



**The United States Army
Concept Capability Plan
for**

Distribution Operations

**for the
Future Modular Force**

2015-2024

Version 1.0

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Foreword


From the Director U.S. Army Capabilities Integration Center

Evolving joint and Army concepts indicate that the future Modular Force will operate as part of a joint or coalition force. Future forces will operate across the spectrum of conflict on a global battlefield involving simultaneous regionally focused operations. These operations will be prosecuted by agile and adaptive forces that will deploy rapidly, often from strategic distances, to austere locations, where they will commence operations immediately upon arrival. Such dynamic and complex operations present challenges for those required to sustain the future Modular Force. Providing effective distribution operations in support of the future Modular Force will be a key challenge.

The *U.S. Army Distribution Operations Concept Capability Plan (CCP)* outlines distribution operations in support of the future Modular Force and identifies the capabilities required to support Army distribution during the 2015–2024 timeframe. The CCP describes how Army logistics forces will leverage and synchronize current and emerging Service, joint, interagency, commercial, and multinational capabilities to provide rapid and precise distribution support. The capabilities identified in the CCP provide a coherent means of examining potential doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions. This CCP will therefore serve as the basis for a comprehensive capabilities based assessment (CBA) involving many different proponents.

In examining the Army's future distribution requirements and capabilities, the CCP describes the joint operational environment and the potential enemy threat. The CCP describes how the Army will position itself to realize the maximum benefit from partner capabilities; it identifies emerging technologies that offer potential benefits to distribution command and control (C2), and it explains the need for improved distribution platforms. It recognizes the criticality of collaborative planning and monitoring between supported and supporting organizations and the need for agile and adaptive forces to ensure the intent of the joint force commander is met and the needs of units satisfied in a timely manner. The CCP acknowledges that distribution has a substantial joint dimension and therefore draws from the relevant joint concepts.

As with all concepts, CCPs are continuously evolving. This CCP will be refined and updated as new technologies emerge and as the capabilities introduced in this document are integrated. This CCP has applicability to many joint and Army functional areas and I recommend it to you when engaging other proponents, Services, and joint organizations.



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Executive Summary

Introduction

a. It is likely that future Modular Force operations will be characterized by joint expeditionary operations undertaken by a multinational coalition of the willing, operating in austere locations, with large areas of responsibility, conducting simultaneous and distributed operations. An agile, responsive distribution capability is required to support the high tempo of such operations to include dealing with an asymmetric threat in a non-contiguous battle space.

b. Future Modular Force distribution operations will need to be coordinated and centralized across the joint, Service, and multinational spectrum; integrating a range of capabilities and common processes, under a unified structure, to produce rapid and precise support. The benefits that such a capability affords the combatant command will include a reduction in stock holdings, improved flow of materiel, and timely and accurate support that enables high tempo operations in future expeditionary warfare to a far greater extent than is presently the case.

Basis of Distribution Operations

a. Distribution operations are contingent on three fundamental issues. They are-

- *Visibility.* The distribution manager (DM) must be able to see in real time what the user requires, when and where the item is required; where the item is currently located; the item condition; and the resources available to move the item. Equally important is the need for near real time visibility of transactions that have been delivered to the customer. This information will be available, via a shared knowledge base, to all users.
- *Capacity.* The DM must be supported by an agile physical and informational system and a distribution network with a range of node and mode capabilities that combine to produce the capacity to respond to user requirements, with speed, precision and accuracy.
- *Control.* The DM needs the ability to plan, direct, control, assess, and monitor the various processes, activities and information required to distribute the item to the user.

b. When all these requirements are met; rapid, precise, and effective distribution operations become the norm.

Operational Problem

a. The current Army distribution system lacks global near real time asset and in-transit visibility; networked communications; an information system that provides network-wide visibility of node and mode status; and an automated decision support capability. It is also deficient a suite of modern distribution platforms to enable the provision of a rapid, responsive and timely service across the area of operations (AO).

b. These issues collectively inhibit the ability of the geographic combatant commander (GCC) or joint force commander (JFC) to employ the combat power at his disposal in the most

effective manner. They also affect the Army's ability to provide the required Title 10 United States Code (USC) support to other Services or execute Lead Service Executive Agent, or lead Nation responsibilities in the future Modular Force joint, interagency, and multinational (JIM) environment.

Solution Synopsis

a. Improvements in distribution operations will not result from a single event or innovation, but from the collective beneficial contribution from a number of individual and incremental changes. Some of these changes will be cultural and structural changes driven by both Army and joint initiatives. Others will be procedural or technological changes driven by lessons learned on operations or emerging technologies. All these are necessary prerequisites to a more effective distribution network that will be managed as a system of synergistic capabilities. The most fundamental benefits will derive from improved information gathering and management, which will maximize the potential of all the other improvements.

b. The speed, precision, and accuracy with which information is exploited will dramatically improve planning and logistics output. Developing the means and procedures to manage information and reap the potential rewards is the immediate major challenge. Therefore, it goes without saying, that potential capability enhancements must be developed collectively, in a coherent and coordinated manner. A strategy is required to identify, prioritize, and integrate all the required capabilities into a program that unfolds over the next 20 years to deliver a quantum improvement in distribution operations.

Key Ideas

a. Future Modular Force distribution will employ air and surface advanced distribution platforms, precision delivery systems, and state-of-the-art C2 networks to provide a more effective two-way distribution capability. Distribution requires the optimization of a number of capabilities across the joint, Service, and multinational spectrum to produce more improved results.

b. Distribution operations can be dramatically improved and operational risk mitigated by adopting a coherent, integrated strategy that incorporates change across the DOTMLPF construct. This will result in a more effective distribution capability, with reduced stock holdings and faster more effective service, with the attendant potential savings in resources.

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Military Operations

**DISTRIBUTION OPERATIONS FOR THE FUTURE MODULAR FORCE CONCEPT
CAPABILITY PLAN**

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History. This publication is a new U.S. Army Training and Doctrine Command (TRADOC) concept capability plan developed as part of the Army Concept Strategy for the future Modular Force and as part of the capabilities based assessment (CBA) process.

Summary. TRADOC Pamphlet (Pam) 525-7-2, *Distribution Operations for the Future Modular Force Concept Capability Plan (CCP)*, is the overarching CCP for what is required to accomplish distribution operations in the future Modular Force. The ideas presented are fully integrated within the evolving context of the future operating environment, joint and Army strategic guidance, and the Army Concept Strategy, specifically, TRADOC Pam 525-4-1, *The United States Army Functional Concept for Sustain 2015-2024*. It also integrates the grandfathered concept TRADOC Pam 525-98, *Distribution Operations for the Future Modular Force Concept*.

Applicability. This pamphlet applies to Department of the Army (DA) services, TRADOC, agencies, and activities that identify and develop of doctrine, organizations, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions to field required distribution operations capabilities.

Proponent and supplementation authority. The proponent of this pamphlet is the Deputy Chief of Staff, G-9. The proponent has the authority to approve exceptions or waivers to this pamphlet that are consistent with controlling law and regulations.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Deputy Chief of Staff, G-9 (ATFC-ED), 33 Ingalls Road, Fort Monroe, VA 23651-1046. Suggested improvements may also be submitted using DA Form 1045 (Army Ideas for Excellence Program Proposal).

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Chapter 1 Introduction

1-1. Purpose

a. This concept capability plan (CCP) focuses on how distribution will be executed to support operations at the operational and tactical levels of war, and outlines how strategic distribution is integrated into the theater distribution process. It is set in the context of military actions across full spectrum operations (FSO) in collaboration with joint, interagency, and multinational (JIM) partners. This CCP recognizes that distribution involves synchronizing various elements of the logistics system and addresses the interaction of command and control (C2), distribution management, and physical distribution functions.

b. This CCP is consistent with TRADOC functional concept TRADOC Pamphlet (Pam) 525-4-1, *Sustain*, and the Army's capstone concept TRADOC Pam 525-98, *Distribution Operations for the Future Force*, and describes Army distribution operations in the future Modular Force. It forms the basis for developing the required doctrine, organizations, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions related to distribution operations. It also provides sufficient detail to support a distribution operation capabilities based assessment (CBA) and identify issues for experimentation.

1-2. Functional Area

The Army distribution operations CCP identifies capabilities required to execute Army operations during the 2015-2024 timeframe. The plan is coherent with joint functional areas of *Force Application*, *Joint Command and Control*, *Focused Logistics*, and *Net-Centric Environment*; as well as the *Joint Logistics (Distribution) Joint Integrating Concept*. It is also consistent with the Army concept strategy from the Army capstone concept, *The Army in Joint Operations*, through the six functional concepts.

1-3. Scope

a. This CCP is set against the architecture proposed for the joint deployment and distribution enterprise (JDDE) defined in the *Joint Logistics (Distribution) Joint Integrating Concept* (JL (D) JIC) and relevant allied concepts. It examines how the Army, in conjunction with Services and partners may manage theater distribution operations and, specifically, how the Army will undertake distribution operations in support of the future Modular Force.

b. The CCP acknowledges that improvements in the distribution function will largely be enabled by improvements in expeditionary theater logistics capabilities embedded in joint processes, modular logistics capabilities which support joint and coalition operations in simultaneous operations, a logistics enterprise architecture with necessary service and joint interdependence and collaboration, improved distribution platforms, and science and technology solutions to provide improved deployment and sustainment capabilities. This CCP acknowledges that retrograde operations are integral aspects of distribution. The principle and proposals of this CCP apply to information, as well as, materiel and personnel flow into, within, and out of the theater of operation or joint operations area (JOA).

1-4. Relation to the Family of Army Functional Concepts and Role of the Army in Distribution

a. TRADOC Pam 525-3-0, *The Army in Joint Operations: The Army's Future Force Capstone Concept* identifies how the Army future Modular Force will operate as an integral component of a joint force, probably as part of a coalition, that will leverage joint, interagency and multinational capabilities to exploit the benefits of joint interdependence. The capstone concept acknowledges the need for a strategically responsive, campaign quality force that is dominant across the range of military options (ROMO) against diverse threats and in volatile conditions. The concept identifies seven key operational ideas and four key tasks that must be met to achieve the challenge of full spectrum dominance. Logistics capabilities are fundamental enablers for each of the operational ideas and key tasks. The concept recognizes the need for maneuver sustainment, noting that, "Future Force operations must artfully blend strategic and operational sustainment flows...to provide continuous sustainment...through a fully integrated national-to-theater-tactical distribution system from early entry through conflict termination."

b. TRADOC Pam 525-3-1, *The U.S. Army Operating Concept for Operational Maneuver* addresses the operational level of war and is largely focused on the ways and means by which future commanders will flexibly link a broad array of tactical actions within major operations to achieve joint force commander's (JFCs) campaign objectives. It addresses FSO in a joint and coalition setting. The concept acknowledges that, "...interdependent joint sustainment will likely require the development of joint theater logistics C2 echelons capable of integrating the strategic-to-tactical distribution required to maintain high operational tempo." It recognizes that the "theater Army will normally be the C2 echelon responsible for linking the strategic logistical base with the in-theater sustainment..." and that "...operational and sustainment planning must be closely integrated, with battle and logistics rhythms executed in close harmony." Finally it identifies the need for new technologies and concepts, such as increased aerial sustainment, to support the agility and mobility needed to meet joint force requirements.

c. Future theater support commands play a critical role in this framework and further provide the capability to function as a joint functional command, where appropriate." The concept accepts that "simultaneous, high-tempo, non-contiguous operations distributed widely throughout the JOA presents significant challenges to sustainability of the deployed force." It also acknowledges that "distribution-based sustainment operations must be continuous...capable to adapt rapidly to changing conditions" and that "operational and sustainment planning must be closely integrated, with battle and logistics rhythms executed in close harmony." Finally it notes the need for new technologies and concepts, such as increased aerial sustainment to support the agility and mobility needed to meet joint force requirements.

