing forward operating bases, selecting and improving LOCs, projecting and preparing forward CSS bases, determining operational stock assets, and building a distribution system. The focus is identifying and ensuring access to resources currently in theater. The command logistician prepares a detailed logistics estimate. He advises the commander of the best method of providing logistics without overwhelming the force. See FM 100-10 and FM 100-16 for a more detailed discussion on the LPT process.

SERVICE SUPPORT PLAN

5-34. The goal of the distribution system is to provide the tactical commander staying power by providing the required personnel, materiel, and services. The system's effectiveness is measured by how it enhances and supports strategic, operational, and tactical plans. Army CSS functions are to be performed in as routine a manner as possible throughout the range of military operations. The success of those operations depends on the staff's ability to prepare a comprehensive and technically supportable service support plan.

5-35. The service support plan is an integral part of the OPLAN/OPORD. It contains a statement of CSS instructions and arrangements supporting the

operation that are of primary interest to the supported units and formations. It provides the commander's plan for CSS operations based on the information gathered and analyzed during the LPT process. It provides information to the supported elements, and it serves as the basis for the plans of supporting commanders to their units.

5-36. The ASCC/ARFOR, corps, and division assistant chiefs of staff, logistics (G4s) have primary responsibility for preparation, publication, and distribution of the service support plan. Other staff officers, both coordinating and special, assist by providing those parts of the plan pertaining to their respective AORs. The distribution plan, along with the movement plan, is prepared by the DMC in coordination with all the other elements involved in distribution management. For a more detailed discussion on support planning see FM 100-16 and FM 101-5.

DISTRIBUTION PLAN

5-37. Establishing and maintaining the distribution plan is the single most important aspect of maximizing throughput operations. Although the strategic-level theater distribution plan is formally prepared through JOPES, the support operations element of the TSC/COSCOM must prepare an Army theater/corps distribution plan. The distribution plan is used by the ASCC/ARFOR and corps commanders to execute Army theater/corps-wide distribution. It supports the commander's priorities by establishing what requirements can be resourced given available CSS assets, units, and infrastructure. It identifies competing requirements and shortages and ensures assets are used to effectively meet commander priorities. It is a living document that requires updating to accommodate known and anticipated requirements. It constantly evolves as the theater matures and as the execution of the campaign plan progresses. The plan defines the distribution system.

5-38. The plan is developed as an appendix to the service support annex of the ASCC/ARFOR/corps service support plan. It is a series of overlays, descriptive narratives, and arrays that lay out the architecture of the distribution system and describe how units, materiel, equipment, and CSS resources are to be distributed within the theater. It portrays the interface of automation and communications networks for gaining visibility of the distribution system and describes the controls for optimizing capacity of the system. It depicts, and is continually updated to reflect changes in, infrastructure, support relationships, customer locations, and extensions to the distribution system. The distribution plan portrays a distribution pattern that is a complete CSS picture showing the locations of supply, maintenance, transportation, engineer (as appropriate), medical, finance, personnel, and field service activities. It becomes the tool by which planners and managers know where support should normally flow and where it may be diverted as operational needs dictate. The distribution plan is complemented by the movements program that is used to plan both known and anticipated transportation requirements. The DMC plans branch, with input from all functional elements of any functional commands and the support operations staff and the DMC operations branch, develops the

distribution plan. The DMC tracks changes to it to maintain a current picture of the distribution system. Appendix C provides information on the doctrinal flow of commodities and services in the theater which assist in the development of a distribution plan. FM 63-4 will have a template for a distribution plan.

5-39. The scope of the distribution plan is limited to explaining exactly how the DMC will maintain asset visibility; adjust relative capacity; and control the flow of supplies, services, and support capabilities in theater. The service support plan is the overarching plan which specifies the theater/corps concept of support, support relationships, priorities of support, and task organization for support of the force. These two separate staff products therefore differ in scope. The distribution plan describes the distribution system and directs the specific protocols by which the DMC will receive and transmit information in order to perform its mission in regard to visibility, capacity, and control of theater distribution. The service support plan is the document which drives the distribution system by directing priorities of support and support relationships and locations. The service support plan translates theater-/corps- level (ASCC/corps) CSS policies into a unified concept of support across the CSS spectrum. The distribution plan is the means of implementing and monitoring the execution of that concept.

Chapter 6

Automation and Communication

"The key to success is a seamless communications architecture that allows commanders to see the battlefield in every dimension, and with capabilities such as Video Teleconferencing, Global Transportation Network, Radio Frequency Tags, and the Defense Tracking System that increases the commander's visibility and units' command and control."

LTG Robert E. Gray
Deputy CINC USAREUR, Dec 96

Theater distribution relies on accurate and timely information. Automated information systems (AIS) are the source of much of this information. For maximum effectiveness, AIS must be integrated with and supported by automated identification technology (AIT) and supporting communications.

SECTION I. AUTOMATION

6-1. This section talks about the AIS and AIT that are involved in distribution. For purposes of discussion, AIS are commonly broken into two types: command and control (C2) and Standard Army Automated Management Information Systems (STAMIS).

COMMAND AND CONTROL SYSTEMS

6-2. Command and control systems include both the joint Global Command and Control System and the Army Battle Command System.

GLOBAL COMMAND AND CONTROL SYSTEM

6-3. The Global Command and Control System (GCCS) is the key joint command, control, communications, computers, and intelligence (C4I) system. The GCCS and associated Service components have replaced the Worldwide Military Command and Control System (WWMCCS). Like WWMCCS, GCCS is a system of interconnected computers that provides an integrated C2 capability to the entire joint community. It provides up to SECRET-level information from a wide variety of applications that have migrated, or are in the process of migrating, from other systems including the Joint Operations Planning and Execution System (JOPES). GCCS provides a fused picture of the battlespace within the overall command, control, communications, and computers (C4) system. The Army Battle Command System (ABCS) is the Army's component of GCCS.

ARMY BATTLE COMMAND SYSTEM

6-4. ABCS integrates Army battlefield functional area systems to link strategic, operational, and tactical headquarters. It provides commanders and staffs at corps and below a relevant common picture through improved situational awareness and battlefield digitization. ABCS includes three components: the Global Command and Control System-Army (GCCS-A), the Army Tactical Command and Control System (ATCCS), and the emerging Force XXI Battle Command Brigade and Below (FBCB2) system (Figure 6-1).

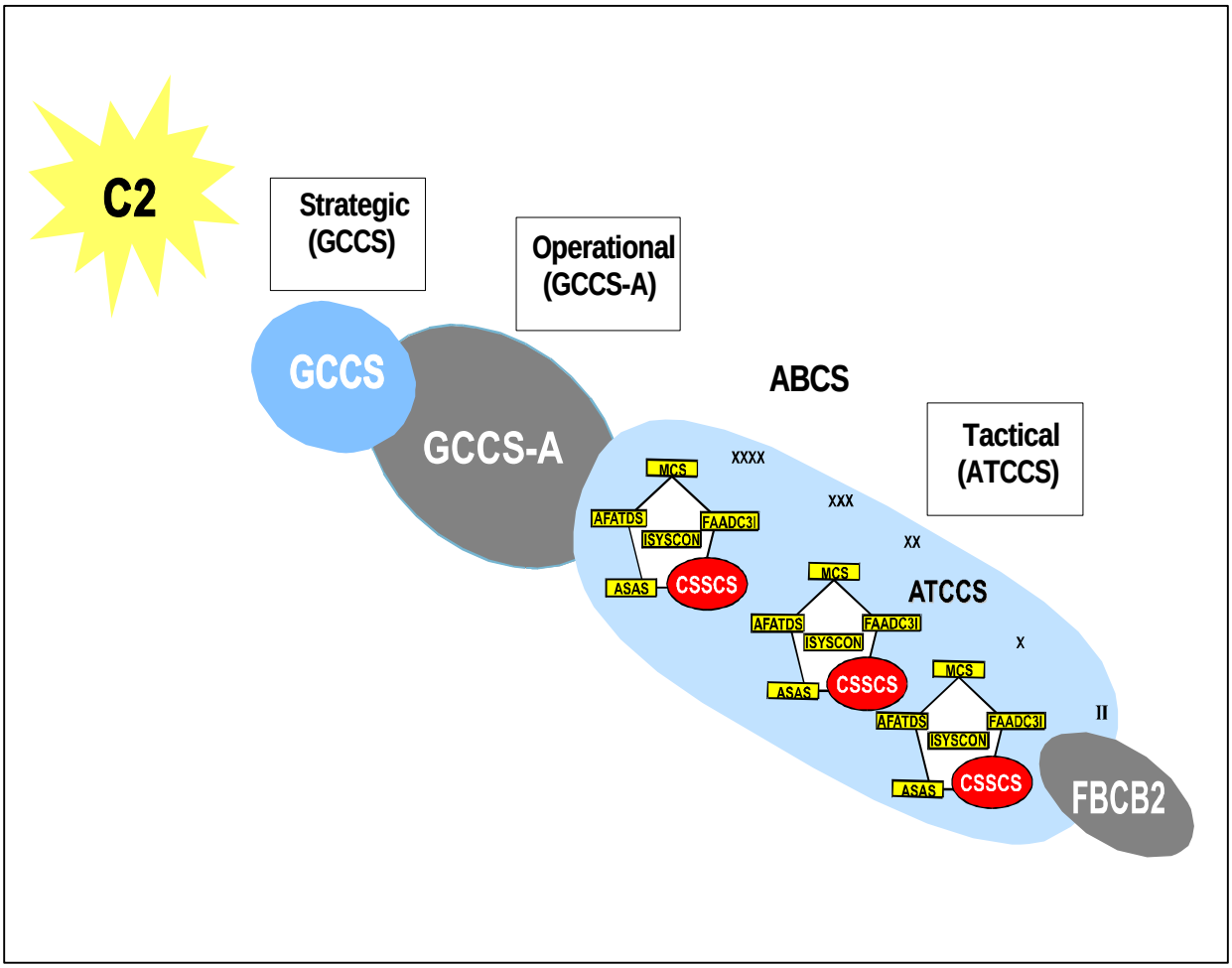


Figure 6-1. Army Battle Command System

Global Command and Control System-Army (GCCS-A)

6-5. GCCS-A is the corps and above operational component of ABCS. It establishes a direct link with the joint GCCS. GCCS-A will receive input from CSSCS and the STAMIS/GCSS-Army.

Army Tactical Command and Control System (ATCCS)

6-6. The Army has fielded the ATCCS to meet tactical C2 requirements from brigade to corps. ATCCS includes a standard automation architecture that uses tactical communications. ATCCS consists of the following five automated battlefield functional area control systems (BFACSs):

- Advanced Field Artillery Tactical Data System (AFATDS).
- Maneuver Control System (MCS).
- Combat Service Support Control System (CSSCS).
- All Source Analysis System (ASAS).
- Forward Area Air Defense Command, Control, Communications and Intelligence System (FAADC3I).

6-7. The relationship between these BFACSs and supporting communication is indicated by Figure 6-2. These systems use common and/or compatible application software and communication protocols, system languages, report formats, and necessary interfaces to ensure a cohesive and compatible overall C2 system.

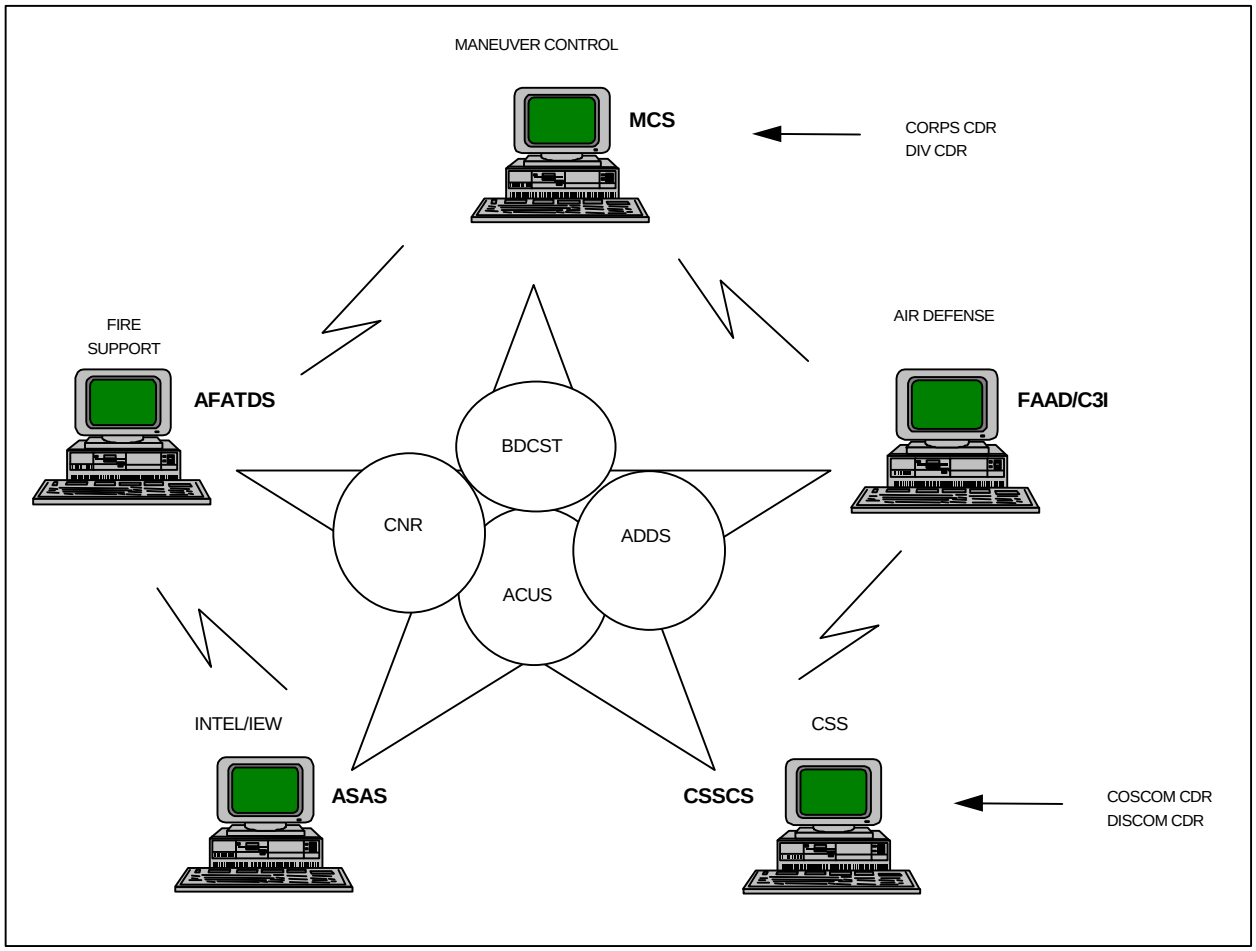


Figure 6-2. Army Tactical Command and Control System

6-8. CSSCS was developed to satisfy the Army's need for an automated system which provides CSS commanders and their staffs with logistics, medical, finance, and personnel information processing, reporting, and planning tools. This automated capability improves and accelerates the tactical decision making process and reduces the manual processing of data.

6-9. CSSCS provides automated support for the dual role of the CSS commander. It supports the command and control of subordinate organizations as they support operations. It also provides critical CSS resource information to the force-level commander for the decision making and battle planning processes.

6-10. CSSCS provides important C2 information to the CSS and force-level commanders and their staffs based on data received from the CSS STAMIS and subordinate staff elements. In addition, CSSCS exchanges CSS and tactical information with the other BFACSs. STAMIS and battlefield functional area (BFA) information is posted to the CSSCS database, to support the generation of reports, projections, and administrative/logistics orders, and to aid decision making and planning. CSSCS will interface with GCSS-Army, once it replaces the legacy STAMIS, and with FBCB2 when it is fielded.

Force XXI Battle Command Brigade and Below (FBCB2)

6-11. FBCB2 is an emerging system being developed to provide situational awareness and digital C2 capability for weapons systems operating in the brigade battlespace. In addition to its primary tactical C2 mission, FBCB2 is also being developed to automatically pass selected CSS information (such as status of fuel, rations, ammunition, and crew) to the appropriate CSSCS or STAMIS to allow CSS commanders to provide required support in an expedited manner.

STANDARD ARMY MANAGEMENT INFORMATION SYSTEMS (STAMIS)

6-12. Theater distribution depends on timely and accurate information about the CSS situation. This information, in turn, depends on the capabilities of automated systems including the associated automated information technology (AIT) and the supporting communications systems. STAMIS are used for the detailed, day-to-day processing of management information supporting CSS. They provide the detailed information needed for effective distribution management and are the key source of CSS data for the C2 systems. The ATAV architecture (Figure 6-3) shows a high-level overview of many of the key STAMIS used in support of the theater distribution mission.

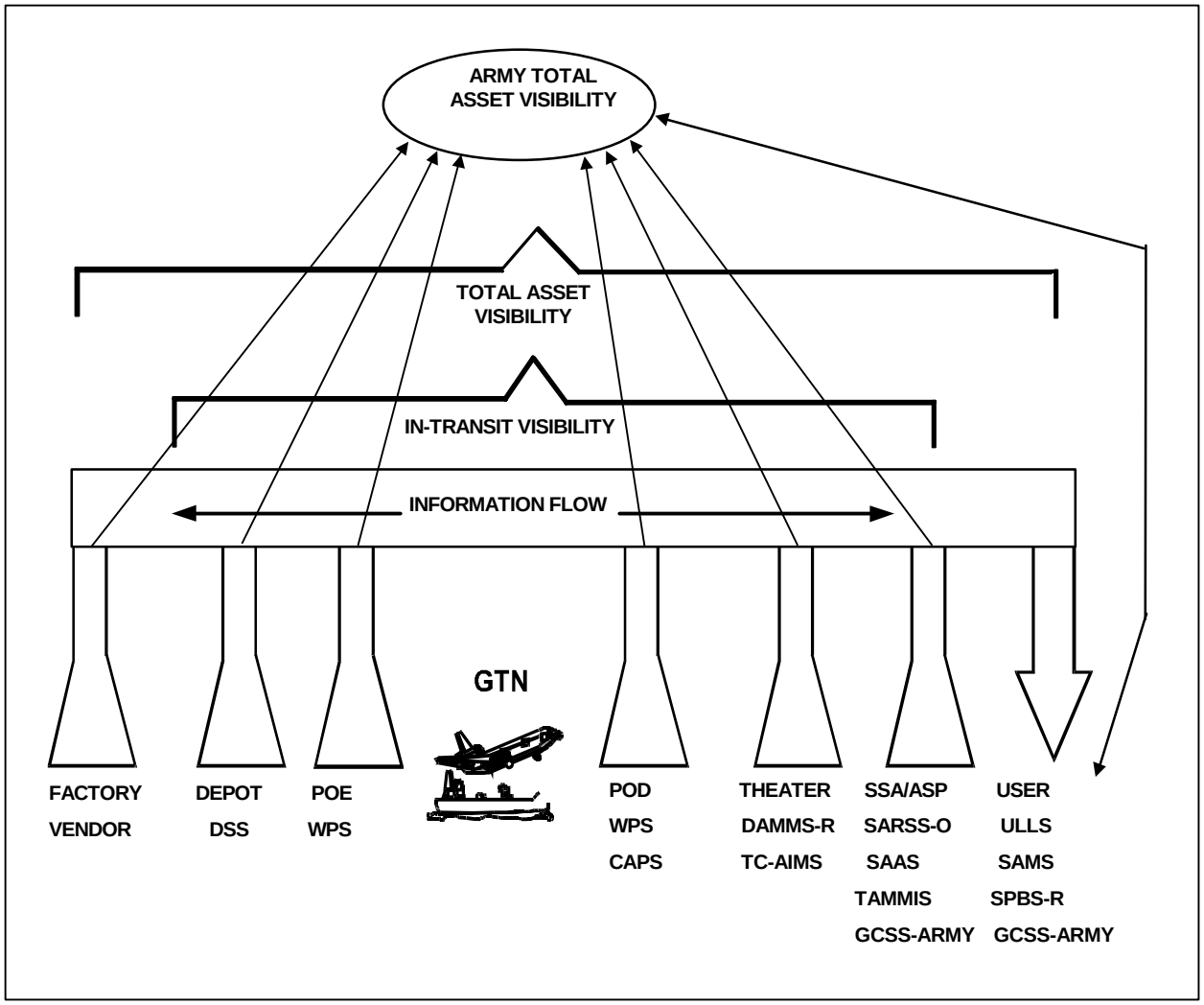


Figure 6-3. Army Total Asset Visibility Architecture

6-13. Effective theater distribution requires information from a large number of different automated information systems (AIS) employed to support the force. They include DoD-level systems used primarily at the strategic and operational levels such as the Global Transportation Network (GTN), the Joint Total Asset Visibility (JTAV), and the Worldwide Port System (WPS). They also include individual Service systems used at the operational and tactical levels such as the Air Force's Remote Consolidated Aerial Port Subsystem (RCAPS) and Cargo Management Operations System (CMOS), and the Army's SARSS and DAMMS systems. Although these systems provide much essential information to support theater distribution, there is not enough interoperability and data sharing between today's systems because they were developed over many years and do not share a standard technical architecture to include standard data elements. Fortunately, many of today's systems are being upgraded/replaced to improve interoperability. An overview of many of the key systems in use today as well as the systems currently in development is provided below.

PRESENT DAY/LEGACY SYSTEMS

6-14. Figure 6-4 depicts the distribution of present day/legacy AIS within a theater.

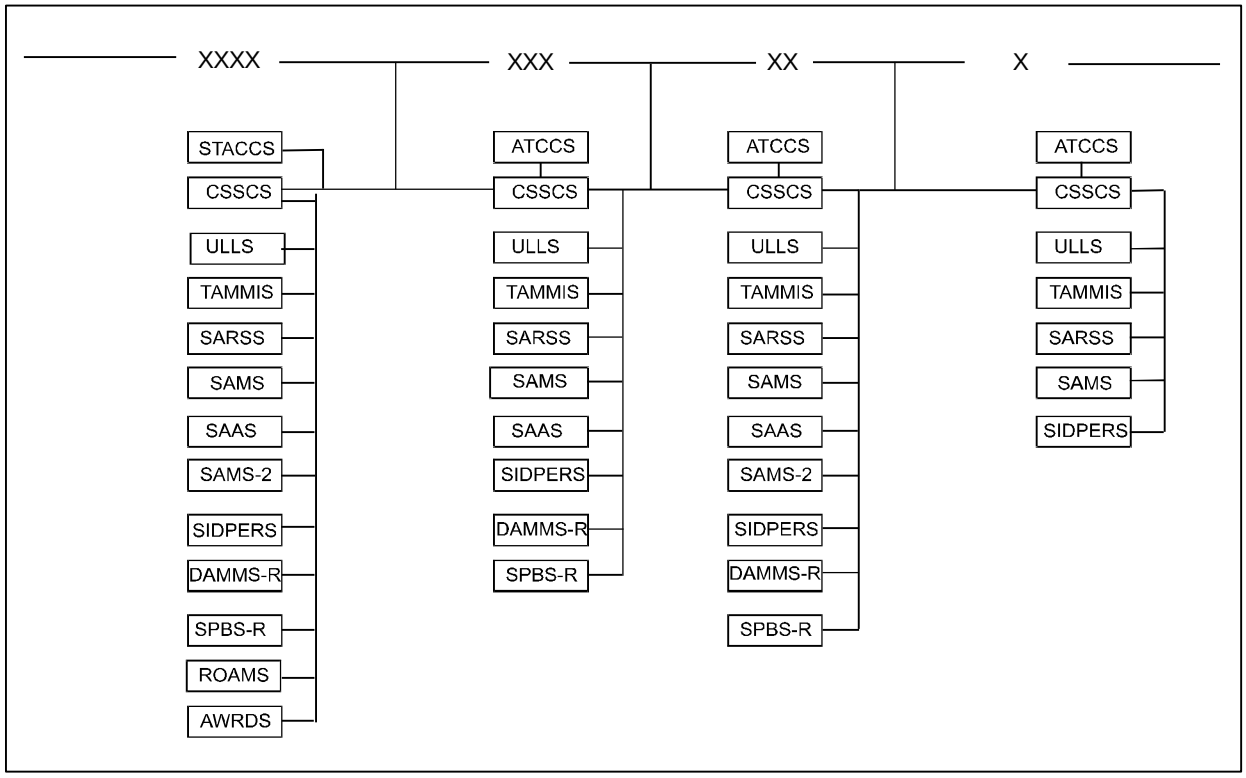


Figure 6-4. Present Day/Legacy AIS

Unit Level Logistics System (ULLS)

6-15. There are three versions of the Unit Level Logistics System (ULLS): ULLS-G, ULLS-S4, and ULLS-A. ULLS-G is used in units with an organizational maintenance mission. It is used to requisition Class IX supplies, manage the prescribed load list (PLL), dispatch vehicles, and perform maintenance-related record keeping IAW The Army Maintenance Management System (TAMMS) procedures. The ULLS-S4 system is used in organizational supply rooms and battalion and brigade S4 staff sections. ULLS-S4 automates the supply and property requisitioning and document register process, unit and section hand receipts and sub-hand receipts, budget, and logistics planning activities. ULLS-A is used in aviation units for the same basic functions as ULLS-G is used for in non-aviation units.