d. TRADOC Pam 525-3-2, *The U.S. Army Operating Concept for Tactical Maneuver*, examines future tactical operations conducted at division level and below and identifies the future capabilities required to succeed at the level. The concept identifies and discusses five key ideas: simultaneous and continuous operations; decisive maneuver; routine employment of an expending set of joint capabilities; self synchronizing and cooperative engagement, and the quality of firsts. The concept notes "At the tactical level, sustaining operations typically will occur in pulses keyed to battle rhythms," the need to "adjust and redirect distribution in

accordance with (IAW) these cycles” which will require “...an adaptable distribution framework orchestrated at the operational level.” It also recognizes the difficulties of securing ground lines of communications (LOC) and the need to “expand it’s [the force] reliance on air LOC.” The concept comments that “...reduction across all classes of supply, simplified packaging and materiel handling, and increasing commonality in equipment and platform characteristics will all contribute to ease logistical burdens, as will improvements in reliability and maintainability...”

e. The final concept documents describing the Army’s roles in the future Modular Force are the six functional concepts: *Battle Command*, *Move*, *Protect*, *See*, *Strike*, and *Sustain*. The functional concepts describe the Army capabilities required to conduct successful operational and tactical maneuver. The following paragraphs address the relevance of each Army functional concept:

(1) *Battle Command*. The *Battle Command* functional concept explains in outline how future Modular Force commanders will exercise C2. It envisages C2 in a network-enabled environment, underpinned by a collaborative planning environment employed during planning, preparation, execution and assessment phases, to enable more timely and effective decisionmaking. It identifies the need for technological enablers, such as decision support systems, information fusion and synchronization, but accepts that command is equally an art, and therefore has a distinct human dimension. The themes of *Battle Command* are consistent with the C2 philosophy of this CCP; specifically-

- Centralized control and decentralized execution.
- The need for commanders to employ mission command.
- Adoption of a single integrated battle command system.
- The need for collaborative planning.
- Improved information fusion and management tools.

(2) *Move*. The *Move* functional examines force projection, with a focus on strategic responsiveness and operational agility, exploiting all modes – including new and evolving platforms to enable the Deploy=Employ paradigm. It advocates the exploitation of multiple points of entry, through austere and fixed ports of debarkation, coupled with maintenance of deployment momentum to overcome anti-access measures. The concept acknowledges the benefits of the JDDE, the need to integrate sustainment capabilities into the force flow process, and the requirement for continuous sustainment across the JOA. The ideas in the *Move* concept are consistent with the philosophy of this CCP, specifically-

- Operational maneuver from strategic distance.
- New and improved inter and intratheater lift platforms.
- Rapid intratheater maneuver and sustainment.
- Units deployed with integral sustainment.

(3) *Protect*. The *Protect* functional concept identifies the capabilities required by the future Modular Force to protect people, physical assets and information from thinking and adaptive adversaries who will seek to exploit U.S. vulnerabilities. The concept notes that the future Modular Force must operate as a networked joint force, integrated at every level, and that

organizational flexibility will be of paramount importance. It recognizes that the future Modular Force will face various threats and acknowledges that adversaries will seek to interrupt or disrupt essential U.S. knowledge networks. The ideas in the *Protect* concept are consistent with the philosophy of this CCP, specifically-

- The need to protect static and mobile resources.
- Relevance of the 'detect, assess, decide and act' cycle.
- The need for advanced protection capabilities, employed in layers.
- The need for assured sustainment distribution and protected air and ground LOC.

(4) *See*. The *See* functional concept describes how the future Modular Force will acquire and manage information and process it to provide knowledge, upon which timely and accurate decisions can be made. It notes the requirement for continual acquisition and analysis of data to provide an accurate understanding of an increasingly dynamic battlefield, where the U.S. will possess greater capabilities, but operations will be more complex. It acknowledges the primacy of the idea of the 'Quality of Firsts' and recognizes the need for the collection of detailed data and the integrated use of comprehensive knowledge. The ideas in the *See* concept are consistent with the philosophy of this CCP, specifically-

- The requirements to acquire, transform, provide, and exploit data to enable improved decisionmaking.
- The need for joint sustainment based on accurate and up to date information and global visibility.
- The need for logisticians to access information from interdependent supply chains.

(5) *Strike*. The *Strike* functional concept establishes the overarching framework for integration and employment of joint force capabilities to enable decisive results. The concept identifies the requirement to deliver immediate, precise and sustained fires but recognizes that doing so, in support of distributed operations, is a challenge. It identifies the need for the future Modular Force to employ a net-enabled battle command system that enables collaborative and dynamic planning. The ideas in the *Strike* concept are consistent with the philosophy of this CCP, specifically-

- The need to protect sustainment operations and LOC.
- The need to protect areas and facilities, such as ports and airports.
- The need for significant adjustments in sustainment concepts and capabilities to support continuous operations, including accelerated throughput and increased battlefield distribution.
- The need for reductions in sustainment demands and significant improvements in reliability.

(6) *Sustain*. The *Sustain* functional concept sets out the framework for logistics support to the future Modular Force. The concept acknowledges the need for a single joint capable network enabled logistics system. It also identifies the imperative to operate as part of a coherent system that plans and executes collaboratively and leverages JIM capabilities to achieve JFC desired effects. It notes the need for a multi-modal, multi-nodal distribution capability that

employs improved distribution platforms to provide timely, accurate and precise support for simultaneous distributed operations. The ideas in the *Sustain* concept are consistent with the philosophy of this CCP, specifically-

- The need for state-of-the-art C2 and decision support systems.
- The requirement for advanced inter and intratheater distribution platforms.
- The need for continuous support through global integrated management and use of partner capabilities.
- The need for centralized management and decentralized execution.
- The need for interdependent capabilities based on modular organizations with commonality of equipment and organizational design.

1-5. References

Required and related publications and prescribed and referenced forms are listed in appendix A.

1-6. Explanation of Abbreviations and Terms

Abbreviations and special terms used in this pamphlet are explained in the glossary.

1-7. Summary

a. This CCP identifies the capabilities required to provide a distribution system that can effectively and efficiently satisfy the needs of the future Modular Force Soldier across FSO. It recognizes the potential contributions and requirements culminating from joint interdependencies, contractor support, host nation support (HNS), nongovernmental agencies, multinational organizations, and coalition partners. It also accepts the requirement for the future Modular Force Army, just as today's Army, to provide distribution support to other Services, host nations(HNs), coalition partners, interagency, intergovernmental and nongovernmental organizations (NGO) and multinational participants in future operations.

b. It acknowledges the need for a robust C2 organization, using a common operating picture (COP), with a suite of information systems to collaboratively control and coordinate a flexible and responsive distribution network that is synchronized with operational and tactical requirements.

Chapter 2

Distribution Operations Concept

2-1. Introduction

This chapter will set out the underlying tenets and principles that guide the development of future Modular Force distribution operations. It will then outline the concept for future Modular Force distribution operations at the strategic, operational, and tactical levels.

2-2. Key Ideas

The following outline key ideas for this concept.

- Distribution will be planned, controlled and coordinated centrally as part of an integrated process. It will be executed locally as part of a unified logistics C2 network to ensure the contributions of the nodes and modes are synchronized; optimizing distribution across the enterprise.
- Distribution operations will be unified across a virtual enterprise network with clearly identified roles and responsibilities. These operations will be coordinated using communication systems that operate across multiple domains, integrating unclassified and classified information.
- Distribution operations must identify requirements, then exploit and integrate joint, service, commercial, and coalition capabilities and resources as part of an effective, coherent system to provide support in a timely manner.
- A responsive distribution system must be supported by a net-centric environment coordinated by a robust C2 system, using a standardized COP, to provide real time, domain-wide visibility.
- The customer must have confidence that the distribution network is consistently reliable and protected, and will provide a rapid and precise service; delivering what is required, when and where it is required.
- The future distribution process must be founded upon a persistent and near real time linkage throughout the entire enterprise. This linkage will be between distribution actions and event management and their effects on the planned operation and intentions of the executing commander.
- U.S. Transportation Command (USTRANSCOM), as the distribution process owner (DPO) has the mission of improving the overall efficiency and interoperability of distribution related processes and serving as a single entity to coordinate and synchronize execution of the distribution system, in conjunction with the joint distribution community of interest (COI).
- Distribution operations will use speed, precision, accuracy, visibility, and multidirectional flow and employ minimal forward stockage to produce an effective capability.
- Distribution will be executed with greater use of air assets, advanced distribution platforms, and precision delivery systems all coordinated using a state-of-the-art C2 network.

2-3. Supporting Ideas

The following outline supporting ideas for this concept.

- Rapid, precise, and adaptive distribution capabilities must support high operational tempo and reduce operational risk.
- Modern delivery platforms, with increased capability, survivability, and reliability to permit continuous operations will greatly benefit distribution operations.
- Planning and coordination of distribution operations must be integrated into geographic combatant commander (GCC) or JFC operational and tactical plans in a collaborative manner.

- A responsive and flexible distribution system will be enabled by a network comprised of one or more theater distribution hubs supporting tactical distribution nodes, linked by multi-modal transportation systems.
- An effective distribution system manages common processes, in a simple, well defined, transparent network of interactive nodal based capabilities.
- Demand drives distribution effort and until demand or consumption changes, the distribution throughput will remain largely constant.
- Improved visibility, capacity, agility, and control will enable more effective utilization of anticipatory logistics; this allows commodities to be managed in transit and to minimize stock holdings forward.
- A synchronized Department of Defense (DOD) (joint, multinational, and Services) and an industry network of organizations, infrastructures, processes, capabilities, and automated systems, with common objectives and enablers, will facilitate rapid and assured delivery and retrograde of materiel to forces worldwide across the full spectrum of military operations.

2-4. Strategic Guidance

This CCP supports the priorities of the Joint Planning Guidance, the objectives of the National Military Strategy, the Chairman of the Joint Chiefs of Staff policy and the spirit and intent of DOD strategic guidance, and the Army Campaign Plan. It complements the applicable priorities, principles, objectives, attributes, and capabilities described in DOD strategic guidance documents. There is no divergence from published strategic guidance in this concept.

2-5. The Joint Distribution Problem

a. Problems within the joint distribution environment have a direct impact on the Army distribution effort. These problems are the result of an absence of common DOD domain-wide visibility over requirements, resources, and priorities; the inability to meet operational needs of the JFC with speed and precision; and disarray of effort in the planning and execution of logistics across the JOA.

b. The following joint capability shortfalls must be addressed as part of the effort to improve Army distribution.

- Inadequate and non-interoperable asset visibility and tracking systems.
- Stovepipe management and process ownership.
- Unilateral and ad hoc command, C2 systems; no data standard or common data elements or common process metrics, and minimal data sharing.
- Lack of common rules, tools, and procedures.
- A peacetime logistics system that must be rapidly transitioned to contingency operations that impacts the ability to exercise seamless control and coordination of the deployment and distribution network.
- Wholesale and retail operations are defined, managed, and controlled separately with little interaction, except at transition points, that require mass infrastructure.

2-6. The Multinational Distribution Problem

a. Future operations for the U.S. will in most cases involve coalition partners, HNs, and governmental and nongovernmental organizations. Integration of coalition partners, who will probably vary from operation to operation, will be problematic and therefore may inhibit rapid deployments. Although there are North Atlantic Treaty Organization (NATO) and American, British, Canadian, and Australian (ABCA) standardization agreements in place, there is no universally endorsed doctrine that provides sufficient detail on how nonmember coalition partners will operate. Unless coalition partners accept these standardization agreements, the coalition will have to create their own solutions, which is time consuming.

b. The following capability gaps highlight the issues that need to be addressed to improve the situation.