6-16. ULLS has automated interfaces with a number of STAMIS including the Standard Army Retail Supply System (SARSS), Standard Army Maintenance System (SAMS), Standard Property Book System – Redesign (SPBS-R) and the Standard Army Ammunition System (SAAS). These interfaces support the transmission and processing of supply and maintenance information.

Standard Property Book System-Redesigned (SPBS-R)

6-17. SPBS-R is an automated property accountability system that provides on-line management information and automated reporting procedures for property book officers (PBOs). SBPS-R interfaces with SARSS at the supply support activity (SSA) to requisition property book and other accountable items required by units. It interfaces with ULLS-S4 at the unit level to provide the information needed so that ULLS-S4 can generate the hand receipt/sub-hand receipt and component listings. SPBS-R performs automated reporting of assets to support Army Total Asset Visibility (ATAV).

Standard Army Maintenance System (SAMS)

6-18. There are two versions of the Standard Army Maintenance System (SAMS) used in the tactical environment: SAMS-1 and SAMS-2.

6-19. SAMS-1 is the automated maintenance management system used at the direct support (DS) maintenance companies found in the separate brigade, division, corps, and echelons above corps, and the general support (GS) maintenance companies at echelons above corps. The system automates work order registration and document registers as well as inventory control and reorder of shop and bench stock. It has an interface with SARSS-1 for the automated requisitioning of parts needed for work orders. SAMS-1 produces pre-formatted and ad hoc reports and allows extensive on-line inquiry. It also provides completed work order data to the Army's Logistics Support Activity (LOGSA) for equipment performance and other maintenance-related analyses.

6-20. SAMS-2 is an automated maintenance management system used at the support battalions in the division, and the materiel office of functional maintenance battalions and support groups in the corps and echelons above corps (EAC). It is also used at the material management centers (MMCs) at each echelon. SAMS-2 collects and stores equipment performance and maintenance operations data. The system provides the capability to monitor equipment non-mission capable status and control and coordinate maintenance actions and repair parts utilization to maximize equipment availability. SAMS-2 maintains equipment status by line number and unit within the command, maintains a record of critical repair parts and maintenance problem areas, provides visibility of backlog and planned repair requirements, and provides maintenance performance and cost evaluation tools.

Standard Army Retail Supply System (SARSS)

6-21. SARSS consists of three components: SARSS-1, SARSS-2A, and SARSS-2AC/B. SARSS-1 is the automated system used in SSAs at all echelons to accomplish the receive, store, and issue mission. SARSS-1 has interfaces to receive and process requests for issue from ULLS, SPBS-R, and SAMS-1. SARSS-2A is the automated supply management system used by managers in MMCs at the division, separate brigade, or armored cavalry regiment (ACR) level. It provides the tools necessary for item managers to establish stockage level and support relationships (which units are supported by which SSA for

which classes of supply), and to control the lateral issue process (that is, referrals) of assets between SSAs. SARSS-2AC/B is used at the corps and theater MMCs. It provides the same management capabilities for the corps/theater MMC managers who are responsible for corps/theater SSAs that SARSS-2A provides for divisional MMC managers. Additionally, it maintains the demand history files used for demand analysis and the interface with the finance system.

Standard Army Ammunition Supply System-Modernized (SAAS-MOD)

6-22. SAAS-MOD integrates all retail munitions supply functions and processes. It is used at three levels: corps and theater MMCs, ammunition supply points (ASPs), and the division ammunition office (DAO). The primary purpose of SAAS-MOD is to provide conventional ammunition assets to tactical commanders during wartime conditions. SAAS-MOD manages all conventional ammunition, guided missile large rockets (GMLRs) and their related components, and packaging materiel. The system uses desktop-type computers and associated AIT to accomplish these tasks. It provides in-transit visibility and stock record accounting for ammunition at the retail level. SAAS-MOD can interface with the following systems: SAAS, Commodity Command Standard System (CCSS), Worldwide Ammunition Reporting System (WARS), Standard Property Book System-Redesign (SPBS-R), Department of the Army Movement Management System-Revised (DAMMS-R), ULL-S4, and CSSCS.

Department of the Army Movement Management System-Revised (DAMMS-R)

6-23. DAMMS-R was developed as a theater cargo movement and mode asset management system. It provides timely and accurate information to movement managers, highway regulators, and mode operators within the area of operations. It provides shipment planning information, such as consignee listings, destination information, and cargo on hand, so the system user can determine priorities, forecast workload and conveyance requirements, and develop appropriate hazardous or local-unique documents. It also serves as the tool to develop a pickup/delivery schedule designed to maximize unit transportation assets.

Replacement Operations Automation Management System (ROAMS)

6-24. The Modernization and Operations Directorate (MOD), PERSCOM, assists in projecting individual manpower requirements during OPLAN execution. Once executed, MOD is responsible for managing replacement flows to the theater and ensuring supported units maintain at an acceptable personnel strength level. Currently, the following three automated systems support this mission:

- Automation of the Theater Shelf Requisitioning Process (AUTOREP). AUTOREP generates fillers and casualty replacement requirements by personnel category, military occupational specialty (MOS), grade, and

rank to predict the number of replacements required over time. Its product is known as the "Shelf Requisition."

- Non-Unit Replacement Personnel (NRP) Flow Computer Assisted Program (FLOWCAP). FLOWCAP is used by PERSCOM and CONUS replacement centers (CRCs) to schedule, control, and track the flow of replacements from the CRCs. Applications also provide manifest data for AMC and advance arrival information for the ASCC. They also generate internal reports for the CRCs to manage and process replacements.
- Automation of the Casualty Analysis Process (AUTOCAP). AUTOCAP compares actual casualty data and OPLAN modifications against projected and actual flow of casualty replacements and fillers. It also allows the ASCC to adjust projected requirements.

Standard Installation Division Personnel System (SIDPERS)

6-25. SIDPERS provides automated personnel support for active and reserve Army soldiers. It supports strength accounting, personnel management, personnel actions, and exchange of information with other automated systems. SIDPERS provides commanders the ability to optimize allocation and use of personnel assets to meet peacetime, mobilization, and wartime personnel service requirements. SIDPERS is a standardized personnel system responsible for strength reporting and personnel administration. The system provides for data entry, ad hoc queries, word processing, spreadsheet applications, battle rosters, personnel requirements reports, personnel summary reports, task force summaries, and miscellaneous functions. The replacement for SIDPERS is in the early stages of development. It is a joint system known as the Defense Integrated Military Human Resources System (DIMHRS).

The Army Medical Management Information Systems (TAMMIS)

6-26. TAMMIS tracks patients and manages medical supply information. Medical C2 information is provided through data roll-ups on the statuses of medical units, evacuation workloads, and critical workloads. The replacement for the logistics portion of TAMMIS is in the early stages of development. It is a joint system known as the Defense Medical Logistics Standard Support (DMLSS).

Army War Reserve Deployment System (AWRDS)

6-27. AWRDS is designed to support rapid force projection through forward storage of unit sets of equipment and sustainment materiel. This system contains the information required for the storage, maintenance, and issue of pre-positioned equipment and supplies stored in specific pre-positioned locations. FMs 100-17-1 and 100-17-2 have more details.

EMERGING SYSTEMS

6-28. This section discusses several key AIS under development which will relate to distribution.

Global Combat Support System (GCSS)

6-29. GCSS is a DoD-level integration and interoperability initiative to ensure interoperability across CSS functions, as well as between CSS and C2 functions.

It is neither an acquisition program nor a standard information system, but a strategy for enhancing CSS effectiveness within and between the Services. It requires each Service to implement common technical standards for their automated information systems IAW the Defense Information Infrastructure (DII)/Common Operating Environment (COE). This includes the use of standard data elements to improve interoperability and understanding when sharing information among the Services during joint operations. Each Service is in the process of upgrading to these new technical standards. The Army's program to implement these standards is known as GCSS-Army.

Global Combat Support System-Army (GCSS-Army)

6-30. GCSS-Army is being developed as the replacement for several of the Army's current STAMIS. It will operate in conjunction with other key systems (such as Transportation Coordinators' Automated Information for Movement System II[TC-AIMS II], MTS, and CSSCS) to provide support personnel detailed information about what support is required by the war fighter and the current availability of needed material to include items in the distribution pipeline. GCSS-Army will address the Army's current automation dilemma of having "stove-piped" systems, that is, systems that do not share information horizontally among different functional areas. It will employ state-of-the-art technology to include client-server technology designed to take full advantage of modern communications protocols and procedures. It will be designed with the maximum amount of communications capability and flexibility so that it can take advantage of any available communication systems to include commercial or military, terrestrial or space based. GCSS-Army will comply with the DII/COE technical standards and data element standards. Compliance with these DoD-level standards is a critical step toward achieving the required joint interoperability goals in support of the DoD GCSS. See Figure 6-5.

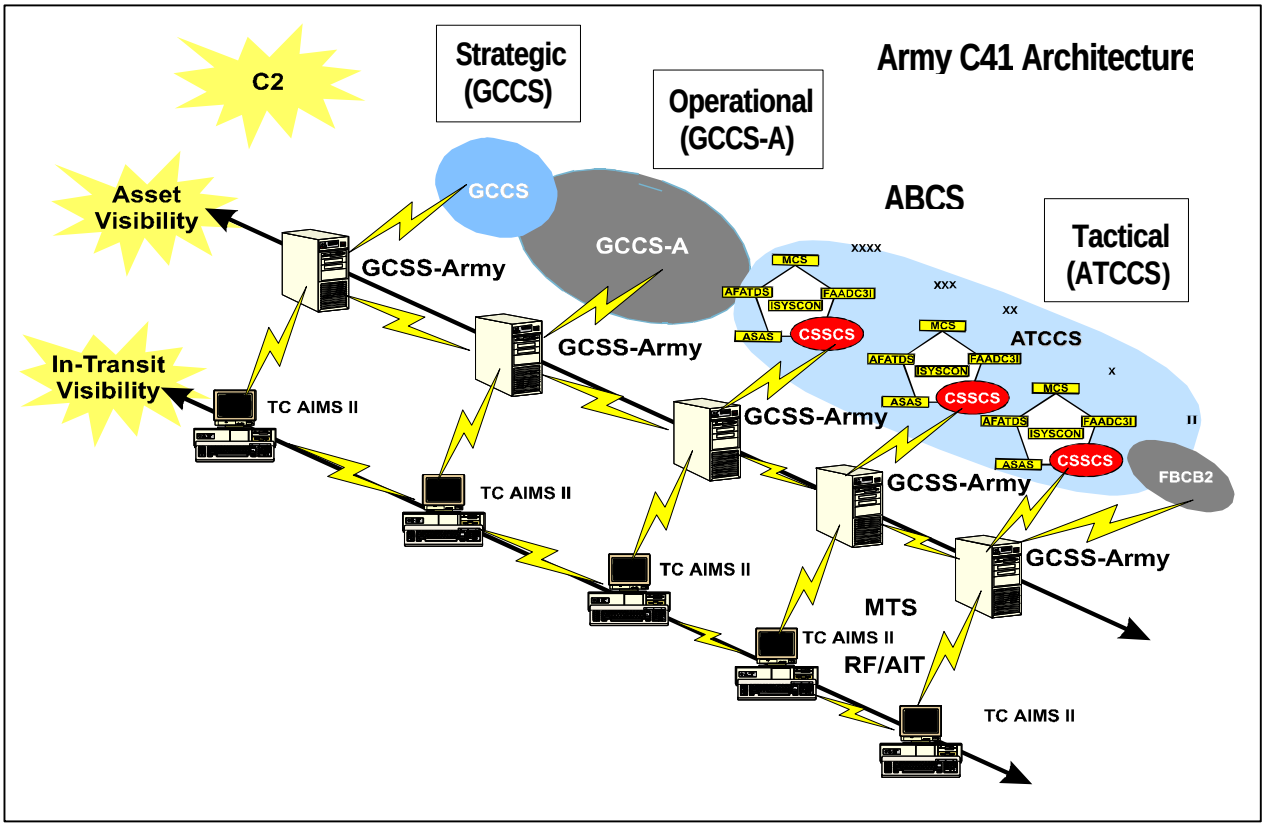


Figure 6-5. Emerging CSS Automation

6-31. GCSS-Army is being developed in three tiers as outlined below. These tiers are being developed concurrently, not one after the other. The tiers are:

- Tier I: Initial Operational Capability (Integration and Modernization). This tier will result in the integration and modernization of current tactical logistics STAMIS to include the integration of information from other CSS areas (medical, personnel, and finance). The functional areas to be integrated in Tier I include supply, property, ammunition, and maintenance functions (less medical). The principal tactical STAMIS to be functionally integrated and replaced include: ULLS, SARSS, SPBS-R, SAAS, and SAMS. Tier I of GCSS-Army will include several different modules each based on a common technical architecture and common look and feel using modern Graphical User Interface (GUI) point and click technology to include embedded training. The Tier I modules include –
  - A supply and property module that integrates supply operations and property accountability in all units.

- A maintenance module that integrates maintenance operations (ground, aviation, and water equipment) at each level of maintenance.
- An ASP module that integrates Class V management and operations at ASPs.
- An SSA module that integrates the supply management and operations at SSAs.

- An integrated materiel management module that integrates supply, property, ammunition, and maintenance management in all materiel management organizations.
- A management module for use at each echelon that integrates information from multifunctional CSS data sources (logistics, medical, personnel, and finance) and allows for data exchange with other GCSS-Army modules and external AIS.

- Tier II: Enhanced Operational Capability (Wholesale and Retail Integration). This tier will include a systemic review of the entire CSS process from factory to foxhole (wholesale/retail business process reengineering). The objective will be a seamless system with total asset visibility and control that effectively eliminates functional disconnects that have developed over the years between the wholesale and retail CSS business practices. The resulting system will dramatically reduce infrastructure costs while significantly improving the ability to achieve the goal of focused logistics (that is, providing time-definite, location-specific delivery of materiel to the war fighter).

- Tier III: Full Operational Capability (Joint Interoperability). Joint interoperability is being addressed in all tiers of GCSS-Army. The Tier I and Tier II compliance with DII/COE standardization and DoD-level data element standardization is a significant step toward joint interoperability as it will allow data to flow seamlessly between the Services and the joint force commander and staff. Tier I also includes intra-Army CSS interoperability between the GCSS-Army management module and the joint systems being developed for use within the Army in the medical, personnel, finance, and transportation areas. Inter-Service support (such as Marines getting supplies from an Army SSA or vice versa) is also included in Tier I. The wholesale/retail business process reengineering in Tier II will include joint/DoD-level systems for inventory management and asset visibility (DLA, JTAV).

Transportation Coordinators' Automated Information for Movement System II (TC-AIMS II)

6-32. TC-AIMS II is being developed as the deployment system of the future and will replace DAMMS-R and selected other Army transportation systems. It is a DoD system being designed for use by all Services. It will support all unit and installation deployment, redeployment, and retrograde operations requirements. The TC-AIMS II design incorporates the best parts of each component's transportation system and the unique needs of each Service to create a joint transportation system.

6-33. TC-AIMS II will operate in conjunction with the GCSS-Army and the MTS to provide the automated tools needed for successful distribution management. TC-AIMS II will provide the capability to automate unit movement and installation transportation office/traffic management office (ITO/TMO) planning and execution from both in-garrison and deployed field environments. TC-AIMS II will also provide an automated information management capability to managers involved with movement control and allocation of common-user land transportation in a theater of operations. TC-AIMS II will also provide needed data to the Global Transportation Network (GTN) and C2 systems at various command levels. TC-AIMS II will be the standard joint transportation and deployment information management system.

6-34. TC-AIMS II will operate in garrison to support daily military transportation requirements, transportation and specific deployment-related deliberate planning requirements, and transportation and deployment-related execution requirements. The garrison configuration will use existing base communications. TC-AIMS II will provide data to the GTN and to the Defense Transportation System (DTS).

6-35. TC-AIMS II will have the capability to provide support in field conditions, to include during reception, staging, onward movement, and integration (RSO&I). All requisite data must be available to accomplish RSO&I of personnel, supplies, and equipment. The communications capability must also be available to handle the interface and to share data with GTN and DTS as well as with joint/Service/C2 systems and other critical transportation and deployment systems. Units with deployment, movement control, or mode operations missions will deploy with their own TC-AIMS II hardware platforms.

6-36. TC-AIMS II will provide movement control organizations within a theater of operations an automated capability to forecast the arrival of personnel, inter-theater cargo, and containerized shipments, and to maintain visibility of command-interest cargo throughout the theater. Movement control elements will have the capability to coordinate and provide transportation services to shippers, carriers, and receiving activities. Automated functions include documenting transportation movement requests, tasking mode operators, forecasting, and reporting container and cargo movements. Mode operators will have the automated capability to receive commitments, task specific assets, and maintain fleet asset status data. Other capabilities include scheduling and de-conflicting convoy movements, maintaining unit location data, and maintaining in-transit cargo and asset movement visibility.

Movement Tracking System (MTS)

6-37. MTS will support distribution management through the full spectrum of military operations. The system's integration with TC-AIMS II and GCSS-Army will provide commanders and distribution managers an unprecedented movements tracking, control, and management capability. It will provide near real-time information on the location and status of distribution platforms using cabin console-mounted hardware and satellite

technology. MTS will incorporate various technologies including GPS, AIT, vehicle diagnostics, and non-line of sight communication and mapping.

6-38. MTS capabilities will improve the effectiveness and efficiency of limited distribution assets. It will provide flexibility and control over distribution operations to include the ability to re-route supplies to higher priority needs, avoid identified hazards, and inform operators of unit location changes. Future plans call for MTS to interface with embedded equipment diagnostic and prognostic systems to provide accurate data that will aid fleet maintenance and improve availability and overall service life.

6-39. MTS will be used primarily to enhance distribution operations from the POD to the brigade rear boundary. MTS control stations will be established in DMCs, movement control elements, distribution terminals, and mode operators. Control stations will also be established with FSBs to provide brigades with the capability to monitor and control non-brigade assets within their AOs. Additionally, the MTS will improve the operational effectiveness and efficiency of a number of other support activities, including traffic regulation control, maintenance and recovery, medical evacuation via ambulance, field services, financial management, religious support, and water transport. The plan is that all common-user logistic transport (CULT) vehicles and selected combat support (CS) and CSS tactical wheeled vehicles and watercraft will be fitted with the MTS mobile units.

6-40. MTS will consist of long-range digital communications, GPS, and computer capability. It will provide the distribution system the capability to –

- Track the location of vehicles and communicate with vehicle operators (US and HN).
- Provide real-time in-transit visibility (ITV) of movements within a theater.
- Redirect movements based on changes to battlefield requirements.

6-41. Transportation elements will use MTS to monitor and control in-transit status of their equipment tasked to move unit or non-unit equipment, supplies, and personnel throughout the theater distribution system. The MTS also will provide the capability to synchronize resupply actions with fluid movements of maneuver forces ensuring that the right resources are at the right place at the right time. MTS will maximize transportation asset utilization and efficiency, thus reducing overall operational times and associated costs. AIT will be used to document arrival and departure events at nodes within the Defense Transportation System for ITV. MTS provides real-time tracking and messaging between transportation managers and the vehicles actually moving resources. This permits re-routing, redirection, and synchronization of supplies with maneuver forces.

Defense Finance Battlefield System (DFBS)

6-42. DFBS is a deployable computer system that provides fully integrated finance, accounting, and resource management support, such as military pay, disbursing, vendor support, travel, civilian pay, and non-US pay, between the battlefield and the DFAS. Finance organizations will use the

DFBS in concert with other systems and automation enablers to facilitate responsive financial management support in all operations. DFBS is compatible with other CSS platforms and is upgradable to incorporate future systems and technological changes.

AUTOMATED IDENTIFICATION TECHNOLOGY (AIT)

6-43. AIT is not an automated information system as such, but rather a valuable component or peripheral of other AIS. When properly integrated into other AIS,

it is a key enhancement to help obtain accurate and timely distribution information, such as the status of shipments and distribution platforms. AIT consists of a suite of many different tools used for automating data capture, aggregation, and transfer. Examples of AIT include simple (linear) bar codes, 2-dimensional bar codes, memory cards, smart cards, laser cards, radio frequency identification (RF ID) equipment (including RF tags and interrogators), and radio frequency direct communication (RF DC) equipment. To function effectively, AIT must be fully integrated into the various AIS.

6-44. Figure 6-6 depicts some of the current and emerging uses of AIT in providing visibility of commodities, equipment, and personnel through the strategic, operational, and tactical continuum. Updated information on AIT developments is available on the CASCOM homepage at http://www.cascom.army.mil/automation/Auto_ID_Technology/.

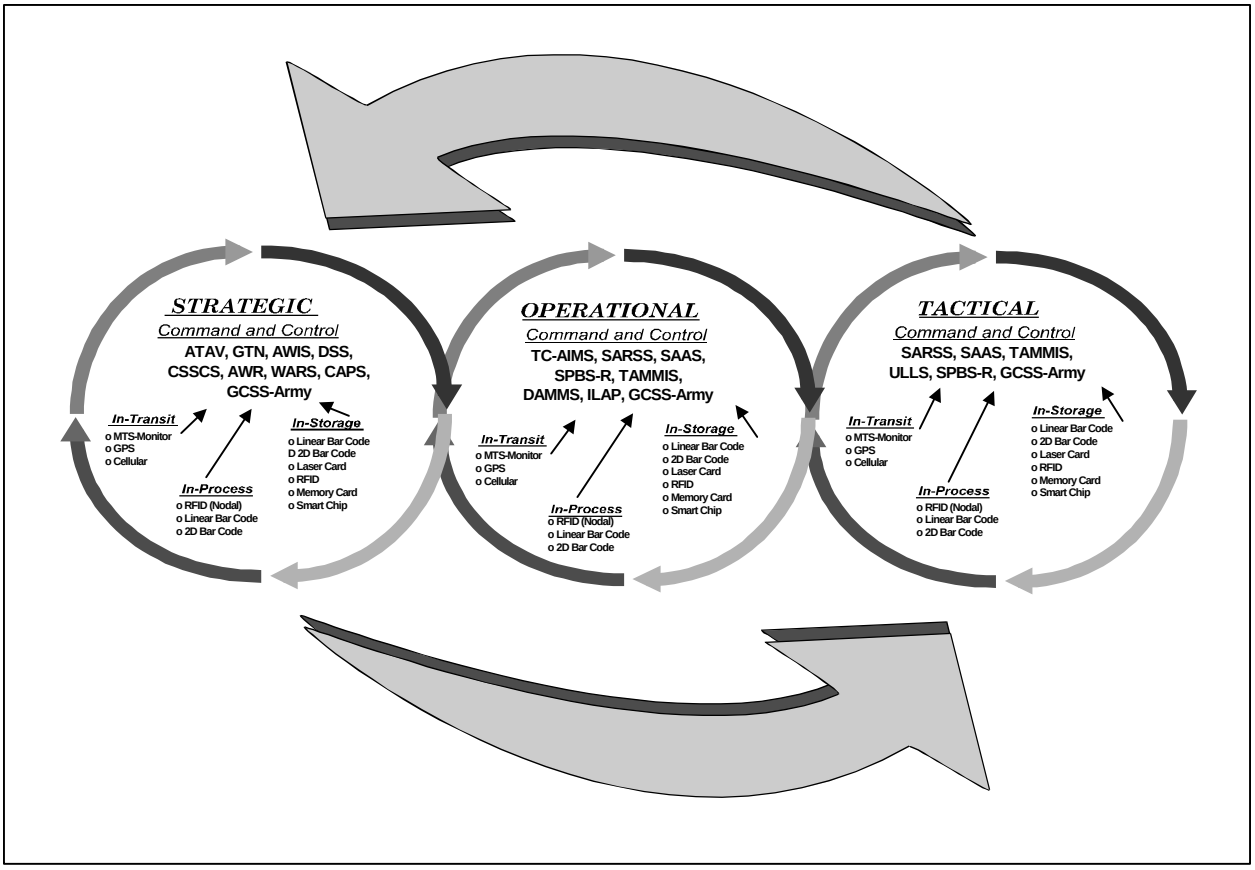


Figure 6-6. AIT Elements within the Strategic, Operational, and Tactical Continuum

CURRENT AIT USE

6-45. AIT has been used in the past and continues to be used today to a limited degree. Although it has proven useful, AIT has not yet been fully integrated into the various AIS. The strength of today's AIT is its ability to rapidly capture detailed information and interface with AIS to reduce human intervention and improve accuracy. The Army is currently using a number of AIT devices that support distribution management:

- Linear bar codes provide item identification and document control information for individual items and shipments. These have been used for years for material release orders (MROs) and transportation control and movement documents (TCMDs).
- Radio frequency (RF) tags with TCMD and content data have been applied to containerized cargo such as ammunition and food. They have also been applied to air line of communication (ALOC) pallets with repair parts or general supplies and to unit cargo moving in containers. These RF tags are used for ITV and support the reception, staging, and onward movement of unit equipment and sustainment materiel within the theater.
- The Multi-Technology Automated Reader Card (MARC) is a multi-function integrated circuit card (that is, smart card). It contains a photo, bar code,

magnetic strip, and a 2 to 8K computer chip. Its uses include rapid and accurate collection of personnel information needed to capture manifest information for personnel movements via military air or ground conveyance.

- MTS includes use of satellite tracking via GPS equipment and provides the capability to identify the position, track progress, and communicate with the operators of tactical wheeled vehicles.
- Two-dimensional bar codes can provide comprehensive data on documents, individual items, or shipments, and consolidation data on multipacks and air pallets. They can be used as low-cost data carriers for large volumes of data such as shipment container and/or multipack content with full TCMD/stock number/document number level of detail.

AIT ENHANCEMENTS FOR DISTRIBUTION

6-46. AIT can enhance distribution in many ways. It has the capability for automating source data to minimize human intervention and improve accuracy. In turn, this will improve future processing and documentation. AIT can be used for automating the reporting of events that occur in the distribution system (such as arrivals and departures of shipments at key nodes in the system), locating and identifying major end items and intensely managed supply items, and tracking the contents of containers.

6-47. Specific theater distribution AIT applications currently in use or anticipated in the future include the following:

- Use of laser cards for automated manifest/packing list. The shipping activity (depot or SSA) will read the bar coded information on the individual MRO as the items are placed in the multipack. A transportation control number (TCN) will be assigned for multipack. This will establish the relationship between the document numbers of the items in the box and the TCN assigned to the multipack. This automated manifest/packing list information will be recorded on a laser card. It will also be reported to a central TAV/ITV database for access by various managers. The laser card will travel with its multipack either inside the multipack or attached to the outside. The laser card will be available for use as automated source data at the consolidation and containerization point (CCP) (as source data for container tagging with RF tags) and at the ultimate SSA (for receipt processing).
- Use of RF tags to carry transportation control and movement document (TCMD) and content information for shipments. There will be a RF tag attached to the outside of each shipping container. This tag will be loaded at the CCP with TCMD information for the container. In addition to TCMD information (TCN, container identification number, ship-to address, and so on), the tag will include information about the contents of the container (such as stock numbers, document numbers, shelf life, hazardous materiel codes, and special handling requirements). The automated manifest/packing list

laser card traveling with each multipack will be used as source data for the tag, thus ensuring accurate data with no requirement for manual input. Although the information is the same as that recorded on the laser card, the uses are somewhat different. The laser card must be physically inserted into a reader to access the information. The RF tag provides "hands off" information and has many potential uses as explained below.

- Use of RF tags to locate and identify contents of containers. Fixed and/or hand-held RF interrogators can be used at various locations within the distribution system to quickly locate specific containers by container identification number or TCN. RF tags and interrogators can also be used to identify the contents of containers without opening them.
- Use of RF tags to ensure shipments are properly processed. RF interrogators will be placed at appropriate locations so that the supply and/or transportation AIS used at these locations are automatically updated with the date and time when the tagged shipment arrives. The system can be designed to check periodically on items within the range of the interrogators and to notify managers when the items have not been properly processed within an established timeframe. This procedure can be employed at key locations in the distribution pipeline such as the CCP, POE, POD, SSA, or distribution terminal (DT).
- Use of RF tags to improve management of frustrated cargo. Fixed or hand-held interrogators can be used at the POE, POD, DT, or trailer transfer point (TTP) to capture detailed information about frustrated cargo. This information can be quickly and accurately uploaded from the RF tag attached to the container. It can be entered into a local (or regional) database so that it can be reviewed in an automated manner. It can then be re-routed to the correct consignee with a new RF tag.
- Use of RF tags to automatically and remotely modify ship-to address, consignee, or other cargo disposition instructions. Fixed interrogators located throughout the distribution system will provide the capability to intercept and redirect shipments. The automated systems at the CCP, POE, POD, TTP, or DT can be programmed to look for specific containers (or all containers addressed to a specific consignee) and automatically modify the disposition instructions of the TCMD or other automated manifest documentation.

- Use of RF tags for unit equipment in deployment operations. When embedded in AIS such as TC-AIMS II, AIT will produce unit deployment data on tagged vehicles and unit equipment derived from the automated unit equipment list (AUEL). The movement of unit equipment can then be monitored throughout the deployment via the same interrogator network that will be used to monitor ITV for sustaining cargo. The tag, when used as source data automation for aerial and surface ports, can also act as the advance movement documentation upon arrival at the ports and be used to create the cargo manifest. The stand-off interrogation capability will also enhance the management of port operations and staging areas.
- Use of RF tags to help manage pre-positioned materiel. Tags on pre-positioned materiel ashore and afloat can help provide a means of managing, controlling, and issuing equipment to units. RF tags on these

items will allow "hands off" inventory management and allow operators to know exactly what materiel and equipment has arrived without the laborious task of scanning thousands of bar codes. AIT also offers the potential to manage staging areas with limited soldiers and paperless issuing of equipment to units.

- Use of RF tags in materiel accounting. RF interrogator networks can be established at storage area entrances and exits to capture materiel arrival and departure data. When linked to the proper AIS, the tags can provide automatic credit and debit transactions for supply operations. This capability can also perform remote and stand-off inventory functions.
- Use of RF tags in locating materiel. RF tags can be used to report their locations to local users with hand-held interrogators at busy or crowded ports, staging areas, or ammunition storage points. The desired item can be queried from the hand-held interrogator using NSN, document number, or generic name (such as "tire" or "barbed wire"). Only tagged containers with these items will respond. The "beeping" tags or the interrogator's location finding functions can be used to locate the container and item.

SECTION II. - COMMUNICATIONS

6-48. Relevant distribution information must be quickly and accurately distributed to elements within the distribution system. The interconnectivity of various information systems within the overall distribution system is critical. Communications must provide reliable connectivity for a seamless flow of information throughout the strategic, operational, and tactical continuum.

6-49. In a typical, forward-deployed theater of operations, as the transition from peace to war begins, storage and maintenance areas at both theater and corps continue operating from their peacetime, fixed locations. Communications support continues its reliance on garrison and strategic systems. In the early stages of operations in such theaters, some tactical communications support will be available. On the other hand, in a contingency theater of operations, communications support will be very austere, relying on a mix of tactical and local indigenous communications systems. As the theater matures, in both a forward-deployed or contingency theater, tactical communications systems will provide the majority of communications support.

6-50. Today, distribution operations depend heavily on the area common user system (ACUS) which consists of the COMMZ Tri-Services Tactical (TRI-TAC) and Mobile Subscriber Equipment (MSE) systems. Figure 6-7 illustrates the configurations for tactical connectivity. For operations within the brigade area, the tactical internet (TI) provides connectivity between the brigade and STAMIS. However, commercial satellite communications may be required to augment these primary tactical communications systems. Future communications technologies, such as global cellular systems, low earth orbit satellites, and the joint tactical radio (JTR), will be evaluated as they mature for possible inclusion in the systems architecture to satisfy distribution operations requirements. See Figure 6-8.

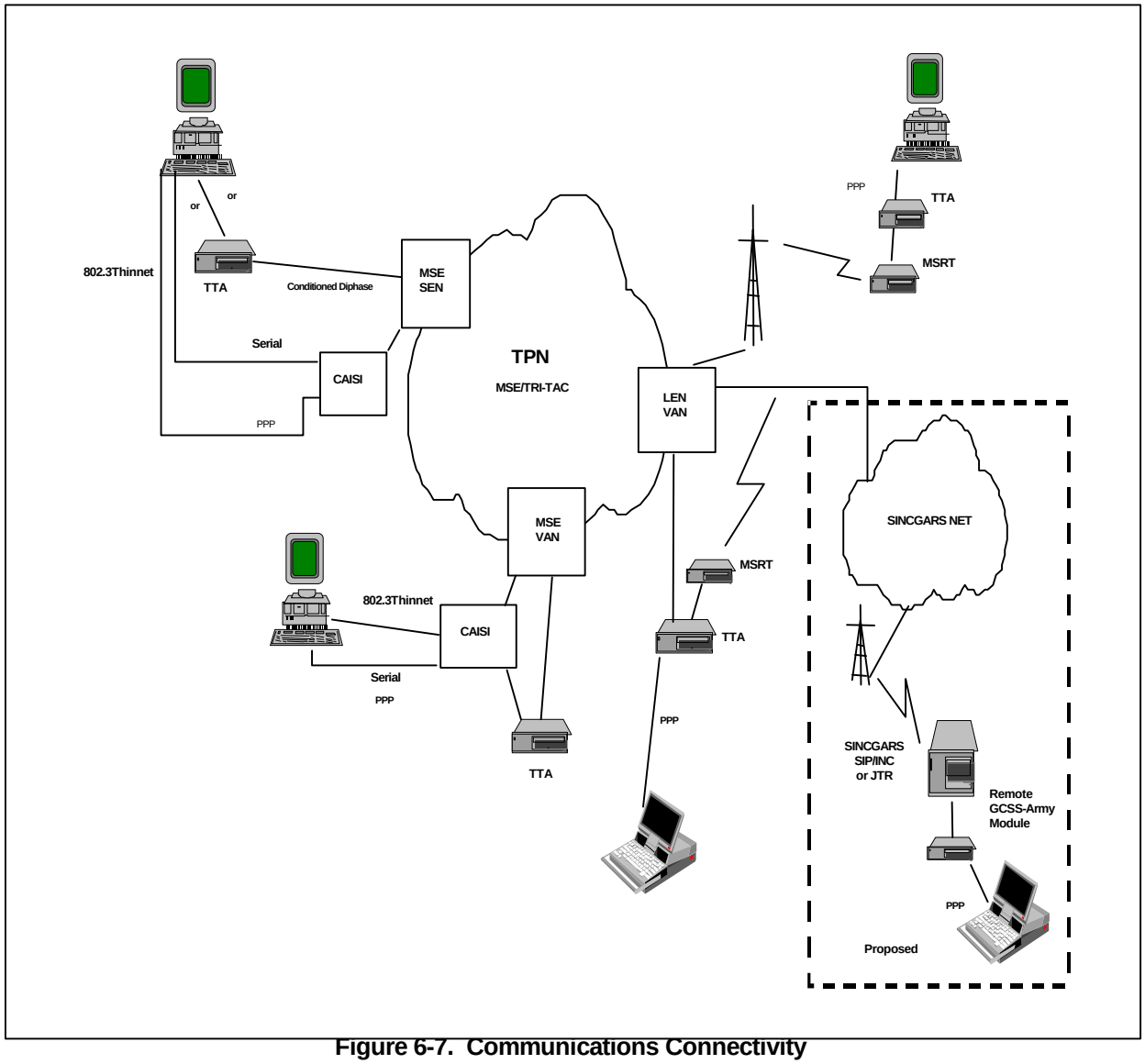


Figure 6-7. Communications Connectivity

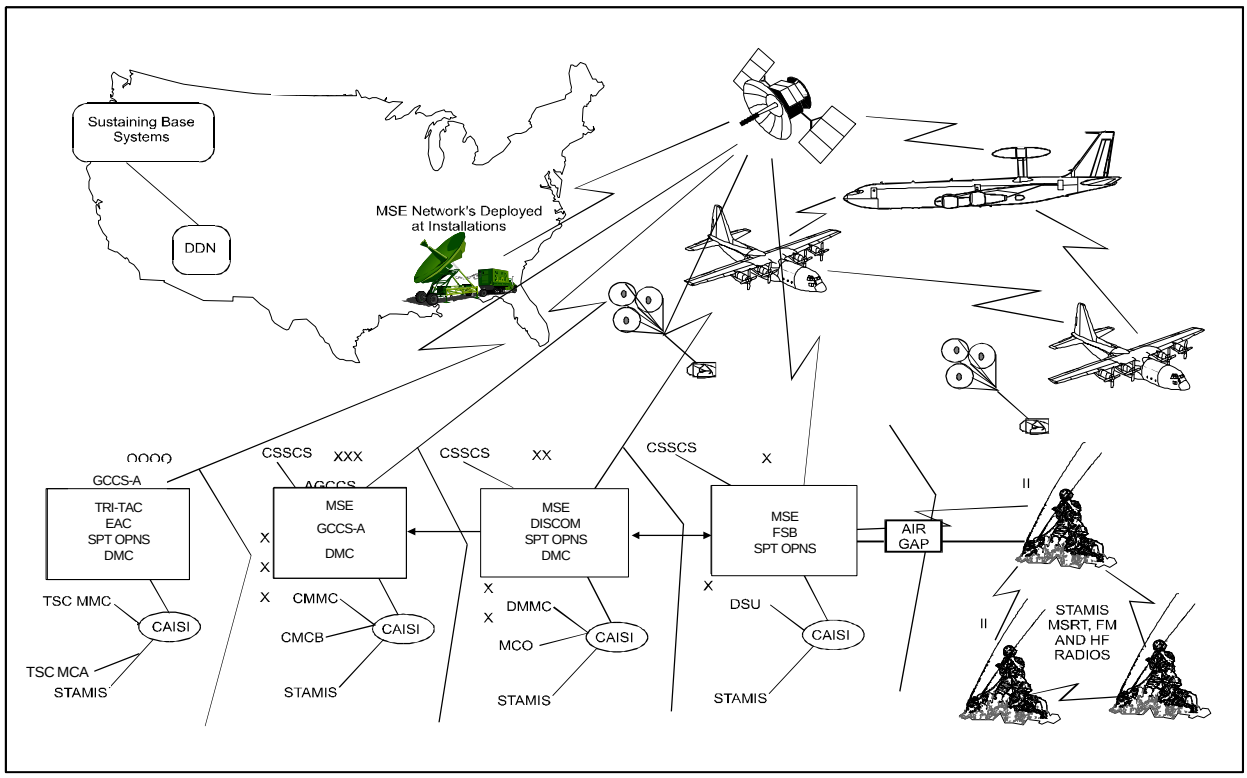


Figure 6-8. CSS Communications Architecture

AREA COMMON USER SYSTEM (ACUS)

6-51. Today, the ACUS is a digital battlefield telecommunications system composed of switching, transmission, network control, TRI-TAC, and MSE subscriber and terminal equipment. ACUS provides access for static or mobile subscribers and interfaces with strategic voice and data systems. MSE extends from the division maneuver battalion rear area back to the corps rear boundary. Fully interoperable, automated, secure voice, and data connectivity with EAC is provided by TRI-TAC systems. Although ACUS was designed to handle primarily voice traffic, both TRI-TAC and MSE include a packet switch network overlay to the voice network called tactical packet network (TPN). The TPN has no impact on voice grade of service and is used by large volume STAMIS to transfer data. Connection to the circuit switch (voice) may be allowed for low volume users. MSE also provides long-range, hard-copy communications capability through a communications terminal or by fax. In the future, the tactical defense messaging system (TDMS) will provide a standards-based, secure worldwide electronic messaging capability to support garrison and battlefield environments.

6-52. Signal units establish the network and maintain the system to the junction box or access point at a small extension node (SEN) switch. Subscribers connect to the system by using equipment organic to the unit or by laying wire to a junction box connected to a SEN switch or radio access unit (RAU). They are also responsible for the installation, operation, and

maintenance of organic subscriber equipment. The CSS automated information system interface (CAISI) device can be used as an interface device between both the circuit and packet sides of the MSE similar to how a terminal server works on the not classified but sensitive internet protocol router network(NIPRNET).

6-53. There are several methods to access the circuit (voice) switched network. Users may gain access to the circuit switch with physical connections to a digital non-secure voice terminal (DNVT), digital subscriber voice terminal (DSVT), mobile subscriber radiotelephone terminal (MSRT), tactical terminal adapter (TTA), or CAISI. Data communications using the circuit switch will require the local commander's permission.

TACTICAL PACKET NETWORK

6-54. TPN is the packet overlay to the MSE and TRI-TAC communication systems. It provides comprehensive network services for users of secret information from brigade up through EAC. TPN provides services such as automatic internet protocol (IP) address assignment and address resolution. At this time, none of the network services provided by TPN are available to unclassified users.

6-55. The NIPRNET is the Defense Information Systems Agency (DISA) backbone IP router network which provides service to unclassified users. Service-specific local area networks (LANs) tie into the NIPRNET backbone. The NIPRNET is connected via routers to the civilian internet. In terms of the unclassified packet network (UCPN), once a reachback (discussed below) is established, tactical unclassified users can access resources on or through the NIPRNET.

6-56. The secret internet protocol router network (SIPRNET) is the DISA backbone network that supports secret-level users. Like NIPRNET, Service-specific networks tie into the SIPRNET backbone. In the case of SIPRNET, the LANs operate at the secret level. Since the TPN is a secret high network, it can be connected to the SIPRNET to allow command and control and other secret information to be passed between deployed units and fixed strategic sites.

6-57. TPN is accredited at the secret systems high level. Most CSS STAMIS are sensitive but unclassified (SBU). Physical connectivity of STAMIS to the TPN is through the CAISI device. CAISI's design is based upon the requirement that STAMIS must communicate on the battlefield using the supplied TPN. CAISI and other unclassified transmission control protocol/internet protocol (TCP/IP) capable hosts cannot connect directly to the TPN. As a result, a methodology is required to separate the unclassified hosts from those of higher classification. In addition, STAMIS require the ability to reach the NIPRNET from the battlefield. This imposes additional security problems with the possibility of attack from the NIPRNET/internet to disrupt service to the TPN. To resolve these problems, a device known as a network encryption system (NES) is positioned between the unclassified TPN users and the connectivity points to the MSE/TRI-TAC network and before the point of entry to the NIPRNET gateway (Figure 6-9).

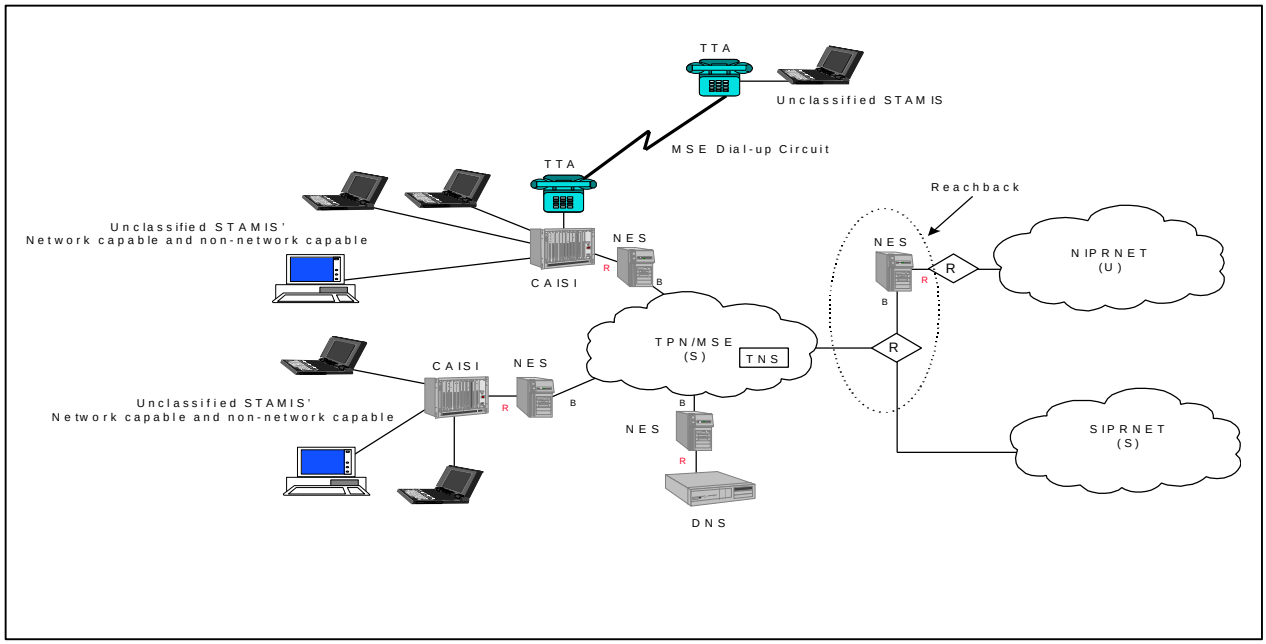


Figure 6-9. UCPN Structure

NETWORK ENCRYPTION SYSTEM

6-58. The NES is an in-line packet encryption device. In the UCPN, the NES allows users behind the NES to communicate with each other but will block communications with any user directly connected to the TPN. The unclassified data is encrypted before entering the TPN allowing it to tunnel through the secret network without becoming "contaminated" by secret data. The NES also prevents secret data from being misrouted to the unclassified enclaves. The NES is configured so that all deployed unclassified enclaves can communicate with each other as well as with systems connected to NIPRNET. The overall effect is that both the secret and unclassified networks coexist on the same backbone but are separated. Systems and networks directly connected to TPN cannot communicate with systems and networks connected to the UCPN (RED side of the NES). The NES is owned, operated and maintained by signal brigades and battalions. At corps and below, one NES is fielded per CAISI device.

COMBAT SERVICE SUPPORT AUTOMATED INFORMATION SYSTEMS INTERFACE

6-59. The CAISI is a commercial off-the-shelf (COTS)/ non-developmental item (NDI) device that offers an integrated approach to providing network connections to both STAMIS hosts and client systems. It is an interface device which provides network connectivity for STAMIS owned by CSS units, primarily in a tactical environment. The CAISI is a user-owned and operated system that allows STAMIS to exchange information via both tactical and commercial communications networks. CAISI concentrates dispersed STAMIS users at a central entry point to maximize existing connections to the TPN.

6-60. CAISI is both hardware and software and will support two classes of users: (1) systems which are inherently network capable and implement TCP/IP and (2) legacy systems. Support for legacy systems is provided by the virtual end-to-end (VEE) application. The VEE application provides connectivity through packet networks in a manner that simulates the point-to-point connectivity currently employed by most CSS automated systems. VEE interfaces with Military Communications Networks (MCNs), that is, MSE, TRI-TAC Communication, Defense Data Network (DDN), and Defense Switching Network (DSN), and with US Public Switched Networks and commercial communications systems of nations with which the US has defense agreements.

WARFIGHTER INFORMATION NETWORK (WIN)

6-61. The ATCCS described earlier in this chapter will rely on the Warfighter Information Network (WIN). WIN is an evolving integrated C4 network that is comprised of commercially-based, high technology information and communications systems. It is designed to increase the capacity and velocity of information distribution throughout the area of operations in order to gain information dominance. WIN will support the warfighter in the 21st Century with the means to provide sustaining base information services to deployed units. WIN will maximize secure information services for the warfighter and support the power projection force from sustaining base to foxhole.

6-62. WIN is a network of information and communications services that provides support to the ABCS. It is comprised of seven component threads. They are:

- Power projection/sustaining base.
- Tactical internet/combat net radio.
- Satellite transport.
- Information systems.
- Information services.
- Terrestrial transport.
- Network management.