- Lack of clear understanding about lead nation and role specialist nation functions.
- Inability to exchange classified and sensitive information between coalition partners.
- Lack of system connectivity to support integrated logistics operations and coordinate force protection.
- No established procedures and rules for how coalition forces integrate into the operational and tactical planning and coordination functions.

2-7. The Army Distribution Problem

a. The current Army distribution system lacks global near real time asset and in transit visibility; networked communications; and an information system that provides network-wide visibility of node and mode status; and an automated decision support capability. It is deficient a suite of modern distribution platforms to enable the provision of a rapid, responsive and timely service across the area of operation (AO). The use of current Service specific processes, practices, and systems significantly inhibits the Army distribution system from being effective and efficient, which contributes to more asset utilization and overstocking.

b. Therefore, the Army distribution organization is not able to collaboratively plan, coordinate, and execute distribution operations to match the dispersed, dynamic, high operational tempo missions undertaken by the future Modular Force. These issues collectively inhibit the ability of the GCC and JFC to employ the combat power at their disposal in the most effective manner. They also affect the Army's ability to provide the required Title 10 USC support to other Services, to execute Lead Service Executive Agent, or to lead nation responsibilities in the theater.

2-8. Central Idea

a. If theater distribution is to be optimized and integrated into a comprehensive global system as defined in the JL (D) JIC, a robust, centralized operational level logistics C2 system is required to integrate functions. Joint theater logistics rules, tools, and processes adopted across an integrated logistics C2 environment that defines and employs a comprehensive process for distribution will produce the desired seamless and synchronized effects for unity of effort and

unity of purpose in both logistics and distribution. Distribution will be coordinated using centralized logistics C2 and executed locally (within each Service, component, or agency) using a multi-nodal and multi-modal network to provide time definite delivery from point of origin to actual point of consumption. The system will leverage legacy and emergent capabilities resident in logistics systems and processes, including those used by the JIM who represent both capability providers to dynamic logistics system processes and supported customers.

2-9. Assumptions

Assumptions are defined as starting conditions upon which this concept depends. They include-

- The U.S. Army modular force transformation will be largely complete, but the force will continue to be a hybrid mixture of heavy and Future Combat Systems (FCS) equipped units.
- The proposals of the JL (D) JIC and the subsequent initial capabilities document (ICD) will be realized.
- USTRANSCOM in its role as the DPO, in concert with service and defense partners, will have introduced standard rules, tools, and process to standardized distribution operations across the Services.
- U.S. Joint Forces Command (JFCOM) in its role as the joint deployment process owner, in conjunction with Services, defense partners, and USTRANSCOM, will have introduced common systems and procedures to standardize the provision and deployment of joint force capabilities and fully integrated these with common systems, policies, and processes for deployment and employment of joint forces.
- The Army will continue development of an integrated logistics network that is fed by automated data from a variety of platform and non-platform sources to provide the ability to see, assess, determine, and deliver support to the force. The Army logistics network will operate as part of the JDDE in the JOA.
- The Army will field a joint interoperable operational logistics C2 capability that unifies logistics C2 across the JOA, integrating logistics resources at the theater level.
- A stable science and technology program will have allowed the identification and insertion of technologies that provide capabilities to predict and preempt logistics requirements. Leap-ahead advances in science and technology that hold promise for transformational effects in distribution capabilities will facilitate development and experimentation of predictive, adaptive, and effects based approach to logistics concept.
- Improvements will continue to be made to the capabilities and capacity of joint inter and intratheater air and surface lift platforms.
- The private sector, contracted logistics, JIM, and HNS will be integrated at the operational level to support the theater distribution network.
- The U.S. will invest in the joint seabasing concept and seabasing capabilities to support future expeditionary operations.
- Technical innovations will improve equipment reliability and maintainability reducing the support characteristics across the force, and stress on the distribution system.

2-10. Tenets of Theater Distribution

At the core of the distribution system are three fundamental tenets. They are -

a. Visibility. Near real time visibility of the requirement, commodity condition and location; equipment, personnel, commodities in transit, and logistics resources and infrastructure is critical to optimizing distribution operations. In simple terms, a distribution manager must know what the customer requires, where the commodity is, what its condition is, what assets are available to distribute it, and what, if any, constraints exist that inhibit the distribution process. The distribution system must be well defined and transparent if the customer is to have confidence that it will provide required distribution needs. Visibility of items within the distribution system must be captured in real time, using automatic information technology (IT), so that the logistician can, in collaboration with the user, develop timely plans which support the user's needs. Distribution information will be shared via a knowledge base with all users.

b. Capacity. Distribution resources, infrastructure, and the ability to use them in an agile manner dictate the capacity of a distribution system. Knowledge of the capacity of the various modal components (air, ground, and sea) and the nodes with near real time visibility of the current status enables the logistician to optimize the distribution network and react to changes in demand or disruption, in a proactive and responsive manner. Decision support tools will allow the distribution manager to plan and cope with potential and real problems to fuse and harmonize the distribution network.

c. Control. Control consists of two key elements: 'process control,' and, 'executive control.' Process control is the responsibility of the process owner, for example, USTRANSCOM as the DPO. The DPO, along with joint distribution COI, is responsible for developing common global systems, practices, and procedures that derive more effective and efficient processes. Executive control relates to the actual control of physical capabilities and resources exercised by headquarters (HQ) at the strategic, operational, and tactical levels. Executive control must be clearly defined in time and space so that all involved are clear about their roles and responsibilities and organizations are not over extended.

d. The Triad. The three tenets of theater distribution are interdependent. Distribution managers must know what the user requires, where the commodity is, what condition it is in, what assets are available to distribute, and what, if any, constraints exist that inhibit the distribution process. Visibility, capacity, and control combine to produce an effective distribution system. Figure 2-1 represents this principle.

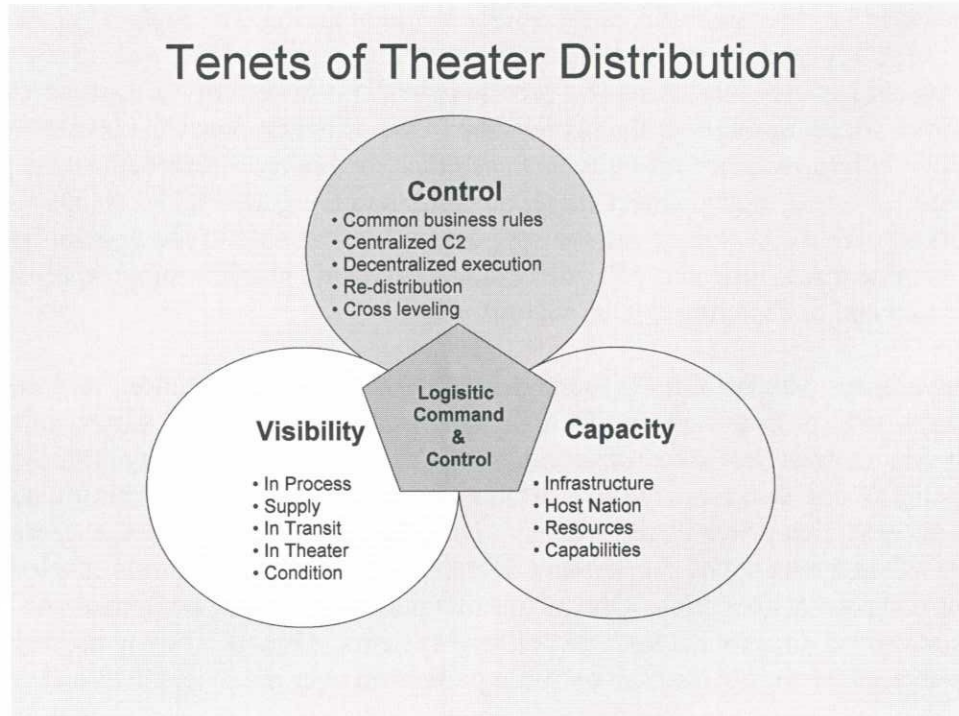


Figure 2-1. The Distribution Triad

2-11. Logistics Principles

a. There are certain enduring logistics principles that serve as guides for planning, organizing, managing, and executing logistics. Those that are particularly relevant to distribution are discussed below.

b. Responsiveness. The distribution system must be responsive to operational requirements. Distribution activity must be triggered by consumption or a planned requirement, not anecdotal assessment. If the distribution system is to be responsive it must be integrated into, and engage with, the supported units, so that it can provide proactive support. To be truly responsive, the distribution system needs centralized decision support information, and reliable and predictive modeling and simulation tools that utilize actual consumption data and enhanced logistics information systems. Success is measured by speed of action and the ability to provide consistent, assured support, rapidly and precisely to the Soldier when and where needed.

c. Flexibility. The distribution system must have the ability to forecast and rapidly adapt to changing situations, missions, and concepts of operations. To do so, the distribution system must be clearly defined with unambiguous roles, tasks, and responsibilities, in order for all individuals to understand how the logistics are employed to support the Soldier. Distribution managers that operate the system must be flexible in the manner in which they employ the resources and processes to produce optimal results. The distribution network must be enabled by a multi-modal distribution system that offers a variety of delivery options which to provide the operational and tactical requirement. Logistics system connectivity enables integrated real time C2 systems that distribution managers can employ to identify deviations and plan accordingly.

d. Sustainability. Sustainability is the ability to maintain logistics support to all users throughout the AO for the duration of the operation. Lean supply chains will characterize future operations, placing critical importance on precise time definite delivery of equipment and supplies to joint forces throughout the battlespace. This principle poses the greatest challenge to the distribution enterprise since future forces will likely be highly distributed across greater distances with LOC that must connect non-linear and noncontiguous JOA. A JDDE that is not fully networked with the customer and the supplier will not be able to see operational requirements in near real time and will not be able to generate pipeline support, or manipulate the pipeline to adapt to changing operational priorities.

e. Survivability. Survivability is fundamentally about “force protection” and the capability of an organization to protect units and their capability assets from a wide variety of threats. The distribution system must provide a robust planning and execution capability employing centralized control and decentralized execution via a series of C2 and distribution nodes that are linked by a network that provides redundancy. Distribution operations for the future Modular Force are based on a concept of support that decreases reliance on numerous echelons of inventory or equipment stockpiles. One means of safely transporting personnel and materiel is to leverage advanced air, ground, and sea delivery systems. Organic convoy protection platforms are required to provide convoy force protection over great distances and across the ROMO.

f. Simplicity. The uncertainties of military operations must be mitigated by adaptive organizations with much improved visibility, and the resources to respond to requirements. The distribution system and processes must be simple, clear, and concise in order to be easily understood by all individuals and flexible enough to respond to operational requirements or threats.