6-63. WIN is the C4 network that supports all battlefield functional areas (BFAs). Several of these components important for distribution managers and operators to understand are discussed below.

POWER PROJECTION/SUSTAINING BASE

6-64. Future operations should not require the physical movement of sustaining base functions to the theater. A key element in the distribution requirement is the ability to provide sustaining base services to the foxhole. This can only be accomplished if there is a seamless connection from the sustaining base through the defense information switching network (DISN) transport layer and into the theater information infrastructure. The DISN transport layer provides the strategic information systems infrastructure linking fixed installations worldwide. The goals of the power projection/sustaining base (PPSB) component of WIN are:

- To upgrade the post, camp, and station information systems infrastructure to provide the seamless connection into the DISN transport layer. These upgrades are being performed under the Power Projection C4I (P2C4I) program.
- To ensure that the application layer (hardware and software) in garrison and at the sustaining base will "plug and play" with the battlefield through the WIN transport layer.
- To help the Army define the requirements of power projection platforms in support of sustaining base operations.

6-65. PPSB infrastructures will provide the gateways and the information support for split-base operations. Infrastructure upgrades needed to make this a reality include fiber optics, standardized gateways, and asynchronous transfer mode (ATM) switches. Commercial technology used at PPSB and standardized tactical entry point (STEP) locations will allow forces to use the same telephones or personal computers in the field that they use in garrison. It will also provide standardized access to strategic infrastructure services such as the DISN, NIPRNET, and SIPRNET. Infrastructure improvements will enable power projection through the quick transmission of mobilization and movement control information.

6-66. Each installation must be examined to ensure that all functional area requirements are met in support of split-base operations. Contingency requirements must be identified and matrixed against current installation C4I capabilities. All contributing commands must evaluate the peak requirements and plan accordingly. The C4I installation infrastructure requires long range planning for resourcing and execution, with all functional areas providing requirement input. See Figure 6-10.

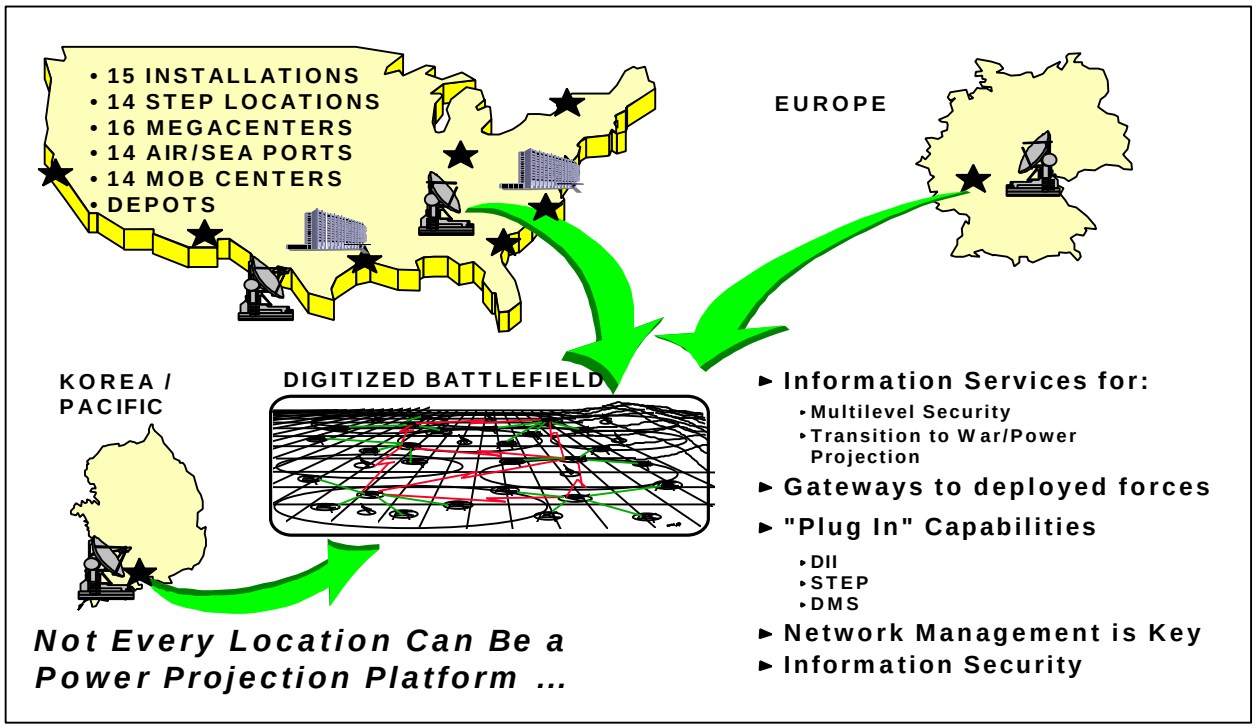


Figure 6-10. Power Projection Platforms

6-67. P2C4I programs have been established to ensure the Army's sustaining bases are integrated into the WIN architecture. This allows for a seamless "plug in" capability from the deployed force to the sustaining base by upgrading the telecommunications infrastructure at designated power projection sites. Resourcing and implementation of the four P2C4I components (switching, gateways, Common User Installation Transport Network, and Outside Cable Rehabilitation) will ensure a sustaining base infrastructure exists to support the expanded WIN battlespace.

6-68. The demarcation between the strategic layers of the DISN and the tactical layer is the STEP. The STEP provides the link, both secure and non-secure, from the theater to the DISN. The deployed force will link into one of 14 worldwide STEP locations for out-of-theater connectivity. The DISN transport layer, using the STEP as an entry point, is the means by which battlefield information is transported to the sustaining base. The transport layer consists of both satellite and terrestrial systems.

6-69. The Defense Message System (DMS) consists of the hardware, software, procedures, standards, facilities, training, support and personnel used to exchange messages electronically between organizations and between individuals in the DoD. In addition, the DMS will support interfaces to systems of other government agencies, allies, and defense contractors. DMS will replace the Automatic Digital Network (AUTODIN) and E-mail messaging systems used today.

TACTICAL INTERNET

6-70. At brigade and below, the TI will extend the ABCS to the soldier and weapons platform. The TI passes battle command and situation awareness data. The TI must provide tactical, mobile, simultaneous multi-band, multi-mode, voice and data (and possibly video) communications while providing routing and network services. The TI must support the exchange of secret and unclassified data. The TI, as referred to here, is used to describe the communication pathways only. It utilizes the Tactical Multinet Gateway (TMG) which interfaces with the data server to provide connectivity to the WIN data network.

6-71. The TI requires a network, not just a radio designed to support known and emerging requirements. Today it integrates the legacy Single Channel Ground and Airborne Radio Systems (SINCGARS) and Enhanced Position and Location Reporting System (EPLRS) radio. In the future, JTR will be a networked, multi-wave form, multiband radio system employed to provide the TI backbone that supports voice and high data throughput. JTR will support existing and planned information systems at brigade and below including ATCCS, FBCB2 and STAMIS information where the ACUS is unable to provide support.

Current Combat Net Radio

6-72. The CNR architecture includes SINCGARS; amplitude modulated (AM) high frequency (HF) radios; and single channel tactical satellite (TACSAT) radio systems. In the future, JTR will replace each of these CNR systems.

Although the range of frequency modulation (FM) very high frequency (VHF) radios is limited, HF and TACSAT radios can extend transmission ranges over hundreds and thousands of kilometers, respectively.

6-73. SINCGARS radios are portable and mobile. They can be used on the move more easily than other CNR systems. High frequency AM radios extend ranges beyond those possible with VHF radios, such as SINCGARS. Single-channel TACSAT radios use ultra high frequency (UHF) and extremely high frequency (EHF) to carry both single-channel voice and data traffic globally, virtually eliminating distance constraints inherent in other CNR systems.

6-74. EPLRS provides the wide area network (WAN) connectivity from platoon-level to brigade and between brigade and battalion autonomous systems and routing areas (RAs). Operational units are equipped with EPLRS very high speed integrated circuit radio sets to establish and maintain a tactical WAN backbone for the TI. The radio set provides secure, jam-resistant digital communications and accurate position location capabilities for the user. It also provides retransmission capabilities that are transparent to the user. The maximum distance the EPLRS can cover is based on an average distance of three to 10 kilometers between each radio and the maximum number of relays in the link. The interface between SINCGARS, FBCB2, internet controller (INC), and the EPLRS will be internet protocol (IP) compliant.

Joint Tactical Radio

6-75. JTR will provide a means for transport of information exchange requirements (IERs) between users throughout the theater. Various configurations of JTRs will support IERs extending from low capacity local voice or data nets to high capacity video links or WANs covering large areas such as brigade, division, corps, and theater. The JTR family of radios will serve as a means to simultaneously operate across multiple frequency bands. It will operate simultaneously across multiple voice, data, or video networks to exchange information between users throughout the battlefield. The key function of JTR will be to serve as the information transport backbone for the tactical internet at echelons brigade and below. The JTR system will allow operation of multiple applications simultaneously from a single radio unit. The future digital radio (FDR) concept will replace all other combat tactical radios to include SINCGARS, MSRT, HF sets, EPLRS, satellite communications (SATCOM), GPS, and others.

SATELLITE TRANSPORT SYSTEMS

6-76. SATCOM is often the primary communications means available to support US military operations in a global threat environment of regional conflicts that are unpredictable in location, time, duration, and intensity.

Types of Systems

6-77. WIN will use a variety of space segment assets for communications. Each space segment and the frequency band offers advantages and disadvantages. The UHF band offers single channel assess at low data rates (16 kilobytes) with no anti-jam (AJ) capability but is characterized by small, inexpensive ground terminals. The UHF band also allows for the implementation of demand assigned multiple access (DAMA). Super high frequency (SHF) offers greater throughput for users but provides limited protection. Competition for SHF band access is increasing, making access authorization difficult to obtain. The Military Strategic and Tactical Relay Satellite (MILSTAR) program provides the newest space segment. MILSTAR EHF provides well-protected communications by using low probability of intercept (LPI) and low probability of detection (LPD) technologies combined with AJ capabilities. Commercial SATCOM, using portions of the SHF band, provides surge capability when military systems are saturated.

6-78. Military satellite communication systems include the Defense Satellite Communications System (DSCS), MILSTAR EHF, and Tactical Satellite Communications (TACSAT) systems. Other modernization efforts described include Global Broadcast Service (GBS) and the Global Positioning System (GPS). GBS provides tailored, multi-media, intelligence broadcast service, while GPS remains the Army's primary navigational aid. A proper mix of military and commercial satellite systems are necessary to meet the requirements of a force projection Army. This mix will balance the capabilities and limitations of the various assets (Figure 6-11).

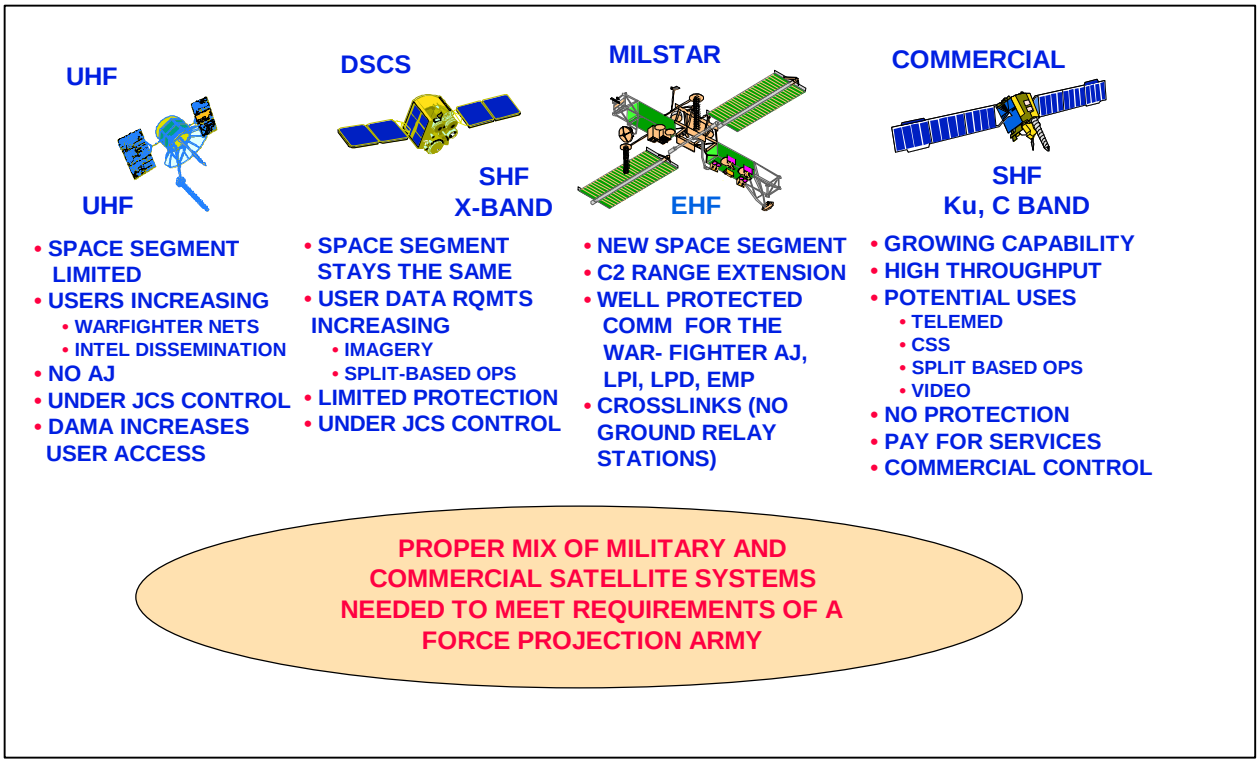


Figure 6-11. Space Segment Capabilities

6-79. Single channel SATCOM is primarily low data rate communications. Single channel space and ground terminal segments are characterized by increased terminal availability, low cost, and ease of mobility. They can network with multiple users, communicate on the move, and penetrate foliage while on the ground. However, UHF single channel SATCOM access is extremely restricted, has limited information throughput, and has no anti-jam capability.

Global Broadcast Service

6-80. GBS is an evolving secure, integrated satellite broadcast service and information dissemination system based on commercial and high technology developments. GBS increases the capacity and velocity of information distribution. As a component of the WIN, GBS augments current space and terrestrial transport systems through one-way transmission.

6-81. GBS exploits commercial developments in the direct-to-home broadcast service industry. Because of the low cost, small size, and mobility, GBS will be fielded to combat, combat support, CSS units at all echelons down to battalion level. The receiver terminals will consist of a small antenna system and a GBS receiver. GBS terminals would be capable of operating on board aircraft, ships, and vehicles.

6-82. GBS provides a real-time, continuous means to receive, access, retrieve, and archive battle command information. The information can come from national/strategic sources or from theater level. Information products can be video broadcasts, unmanned aerial vehicle (UAV) video, common ground station sensor data, or other large volume data product. A few of the potential types of information that may enhance distribution operations are:

- Movement control information.
- Air tasking orders.
- Weather data.
- Intelligence briefings/files.
- UAV and satellite imagery.
- Logistics files.
- Commander's intent briefings.
- Operations orders and overlays.
- Nuclear, biological, chemical (NBC) status, warnings, and operational information.
- Civil affairs and psychological operational information.
- Software/databases.
- Morale/welfare information.
- Information from national sources and archives.

6-83. At each echelon the user can define the type of information he needs and when he needs it. Users at GBS terminals will set profiles that define the time, area, and type of information they want to receive through the GBS system. They can also submit queries/requests for specific data.

WARFIGHTER INFORMATION NETWORK - TERRESTRIAL (WIN-T)

6-84. WIN-T will replace the current ACUS (MSE and TRI-TAC) systems in EAC, corps, and division. It will be deployed within the theater, corps, and division, down to maneuver brigade and separate maneuver battalion command posts (CPs). Commonality of equipment at all levels will facilitate the formulation and use of task forces as fighting or supporting units.

6-85. Terrestrial transport systems are the backbone of the WIN architecture. They provide simultaneous voice, data, imagery, and video communication services at all levels of security. Terrestrial transport systems will provide higher capacity and faster velocity by integrating ATM protocols, embedded integrated services data network (ISDN) services, wideband high-capacity radios, network services, and access to personal communications services (PCS) cellular sites. Some of the network services provided will be multimedia, wireless LAN, command post PCS cellular services, automatic dial-up video teleconferencing, multi-level security, and ISDN ethernet gateway for remote users.

6-86. ATM backbone and extension switches with ISDN technology and high-capacity line of sight (HCLOS) radios will provide the velocity and throughput necessary to support information requirements. The HCLOS will serve as the next-generation line-of-sight (LOS) radio for the Army's TRI-TAC and MSE.

6-87. Each WIN switch will provide wireless data access via wireless LAN (WLAN) or by a wireless modem embedded in the JTR. The WLAN, supported by all WIN switches, will be the primary wireless access point for the majority of wireless users to the data network. These WLANs will provide at least three megabytes of throughput capability at distances up to three kilometers. Host subscribers at battalion and below will access the WIN via the tactical internet.

Personal Communications Services

6-88. Personal communications services (PCS) is an evolving integrated wireless communications service based on commercial cellular and mobile telephone technology. As a component of the WIN infrastructure, PCS will provide seamless mobile secure communications service throughout the battlespace. A secure personal communicator (cellular telephone equipped with a communication security (COMSEC) device) will access the PCS transport architecture. The WIN PCS will employ commercial wireless technology and services to support information transport and dissemination needs.

6-89. PCS will provide users with a high probability of system access and secure end-to-end communications. Desired capabilities also include conference calling and net radio operations. To support the highly mobile users, the end-user communications equipment must be extremely small and lightweight. The service must be capable of providing secure communications service with a minimum land based infrastructure, while providing global connectivity for real-time voice and low rate data communications and direct connectivity to the Public Switched Telephone Network (PSTN) and the DISN.

Wireless Local Area Networks

6-90. A major terrestrial transport component of WIN is the WLAN. WLAN will support information needs of highly mobile and distributed users through adaptation to military tactical communications systems and commercial wireless technology. The WLAN will assist in providing mobile and flexible CPs and enhancing C2 on the move.

6-91. A WLAN creates a more mobile environment for a host data user, it is quicker to install, and it may lower the LAN maintenance costs associated with constant rewiring. WLANs will provide at least three megabytes per second of throughput capability at distances up to three kilometers. However, the limitations of distance and bandwidth will lower the performance below that of a hard-wired system and may be subject to interference. Integrity and security of the data will always be a major security concern when dealing with a wireless system. Additional limitations include interoperability with different vendors and costs.

6-92. The WLAN supported by all WIN switches will be the primary wireless access point for the majority of wireless users to the data network. The future small extension node (FSEN) switch will have an embedded JTR. The JTR will provide WLAN access, for users at brigade and below, via the TI to the switched packet network. A wireless modem is embedded in the JTR to meet the WLAN requirements for users below brigade such as CSS users.

GARRISON COMMUNICATIONS

6-93. In CONUS during transition to war and wartime, communications will be the same as peacetime. The existing infrastructure consisting of military and commercial communications networks will be utilized. During peacetime, storage areas and ammunition supply points (ASPs) at theater and corps levels operate from fixed depots or locations. Communications support relies on garrison and strategic communications systems.

Appendix A

Theater Force Opening Package

Force projection requires a TFOP that is rapidly deployable, modularly configured, and designed to open an Army theater CSS infrastructure. The TFOP must have the capability to establish the Army theater distribution system and conduct those operational-level support tasks required to meet ASCC early entry support responsibilities. More specific details on the TFOP are in FM 63-4.

MISSION

A-1. The TFOP is a modularly configured, early entry, multifunctional support task force comprised of functional CSS and selected CS modules called theater force opening modules (TFOMs). The mission of the TFOP is to deploy early to a force projection theater and establish the physical, resource, communications, and automation networks necessary for an effective and efficient Army theater distribution system. It also conducts the initial reception, staging, and onward movement of Army resources and other resources as designated by the ASCC/ARFOR commander. The mission and major functions of the TFOP are described in subsequent paragraphs. The ASCC/ARFOR commander determines the specific mission, organization, and command and support relationships of early entry support forces in a particular operation.

CONTINGENCY PLANNING

A-2. Preparation for theater opening begins before the actual deployment of TFOP elements into an area of operations. The TFOP has the capability to conduct home station (power projection platform) contingency planning and interface with appropriate ASCCs and supported/supporting JFCs preparing for TFOP employment. This includes the capability to –

- Interface/coordinate with the ASCC/ARFOR commander, JFC, and supporting CINC support planners to identify the appropriate TFOM mix required to accomplish theater opening.
- Develop and provide missions, policies, guidance, priorities, and allocations for all TFOP activities/organizations IAW appropriate ASCC/ARFOR commander policies and directives.

COMMAND AND CONTROL

A-3. As directed by the ASCC/ARFOR commander, the TSC deploys a headquarters early entry module (EEM) to establish TFOP command, control, communications, and automation(C3A). It interfaces with tactical,

joint, and

strategic/national CSS systems and synchronizes Army deployment activities theater-wide. This includes the capability to –

- Provide TFOP survey, liaison, and reconnaissance party (SLRP), APA off-load preparation party (OPP), and advance party elements.
- Exercise control over the theater-level CSS operations directed by the ASCC/ARFOR commander. This includes support to other Services. The headquarters module with assistance from functional command elements refines TFOM requirements and updates the LPT and distribution plan.
- Coordinate theater and strategic-level support requirements.
- Plan physical security for RSO&I nodes.
- Plan, manage, and acquire HN real estate. Manage initial local procurement, contracting, and HNS activities.
- Manage ASCC/ARFOR force generation operations.

THEATER RECEPTION

A-4. TFOP transportation, supply, ordnance and other required TFOMs establish initial ASCC/ARFOR theater APOD, SPOD, and theater staging base reception nodes within the theater. This includes the capability to –

- Establish connectivity with the GTN which allows access into the WPS and Consolidated Aerial Port System (CAPS) essential to the theater reception process. In addition, they establish other theater automated data processing (ADP) systems for force tracking IAW JFC/ASCC guidance.
- Establish and conduct Army or commercial/HNS contract port operations at Army/common-user SPODs. Port operations include beach/port preparation or improvement, cargo discharge, harbor craft services, ship-to-shore cargo movement, movement control, cargo marshaling, documentation, and port clearance.
- Establish and conduct air terminal operations at APODs. Air terminal operations include movement control, cargo transfer, unit/cargo marshaling, cargo documentation, and port clearance.
- Establish/supervise contracts for transition of military port operations to commercial/contract/HNS.

THEATER STAGING

A-5. TFOP transportation, supply, Force Provider, engineer (if directed by the ASCC), maintenance, personnel, and medical TFOMs establish and conduct initial ASCC/ARFOR theater staging operations. This includes the capability to –

- Establish and operate initial staging bases using Army Force Provider, contracted, or HNS resources.
- Provide equipment deprocessing and property transfer of pre-positioned unit equipment to assist AMC/USAMMA and unit personnel as required.
- Establish staging areas for APS, transitioning unit personnel, and supplies.
- Establish/supervise contracts for transition of selected military staging area operations to commercial/contract/HNS elements.

FORCE SUSTAINMENT

A-6. TFOP transportation, supply, engineer (as directed by the ASCC), military police, personnel, maintenance, and medical TFOMs establish theater-level sustainment capability and conduct operational- and tactical-level sustainment operations. This includes the capability to –

- Establish operational-level supply, services, and soldier support; receive and store APS; and provide personnel accountability for filler, casualty replacements, and transitional personnel.
- Establish tactical-level maintenance, supply, medical, and soldier support to meet DS-level support requirements for the TFOMs.
- Acquire, build, repair, and/or maintain CSS facilities of the initial theater-level infrastructure.
- Provide physical security to TFOP facilities and operations.
- Establish initial ASCC/ARFOR theater-level distribution management capability. Modules estimate theater support requirements.