2-12. Operational Environment

a. During the 2015-2024 timeframe, the operational environment for military forces will be complex and dynamic. Increased globalization is bringing changes to the international strategic landscape based on a rise of new powers, population shifts, competition for natural resources, impacts on governance, a pervasive sense of global insecurity, evolving coalitions, alliances and partnerships, and new actors (both national and transnational) that will continually appear and disappear from the scene. Urban environments and other complex terrain will increasingly characterize areas of operations that may see humanitarian crisis and combat operations often occurring simultaneously. These environments will be characterized by ambiguously defined rear areas, thus placing additional emphasis on convoy security and security of logistics facilities. The operational environment may be characterized by dynamic, dispersed, simultaneous operations at a high operational tempo, conducted in complex environments with infrastructure ranging from austere to well established.

b. Threats to Distribution Operations. Adversaries will employ both asymmetric and conventional symmetrical threats and continually seek new capabilities and use adaptive and constantly evolving methods to counter the capabilities of the U.S. and its allies, including the distribution system. While the nature of war will remain a violent clash of wills between states

or armed groups pursuing advantageous political ends, the conduct of future warfare will include combinations of conventional and unconventional, kinetic and non-kinetic, and military and nonmilitary actions and operations, all of which add to the increasing complexity of the operation. Adversaries can strike at any time, from any direction, and against any organization, particularly against highly visible targets, such as convoys and logistics installations. Adversaries will seek to delay or prevent the establishment of U.S. military superiority through targeting of sea and air ports of embarkation and debarkation. Furthermore, adversaries will use propaganda, media manipulation, and other elements of information warfare to create strategic effects. Enemy information warfare will also target the information systems that support logistics.

c. Impact of distribution operations. In an operational environment likely plagued by political and social unrest accompanied by economic disarray, distribution operations may play an important role in helping restore political order, re-establish economic stability, and rebuild social normality. These operations can also influence the attitude of the local population favorably regarding the U.S. and local civil authority objectives.

2-13. Joint Capabilities

a. The JDDE will provide the medium to integrate distribution organizations and capabilities in order to provide the GCC or JFC with the ability to rapidly and effectively move and support joint forces engaged in combat or other joint operations. This enterprise, an integrated system consisting of DOTMLPF and battle command solutions, will enable the GCC or JFC to minimize seams in the joint distribution pipeline. Joint and Service logistics capabilities will be coordinated at the theater level, to enable rapid and effective distribution operations. Unique joint distribution capabilities provided by organizations, such as USTRANSCOM and Defense Logistics Agency (DLA), will be integrated into the theater segment of the JDDE distribution structure to harmonize strategic operational transition.

b. Increasingly, Service distribution capabilities will transition almost completely to joint capabilities down through the higher tactical level. However, Title 10 USC missions and those assigned to the Services or executive agents will endure for common-user support to the JFC. Joint capability improvements in force projection and reception, synchronization of inter and intratheater movement, priority management, theater logistics collaboration, and interoperable logistics technologies will provide the GCC or JFC the capabilities to enable an effective distribution network.

2-14. Strategic Distribution

a. Distribution from CONUS or from another theater to the supported theater will be managed by the JDDE, with USTRANSCOM as DPO acting to synchronize actions of the JDDE partners. This task requires both the vertical and horizontal integration of all joint distribution activities to ensure that all joint, Service, and commercial resources are effectively employed. In this way, orchestrating distribution as a system prevents any one piece from being suboptimal at the expense of the overall system. This task includes providing oversight of systems to ensure propriety and legality. The desired end state of this activity is a joint and integrated approach

from point of origin to point of need, supported by an effective two-way distribution network. The strategic distribution focus is on moving mass over distance to GCC or JFC designated points of need. This will require a handoff from strategic to theater distribution organizations which will occur once stocks, personnel, etc. process through the point of debarkation.

b. While the GCC or JFC may specify some strategic to tactical distribution, the handoffs will usually occur at the strategic port of debarkation (POD) in the operational area. Figure 2-2, depicts the global view of the JDDE, with handoff of strategic distribution occurring at the air or sea POD, at intermediate staging base, or by-passed with direct delivery to theater designated PODs.

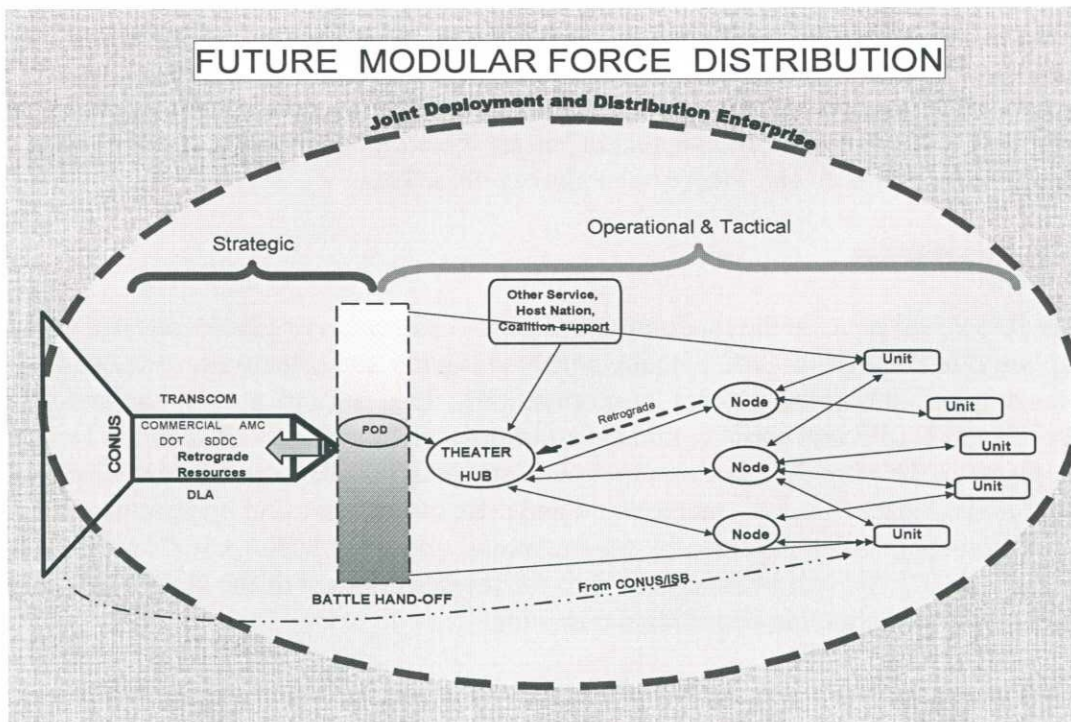


Figure 2-2. The Strategic Theater Interface

c. C2. As DPO, USTRANSCOM will be responsible for delivering items to the GCC or JFC designated handoff point, IAW GCC or JFC priority and guidance. The GCC or JFC logistics staff will provide distribution policy and guidance, set priorities, and coordinate strategic distribution requirements with USTRANSCOM. USTRANSCOM will likely deploy unique capabilities to the GCC or JFC to coordinate and synchronize strategic to operational distribution. The GCC or JFC may designate a joint or appropriate service HQ to coordinate the reception and initial staging of consignments destined for theater. The appointed organization will work for the GCC or JFC, through the relevant logistics staff and coordinate reception and onward movement of consignments destined for the theater base. Each of the Services will have the capability to contribute an organization to undertake this task and the operational profile will dictate which service is selected to lead. The Services will provide capabilities for port clearance tasks. Joint, HN, and coalition partners will be integrated into theater distribution operations and contribute distribution capabilities when appropriate.

d. **Physical Distribution.** The key to strategic distribution is visibility of requirements, priorities, and resources and integration of effort across the JDDE, a virtual unified distribution network. Strategic distribution will be accomplished using a variety of modes, including, but not limited to: intertheater airlift, commercial air, and sea platforms. In certain instances commodities or capabilities may be retained out of the theater, possibly at an intermediate staging base, or pre-positioned stocks, where they can be called forward as required. USTRANSCOM will deliver to the GCC or JFC designated handoff point in the theater. The distribution network will comprise multidirectional and flexible combination of nodes and links between the nodes. Seams in the network between the strategic and theater levels will be transparent to users. The distribution system will be enabled with assured communications, total visibility of the strategic flow, effective distribution management, and modernized distribution processes and technologies.

e. **Distribution Management.** The GCC or JFC may designate a joint or appropriate service HQ to coordinate the reception and initial staging of consignments destined for theater. This organization will be responsible for distribution to Service and or JIM designated handoff, using common-user, HN, and coalition resources. It will also be responsible for the theater retrograde, redirection, and redistribution of commodities as directed by the GCC or JFC logistics staff. This effort will be coordinated with the Services, coalition allies, and HN in a transparent manner in concert with the GCC or JFC staff who will adjudicate priorities of support based on missions and tasks. The initial effort will be to clear PODs, synchronize distribution operations, and establish a theater base. Distribution linking wholesale and retail operations will enable direct distribution from depot or prime vendor locations to tactical locations when loads are ordered and configured specifically for a unit. This concept will be employed where appropriate to increase the speed and flow of distribution.

(1) *Distribution and deployment synchronization.* Distribution and deployment must be fully synchronized to ensure available strategic lift, air and sea port, reception, staging, and distribution capabilities are fully optimized.

(2) *Theater opening process.* To establish an effective distribution network and provide total asset visibility, the organizations responsible for establishing and operating the theater distribution system must deploy early and be accorded a high priority on the time-phased force and deployment list.

(3) *Seabasing.* Seabasing may be used to provide the capability to deploy and support forces from the sea when port facilities are unavailable or inadequate, or when anti-access measures have been employed by adversaries.

(4) *Pre-positioned stocks.* Expeditionary operations may limit the feasibility of pre-positioning stocks for early entry units. However, where appropriate, mission pre-positioned stocks will be used to support operations when pre-positioned stocks can be configured in theater for further delivery. Army pre-positioned materiel, ammunition, and war reserve stocks (afloat and ashore through the Army Pre-positioned Stock Program) provides a capability forward that reduces strategic mobility requirements.

(5) *Integration of functions.* Integrated distribution and supply chain operations produce greater results than the contribution of the individual functions. Synchronization of the distribution and supply chain operations must occur at the strategic, operational, and tactical level to maximize results. Use of HN, coalition, and regional commercial supply sources should be considered as a means of reducing supply chain activity and strategic lift requirements. This will require the integration of supply and distribution functions and the ability to inject items into the supply chain, in a transparent manner, at all levels.

2-15. Operational Distribution

a. Operational level distribution is primarily concerned with receiving strategic consignments, POD clearance, establishing and stocking a theater base, and supporting deploying and redeploying forces while developing the distribution network. The Army will employ an operational level logistics command and control (OLLC) to provide a joint capable organization to plan, manage, command and control Army theater distribution. This ensures a coherent and integrated system that is capable of always managing and controlling multidirectional flow, and to provide for the retrograde, redirection, and redistribution of commodities. This organization will command all Army theater distribution resources. Where required and when assigned, this organization, when augmented by the relevant staff, will provide the theater joint distribution C2 HQ.

b. Distribution operations at the operational level will employ a prediction related technology, linking distribution activity to priority of maneuver. Figure 2-3 depicts the operational view of Army distribution operations in a joint environment. Prediction related technology and analytical tools will be used to predict consumption, order fulfillment, equipment failures, and consequences of other logistics events and will play a major role in preempting sustainment demand, as well as controlling the distribution system.