THEATER ONWARD MOVEMENT

A-7. TFOP transportation, engineer (as directed by the ASCC), and military police TFOMs establish an onward movement and distribution capability through theater support operations and control center elements. This includes the ability to –

- Establish and operate in-theater force/materiel tracking information management systems that interface with strategic/joint/ASCC ITV and TAV ADP systems. TFOMs install, as directed, ITV interrogators at DTs, along LOCs, and at sustainment support nodes. They validate air, sea, rail, and highway deployment rates for the force.
- Establish ASCC/ARFOR movements management activities and conduct initial movement control operations. Modules coordinate port clearance and inland theater movement of forces and materiel stocks.
- Identify MSRs and their capacities.
- Establish and operate the theater distribution infrastructure consistent with the JFC's battlefield framework. They provide transportation (Army, HNS, contract, or commercial) support for port clearance and onward movement of units and materiel to AAs and operational/tactical SSAs.

ORGANIZATION

A-8. As previously indicated, the TFOP is a tailored, early entry, multifunctional support task force comprised of CSS and selected CS modules as identified by the ASCC. A typical TFOP needed during the initial stages of deployment includes transportation, engineer, supply and field service, contracting, ordnance, military police, personnel, finance, and medical modules, as well as any other modules required to meet the mission assigned by the JFC/ASCC. The JFC may also elect to include strategic CSS cells from the AMC, the DLA, and the Military Traffic Management Command (MTMC).

A-9. The composition of the TFOP varies throughout the stages of a force projection operation and depends on numerous factors including the type of operation, the nature of the supported ARFOR, the available infrastructure in the theater, availability of contracted support, support provided to and by other Services and allies, and the nature of the threat. TFOP out-sized equipment requiring sealift to force projection theaters is integrated into cargo manifests of current APA vessels. More details on TFOP organization are in FM 63-4.

TFOP COMMAND AND CONTROL

A-10. The C2 element of the TFOP is the initial EEM that deploys to force projection theaters. It is typically comprised of the TSC headquarters EEM and national strategic-level CSS elements from an AMC logistics support element (LSE), a DLA contingency support team (DCST), and a MTMC port management module as directed by the JFC/ASCC. As directed by the ASCC/ARFOR commander, functional commands also provide C2 of TFOP elements. The technical chains between forward elements of functional commands and their parent commands remain in tact. The same is true of the national strategic-level elements. Relationships between the TSC and functional commands will be discussed in FM 63-4.

FUNCTIONAL TFOMS

A-11. Under the template, functional mission-oriented TFOMs of the TFOP are typically configured under tailored battalion-level transportation port, terminal, and motor transport; medical; engineer; multi-functional logistics; and other support task forces as directed by the ASCC/ARFOR commander. Other organizations such as elements of an explosive ordnance disposal (EOD), civil affairs (CA) teams, NBC companies, military police (MP) company, and a rear operations center may also be included in the TFOP. All these TFOMs perform the operational and tactical functional missions associated with theater opening and initial entry force generation. The actual functional mission-oriented TFOM mix depends on METT-TC and available in-theater infrastructure. The actual transportation port and terminal TFOM mix depends on the specific theater reception infrastructure. Water terminal TFOMs are only required in theaters supported by a SLOC.

A-12. The CSS group (typically an ASG) headquarters provides basic command and staff planning, supervision, and life support functions for its subordinate battalions/battalion task forces as directed by the ASCC/ARFOR commander. It also normally provides life support to the TFOP elements.

Appendix B

Joint/Multinational Distribution

The Army, Navy, Air Force, and Marine Corps, under their departmental secretaries, and the Coast Guard, under the Department of Transportation in peacetime and the Department of the Navy in wartime, are responsible for the functions enumerated in DoD Directive 5100.1. They provide support for Service forces including procurement, distribution, supply, equipment, and maintenance, unless otherwise directed by the secretary of defense.

Nevertheless, recent operations in the Persian Gulf, Somalia, Rwanda, and elsewhere demonstrated that insufficient coordination may occur among the Services to plan and supervise CSS operations. The results may include a redundancy of materiel, duplication of effort, and competition for scarce in-country assets.

JOINT SUPPORT

B-1. The JFC is responsible for theater distribution. JP 4-01.4 will detail distribution in a joint context. Joint theater distribution managers often operate in an environment with special challenges and circumstances, and where deficiencies in asset visibility can have serious consequences–cost inefficiencies in peacetime and loss of additional lives in wartime. They may also operate in austere conditions without the support of an extensive base infrastructure. The lack of assured, continuous, high-quality communications adds further complications.

B-2. High quality management and support are essential to coordinate the buildup of CSS to support a contingency. It is highly unlikely that US forces will ever again have the time they were afforded to prepare for operations in Southwest Asia. Future contingencies will likely permit very limited time for the buildup before combatant operations begin.

B-3. Historically, providing CSS was predominately a Service responsibility. The Army can expect JFCs to ask Service component commanders to take on CSS missions supporting other Services. JFCs must capitalize on the unique strengths of individual Services that can best provide specific support to deploying forces. For further information see FM 100-10, FM 100-8, and JP 4-0.

B-4. JP 4-0 is the basis for joint logistics doctrine. It suggests that for a given area and mission, a single command authority should be responsible for logistics. In addition, it recommends that chains of command and staffs be

organized in such a way during peacetime that reorganization is unnecessary during wartime.

B-5. JFCs ensure that the concept of CSS supports the concept of operations. The CSS concept of the campaign plan does this by establishing a base of operations, opening and maintaining LOCs, providing intermediate bases of operations to support phasing, and establishing priorities for support for each phase of a campaign. The CSS concept also uses available HNS and contracted support.

SUPPORT TO OTHER SERVICES

B-6. Even though CSS is a Service responsibility, the Army provides certain support to other Services though several types of authorities. Though the Army has other responsibilities, this discussion deals only with support provided to forces of other Services in a theater during operations. Such support falls into two basic categories. It is either support that the Army provides to other Services in all theaters and for all types of operations, or it is support associated with a specific theater, OPLAN, or situation.

B-7. Executive agency is only one facet of Army support to other Services. DA Memo 10-1 lists all the executive agency responsibilities of the Army. It defines an executive agent as a "DoD component which has been designated by the President, DoD, or Congress as the sole agency to perform a function or service for others." However, whether the term "executive agent" is used or not, the Army is responsible for certain support functions in all theaters. For example, the Army provides management of overland petroleum support to US land-based forces of all DoD components. To ensure wartime support, the Army funds and maintains tactical storage and distribution systems to supplement existing fixed facilities. The Army is responsible for inland distribution during wartime to include providing the necessary force structure to construct, operate, and maintain an inland petroleum distribution system. In an undeveloped theater, this also includes providing a system that transports bulk petroleum inland from the high-water mark of the designated ocean beach. Some key responsibilities related to theater distribution that are assigned to the Army on a permanent basis are listed in Figure B-1.

TASKING DOCUMENT	SUPPORT RESPONSIBILITY
AR 40-656	Veterinary Service Support
AR 40-905	Single Integrated Medical Logistics Management (SIMLM)
DSD Memo, 13/3/91	Controlled Disposal of Waste, Explosives, and Munitions
DSD Memo, 15/3/91, and JP 4-06	Mortuary Affairs
DoDD 1315.06	Military Troop Construction Support to OCONUS USAF
DoDD 2310.01	Executive Agency for DoD Enemy Prisoner of War Detainee Program
DoDD 4500.09	Common-User Land Transportation in Overseas Areas
DoDD 4500.09	Intermodal Container Management
DoDD 4500.09	Overseas Ocean Terminal Operations
DoDD 4525.06	Management of Military Postal Services
DoDD 4705.01	Executive Agency for Land-Based Water Resources
DoDD 5030.49	Executive Agency for the DoD Customs Inspection Program
DoDDs 5160.65 and 5160.68	Management of Conventional Ammunition
DoDD 5515.08	Executive Agency for Processing Claims (in Selected Countries)
DoDD 5515.09	Executive Agency for Settlement of Tort Claims by DoD Employees
DoDI 4140.50	Locomotive Management
JP 4-01.5	Single Manager for Military Traffic Management
JP 4-02	Food Safety Service
JP 4-03	Overland Petroleum Support Management
OSD Memo 27	Inland Logistics Support to US Marine Corps
USD (Log) Memo, 6/11/95	Executive Agency for Automatic Information Technology (AIT)

Figure B-1. Army Responsibilities for Support to Other Services

B-8. In addition to these general responsibilities that apply in all theaters and for all Services (unless specifically limited to a single Service), a JFC may designate a Service, usually the dominant user or most capable Service, to provide common item/service support for the entire theater, areas within a theater, or specific operations. The JFC frequently tasks the Army component of a joint force to provide CSS to other Service components, and he may task it to provide specific support to allied commands or other agencies. Responsibilities may include–

- Wartime Class I, II, III(B), IV, and IX in-theater receipt, storage, and issue.
- Medical evacuation on the battlefield.
- Transportation engineering for highway movements.
- Finance, banking, and currency support.
- Chemical ammunition.
- Airdrop equipment and systems.
- Billeting, medical, and food service support for transient personnel during other than unit moves.

B-9. CSS planners must identify joint and multinational CSS responsibilities as soon as possible so that adequate distribution assets are available to meet the JFC's requirements.

MULTINATIONAL SUPPORT

B-10. Although each country is responsible for providing sustainment for the forces it deploys, varying degrees of mutual CSS are expected in order to achieve economy of effort. Just as for US Services, responsibilities for allied countries can be delineated based on theater requirements and the ability of each country to provide materiel and services. Duplication of effort again should be avoided. Unity of effort among multinational CSS partners is essential. Limited centralized C2 is possible for some CSS functions, such as bulk fuel supply, contracting, movement control, and some services. This relationship is formed on a case-by-case basis consistent with METT-TC and the force command structure.

B-11. Multinational distribution is a major challenge. Potential problem areas include differences in doctrine, stockage levels, CSS mobility, interoperability, infrastructure, competition among Services and alliance and/or coalition members for common support, and national resource limitations. Nonetheless, force commanders must coordinate the use of facilities such as highways, rail lines, ports, and airfields in a manner that supports mission accomplishment. The notion that CSS is primarily a national responsibility cannot supplant detailed CSS planning in the operational area. CINCs typically form multinational CSS staff sections early to facilitate CSS coordination and support multinational operations.

B-12. Standardization of CSS systems and procedures can ease the CSS challenges. Interoperability of equipment, especially in adjacent or subordinate multinational units, is desirable and is considered by operational planners during concept development. Significant CSS operations include acquisition and distribution of food stuffs, fuels, ammunition, and spare parts; transportation; field services; and combat health support. JP 4-08 will detail multinational support considerations.

Appendix C

Distribution of Supplies and Services in the Theater

Successful distribution must be both effective and efficient. Anticipation, integration, continuity, responsiveness, and improvisation facilitate effective and efficient distribution operations. Commanders and support personnel who integrate CSS concepts and operations with strategic, operational, and tactical plans must anticipate requirements, maintain visibility of the distribution pipeline, and be able to affect rapid and positive control within the distribution system. The theater distribution system allows units to request, receive, sort, maintain, distribute, retrograde, and control the flow of resources between the point of entry into the theater system and the destination within the theater. This appendix lays out the flow of discrete CSS resources through the theater hub: from reception in the theater hub to delivery at DS activities in the CZ.

Theater and corps hubs provide the foundation for the in-theater distribution pipeline. Hubs receive and stage all supplies, personnel, and units moving into the theater and prepare them for onward movement to their ultimate destination.

DMCs, found within theater/corps hubs and the division support area, manage the theater distribution system by accessing asset and ITV system tracking shipments as necessary, and establishing priorities to ensure that theater infrastructure is balanced with the resource flow requirements. This is accomplished through DMC staff supervision of distribution terminals and control centers and in close coordination with the functional elements.

SUPPLY

C-1. Basic loads support units during the initial stages of an operation. APS may also provide support in early stages of an operation. Forward presence SSAs in DSUs at echelons above division are authorized to establish the combat ASL and other stockage requirements to sustain the operations. Forward presence general support units (GSUs) maintain a minimal level of combat essential supplies to satisfy high-priority requisitions and to account for interruptions in the distribution system. The number of items maintained is based on anticipated wartime usage rates. Beginning with the transition-to-war phase, the number of items maintained is adjusted to the wartime demand.

C-2. Adequate APS and staging base capabilities are maintained to meet anticipated force requirements in a theater until SLOC closure from CONUS.

APS materiel may be positioned in the COMMZ or other designated area to meet immediate needs at the onset of war. This dispersion of stocks also reduces vulnerability.

C-3. IAW the JFC and ASCC/ARFOR CSS priorities, the TSC MMC provides direction for receipt, storage, and issue of theater stocks. When the required stocks are not available or stock replenishment is required, requirements pass to the appropriate CONUS national inventory control point (NICP). Arriving shipments are routinely throughput from the port directly to direct support units (DSUs). With the exception of Class V, throughput routinely makes up 70 percent or more of the flow of supplies within the theater distribution system. Otherwise, shipments are directed to distribution terminals for reconfiguration or to an appropriate general support storage activity in the theater.

C-4. Whenever feasible, the distribution system will use strategic configured loads (SCLs). These loads configured in the sustainment base will be throughput whenever possible from the POD to SSAs.

CLASS I

C-5. Class I items are initially pushed from CONUS or other sustaining locations to the theater. The mix of perishable and semi-perishable rations depends on the JFC's feeding policy, the arrival dates of units capable of handling Class I items, and the availability of refrigerated storage.

C-6. Class I supplies arriving in the theater are moved to a GS or a DS supply activity capable of handling them. GS supply activities can issue to other GS activities, but primarily issue to DS supply activities. DS supply activities issue Class I items to their customers, the consuming units. They stock Class I supplies based on unit strength reports submitted by the units they support. Currently, the supply point method is used to issue Class I items to consuming units. See FMs 10-1 and 10-23 for more details on Class I supply operations. Figure C-1 depicts the flow of Class I in a fully developed theater of operations.

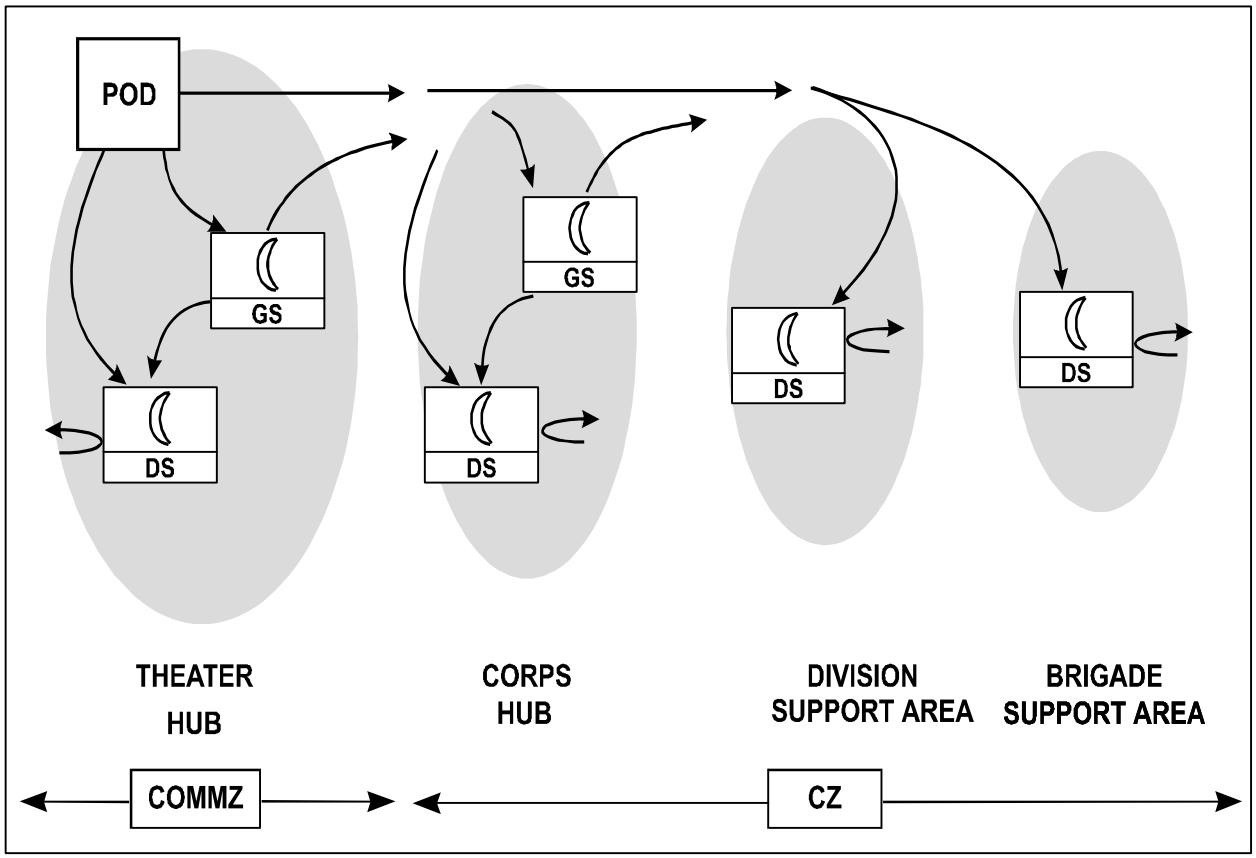


Figure C-1. Distribution of Class I in the Theater

CLASSES II, III (PACKAGED) AND IV

C-7. Classes II, III (Packaged), and IV represent a broad range of general supplies that are less visible than other commodities. Nevertheless, they contribute significantly to the support of the mission. Class II consists of items such as clothing, individual equipment, tentage, organizational tool sets and kits, hand tools, maps, administrative/housekeeping supplies, and equipment. Class III (Packaged [P]) consists of packaged petroleum, oils and lubricants (POL) products that can be handled in basically the same manner as dry cargo. Class IV consists of fortification, barrier, and construction materials. Figure C-2 depicts the flow of Class II, III(P), and IV in a theater of operations.

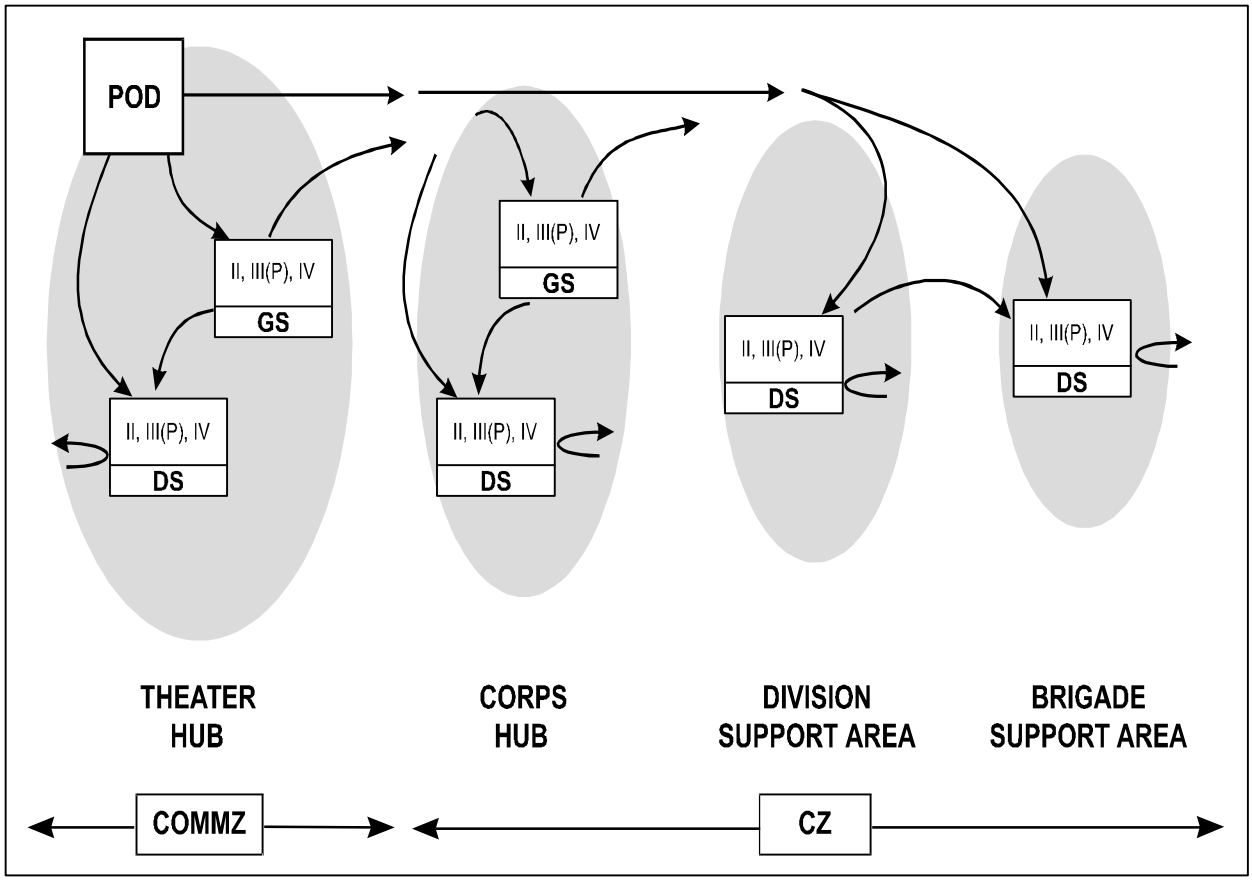


Figure C-2. Distribution of General (Class II, III(P) and IV) Supplies in the Theater

CLASS III (BULK) SUPPLIES

C-8. The responsive supply of Class III (Bulk) is critical to battlefield success. The TSC MMC centrally manages, controls, and allocates it IAW the JFC's/ASCC's priorities. The operational-level commander, in coordination with the TSC, is responsible for providing bulk petroleum to US land forces. Support to multinational forces is based on established agreements.

C-9. Distribution planning is the basis for the design, construction, and operation of the theater petroleum distribution system. The senior petroleum unit commander is also responsible for quality surveillance and liaison with the TSC MMC as well as with the supported forces. Bulk fuels are distributed based on ASCC/ARFOR established priorities and TSC MMC directives. Stockage policy is covered in AR 710-2. Additional information on petroleum operations and organizations is in FMs 10-1 and 10-67. Figure C-3 depicts Class III (Bulk) supply flow in a theater of operations.