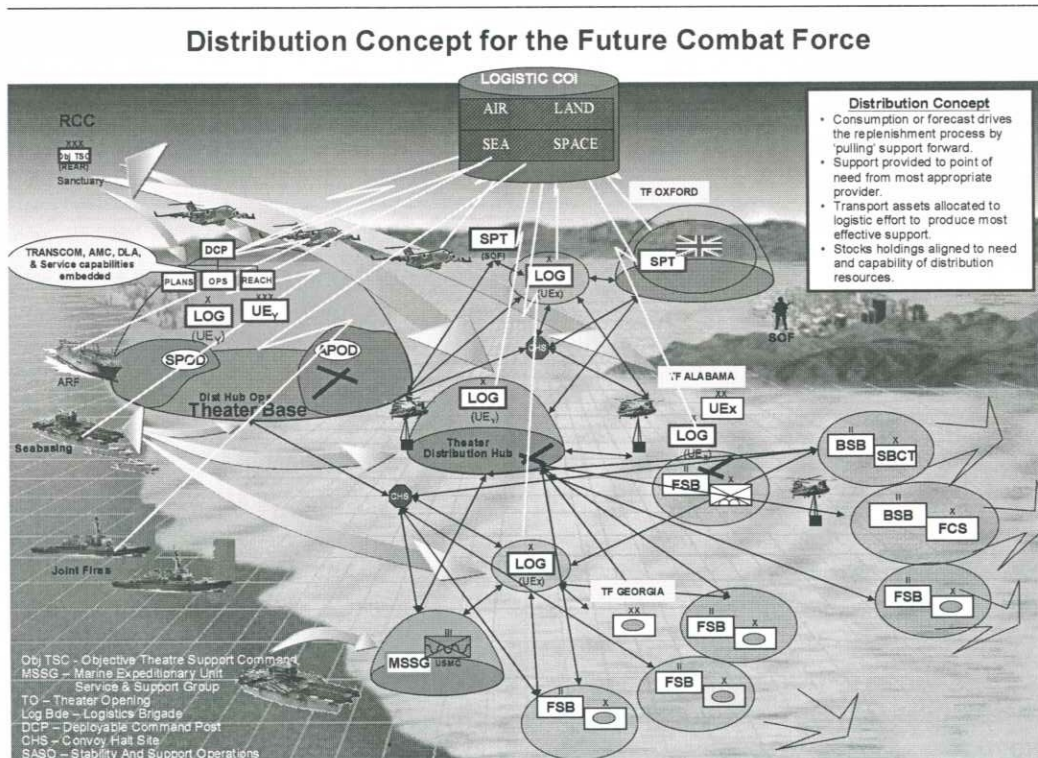


Figure 2-3. Distribution Operations in the Theater

(1) *C2*. An Army OLLC will C2 Army theater distribution. The OLLC is joint capable and is therefore able, if assigned and when provided suitable joint augmentees, to coordinate and control operational logistics in the JOA. The OLLC will usually work for the Army Service Component Command. The OLLC will be modular in construct and posses the capability to deploy early entry command nodes, subordinate commands capable of providing logistics C2, or operate as a single entity. If assigned, as the joint logistics component the OLLC will establish a distribution network that optimizes all available distribution capabilities to provide a robust, adaptive, and dynamic network of logistics nodes, linked by multi-modal transportation capabilities. The other Services will contribute and manage specific capabilities in support of their efforts using the theater base, as required. Distribution will be coordinated centrally at the operational level, but executed regionally, in close proximity to the user by logistics formations.

(2) *Unity of command*. A unified C2 structure will exist with the OLLC having command of modular logistics formations that will have, where required, attached functional capabilities to undertake theater opening and theater distribution missions. The logistics formations will have a variety of capabilities to enable them to provide both area support and formation specific support as directed.

(3) *Collaborative planning*. Logistics staff at all levels will collaborate with respective operations staff on the COP via the commander's portal, to collaboratively develop plans employing real time data to identify the course of action (COA). This will improve support for high tempo operations and enable the logistician to monitor and respond to operational and tactical requirements in a more timely fashion.

(4) *Network system.* The future distribution network will be enabled by an information systems intelligence network that will link it in real time to the supported organizations and the Single Army Logistics Enterprise (SALE). Both will provide real time visibility of the operational and logistics situation, live data streams, and the decision support tools required for real time collaborative planning.

(5) *Information management.* Consumption and demand data will, where appropriate, be collected automatically in near real time and available to all staff via a shared knowledge database or battle command system. Some of this data will be set by user protocols to automatically trigger distribution, and some will generate a tasking that requires human intervention and decisionmaking.

c. *Physical Distribution.* Physical distribution will be affected by a variety of DOD, Service, coalition, HN, and commercial resources, commensurate with the operational priority. The distribution network will be anchored on a theater base that supports regional hubs, where multi-modal transport resources are collocated, to aid rapid distribution. The theater base will receive all stocks arriving in theater and comprise DLA, service, coalition, and HN resources, unless specified to the contrary. Where required, the GCC or JFC may designate that distribution operations occur direct to tactical locations. The distribution system will operate on the premise that stocks will be pulsed forward to reduce the quantity of commodities deployed across theater, as and when required.

(1) *Multi-nodal/multi-modal network.* The distribution network will comprise a series of distribution nodes that are linked by multi-modal transportation means to enable commodities to be centralized for improved management and pushed to where needed, when needed.

(2) *Innovative platforms.* The future distribution network will require capabilities that enable it to rapidly respond to user requirements in a manner that minimizes risk to friendly forces, the distribution medium, or the commodity. This will require the adoption of innovative technologies and systems, some of which may be unmanned surface or air platforms, and a broader, more extensive use of existing aerial delivery platforms to provide a rapid, accurate, and robust delivery capability.

(3) *Stock holding.* Stock holding levels will be dynamic, dictated by operational and tactical requirements and the capability and capacity of the strategic and theater distribution system. The theater stock policy will be set by the GCC logistics staff. Commodities will be managed according to their contribution to readiness and consumption profiles. For example, rations and water will probably be distributed on a routine basis, while some munitions may be centralized at the theater level and moved only when needed. Only those stocks needed to achieve readiness will be held forward, along with a contingency or reserve stock. Operationally critical stocks will be centralized at or adjacent to key transportation nodes and pushed forward using fixed, rotary, or aerial delivery systems as appropriate.

(4) *Load configuration.* Loads will be configured as far to the rear as practical, but configured as they will be appropriate when delivered. This suggests there may be

configuration points at the strategic, operational, and tactical levels, with the operational tempo, distribution, and build times determining the exact location of the configuration point.

d. Distribution Management. The OLLC will plan, manage and coordinate Army theater distribution. The OLLC will have a Distribution Management Center and a distribution manager who will be responsible for planning, coordinating and controlling theater distribution. The OLLC will possess the capability to manage items in transit. Even though it possesses the capability to redirect items en route, the intent is to avoid redirection of commodities to ensure even flow. Logistics organizations will be tasked with running the theater base and the arterial surface distribution network.

e. In order to effectively manage logistics resources the distribution manager will need to have visibility of the location and condition of resources. This will be particularly true for such items as containers and flat racks, that will need to have global wireless communication capability (for example, active radio frequency identification tags) to enable real time tracking and monitoring. Such items will be centrally managed and controlled by the OLLC.

f. Force Protection. Protection of the distribution network will be of paramount importance and require careful coordination. Logistics formations will have an established force protection cell that will coordinate protection of all distribution missions. Logistics units will have protected manned and unmanned platforms and an array of sensors that will detect and defeat mines and explosive devices. All units will possess the means of static and mobile self protection. A variety of distribution capabilities will be employed to mitigate the threat, including fixed and rotary wing, unmanned, and aerial delivery systems; with each employed wherever appropriate to achieve rapid and secure distribution.

2-16. Tactical Distribution

a. The tactical environment may be characterized by dynamic, high operational tempo, simultaneous operations in complex and often austere environments. These operations will be prosecuted by mobile brigades against an adversary that presents an asymmetric threat. The distribution effort will focus on providing for the needs of the brigade, often operating across a substantial JOA. This will be enabled by continuous, collaborative planning between the supporting and supported formations. The supporting logistics organizations will need to be agile, flexible, robust, and possess the same degree of protected mobility as the supported units, if they are to provide effective and responsive support.

b. Logistics units will need to be globally connected in a virtual logistics network, operating in a collaborative environment, as well as being physically integrated into and synchronized with the supported force operational planning and control structures and processes. Tactical distribution will focus on delivering timely, dependable, accurate, and consistent support to point of need. Assured 24 hours a day 7 days a week communications, shared distribution information across the enterprise, and tracking capabilities embedded into distribution platforms are essential to modernizing theater distribution.

c. C2. Tactical distribution will be coordinated, controlled, and executed by the logistics formations operating IAW OLLC guidance. The logistics formations will be integrated into division and brigade planning processes in a habitual manner, such that collaboration is a matter of routine. Logistics units within logistics formations will operate storage sites and distribute stocks to the support battalions in each maneuver and maneuver enhancement brigades. The brigade support battalions will distribute commodities forward to the units in the maneuver brigade.

d. Physical Distribution

(1) Logistics formations will coordinate support to ensure that their sub-units deliver commodities at a time and place best suited to the operational tempo. Where required, the logistics formation will coordinate with the support command to achieve strategic or operational to tactical distribution. Physical distribution operations will be planned to meet time definite requirements, while minimizing ad hoc movement.

(2) At the tactical level, the intermittent multi-modal movement of goods and services (to include personnel services), will be integrated into the maneuver commander's battle rhythm in pulses to sustain or rebuild combat power. Pulsed logistics obviates the requirement to maintain secure LOC at all times and in all places within a non-contiguous AO. Force protection assets are therefore required to temporarily secure LOC and event sites, as required.

e. Distribution management. The logistics organization Distribution Management Center will plan and coordinate distribution operations in a collaborative manner with its supported units and direct the effort of logistics units to achieve the plan. It will also monitor the status of units and ensure that it has the capacity to react to changes in the tactical situation. This will include management of all retrograde requirements.

f. Force protection. The asymmetric threat and dispersed nature of operations will increase the risk to distribution operations. It will be important to reduce the risk by operating a coordinated force protection system that integrates all capabilities, as appropriate. Distribution operations will not be routine or predictable and will employ a variety of distribution means, such as fixed and rotary wing aircraft, manned and unmanned guided vehicles, armored vehicles, and aerial delivery systems to affect distribution. New technologies will be leveraged to aid the distribution effort where available. It will not be possible to protect entire surface routes, so ground transport will move in 'bubbles' protected by electronic detection and physical protection means. Distribution operations will need to be closely coordinated by supporting and supported organizations to reduce the threat.

2-17. Integrated Distribution

a. Figure 2-4 provides a representation of how distribution operations will support future Modular Force operations. Distribution will be managed as a seamless process, using a network comprising of a variety of nodes and modes. It will be managed by organizations at the strategic, operational, and tactical levels. All will be connected by a robust communication capability that will link them in near real time so that they can monitor and manage distribution

in real time. The network will comprise two primary segments; strategic and theater. USTRANSCOM will be responsible for control and coordination of the strategic leg and a joint capable organization, such as the OLLC will be, responsible for theater distribution control and coordination. The distribution network will operate a two-way flow to provide retrograde operations.

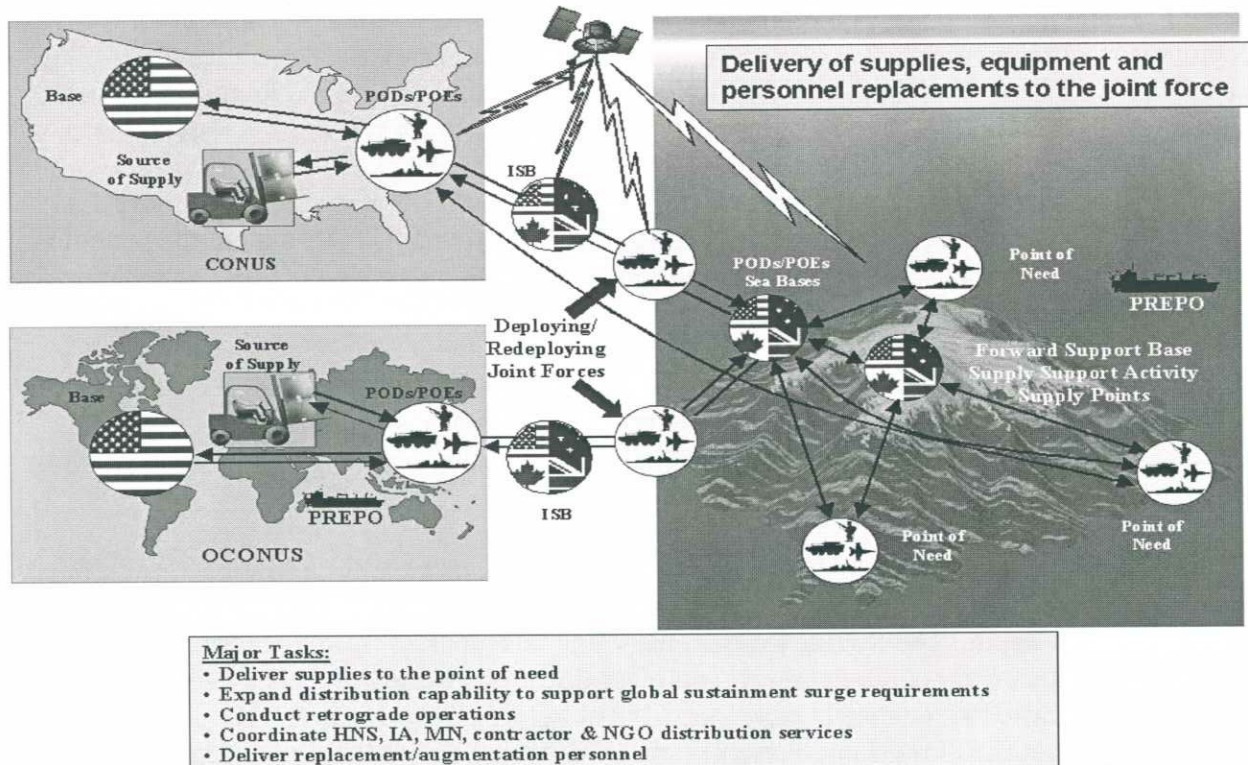


Figure 2-4. Strategic to Theater Distribution

2-18. Concept of Operations Vignette

a. EXERCISE: There is political and social unrest between the sovereign nations of Ageori and Janazer. Ageori is a secular state with close ties to the west, especially the U.S. Janazer, however, is largely an extremist state. Extremists have instigated anti-U.S. sentiment in the region and have sponsored insurgencies into Ageori. Deterioration of political and diplomatic approaches is evident. Ageori is expected to request help from its western partners. Viewed as a possible area of deployment, special operations forces (SOF) have been inserted into the AO through and with the support of the Ageori government. Ageori and its allies continue to seek a political solution to the problem. However, conditions continue to deteriorate, as insurgents resort to assassinations and the use of improvised explosive devices throughout Ageori to instill fear and destabilize the Ageori government. Insurgent forces quickly establish a foothold in the east of Ageori and continue in their efforts to gain control of the whole eastern region. Ageori requests assistance in restoring its territorial integrity and the rule of law.

b. Tensions continue to increase in Ageori and it is apparent that all diplomatic and political efforts are failing. Ageori requests military and financial assistance from its western partners. The U.S. has assumed lead nation responsibility, further aggravating the secular/extremist,

causing an escalation of hostile incidents. Planners begin to tailor the force mix, to include support forces for the specific mission. Units to deploy are notified and begin preparations for movement.

c. Planners coordinate for strategic lift and prepare the time phased force development data to meet the commander's intent. Equipment to be transported to the theater is configured for movement and moved to points of embarkation; personnel undergo final preparation for overseas deployment. The points of entry have been identified and reconnaissance operations are being completed by SOF already in theater. Coalition force contributions and requirements are being identified and incorporated into logistics plans; including reception and staging requirements.

d. Due to the anticipated rise in aggressive actions, the need for a joint task force (JTF) is identified; Army is designated as the lead Service and will provide C2 throughout the operation. Coalition/interagency teaming, as well as mission/force requirement identification is taking place as force leaders use this time to unify purpose and effort and ensure joint interoperability.

e. Responding to the Ageori request, the U.S. leads a coalition force to assist Ageori in actions against extremist insurgents. A corps comprised of three divisions deploys to the AO and conducts offensive operations IAW the JFC's campaign, together with forces from coalition allies.

g. The JTF commander coordinates, via the joint command post, for a Marine expeditionary unit to deploy in and around key ports to provide local security for support operations. Early entry operations begin. The Marine expeditionary unit is supported from a sea base and can conduct operations without disrupting reception staging and onward movement (RSO) operations conducted at the theater base located in close proximity to a port. The Marine expeditionary unit is followed into theater by the 3rd Division and the coalition brigade forces.

h. The Army provides a joint capable OLLC. Since the U.S. is the lead nation for the operation and the Army the predominant Service, the Army is assigned the task of providing an OLLC which, with joint augmentation, will coordinate JOA logistics. Service and coalition partners will embed logistics teams in the OLLC to synchronize requirements and coordinate logistics support. The OLLC will deploy logistics brigades to undertake theater opening, distribution operations, and support to deployed formations.

2-19. Operational Construct

a. The JFC staff synchronizes the commander's intent and integrate the actions of air, ground, sea, space, and SOF to achieve strategic and operational objectives through an integrated joint campaign. The following concept of support model is based on the phases used during a joint campaign or operations. A brief description of each phase is provided to identify the absolute necessity of interoperability between the combatant commander and a theater level logistics commander providing logistics support and conducting distribution operations in the JOA. The phases of operations, which have been combined for brevity, include: *shape* and *deter*; *seize the initiative*, *dominate*, and *stabilize*, and *enable civil authority*.

b. Shape and Deter. Joint force and multinational operations are performed to dissuade or deter potential adversaries and to solidify relationships with friends and allies. They are executed with the intent to enhance international legitimacy and gain multinational cooperation in support of defined military and national strategic objectives. Shaping operations are targeted at global perceptions and influencing the behavior of both adversaries and allies, developing allied and friendly military capabilities for self-defense, and coalition operations. The deter phase seeks to deter undesirable adversary action by demonstrating the capabilities and resolve of the joint force. It is characterized by preparatory actions that specifically facilitate the execution of subsequent phases of the operation/campaign. Liaison teams and coordination with other government agency (OGA), international governmental organization (IGO), or NGO assist in setting conditions for execution of subsequent phases of the campaign. Typically during this period the OLLC will engage with the combatant command staff to develop logistics plans, coordinate support for SOF and early entry forces, and establish linkages to and relations with coalition and HN organizations.

c. Seize Initiative and Dominate. The JFC seeks to seize the initiative through the application of appropriate joint force capabilities. This may involve executing offensive operations at the earliest opportunity and setting the conditions for decisive operations. Rapid application of joint combat power may be required to delay, impede, or halt the adversary's initial aggression and to deny the initial objectives. The dominate phase focuses on breaking the enemy's will for organized resistance or, in non combat situations, control the operational environment. Success depends upon overmatching joint force capability at the critical time and place. This phase includes full employment of joint force capabilities and continues the appropriate sequencing of forces into the operational areas as quickly as possible. The logistics focus at this stage will be on establishing a footprint, developing a theater base, sustaining early entry forces, and coordinating requirements and capabilities with coalition, HN, and contractors. The theater arterial distribution network will be expanded as forces deploy further across the JOA.

d. Stabilize and Enable Civil Authority. Stabilization is required when there is limited or no functioning, legitimate civil governing entity present. The joint force may be required to perform limited local governance, integrating the efforts of other supporting/contribution multinational, OGA, IGO, or NGO participants until legitimate local entities are functioning. Stability operations are necessary to ensure that the threat (military and political) is reduced to a manageable level that can be controlled by the potential civil authority or, in non combat situations, to ensure that the situation leading to the original crisis does not reoccur and effects are mitigated. Redeployment operations will often begin during this phase and should be identified as early as possible. Enabling civil authority involves supporting the civil authority to enable the viability of the civil authority and its provision of essential services to the largest number of people in the region. This includes coordination of joint force actions with supporting multinational, OGA, IGO, and NGO participants; establishment of measure of effectiveness; and influencing the attitude of the population favorably regarding the U.S. and local civil authority objectives. Once there is a degree of stability, a civil-military operations center (CMOC) will be established which includes HN, humanitarian assistance (HA), and NGO organizations engaged in developing the HA strategy and plans. The OLLC will work with the GCC/JFC staff on

withdrawal plans and distribution functions are being handed over to DLA and contractors to assume.

2-20. Concept of Support

a. The operation is undertaken by a U.S. led coalition, comprising joint and multinational partners; NGO and HA organizations are also expected to contribute during the later stages of the operation. The force is comprised of three U.S. divisions and supporting formations; a United Kingdom brigade and force units, supported by a logistics brigade; and a U.S. Marine air ground task force, with integral support. A JFC has been established and tasked with executing the mission. A corps HQ deploys and an OLLC is tasked in support, since the region is isolated, austere, and has very limited transportation and commercial infrastructure outside a few medium size cities. The operation starts with SOF deploying into the JOA to assess the situation and collect intelligence with the intent to stimulate a rapid deployment to overmatch the insurgents, and re-establish HN sovereignty, and political rule, while establishing a HA regime to will help rebuild social and economic normality.

b. Shape

(1) During the shape phase of the operation, the distribution effort is focused on supporting deployed SOF. The support is consolidated from continental United States (CONUS), but could be provided from a secure staging base inside the AO within close proximity to react quickly to the requirements of the teams on the ground, (see fig 2-5).

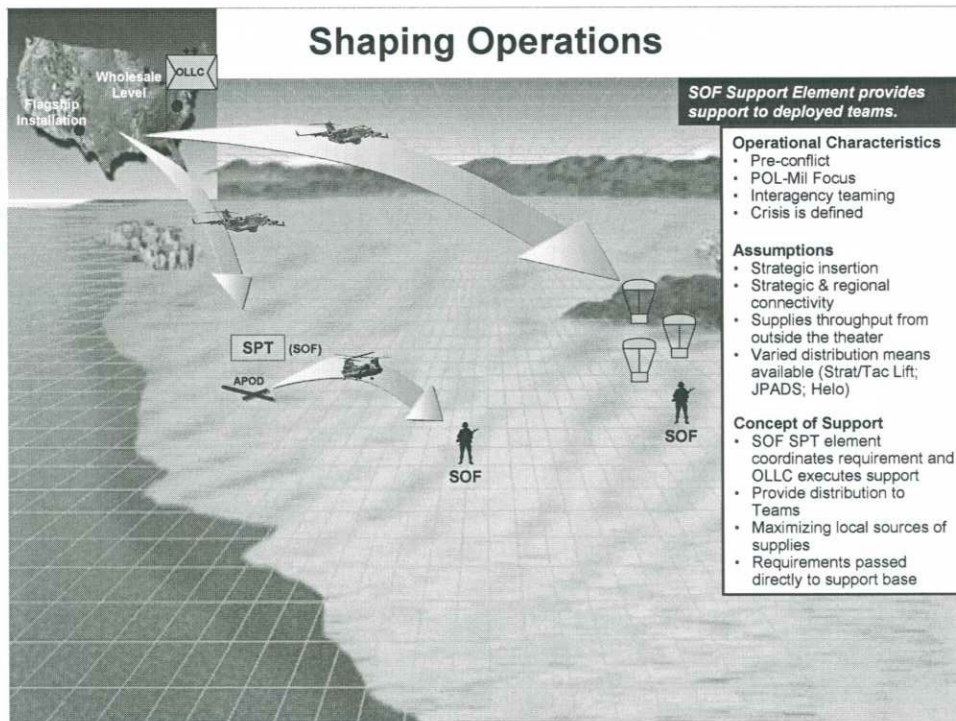


Figure 2-5. Shaping Operations

(2) A SOF support team has deployed to coordinate and prepare support for SOF. The SOF support team is comprised of specialized units from a variety of organizations that are assigned to the OLLC for such missions.