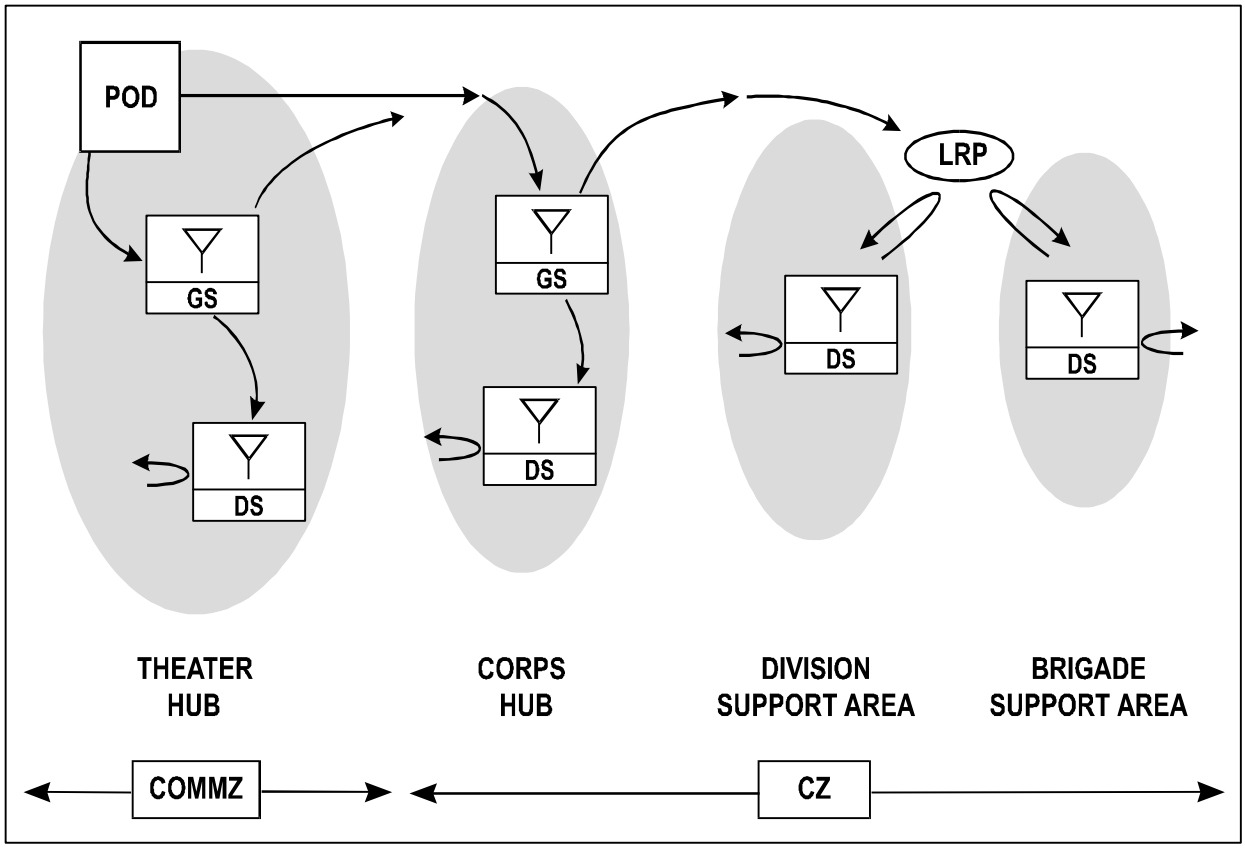


Figure C-3. Distribution of Bulk Fuels (Class III) in the Theater

CLASS V

C-10. The ASCC/ARFOR commander establishes priorities for theater Class V supplies, giving priority to the highest usage and most critical ammunition. The TSC MMC coordinates the shipment and delivery of stocks from CONUS IAW the CINC's support plan. Shipment is by either surface ships or aircraft. To immediately support rapid deployment forces, initial shipment is likely to be by air (ammunition accompanying troops and ammunition requirements prior to the forecasted arrival of APS ships). This is followed by APS ships and then surge shipping. The ASCC/ARFOR and JFC CSS planners must consider total force ammunition requirements in a contingency environment when planning for the movement of stocks and supported forces. The intent is to maximize throughput of ammunition whenever possible. Requirements are then filled with mission configured loads (MCLs) shipped from the corps storage area (CSA) or ASP as much as possible. FM 9-6 has details on Class V supply. Figure C-4 depicts ammunition flow in the theater. (Initiatives are underway to employ strategic configured loads (SCLs) for ammunition as with other classes of supply. These loads will be throughput whenever possible from the POD to the ATP. Several issues must still be resolved to take full advantage of SCLs of ammunition.)

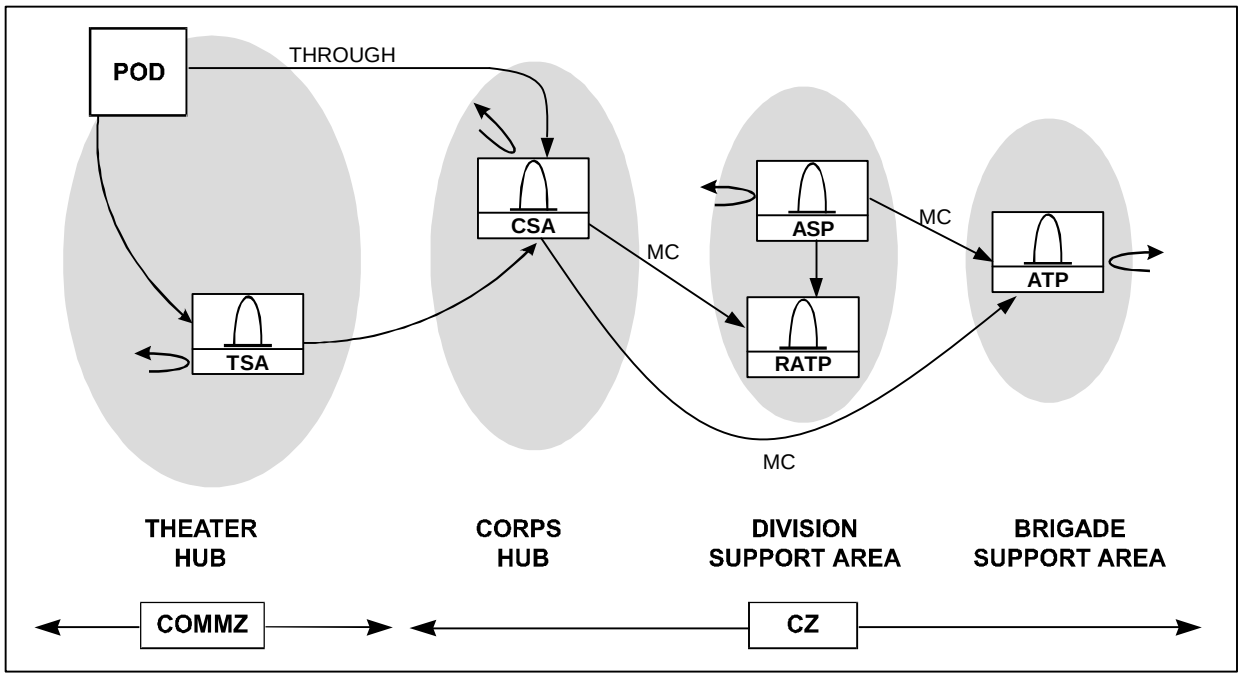


Figure C-4. Distribution of Conventional Ammunition (Class V) in the Theater

CLASS VI

C-11. Army/Air Force Exchange System (AAFES) sales teams, operating fixed-area facilities and tactical field exchanges, may establish essential post exchange services at the operational and tactical levels of CSS. In the early stages of war, essential exchange stocks may be turned over to the theater supply system. The ASCC/ARFOR can request health and comfort packages and health and comfort packages-Type II, which are issued gratuitously with Class I supplies. Health and comfort packages contain health and sanitation items such as toothbrushes, toothpaste, razors, and personal demand items. The health and comfort packages-Type II contain additional health and comfort items for female soldiers. As the theater matures and conditions permit, exchange activities can be established or expanded and a wider variety of items can be sold. Class VI items forwarded to the theater are based on personnel strength figures. See FM 10-27 for more details.

CLASS VII

C-12. Class VII supplies consist of major end items such as weapon systems (launchers, tanks, etc.), mobile machine shops, and vehicles. Major end items are a final combination of end products that are ready to use. They represent a low percentage of total line items but a high percentage of the total dollar value of the Army inventory. Because of the high dollar cost and their overall importance to combat readiness, major end items are usually controlled

through command channels; otherwise, the TSC MMC controls them at theater level. The requisitioning, distribution, maintenance, and disposal of these items are intensely managed at each support level to ensure visibility and operational readiness. Major end items are controlled and distributed IAW carefully developed theater distribution plans and directions. Figure C-5 depicts Class VII materiel flow.

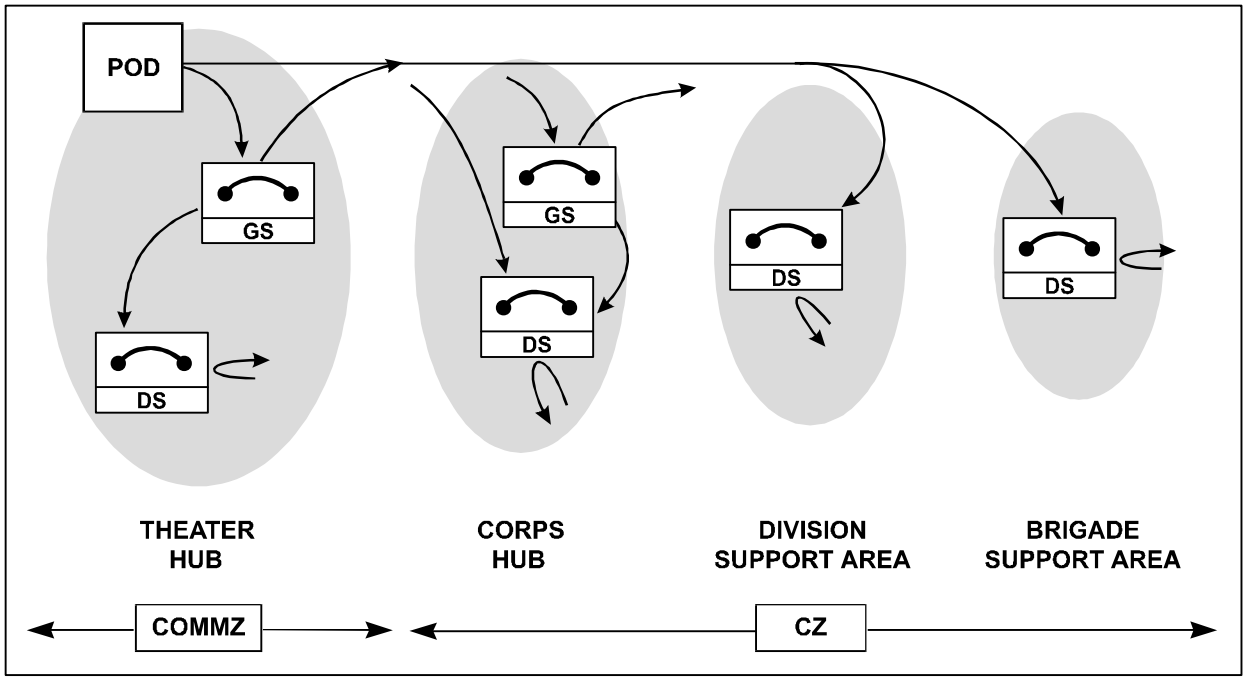


Figure C-5. Distribution of Major End Items (Class VII) in the Theater

CLASS VIII (COMBAT HEALTH LOGISTICS)

C-13. Combat health logistics must be anticipatory and projected when and where needed. It must be tailored to continuously support missions through all stages of operations and across the operational continuum. The Class VIII supply system must reduce its reliance on strategic air and sea lift, utilize throughput distribution to the maximum extent possible, eliminate double handling, and recognize and plan for the distribution mission. Theater Class VIII supply management is accomplished through a unit distribution system that pushes preconfigured supplies and services as far forward as needed. Blood and resuscitative fluids are dispersed throughout the medical support system using predetermined distribution guidelines. The MLMC links the wholesale system (CONUS) with the theater. The Army combat health logistics system serves as the theater's Single Integrated Medical Logistics Manager (SIMLM). See FM 8-10-9 and FM 8-55 for comprehensive discussions on this subject.

C-14. In a mature theater the medical logistics (MEDLOG) support company is responsible for resupplying Army medical units in the COMMZ and

resupplying MEDLOG support companies in the corps. The corps MEDLOG support companies resupply divisional and nondivisional medical units in the CZ. The MEDLOG support company along with the MLMC performs the single integrated medical CSS mission in support of joint or multinational operations.

C-15. Initially, resupply to the theater is provided by preplanned, time-phased shipments of medical resupply sets from the CONUS strategic CSS system. When possible, medical supplies are shipped directly to the corps MEDLOG support company from the national strategic CSS base. This happens when required supply echelons of care are determined and normal replenishment, based on theater demand, replaces the preplanned resupply system.

CLASS IX

C-16. The TSC MMC manages Class IX supplies for the theater. The degree of management is generally proportional to the contribution repair parts make to the operational readiness of the end items they are supporting. Items such as major assemblies, that directly affect the ability of end items to operate in combat, receive particular attention. Another factor affecting management is dollar value of supplies. Combat-essential and high-dollar-value items are intensely managed at all levels. Low-cost, noncombat-essential items may be managed within the established parameters of the automated systems at the various echelons of supply, thereby allowing the manager to concentrate on fewer items.

C-17. The operational level of Class IX supply focuses on providing a GS level of supply that provides a safety level for all repair parts and a level of stockage for the items that will not be sent to the theater via ALOC. Easing these supply requirements are the serviceable assets that GS maintenance repair of line replaceable units generates. These theater-generated assets can offset the requirement to support from the strategic level of supply.

C-18. ALOC cargo arrives daily at predetermined in-theater aerial ports. Most Class IX ALOC-eligible items are delivered directly to the requesting SSA. The remaining Class IX ALOC items are delivered to a GS repair parts supply company in the COMMZ or CZ. Air eligible Class IX support begins when the ALOC is established, but non-ALOC support must await SLOC establishment. FM 10-1 and FM 10-27 contain additional information on Class IX supply. Figure C-6 depicts Class IX materiel flow.

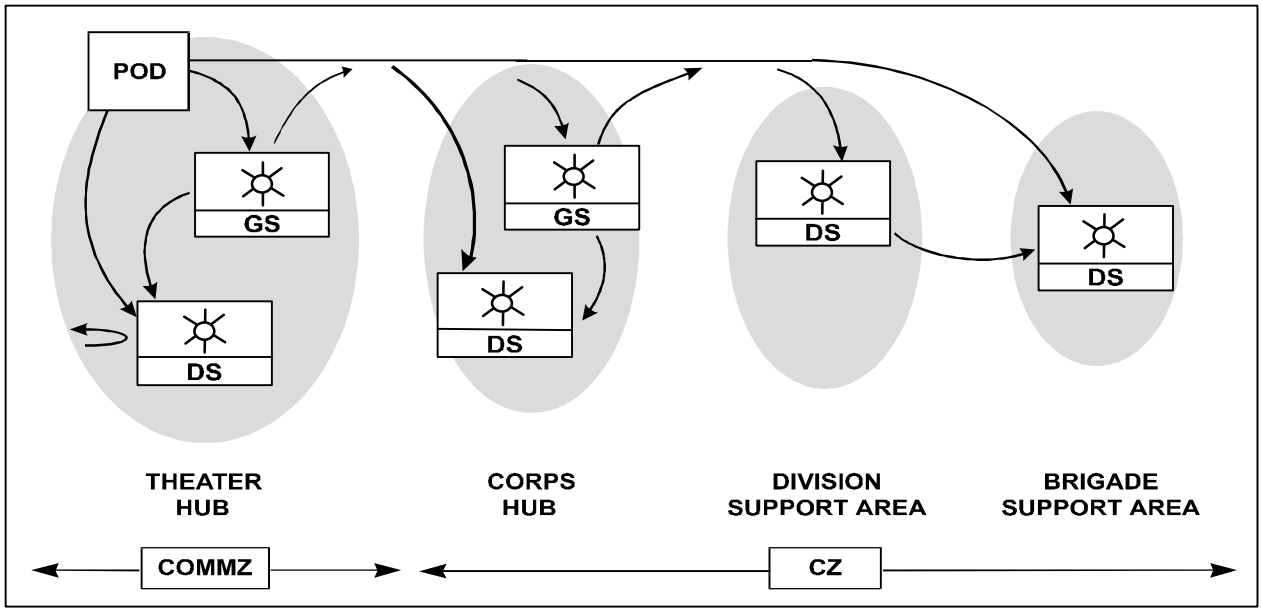


Figure C-6. Distribution of Repair Parts (Class IX) in the Theater

WATER

C-19. MMCs monitor water priorities and allocation procedures and provide the commander with supply information. In many regions of the world, surface water is readily available and DS purification, storage, and distribution capabilities are sufficient. However, when well drilling is necessary, the senior engineer command in the theater assists CSS personnel by locating and drilling in the most appropriate places. Army of Excellence Divisions, separate brigades and armored cavalry regiments (ACRs) have organic DS purification, storage, and distribution capabilities. Force XXI divisions and all nondivisional units receive DS water support from water purification, storage, and distribution elements of echelon above division (EAD) quartermaster supply and water support force structure. These DS units provide support on a unit or area basis.

C-20. In an arid environment, available water sources are limited and widely dispersed. Surface fresh water is almost nonexistent, and the availability of subsurface water varies within geographic regions. This lack of water sources mandates extensive purification, storage, and distribution. GS water units provide these capabilities. Once a suitable water source is found, it must be treated through a process of reverse osmosis before it becomes a routine item of supply. For that reason, water purification is identified as a field service.

C-21. EAD water elements will be able to package water. The packaging will involve an expendable, lightweight material. There will be a broad spectrum

of package sizes, providing added flexibility to consumer units. The packages

will be used for water distribution, logistic packages, and caches. FMs 10-1 and 10-52 contain additional information on water support operations. Water is required for decontaminating personnel and equipment. Water for NBC decontamination does not have to be potable. The amount of water needed depends on the frequency, intensity, and location of enemy NBC attacks.

MAINTENANCE

C-22. Maintenance is critical to sustaining the Army. Without on-time maintenance, the combat arms and supporting services will not have the firepower, communications, and mobility to win in battle. It involves recovering, repairing, replacing, and returning equipment or components to the end user or the supply system. Such activities require materiel and distribution managers to integrate the various CSS systems. The personnel system ensures maintenance activities have soldiers and civilians with the required skills. The supply system supports maintenance activities with repair parts, tools, and equipment needed to perform maintenance. Transportation assets must be effectively prioritized to evacuate equipment and move required repair parts to appropriate maintenance sites. In addition, those same assets are required to return repaired equipment and components back to the using unit and/or appropriate SSA. Synchronization of all these activities within the distribution system results in a greater flexibility to satisfy the commander's priorities.

GROUND

C-23. A major change to the Army maintenance system is how we execute the four levels of maintenance. These are called flexible levels of maintenance. Rather than using the levels of maintenance in a lockstep fashion with one level supporting the next, only selected levels may be used. As an example, a particular component may be replaced at unit level, but repaired at depot, skipping field and sustainment maintenance units altogether.

C-24. Field maintenance provides repair by replacement and one-stop maintenance to the user. Division field maintenance units support the division and its maneuver elements. They also provide maintenance support to echelon above division units in their area. Nondivisional field maintenance units generally provide area support in the corps and EAC. Some nondivisional field maintenance units also provide backup/reinforcing support to the division. Field maintenance units project support though deploying maintenance support teams. LSEs can also establish forward repair activities and/or special repair activities to form a seamless maintenance structure. Forward repair activities repair customer equipment by replacing components. Forward repair activities can either

repair unserviceable components or use the distribution system to evacuate those components to another maintenance activity for repair.

C-25. MMCs at all levels identify critical end items and components and recommend maintenance priorities and timelines to the commander. Maintenance units may provide limited backup recovery support and coordinate the evacuation of customer equipment that exceeds established maintenance repair timelines, capabilities, or capacity. Maintenance units normally coordinate evacuation of equipment for repair to another direct support unit for any of the above listed reasons. The distribution system is used to facilitate the movement of the equipment to a maintenance activity that can accomplish the required repairs. See Figure C-7.

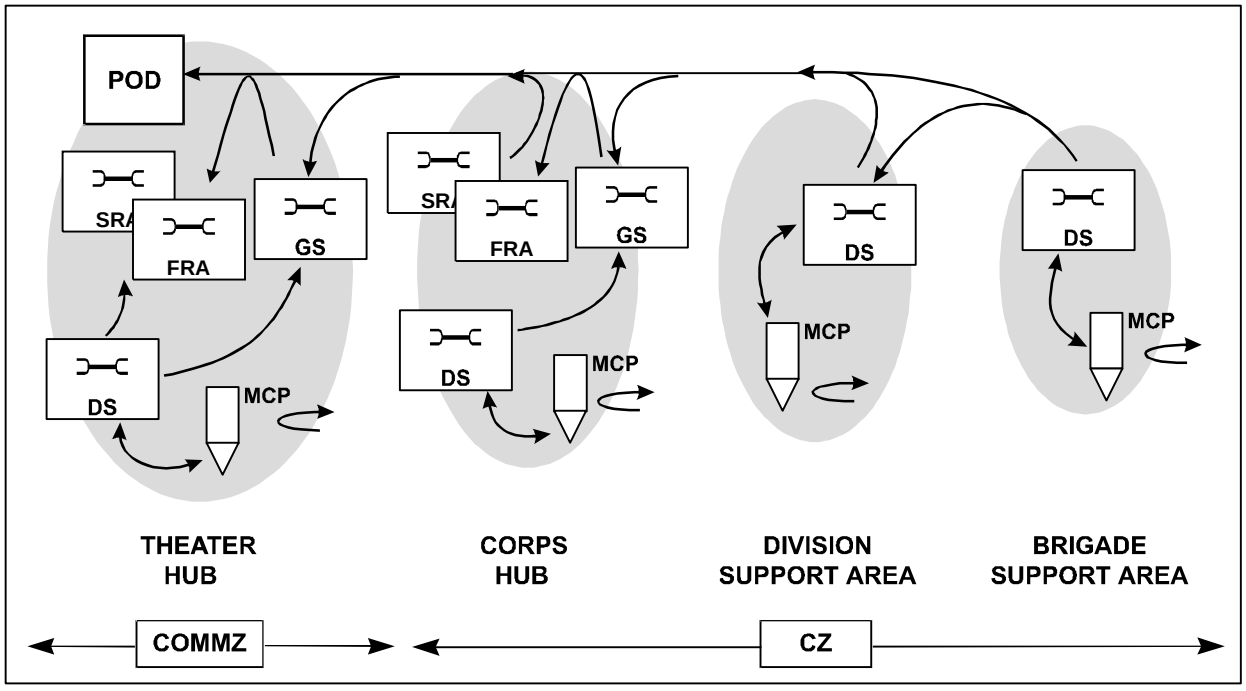


Figure C-7. Concept of Operations for Maintenance Evacuation in the Theater

AVIATION

C-26. Aviation units are responsible for performing aviation unit maintenance (AVUM) on assigned aircraft, including organizational level aircraft system and subsystem maintenance and servicing, combat emergency temporary battle damage assessment and repair (BDAR), and aircraft recovery and evacuation. Divisional and nondivisional aviation intermediate maintenance (AVIM) units provide a one-step or intermediate level of maintenance between the operating units (AVUM) and depot. Divisional AVIM companies are part of the DISCOM. In a heavy division, the DISCOM includes a division aviation support battalion (DASB). The DASB contains a headquarters and supply company, a ground maintenance company, and an aviation maintenance company (AVIM). It provides direct

support to the divisional aviation brigade. Nondivisional AVIM support for corps and EAC is provided by nondivisional aviation maintenance battalions (AMBs). These units are employed on an area basis and assigned to the appropriate (tactical or operational) level CSS organization. An aviation assistance team or an aviation classification and repair activity depot (AVCRAD) may provide

maintenance support above AVIM in theater. The AVCRAD, a CONUS-based reserve component roundout unit, provides selected depot-level support and backup AVIM within the theater. Should operational-level activities require Army aviation support, an operational-level AVIM organization is assigned; however, the operational mission may be inconsistent with the mission for which the AVIM was specifically designed. When appropriate, alternatives may include assigning the mission to the LSE AVCRAD, contracting with commercial maintenance facilities, or making cross-service arrangements. Refer to FM 1-500 for additional aviation maintenance information.

MARINE

C-27. A DS maintenance capability for all watercraft is integrated into organic unit maintenance. Floating craft maintenance elements of the transportation group provide GS maintenance to Army watercraft. The owning units normally recover watercraft. Evacuation is by specialized watercraft, such as the large tug. Depot- level maintenance may be obtained through the LSE.

RAIL

C-28. The transportation railway operating company has a railway equipment maintenance platoon that will inspect, service, and repair diesel-electric locomotives and rolling stock. The HN, under a memorandum of understanding (MOU) or memorandum of agreement (MOA), or a commercial contractor provides rail assets, recovery, evacuation, and major repairs.

AIRDROP EQUIPMENT

C-29. Airdrop equipment repair and supply companies, located in the airborne corps and COMMZ, perform airdrop equipment maintenance. In the airborne corps, this unit provides GS supply support and DS/GS maintenance support of airdrop equipment in support of the multiple airdrop support units organic to the airborne corps. Units include the airborne division airdrop equipment support (AES) company, the airborne corps AES company, and the light airdrop supply company. At the operational level, this company provides similar support to the operational- level heavy airdrop supply company and to the light airdrop supply company in each corps (other than the airborne). This company responds to the appropriate level MMC for both supply and maintenance. Additional information on airdrop equipment maintenance is in FMs 10-1 and 10-500-1.

MILITARY INTELLIGENCE/ELECTRONIC WARFARE

C-30. The military intelligence (MI) commander is responsible for both unit and DS maintenance of intelligence electronic warfare (IEW) systems/equipment. GS and depot-level maintenance organizations perform maintenance and repair of these systems/equipment that exceed the capability of the MI commander's organic assets. GS maintenance is routinely accomplished off-site at semifixed and fixed facilities. The LSE provides the flexibility to project depot-level maintenance capability.