(3) Most of the support for the SOF arriving in the staging base is delivered by strategic air and being reconfigured into mission oriented packs that provide for key items. From the staging base, stocks are typically delivered using stand-off precision air delivery systems. Should the situation require it, the SOF could also be supported from sea platforms for specific missions, using rotary wing resources.

(4) Concurrently, the OLLC, if not already deployed in the region, will have deployed staff to collocate with the GCC or JFC in order to develop and coordinate logistics plans. They will be supported by joint and other Service staffs, as well as coalition and NGO partners.

c. Deter

(1) During this phase a division with three maneuver brigades is arriving in theater where they are immediately employed in FSO. In addition, selected joint theater level early entry modules have also arrived to help set the conditions for future operations. The OLLC is deploying an early entry command post to provide C2 of theater logistics operations, (see fig 2-6).

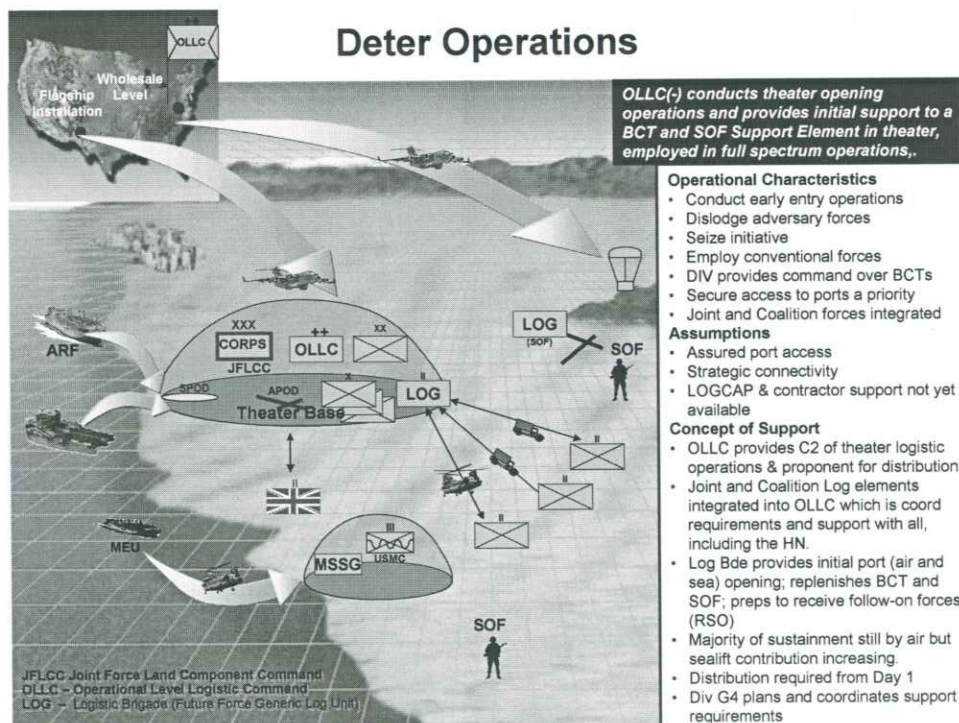


Figure 2-6. Deter Operations

(2) The GCC or JFC J4 staffs are working with the OLLC to assess requirements and to commence coordination with coalition and HN military and commercial organizations.

(3) A JTF port opening organization, a logistics brigade or the U.S. Marine air ground task force deploys to open and operate air and sea ports and receive forces and provide initial replenishment.

(4) Concurrently, the logistics brigade begins to arrive to establish the theater base and distribution network to establish in transit visibility (ITV). At the same time a logistics brigade begins to arrive to deploy forward from the PODs to sustain the SOF forces and the deploying forces.

(5) Marine units are deploying ashore and vessels carrying deploying units and sustainment stocks are arriving in the JOA. The bulk of the initial stocks are still arriving by air.

d. Seize Initiative

(1) In this phase a corps HQ and 3 divisions have deployed into theater along with joint and multinational forces and are conducting FSO. The corps, in its role as ARFOR, ICW the OLLC, plans, coordinates, and assesses theater logistics operations. The distribution manager in the OLLC is now established and has developed and implemented the theater distribution plan (see fig 2-7).



Figure 2-7. Seize Initiative

(2) The focus of distribution effort is to establish the theater base, so that stocks arriving in theater can be moved to and consolidated therein. Concurrent with this is the essential work to expand the theater ITV and asset visibility network required to monitor and track resources. The theater base will also provide for coalition force stock holding requirements and be operated as an integrated facility.

(3) A logistics brigade is running the operational level PODs and coordinating distribution of incoming stocks to the theater distribution base. A logistics brigade is establishing the theater hub and while it continues to unload stock, it is also distributing support to the logistics brigades deployed forward in the JOA. These logistics brigades are now providing area support to maneuver brigades that are operating in, or transiting through the AO.

(4) During this phase the theater base continues to be developed and stock received from strategic sources. Some of these stocks are used to sustain deployed forces, but reach to the national sustainment base is still common. The DLA has deployed a team to the theater to establish the feasibility of developing a deployed depot, based on the theater base. The Army field support brigade attached to the OLLC has let contracts with local commercial organizations for commodities and services, which it has coordinated with coalition counterparts. Additionally, the Army field support brigade has initiated the Logistics Civil Augmentation Program (LOGCAP) to provide required support.

(5) Coalition and joint logistics teams are embedded in the OLLC where they assisted in the development of the theater logistics plan and are now working with the OLLC staff to coordinate requirements and resources in support of the theater distribution plan. The OLLC is fusing all requirements and coordinating coalition and joint resources to optimize support across the JOA, including the protection of distribution missions.

e. Dominate



Figure 2-8. Dominate

(1) The force has now deployed and, discounting the last few people, most units are complete to strength. Coalition forces are now integrated into both operational and logistics

plans and both contribute capability to and call on support from other coalition forces. Coalition logistics requirements are coordinated and monitored in the OLLC, where coalition forces have staff employed. Divisions and brigades are deployed to their operating locations and engaged with the enemy (see fig 2-8).

(2) The OLLC has now established the distribution network which is robust enough to support decisive operations. The theater base continues to be in loaded though it has sufficient stocks to support the current tactical plans, with access to afloat stocks to augment requirements as needed. Some requirements are still being met from the strategic base and flown into and through theater on daily resupply missions.

(3) The logistics brigade operating the arterial theater distribution network has stocked the regional hub and is able to support the logistics brigades providing area support to the formations. Support battalions in the logistics brigades have established small supply support activities in order to quickly respond to requests from the brigade combat teams (BCT). Retrograde missions are now occurring regularly, using the distribution network in reverse, primarily utilizing empty capacity.

(4) Fixed and rotary wing assets are employed on a routine basis across the theater distribution network not only to push forward high value, low volume, or high priority items, but to routinely move stocks rapidly to units, as they maneuver in their AO. This allows the OLLC to focus critical stocks at key nodes where they can be managed more effectively and the quantity reduced accordingly.

f. Stabilize

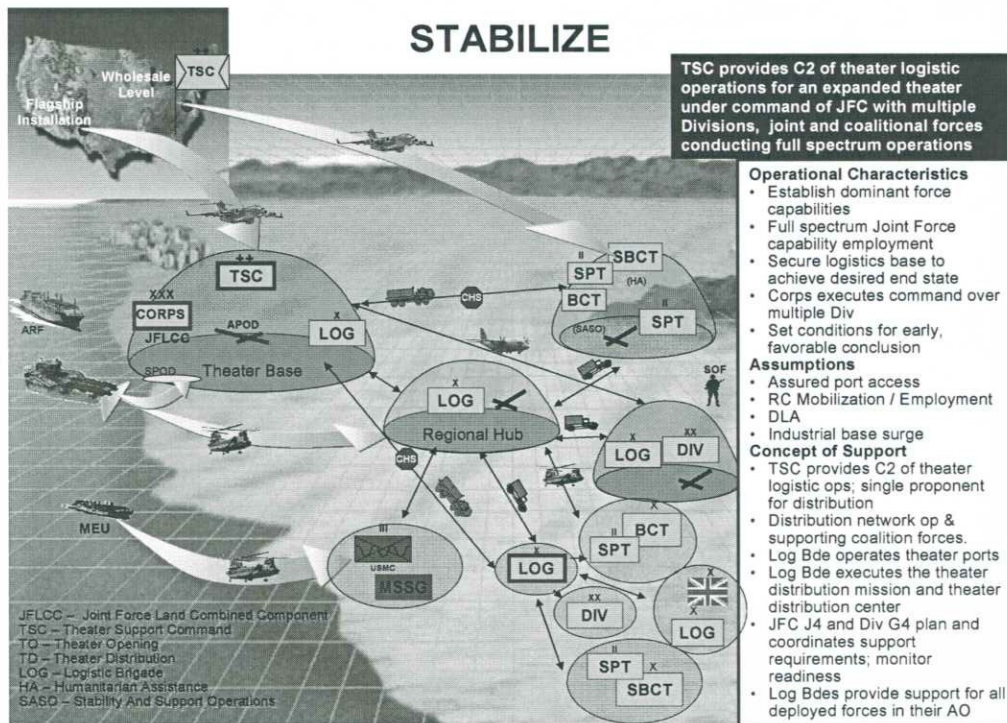


Figure 2-9. Stabilize

(1) The operation is progressing well and there is a sense that coalition forces have contained the insurgents and have control over much of the JOA. There continues to be daily but infrequent small isolated actions though there are indications that the insurgents are unable to continue widespread actions. The national government is functioning and is regaining popular support. National security forces are operating openly with coalition forces in support and confidence is returning (see fig 2-9).

(2) The coalition continues to support the security forces but is gradually reducing its presence on the streets, to enable national police and security organizations to raise their profile and re-establish communications with the populace. At the same time, the coalition is working with the national and local government organizations to restore the political process and develop plans for the restoration of civil and social infrastructure.

(3) The OLLC is working with the GCC or JFC staff to develop plans to support transition operations. Support requests are being received from HA and NGO organizations, and a HA concept has been developed, in concert with national government representatives. The OLLC established a CMOC some time ago to coordinate HA issues and to help integrate NGO and military activities. The CMOC is now the focus for routine HA support to the national government.

(4) The OLLC and subordinate logistics brigades continue to support the deployed force though the emphasis has shifted from Class I, III, and V supplies to HA related items. Concurrently, the OLLC and the GCC or JFC staff develop plans for the withdrawal and redeployment of the force and the subsequent handover of coalition infrastructure to the HN.

(5) With the draw down of the force, the OLLC is coordinating the re-establishment of HN logistics capabilities and transferring logistics tasks to HN organizations. At the same time, LOGCAP and contractor resources are assuming a greater part of the distribution effort, allowing the OLLC to disengage.

g. Enable Civil Authority



Figure 2-10. Enable Civil Authority

(1) The operation has been a success and the region is stable, though there are localized sporadic outbreaks of hostile acts, largely perpetrated by individuals or small teams of extremists. The national government has regained control and, in concert with coalition forces, is working to re-establish services and infrastructure. U.S. forces are starting to rotate.

(2) The OLLC continues supporting deployed formations but the level of activity is now steady and the emphasis has shifted to supporting HA operations across the JOA. The CMOC has now transferred to the Ministry of Interior and is fully operational. All NGOs and HA organizations are represented and the OLLC provides a liaison officer cell to coordinate military HA support. The national government is now effectively managing the HA operation.

(3) A logistics brigade is still running the PODs but is gradually transitioning control to a HN commercial company. The brigade will continue to coordinate POD operations but will reduce its profile and physical commitment.