AUTOMATION

C-31. The automation network of the theater distribution system is critical to the timely and accurate flow of relevant information. The CSS automation management offices located in the support organization at each echelon provide support for the software systems operating on the theater's automation hardware. They coordinate the installation and synchronization of the STAMIS and assist units with CSS automation planning. Military or contractor personnel perform on-site DS/GS maintenance on computer hardware or evacuate it to a DS maintenance facility. To effectively support sustainment maintenance of automation systems and repairable components above DS, a centralized commodity-oriented maintenance activity is established. This activity can deploy as part of an LSE. It deploys with sustainment stocks and maintains a database of all systems under its jurisdiction. It provides piece-part repair and is capable of repairing and returning to stock all levels of automated systems and peripheral devices.

FIELD SERVICES

C-32. The proper distribution of field services in the theater is critical to the maintenance of health, sanitation, welfare, and morale of the force. Field services consist of field feeding; mortuary affairs; aerial delivery; laundry, shower, and clothing and light textile repair; and water purification. The decision as to which field services are more critical is left to the JFC/ASCC in the theater.

FIELD FEEDING

C-33. Distribution of Class I is a direct result of the Army field feeding policy. The Army field feeding standard is that soldiers are fed three quality meals daily, to include one A/B meal per day, depending on METT-TC. Deploying units initially consume meals, ready- to- eat (MREs). As quickly as practical, the standard changes to allow soldiers to consume a variety of group feeding rations.

MORTUARY AFFAIRS

C-34. The mortuary affairs program consists of three distinct programs: the current death, graves registration, and concurrent return programs. Regardless of the program in effect, remains are evacuated in the distribution system through a series of collection points located throughout

the theater (see Figure C-8). If no temporary cemeteries or mortuaries are located in the theater, all remains are processed through the theater mortuary evacuation point for evacuation to a CONUS port-of-entry mortuary. JP 4-06 and FM 10-1 contain additional information on mortuary affairs.

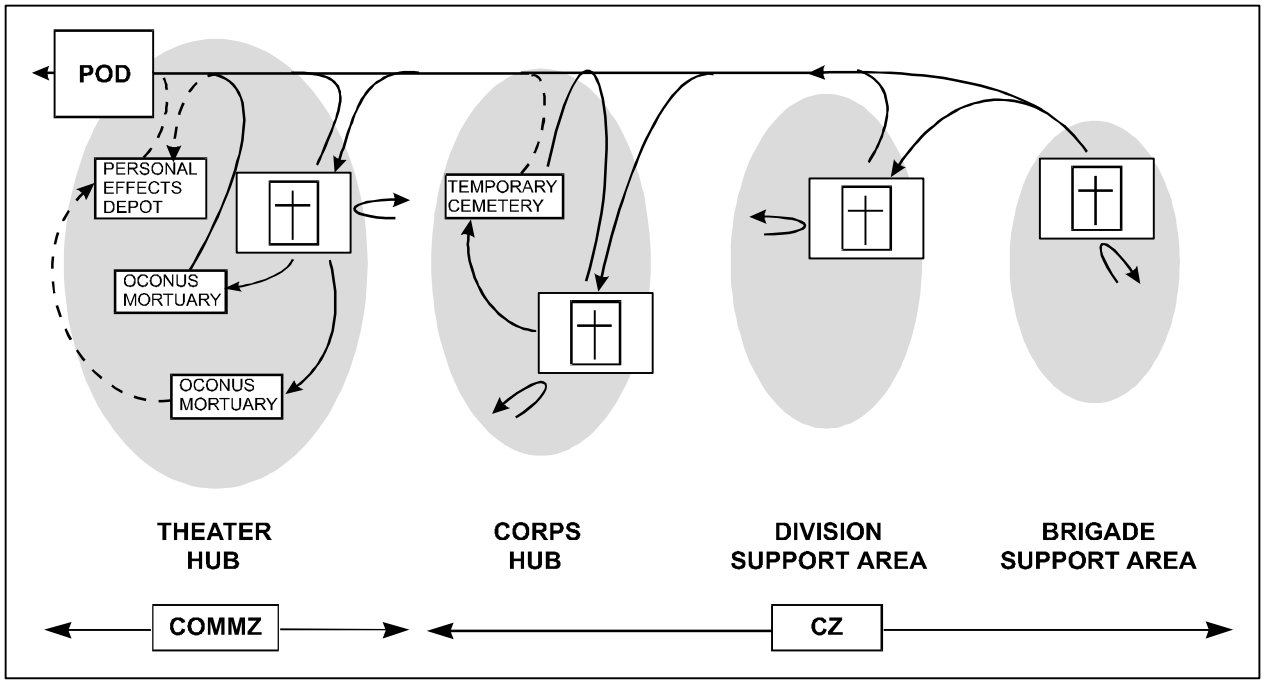


Figure C-8. Concept of Operations for Evacuation of Remains in the Theater

AERIAL DELIVERY

C-35. Aerial delivery is a critical aspect of the resource network within the distribution system. Airdrop equipment support companies provide support to an airborne insertion operation. This entails packing parachutes (personnel/cargo), rigging loads for airdrop, and performing organizational maintenance on the unit's airdrop equipment. Airdrop equipment companies provide airdrop resupply support to the force, primarily to combat units engaged in the vicinity of the forward line of troops. Airdrop responsibilities at the operational level are to provide backup airdrop resupply support and airdrop equipment supply and maintenance support to tactical level airdrop units.

LAUNDRY, SHOWER, AND CLOTHING/LIGHT TEXTILE REPAIR

C-36. The standard is to provide at a minimum a weekly shower to each soldier and, also on a weekly basis, to launder, make minor repairs, and return a soldier's individual clothing within a 24-hour period. The

weekly shower is even more important if individuals wear NBC defense clothing for a length of time. This field service is provided only in the DS mode. Within the division and corps area, this support is provided almost exclusively by field service units during war; at the operational level, by a mixture of field service units, HNS, and civilian contract. If a laundry and renovation GS capability is required, it must be provided from HNS or civilian contract. More information on laundry and shower support is in FM 42-414.

WATER PURIFICATION

C-37. Water purification capabilities are found at both the tactical and operational levels. Purified water enters the GS water distribution system from onshore or offshore purification points. GS water purification teams and detachments operate these purification points using reverse osmosis water purification units. Purified water is stored in collapsible fabric tanks at a base terminal storage facility. It is distributed to other terminals at the operational level and to the tactical level by the Tactical Water Distribution System, semitrailer-mounted fabric tanks, or hard-wall tankers. The water assets at the operational level come under the C2 of the petroleum and water group; at the tactical level they come under the COSCOM and DISCOM. When the GS water system is implemented, both corps and division require augmentation with additional storage and distribution capability. Additional information on water purification is discussed under water supply earlier in this section and in FMs 10-1, 10-52, and 10-52-1.

FORCE PROVIDER

C-38. Force Provider is an air transportable 550-man modular collective support system that supports a myriad of mission profiles, including soldier rest and refit, convoy support, theater reception, and staging base operations. Airframe requirements by type aircraft for each module are: C-130=54; C-141=24; C-17=12; C-5=9. These requirements are based on 109 triple container, shipping, and storage (TRICON) and 5 international standards organization (ISO) containers, 27 generators, 4 water trailers, and 1 wastewater vacuum tank/trailer. (This does not include unit equipment. It is based on the Force Provider module itself.) Force Provider can also be used to support humanitarian aid operations, disaster relief missions, and peacekeeping operations. FM 42-414 has a detailed discussion on Force Provider operations in the theater.

TRANSPORTATION

C-39. Transportation is a fundamental element of a distribution-based CSS system. It forms the centerpiece for reception and onward movement within the theater distribution system. Theater transportation consists of movement control, modal operations, and terminal operations that work together to provide transportation support to the theater, to carry out linkages to strategic transportation, to perform operational tasks, and to support reception and onward movement. Included may be support to other Services or allied nations.

MOVEMENT CONTROL

C-40. Movement control is the planning, routing, allocation, validation, deconfliction of priorities, coordination, and ITV of personnel, units, equipment, and supplies moving over LOCs, and the commitment of apportioned transportation assets according to command planning directives. It is a continuum that involves synchronizing and integrating CSS, movement information, and programs that span the strategic, operational, and tactical levels of war. Movement control is guided by a system that balances requirements against capabilities and assigns resources based on the combat commander's priorities.

C-41. Movement control at the operational level links strategic and tactical levels of war movement control organizations. At the theater level, centralized movement control is imperative for accomplishing the phases of strategic deployment, reception, staging, and onward movement. It is also vital for sustaining forces in the combat zone, along with supporting joint service requirements assigned by the JFC to the ASCC/ARFOR.

C-42. Movement control at the tactical level of war is the responsibility of the tactical commander. Movements within the corps must be synchronized and coordinated to ensure a continuous flow that maximizes the use of available transportation assets, infrastructure, and LOCs. Division transportation links the other CSS functions into a system dedicated to supporting the division forces and their weapons systems. Movements planning and execution in the division is a staff responsibility rather than being vested in operational units found at corps and EAC. FM 55-10 contains additional information on transportation management and movements control in the theater of operations.

THEATER AIR TRANSPORT

C-43. Allocated Air Force support, HN, and Army aviation units provide air transportation within a theater. Army air transport is used to extend the ALOC. Airlift provides support for aerial pre-planned and immediate resupply, movement of critical high-priority Class IX, retrograde of reparables, pre-positioning of fuel and ammunition, and movement of low-density/high-cost munitions when time, distance, or road conditions prohibit ground transportation. Army helicopters complement other modes of

transportation when speed is essential. Army air transport can be designed to provide the connecting link between theater air and sea terminals and receiving supply activities, receiving units, or cargo transfer points. The corps movement control personnel manage Army air transport originating in the corps. It obtains its airlift from the corps aviation brigade.

MOTOR TRANSPORT

C-44. Army motor transportation is a key element of the integrated transportation system. The most versatile mode of transport, it is normally the primary mode of support to Army forces. It provides the link between the receiving units, major aerial and sea ports, supply centers, and rail and IWW terminals. Motor transport units not only provide support to the COMMZ but also linehaul service as far forward as the brigade support area (BSA).

RAIL TRANSPORT

C-45. Military rail unit capabilities are limited to the Army's one deployable transportation railway battalion which is capable of operating 160 to 200 kilometers of railway. Therefore, US forces rely on HN rail transportation to the maximum extent possible for port clearance and inland movement of high-tonnage and high-density equipment and supplies. The railway battalion is normally assigned to the senior transportation organization.

WATER TRANSPORT

C-46. Army water transport units and teams provide water transport, port, and harbor support in harbor areas and IWWs along theater coastlines. Water transport units support movement of military cargo and personnel through and between Army water terminals, as far forward as IWWs and the tactical situation allow. Water terminal operations are conducted at established ports, at beach sites, or at unimproved facilities. They are an integral part of IWW and logistics-over-the-shore operations. Army water transport units normally operate as part of a terminal battalion and are attached to and commanded by an element of the transportation organization.

OCEAN WATER TERMINAL OPERATIONS

C-47. Ocean water terminals are classified as fixed facilities, improved facilities, unimproved facilities, or bare-beach port facilities. Normally, general cargo terminal operations apply to all ocean terminals. Container, roll-on/roll-off, and combination terminals usually refer to fixed-port facilities. Logistics-over-the-shore (LOTS) operations no longer refer to only bare-beach operations; the expanded definition applies to an operation where ocean-going cargo vessels are discharged to lighterage for subsequent discharge to bare-beach (improved or unimproved) facilities.

INLAND TERMINAL OPERATIONS

C-48. Army transportation cargo transfer units establish inland terminals at both ends of and at interchange points along theater air, rail, and motor transport systems to provide for transshipment of cargo and personnel carried by these modes. Normally, operation and control of the entire inland terminal facility are the responsibility of a mode battalion or transportation group having primary transport responsibility in the region the terminal is located.

PERSONNEL SUPPORT

C-49. Personnel detachments, personnel services battalions, personnel groups, theater PERSCOMs, postal companies, replacement battalions and companies, CONUS replacement centers, and reception battalions in close coordination with the personnel staffs of each level of command (S1, G1, and DCSPER staffs) execute the personnel support mission in the theater as part of the integrated distribution system.

C-50. Success in combat is directly affected by the success of personnel support elements within CONUS and the theater of operations. Manning ensures that military personnel of the right type and in the right numbers are on the battlefield. Whether committed to a forward-presence or power projection mission, personnel support must be tailored and distributed to satisfy the commander's tactical and operational requirements, either for Army alone or in concert with a joint or multinational force.

C-51. Specific functions related to distribution include the following:

- Personnel detachments collect, validate, process, and manage combat essential information; manage critical personnel systems; and provide essential services to commanders, soldiers, deployed civilians, and joint or allied personnel.
- Postal companies receive, process, and deliver mail and provide other postal services.
- Replacement companies may be part of a replacement battalion, personnel group, or personnel services battalion. They receive, support, and process replacements (see Figure C-9).

Figure C-9. Concept of Operation for Replacement Flow in the Theater

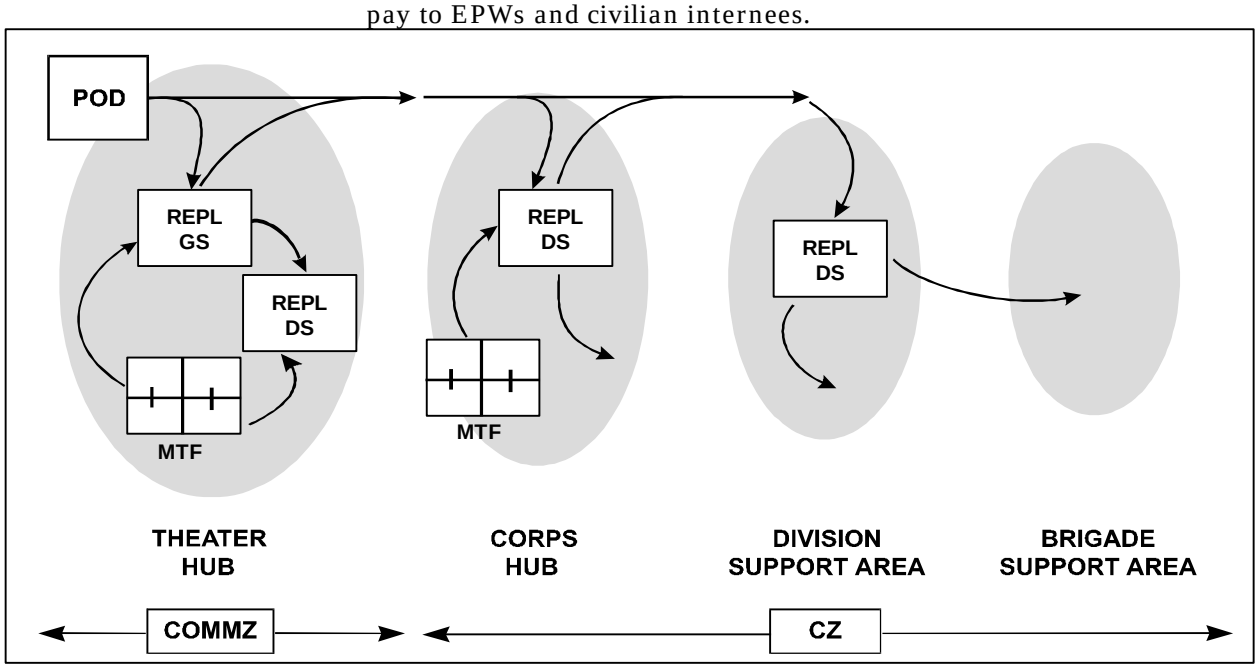
FINANCE SERVICES

C-52. The proper distribution of finance support within the theater distribution system is critical to the efficient and effective leveraging of regional infrastructure. The finance mission is to sustain the Army during joint and multinational operations by providing timely commercial vendor and contractor payments, various pay and disbursing services, and limited accounting. Military pay, travel, and disbursing are missions that offer morale support and, as such, provide an additional combat multiplier to the warfighting commander.

C-53. As directed, the senior finance commander in the theater is responsible for providing finance support to all joint and multinational commands and policy and technical guidance to finance units.

C-54. Finance units provide the full range of finance and accounting services to all military personnel and units in the theater as described in FM 14-100. They also –

- Formulate financial policy for the commander and establish finance procedures.
- Provide finance support for the theater by preparing and paying commercial vouchers, travel vouchers, and foreign national payrolls; cashing negotiable instruments; funding tactical exchange facilities and other nonappropriated fund instrumentalities; and accounting for pay to EPWs and civilian internees.



- Provide currencies for local procurement payments, foreign national payrolls, paying agents, combat payments, day laborer payments, intelligence and counterintelligence operations, and claims.

LEGAL SERVICES

C-55. As described in FM 27-100, legal service support to the command, the organization, and the soldier is accomplished within a theater of operations through seven functional areas: administrative law, contract law, criminal law, international law, operational law, claims, and legal assistance. Staff judge advocate (SJA) sections at every major echelon of command, from division to theater, provide legal service support. Theater legal service support to the theater distribution system includes interpretation and application of appropriate host nation and international laws for the acquisition of infrastructure and sustainment.

COMBAT HEALTH SUPPORT

C-56. The theater CHS system is a single integrated system from the forward line of own troops to CONUS. Since forward site medical treatment facilities (MTFs) are light and mobile (battalion aid stations and clearing stations), a system of echelons of care (see Figure C-10) is used to provide continuity as the patient is evacuated from forward areas to MTFs staffed and equipped to handle his medical needs. These facilities are normally in the corps and COMMZ.

C-57. Overall responsibility for Army CHS in a theater rests with the ASCC. Normally, a MEDCOM headquarters or a module of the MEDCOM control the theater CHS structure. However, a medical brigade may be the C2 unit of the medical support elements based on the size of the operational-level medical force in a force. It provides the flexibility to shift assets to support additional theater buildup, reallocate medical assets to accommodate patient workload, and reconstitute lower echelon medical units. If the operation expands into a multicorps force, the medical support headquarters be established on a regional basis. FM 8-10 discusses health services support as a theater of operations. The goal of the medical system is to return fully functional soldiers to duty.

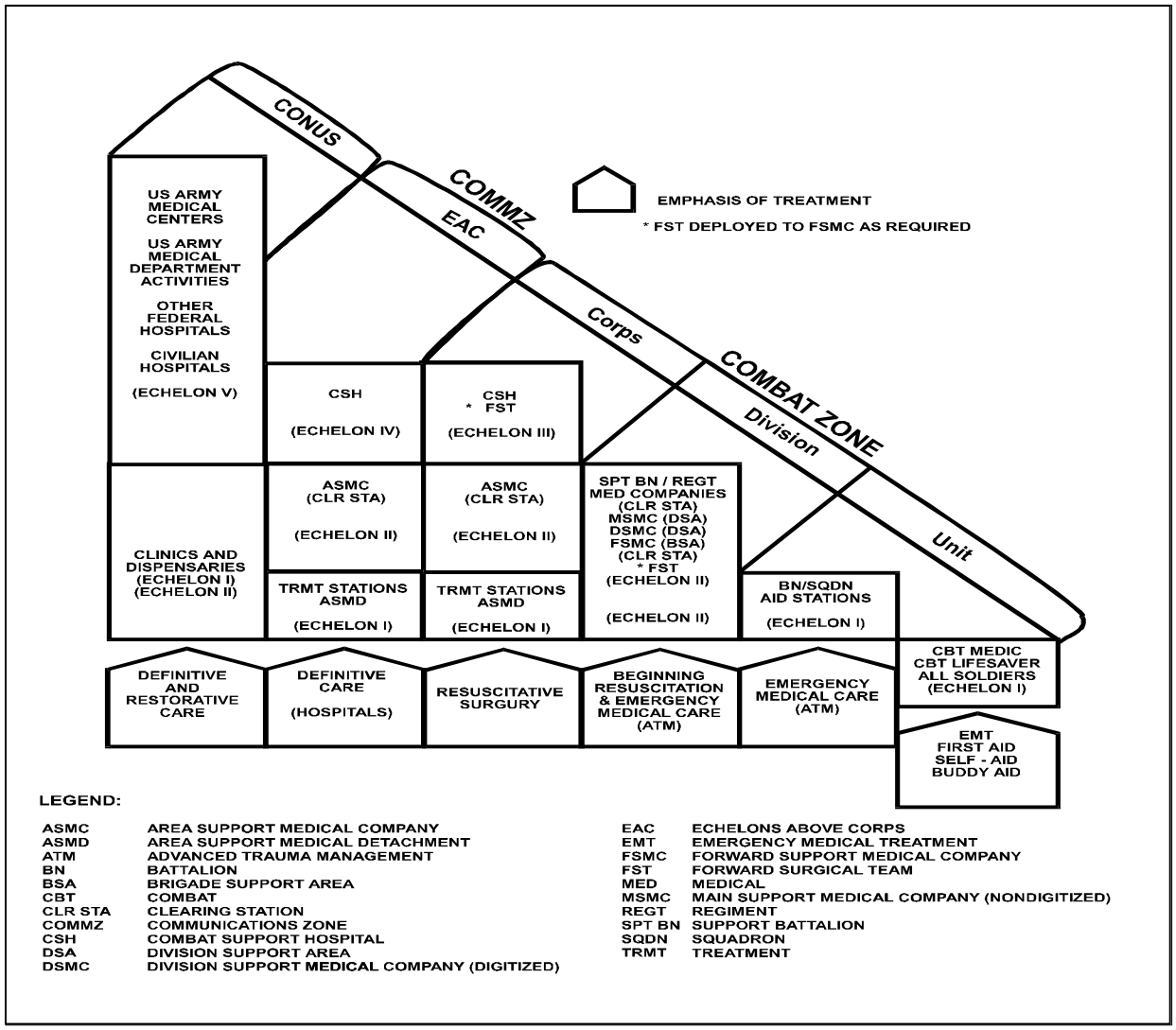


Figure C-10. Echelons of Care

MEDICAL EVACUATION AND REGULATION

C-58. Medical evacuation from the battlefield is a critical element of the overall CHS system. It must be immediately available and capable of moving seriously wounded, injured, or ill personnel from forward locations on the battlefield. Both air and ground evacuation must be totally integrated into the CHS mission in order to treat and evacuate casualties. Air evacuation is the primary and preferred mode of evacuation. Regardless of the mode of evacuation, all evacuation vehicles are capable of providing enhanced en route medical care and monitoring capabilities. As a part of this process, patients are regulated to the most appropriate echelon of care. Patient regulating is accomplished through coordination with corps medical C2 organizations and the forward areas of the battlefield. The movement of patients through the theater medical evacuation system is managed through

the medical regulation system. Together, air and ground evacuation ensure continuity of care and the continuous flow of casualties through the CHS system. Coordinated, integrated, and enhanced evacuation minimizes the number and relocation requirements of theater hospitals. In the COMMZ, the medical evacuation (MEDEVAC) battalion performs ground, air, and rail (if available) MEDEVAC of Army personnel. This mission is accomplished with organic ground and air ambulance companies and attached rail ambulance detachments (see Figure C-11).

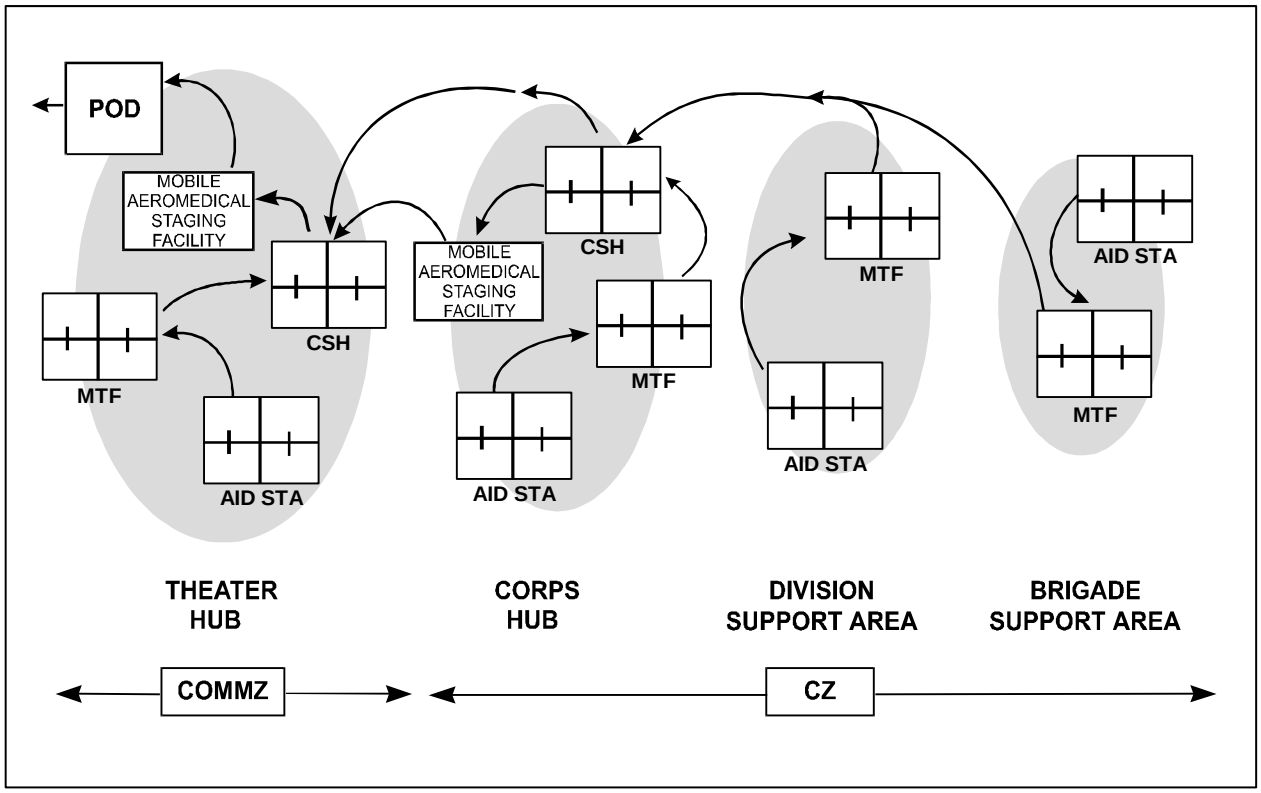


Figure C-11. Medical Evacuation in the Theater

COMBAT HEALTH LOGISTICS

C-59. Combat health logistics must be anticipatory and projected when and where needed. It must be tailored to continuously support the mission through all stages and types of operations. Commanders and staffs must carefully plan and manage the distribution of Class VIII supplies. Their goal is to reduce reliance on strategic air and sea lift, use throughout distribution as much as possible, and eliminate double handling. Theater Class VIII supply management is accomplished through a unit distribution system that pushes preconfigured supplies and services as far forward as needed. Blood and resuscitative fluids are dispersed throughout the medical support system using predetermined distribution guidelines. The MLMC links the wholesale system in CONUS with the theater. The Army combat health logistics system manager serves as the theater's single integrated medical

logistics manager. The supply discussion earlier in this appendix gives more information.

ENGINEER SUPPORT

C-60. Engineer forces at the operational level are responsible for constructing, maintaining, and rehabilitating the theater distribution system. Their responsibilities include support to other Services, agencies, and allied military forces in joint and multinational theaters of operations. The ability of CSS units to perform sustainment operations as well as move and shelter combat/combat support forces depends on adequate, responsive engineer support. The numbers and types of operational-level engineer support units depend on the size of the support base required, HN infrastructure, the mission, the availability of existing engineer support in the theater of operation, and perceived threat in the rear area.

CONSTRUCTION SUPPORT

C-61. In consonance with JCS guidance, the JFC establishes broad standards and policies for theater construction that guide engineer operations, whether they are performed by Air Force, Army, or Navy units. They are based on coordinated planning by construction representatives from all Service components. Theater construction policies establish standards, priorities, and the theater construction management structure.

C-62. The JFC may retain control at his level or delegate construction management to a regional contingency engineering manager (RCEM). When the Army is the RCEM, the senior engineer commander performs this function. The RCEM manages all construction, repair, and facility modification in the COMMZ. This structure provides centralized control with decentralized execution. The RCEM also manages all troop, contract, and HN construction repair operations in the COMMZ. Such a structure ensures that theater construction assets are employed according to theater priorities.

REAL ESTATE PLANNING AND ACQUISITION

C-63. The US Army Corps of Engineers (USACE) theater element provides technical real estate guidance and advice to the theater commander. In addition to recommending real estate policies and operational procedures, it acquires, manages, disposes of, administers payment for rent and damages, handles claims, and prepares records and reports for real estate used within the theater. The theater element also exercises staff supervision over real estate operations of subordinate Army commands and provides real estate support to other US Services.

REAL PROPERTY MAINTENANCE

C-64. The JFC has overall responsibility for real property maintenance activities (RPMA). He normally delegates authority to the ASCC/ARFOR, who may further delegate to the TSC. The TSC and installation commander

normally provide the needed RPMA support. Principal RPMA in a theater of operations include operation, repair, and maintenance of facilities and utilities, fire prevention and protection, and refuse collection and disposal. RPMA requirements that exceed the CSS organization's capabilities are forwarded to the supporting USACE element for execution according to theater priorities. The TSC provides technical RPMA guidance to subordinate CSS organizations. The subordinate CSS organizations provide RPMA support to all Army facilities in the theater, including leased facilities unless HNS is available for leased facilities. FM 54-40 discusses the ASG role.

Glossary

SECTION I. - ABBREVIATIONS

A

AA	assembly area
AAFES	Army and Air Force Exchange Service
AALPS	Automated Air Load Planning System
ABCS	Army Battle Command System
ABL	ammunition basic load
ACR	armored cavalry regiment
ACUS	Area Common User System
ADANS	Air Mobility Command Deployment Analysis System
ADDS	Army Data Distribution System
ADP	automated data processing
AES	airdrop equipment support
AFATDS	Advanced Field Artillery Tactical Data System
AFFOR	Air Force forces
AIS	automated information systems
AIT	automatic identification technology
AJ	anti-jam
ALOC	air line of communication
AM	amplitude modulation
AMB	aviation maintenance battalion
AMC	US Army Materiel Command
AMS	automated manifest system
AO	area of operation
AOR	area of responsibility
APA	Army pre-positioned afloat
APL	Army pre-positioned land
APOD	aerial port of debarkation
APOE	aerial port of embarkation
APS	Army pre-positioned stocks
AR	Army regulation
ARFOR	Army forces
ASAS	All Source Analysis System
ASB	area support battalion
ASCC	Army service component command
ASG	area support group
ASL	authorized stockage list
ASMB	area support medical battalion
ASMC	area support medical company
ASMD	area support medical detachment
ASP	ammunition supply point

ASR	alternate supply route
ATAV	Army total asset visibility
ATCCS	Army Tactical Command and Control System
ATM	asynchronous transfer mode, advanced trauma management
AUEL	automated unit equipment list
AUTOCAP	Automation of the Casualty Analysis Process
AUTODIN	automatic digital network
AUTOREP	Automation of the Theater Shelf Requisitioning Process
AVCRAD	aviation classification and repair activity depot
AVIM	aviation intermediate maintenance
AVUM	aviation unit maintenance
AWIS	Army Worldwide Information System
AWRDS	Army War Reserve Deployment System

B

BAS	battlefield automated system
BDAR	battle damage assessment and repair
BDCST	broadcast communication system
BFA	Battlefield Functional Area
BFACS	Battlefield Functional Area Control System
bn	battalion
BSA	brigade support area

C

C2	command and control
C2IPS	Command and Control Information Processing System
C3A	command, control, communications, and automation
C4	command, control, communications, and computers
C4I	command, control, communications, computers, and intelligence
CA	civil affairs
CAA	command arrangement agreement
CAISI	CSS Automated Information System Interface
CAPS	Consolidated Aerial Port System
CAPS II	Consolidated Aerial Port System II
CASCOM	US Army Combined Arms Support Command
cbt	combat
CCP	consolidation and containerization point
CCSS	Commodity Command Standard System
cdr	commander
CFMS	CONUS Freight Management System
CHS	combat health support
CINC	commander-in-chief
clr sta	clearing station
CMCB	corps movement control battalion
CMMC	corps materiel management center
CMOS	Cargo Management Operations System
CNR	combat net radio
COA	course of action
COCOM	combatant command
COE	common operating environment

comm	communications
COMMZ	communications zone
COMPASS	Computerized Movement Planning and Status Support
COMSEC	communication security
CONUS	continental United States
COSCOM	corps support command
COTS	commercial off-the-shelf
CP	command post
CPU	central processing unit
CRAF	Civil Reserve Aircraft Fleet
CRC	CONUS replacement center
CS	combat support
CSB	corps support battalion
CSG	corps support group
CSG(F)	corps support group (forward)
CSG(R)	corps support group (rear)
CSH	combat support hospital
CSS	combat service support
CSSAMO	combat service support automation management office
CSSCS	Combat Service Support Control System
ctrl	control
CULT	common-user logistics transport
CZ	combat zone

D

DA	Department of the Army
DACG	departure airfield control group
DAMA	demand assigned multiple access
DAMMS-R	Department of the Army Movement Management System-Revised
DAO	division ammunition officer
DASB	division aviation support battalion
DBSS	Defense Blood Supply System
DCG	deputy commanding general
DCIPS	defense casualty information processing support
DCST	DLA contingency support team
DDN	defense data network
DFAS	Defense Finance and Accounting Service
DFBS	Defense Finance Battlefield System
DII	defense information infrastructure
DIMHRS	Defense Integrated Military Human Resources System
DISA	Defense Information Systems Agency
DISCOM	division support command
DISN	defense information switching network
div	division
DLA	Defense Logistics Agency
DMC	distribution management center
DMLSS	Defense Medical Logistics Standard System
DMMC	division materiel management center
DMS	defense messaging system
DNS	domain name server

DNVT	digital non-secure voice terminal
DoD	Department of Defense
DODAAC	DOD activity address code
DODAAF	DOD activity address file
DoDD	Department of Defense directive
DoDI	Department of Defense instruction
DRMO	Defense Reutilization and Marketing Office
DS	direct support
DSA	division support area
DSCS	Defense Satellite Communications System
DSD	digital simple data
DSMC	division support medical company
DSN	defense switching network
DSS	decision support system, DISN switched services
DSU	direct support unit
DSVT	digital subscriber voice terminal
DT	distribution terminal
DTS	Defense Transportation System

E

EAC	echelons above corps
EAD	echelon above division
EEM	early entry module
EHF	extremely high frequency
ELIST	Enhanced Logistics Intertheater Support Tool
EMP	electromagnetic pulse
EMT	emergency medical treatment
ENCOM	engineer command
eng	engineer
EOD	explosive ordnance disposal
EPLRS	Enhanced Position Location Requirement System
EPW	enemy prisoner of war

F

FAADC3I	Forward Area Air Defense Command, Control, Communications, and Intelligence System
FBCB2	Force XXI Battle Command Brigade and Below
FDR	future digital radio
FEMA	Federal Emergency Management Agency
FINCOM	finance command
FLOWCAP	Flow Computer Assisted Program
FM	field manual, frequency modulation
FORSCOM	US Army Forces Command
FSB	forward support battalion
FSEN	future small extension node
FSMC	forward support medical company
FST	forward surgical team
fwd	forward

G

G1	Assistant Chief of Staff, Personnel
G3	Assistant Chief of Staff, Operations and Plans
G4	Assistant Chief of Staff, Logistics
GAO	General Accounting Office
GBS	Global Broadcast System
GCCS	Global Command and Control System
GCCS-A	Global Command and Control System-Army
GCSS-Army	Global Combat Support System-Army
GMLR	guided missile launch rocket
GPS	Global Positioning System
GS	general support
GSA	General Services Administration
GSU	general support unit
GTN	Global Transportation Network
GUI	Graphical User Interface

H

HCLOS	high-capacity line of sight
HET	heavy equipment transporter
HF	high frequency
HN	host nation
HNS	host nation support
HQ	headquarters
HQDA	Headquarters, Department of the Army
hvy	heavy

I

IAW	in accordance with
IBS	Integrated Booking System
ICODES	Improved Computerized Deployment System
IERs	information exchange requirements
IEW	intelligence electronic warfare
ILAP	Integrated Logistics Analysis Program
INC	internet controller
intel	intelligence
IP	internet protocol
IPB	intelligence preparation of the battlefield
ISDN	integrated services data network
ISO	International Standards Organization
ISYSCON	Integrated System Control
ITO	installation transportation officer
ITV	in-transit visibility
IWW	inland waterway

J

J4	logistics directorate at a joint headquarters
JAG	judge advocate general
JCS	Joint Chiefs of Staff
JFC	joint force commander
JOA	joint operations area

JOPES	Joint Operations Planning and Execution System
JP	joint publication
JPAV	Joint Personnel Asset Visibility
JTAV	Joint Total Asset Visibility
JTF	joint task force
JTR	joint tactical radio
JTTP	joint tactics, techniques, and procedures

L

LAN	local area network
LAO	logistics assistance office
LEN	large extension node
LOC	lines of communications
log	logistics
LOGCAP	Logistics Civil Augmentation Program
LOGSA	Logistics Support Activity
LOS	line of sight
LOTS	logistics-over-the-shore
LPD	low probability of detection
LPI	low probability of intercept
LPT	logistics preparation of the theater
LRC	logistics readiness center
LSE	logistics support element

M

MARC	multi-technology automated reader card
MARFOR	Marine forces
MAT	medical analysis tool
MCA	movement control agency
MCL	mission configured load
MCN	military communications network
MCO	movement control officer
MCS	Maneuver Control System
MCT	movement control team
med	medical
MEDCOM	medical command
MEDEVAC	medical evacuation
MEDLOG	medical logistics
MEDSUP	medical supply
METT-TC	mission, enemy, terrain, troops, time available, and civil considerations
mgmt	management
MI	military intelligence
MILSAT	military satellite
MILSTAR	military strategic and tactical relay satellite
MIS	management information systems
MLMC	medical logistics management center
MLST	medical logistics support team
MMC	materiel management center
MMT	movement management team
MOA	memorandum of agreement

MOBCON	mobilization control
MOD	modernization and operations directorate
MOS	military occupation specialty
MOU	memorandum of understanding
MPL	mandatory parts list
MP	military police
MRE	meal, ready-to-eat
MRO	materiel release order
MSB	main support battalion
MSC	Military Sealift Command
MSE	mobile subscriber equipment
MSMC	main support medical company
MSR	main supply route
MSRT	mobile subscriber radiotelephone terminal
MST	maintenance support team
MTF	medical treatment facility
MTMC	Military Traffic Management Command
MTS	Movement Tracking System
MTW	major theater war
mvmt	movement

N

NAVFOR	Navy forces
NBC	nuclear, biological and chemical
NC	noncombatant
NCA	National Command Authorities
NDI	non-developmental item
NEO	noncombatant evacuation operation
NES	network encryption system
NGO	nongovernmental organization
NICP	national inventory control point
NIMA	National Imagery and Mapping Agency
NIPRNET	not classified but sensitive internet protocol router network
NRP	non-unit related personnel
NSN	national stock number

O

OCONUS	outside the continental United States
OMB	Office of Management and Budget
OPCON	operational control
OPLAN	operation plan
opns	operations
OPORD	operation order
OPP	off-load preparation party
ops	operations
OPTEMPO	operational tempo
OSD	Office of the Secretary of Defense

P

P	packaged

P2C41	power projection for C41
PARC	principal assistant responsible for contracting
PBO	property book officer
PCS	personnel communications switch
PERSCOM	personnel command
PLL	prescribed load list
POC	point of contact
POD	port of debarkation
POE	port of embarkation
POL	petroleum, oil, and lubricant
ppp	point-to-point protocol
PPSB	power projection/sustaining base
pre-po	pre-positioned
PSA	port support activity
PSTN	public switched telephone network
PVNTMED	preventive medicine
PW	prisoner of war

R

RA	routing area
RAA	redeployment assembly area
RAU	random access unit
RCAPS	Remote Consolidated Aerial Port Subsystem
RCAS	Reserve Component Automated System
RCEM	regional contingency engineering manager
RDSC	regional distribution service center
regt	regiment
RF	radio frequency
RF DC	radio frequency direct communication
RF ID	radio frequency identification
ROAMS	Replacement Operations Automation Management System
RPMA	real property maintenance activity
rqmts	requirements
RSO	reception, staging, onward movement
RSO&I	reception, staging, onward movement, and integration

S

S	secret
SAAM	special assignment airlift mission
SAAS	Standard Army Ammunition System
SAAS-MOD	Standard Army Ammunition System-Modernized
SAMS	Standard Army Maintenance System
SARSS	Standard Army Retail Supply System
SARSS-O	Standard Army Retail Supply System-Objective
SATCOM	satellite communications
SBU	sensitive but unclassified
SCL	strategic configured load
SCU	satellite communications unit
SECDEF	secretary of defense
SEN	small extension node

SHF	satellite high frequency
SIDPERS	Standard Installation/Division Personnel System
SIMLM	Single Integrated Medical Logistics Manager
SINCGARS	Single-Channel Ground and Airborne Radio System
SIP	system improvement program
SIPRNET	secret internet protocol router network
SJA	staff judge advocate
SLOC	sea lines of communications
SLRP	survey, liaison, reconnaissance party
SPBS	Standard Property Book System
SPBS-R	Standard Property Book System-Redesign
SPM	single port manager
SPOD	sea port of debarkation
SPOE	sea port of embarkation
spt	support
sqdn	squadron
SSA	supply support activity
STACCS	Standard Theater Army C2 System
STAMIS	Standard Army Management Information Systems
STEP	standardized tactical entry point

T

TAA	tactical assembly area
TAACOM	theater Army area command
TACON	tactical control
TACSAT	tactical satellite
TAMMIS	The Army Medical Management Information System
TAMMS	The Army Maintenance Management System
TAV	total asset visibility
TC-ACCIS	Transportation Coordinator-Automated Command and Control Information System
TC-AIMS II	Transportation Coordinators'Automated Information for Movement System II
TCMD	transportation control and movement document
TCN	transportation control number
TCP	transmission controller protocol
TDMS	Tactical Defense Messaging System
TFOM	theater force opening module
TFOP	theater force opening package
TI	tactical internet
TIBS	Tactical Information Broadcast Service
TMG	tactical multinet gateway
tml	terminal
TMO	transportation movement officer
TNS	tactical name server
TPFDD	time-phased force and deployment data
TPN	tactical packet network
trans	transportation
TRANSCOM	transportation command
TRICON	triple container

TRI-TAC	Tri-Services Tactical
trmt	treatment
TSB	theater staging base
TSC	theater support command
TTA	tactical terminal adapter
TTP	trailer transfer point
TUCHA	type unit characteristics
TWDS	tactical water distribution system

U

U	unclassified
UAV	unmanned aerial vehicle
UBL	unit basic load
UCL	unit configured load
UCPN	unclassified packet network
UHF	ultra high frequency
ULLS	Unit Level Logistics System
ULLS-A	Unit Level Logistics System-Aviation
ULLS-G	Unit Level Logistics System-Ground
ULN	unit line number
UMO	unit movement officer
UNAAF	Unified Action Armed Forces
US	United States
USACE	US Army Corps of Engineers
USAF	US Air Force
USAMMA	US Army Medical Materiel Agency
USAREUR	US Army, Europe
USARPAC	US Army, Pacific
USC	United States Code
USD	under secretary of defense
USTRANSCOM	US Transportation Command

V

VEE	virtual end-to-end
VHF	very high frequency

W

WAN	wide area network
WARS	Worldwide Ammunition Reporting System
WIN	Warfighter Information Network
WIN-T	Warfighter Information Network-Terrestrial
WLAN	wireless local area network
WPS	Worldwide Port System
WWMCCS	Worldwide Military Command and Control System

SECTION II. - TERMS AND DEFINITIONS

automated identification technology. A family of technologies that support source data automation through various media to facilitate the rapid collection, consolidation,

storage, and retrieval of data to and from Army management systems. It includes process control hardware, application software, and hybrids that provide industry-standard real-time data acquisition to enhance productivity. It includes bar codes, radio frequency identification, magnetic strips, smart cards, and optical memory cards.

combat service support. The essential capabilities, functions, activities, and tasks necessary to sustain all elements of operating forces in theater at all levels of war. Within the national and theater logistics systems, it includes but is not limited to that support rendered by service forces in ensuring the aspects of supply, maintenance, transportation, health services, and other services required by aviation and ground combat troops to permit those units to accomplish their missions in combat. Combat service support encompasses those activities at all levels of war that produce sustainment to all operating forces on the battlefield. Also called CSS. (JP 1-02)

common servicing. That function performed by one Military Service in support of another Military Service for which reimbursement is not required from the Service receiving support. (JP 1-02)

cross servicing. That function performed by one Military Service in support of another Military Service for which reimbursement is required from the Service receiving support. (JP 1-02)

distribution. From a logistics perspective distribution is: **a.** That functional phase of military logistics that embraces the act of dispensing materiel, facilities, and services. **b.** An official delivery of anything, such as orders or supplies. **c.** The process of assigning military personnel to activities, units, or billets. (JP 1-02)

distribution system. That complex of facilities, installations, methods, and procedures designed to receive, store, maintain, distribute, and control the flow of military materiel between the point of receipt into the military system and the point of issue to using activities and units. (JP 1-02)

dominant user concept. The concept that the Service which is the principal consumer will have the responsibility for performance of a support workload for all using Services. (JP 1-02)

executive agent. A term used in DOD and Service regulations to indicate a delegation of authority by a superior to a subordinate to act on behalf of the superior. An agreement between equals does not create an executive agent. For example, a Service cannot become a DOD executive agent for a particular matter with simply the agreement of the other Services; such authority must be delegated by the Secretary of Defense. Designation as executive agent, in and of itself, confers no authority. The exact nature and scope of the authority delegated must be stated in the document designating the executive agent. An executive agent may be limited to providing only administration and support or coordinating common functions, or it may be delegated authority, direction, and control over specified resources for specified purposes. (JP 1-02)

force module. A grouping of combat, combat support, and combat service support forces, with their accompanying supplies and the required non-unit resupply and personnel necessary to sustain forces for a minimum of 30 days. The elements of force modules are linked together or are uniquely identified so that they may be extracted from or adjusted

as an entity in the Joint Operational Planning and Execution System data bases to enhance flexibility and usefulness of the operation plan during a crisis. Also called FM. (JP 1-02)

force tracking. The identification of units and their specific modes of transport during movement to an objective area. (JP 1-02)

frustrated cargo. Any shipment of supplies and/or equipment which while en route to destination is stopped prior to receipt and for which further disposition instructions must be obtained. (JP 1-02)

in-transit visibility. The capability provided to a geographic combatant commander to have visibility of units, personnel, and cargo while in-transit through the Defense Transportation System. (JP 4-01.3)

joint force commander. A general term applied to a combatant commander, subunified commander, or joint force commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called JFC. (JP 1-02)

joint servicing. That function performed by a jointly staffed and financed activity in support of two or more Military Services. (JP 1-02)

lines of communication. All the routes (land, water, and air) that connect an operating military force with a base of operations and along which supplies and military forces move. Also called LOC. (JP 1-02)

logistics. The science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, those aspects of military operations which deal with: **a.** design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; **b.** movement evacuation, and hospitalization of personnel; **c.** acquisition or construction, maintenance, operation, and disposition of facilities; **d.** acquisition or furnishing of services. (JP 1-02)

logistics pipeline. The channel of support or a specific portion thereof by means of which materiel or personnel flow from sources of procurement to their point of use. (JP 1-02)

movement control. The planning, routing, scheduling, and control of personnel and cargo movements over lines of communications; also an organization responsible for these functions. (JP 1-02)

national sustainment base. The complex of national strategic-level private, government, and military CSS organizations engaged in the production, procurement, management, control, maintenance, and distribution of resources through the CSS pipeline supporting military operations.

resources. Manpower, funds, materiel, space, and time available required to accomplish specific tasks or to realize specific objectives. Materiel includes all objects such as equipment, tools, systems, facilities, and so forth.

time definite delivery. Time definite delivery is a concept that deals with the consistency by which a distribution system delivers given resources within time frames established by peacetime standards and wartime requirements. As such it is a metric of a distribution-based logistics system that measures distribution performance and confidence in the logistics system.

total asset visibility. The capability for both operational and logistics managers to obtain and act on information on the location, quantity, condition, movement, and status of assets throughout DoD's logistics system. Total asset visibility includes all levels and all secondary items, both consumable and reparable. Also called TAV.

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