(4) The DLA has assumed control of the theater base from the logistics brigade and is now coordinating distribution operations, in concert with the OLLC distribution manager. Some military capabilities still reside in the theater base but they will be phased out over the next few months. The logistics brigade is providing area support to deployed formations.

Chapter 3 Required Capabilities

3-1. Introduction

a. This chapter will describe the capabilities required for distribution operations in the future Modular Force in the theater of operations. The capabilities described in this chapter will provide the foundation for the CBA. For consistency with the *Distribution Operations for the Future Modular Force Concept*, these capabilities will be organized under the headings: C2, physical distribution, and distribution management.

3-2. C2

This paragraph identifies the capabilities required to C2 Army distribution operations. They include-

- An operational logistics C2 organization to plan, coordinate and control JOA distribution operations.
- An Army logistics C2 capability to effectively coordinate coalition, HN, NGO, and commercial distribution activities.
- A capability to enable distribution managers to link distribution activity to operational events to ascertain effects, in order to provide a proactive and adaptive distribution capability.
- A logistics information system that enables collaboration with the JFC. It provides visibility of patterns of demand, consumption outside established thresholds, distribution network delays, anomalies, and other disruptive events. This has the potential to impact success of achieving the commander's intent.
- A capability to rapidly change planned or on-going distribution operations in response to changes to the commander's intent, new or revised operations, intelligence, or unforeseen events arising during execution.
- A capability is required to track the movement and status of items in the distribution system in near real time from point of issue to point of use, which can rapidly deploy to and be established in the theater of operations.

3-3. Physical Distribution

a. This paragraph identifies the capabilities requirement to store, maintain, move, and control the flow of military materiel, personnel, and equipment between the point of receipt into the military system and the point of issue to using activities and units; including retrograde activities.

b. All the capabilities detailed herein must comply with, or be accepted as, the NATO standard. The following are required.

- Improved reliability, supply, and maintainability for future Modular Force air and surface distribution platforms.

- A capability to capture and disseminate to convoys real time information about route conditions, traffic conditions, and enemy activity along the route for both primary and alternate routes.
- A capability to rapidly integrate commercially supplied items into the military distribution system in such a manner that they are recognized and subsequently tracked throughout the distribution network.
- A capability to protect or improve survivability of distribution platforms from kinetic and non-kinetic attacks.
- A capability to automatically detect and suppress mines and improvised explosive devices at a safe distance inherent to the distribution platform while in motion.
- A capability to deliver stocks and equipment from aerial delivery platforms, from both high and low altitudes, that improve survivability.
- A capability to provide seabasing and rapid inter and intra-theater sealift.
- An intratheater airlift capability to provide routine air-land and airdrop missions.
- A capability to monitor, in real time, the provision of commercial support from point of source, including in theater, through the distribution network, to the point of consumption, regardless of the source.
- Development of a common DOD platform envelope for all strategic and operational distribution platforms.
- Improved DOD common packaging systems that provide integral asset tracking, temperature control, and reporting systems.
- The development of a common DOD standard for load carrying vehicles, for example, a common palletized load system (PLS).
- The development of common materiel handling systems.
- An automated container and PLS flat rack tracking system.
- Automated material handling equipment (MHE) to minimize manual handling, and protect the Soldier and cargo during unprotected cargo transfer operations.

3-4. Distribution Management

The paragraph identifies the capabilities required to regulate, monitor, direct, coordinate, and task distribution operations. The required capabilities include-

- A globally-integrated network that takes advantage of a cooperative community of semi-autonomous agents in order to provide anticipatory analysis of complex logistics and distribution requirements, and COA modeling that can dramatically improve the responsiveness of the distribution system.
- The automated capability to monitor, coordinate, and control the distribution of all classes of supply, but in particular, bulk fuel and water in theater.
- A set of DOD common rules, tools, and procedures for supply and distribution operations that also meet NATO and ABCA standards.
- Common codification of all DOD stocks so they are automatically recognized by all Services and agencies and the ability to rapidly codify commercial products.
- A system that enables rapid pre-deployment authorized stockage list modeling to determine the type and quantity of stocks required.

- Adoption of NATO standards for platforms and processes to improve logistics interoperability and visibility.
- A set of DOD common relevant metrics that enable the common measurement and analysis of distribution processes across the JDDE.

3-5. Summary

a. Improvements in distribution operations will result not from a single event or innovation, but from the collective beneficial contribution from a number of individual and incremental changes. Some of these changes will be cultural and structural changes driven by Army and joint initiatives. Others will be procedural or technological changes driven by lessons learned on operations of evolving technologies. All these are necessary prerequisites to a more effective distribution network, which will be managed as a system of synergistic capabilities. The most fundamental benefits will derive from improved information gathering and management, which will maximize the potential of all the other improvements.

b. The speed, precision, and accuracy that information exploits will dramatically improve logistics output. Developing the means and procedures to manage information and reap the potential rewards, is the immediate major challenge. It is evident, therefore, that potential capability enhancements must be developed collectively, in a coherent and coordinated manner. A strategy is required that will identify, prioritize, and integrate all the required capabilities into a program that unfolds over the next 20 years to deliver a quantum improvement in distribution operations.

Chapter 4 Migration Plan

4-1. Introduction

a. This chapter will identify the current distribution operations capabilities, explain the limitations or weaknesses of each capability, and then expose the operational impact associated with the deficiencies. It will then identify what, if any, plans exist to remedy the deficiencies. Finally, it will identify the distribution capabilities required to provide effective support to the GCC and JFC in the future. In doing so it will identify desired capabilities from the perspective of what is required for optimal distribution operations.

b. The recommendations will not take account of the affordability of new capabilities; nor will they consider the subject of rapidly diminishing technology lifecycles. However, it recognizes that the U.S. Military can not continually 'pluck' cutting edge systems, but must have a managed capability development and migration plan than selectively leverages new technologies. This work acknowledges the requirement for future distribution capabilities that provide for requirements that are not scenario specific, but are applicable across FSO.

4-2. Current Capability Development Initiatives

a. Some capabilities that exist now will not contribute materially beyond 2012 and will be phased out and replaced; some capabilities may be enhanced to extend their useable life through the 2015-2020 timeframe; and some new technologies will be developed and introduced over the next 20 years, as, and when, the U.S. Military can exploit the potential of such technologies.

b. In the main, programs or initiatives are currently developing or are examining how these capabilities will be developed to support future distribution operations, for example, the Battlefield Combat Service Support System (BCS3), the joint high speed vessel (JHSV), and joint heavy lift (JHL) aircraft. The *Focused Logistics Roadmaps* (volumes I and II) identify most of the desired capabilities. This chapter will identify what current work is underway and also identify areas where there are gaps in the development process.

4-3. Assessment of Current Capabilities

a. There are currently a large number of capabilities that exist in the U.S. Military that enable distribution operations. Many of these capabilities are very effective and satisfy the requirement. However, in some instances the capabilities do not exist, or are suboptimal, and the net result is that there is an adverse impact on distribution operations.

b. C2. This section will identify the current C2 distribution capabilities; outline what each capability can and cannot do, and then identify the impact on operations.

(1) *Organization*. Distribution operations are currently managed and coordinated across the strategic, operational, and tactical environs by a variety of disparate joint and service organizations. The efforts are not adequately unified, synchronized, nor sufficiently integrated to provide effective holistic process management that is output focused. Functional authorities and boundaries between organizations are often unclear and there is potential overlap of responsibility and duplication of effort. As a result, distribution operations are not managed in an effective manner, stock holdings are excessive, and delays occur that adversely impact distribution and ultimately, the JFC ability to prosecute operations.

(2) *Joint Deployment Distribution Operations Center (JDDOC)*. Provides the capability to coordinate and monitor strategic distribution for the GCC or JFC, to ensure priorities are met, and to provide visibility of what is planned to arrive in theater by air and surface modes, integrating strategic distribution into the operational level. The JDDOC is being introduced in several theaters.

(3) *Networked communications*. There are a variety of communications systems employed in the theater of operations to support the force. While there are a number of separate and linked nets, there is no single network that provides guaranteed communications for all organizations. Current logistics communications are borne on combat service support automated information systems interface and very small aperture terminal systems, which can not communicate on the move. The result is that some organizations are unable to establish or maintain contact with superior or subordinate organizations for periods of time and integrating support is ad hoc. This has a direct impact on the ability of logistics organizations to capture

intelligence information, coordinate support, adequately coordinate force protection, and integrate coherent operations. Without guaranteed communications, logistics units operating over extended distances, in a dispersed setting, are unable to provide effective support to the formations and units they are supporting.

(3) *COP*. A number of systems exist that provide data to develop a COP (such as, BCS3 and Army Battle Command System (ABCS)) that provides visual representation of the current operational situation. However, there is no single system able to draw all the data feeds from the disparate systems and present it as a common form for all organizations to see, interactively across classified and unclassified systems. This directly affects situational awareness and understanding that in turn inhibits the development of a coordinated force protection capability. It also affects the ability of units to effectively integrate support because they do not have real time knowledge of the location of units they are supporting, or operating alongside.

(4) *Joint distribution information systems*. There are a variety of IT systems used by joint and Service organizations involved in distribution, though many are organization centric and do not communicate or transfer data readily. The lack of a system that provides visibility of requirements and distribution network and resource status, adversely affects the ability to coordinate and control distribution operations in a holistic manner. The result is a suboptimal system that is not able to provide an integrated approach to distribution operations.

(5) *Logistics information systems*. The Army currently uses a host of Standard Army Management Information Systems in the logistics arena, such as Standard Army Retail Supply System, Unit Level Logistics System Ground, and Property Book Unit Supply-Enhanced System. In addition there are a plethora of function specific systems that are used to manage and monitor specific commodities. The majority of these are transactional systems. The proliferation of separate, stand alone systems has created a barrier to integrated operations as the data is not readily transferable across systems. This adversely affects the ability of logistics organizations to rapidly develop a consolidated picture of requirements and logistics resource status from which to develop and coordinate distribution operations. The distribution system is, at best, suboptimal as a result. On a positive note, the introduction of BCS3 has improved logistics information management. BCS3 mines data from sub-business systems to develop a logistics picture.

(6) *Logistics decision support system*. Current Army Standard Army Management Information Systems provide limited data consolidation and analysis capabilities and, where they do so, it is largely on a function specific basis. This means that information is either transferred manually to consolidate it for analysis, or analysis is undertaken manually. This is not conducive to supporting high tempo operations, or enabling integrated, near real time planning between supporting and supported organizations. As a result, the distribution organization is not able to provide the precise and timely support that is required.

(7) *Joint distribution policy, guidance, and doctrine*. There is very little coherent joint distribution policy and guidance. As a direct result, the various organizations involved in distribution operations use differing regulations and directives and to different priorities. This will not improve until there is DOD standard distribution policy and guidance. Joint doctrine

provides the overarching rules that underpin strategic and operational activities and events. With a few notable exceptions, the current range of joint doctrine publications provide adequate coverage of most logistics functions, though the doctrine on distribution operations is dated and not appropriate for future Modular Force operations. Since distribution is a function undertaken by joint and Service organizations in the strategic, operational, and tactical levels, it is essential that there is clear joint doctrine and guidance on how distribution operations are undertaken. Without clear policy, guidance, and doctrine, there is uncertainty and confusion about roles and responsibilities that adversely impact the distribution network and perpetuate a suboptimal capability. Currently the JDDOC COI is working to provide input for joint policy, guidance and doctrine IAW the Joint Requirements Oversight Council approved JL (D) JIC ICD.

(8) *Integration of coalition and HN capabilities.* Most, if not all, operations in the future will involve coalition and HN partners. These partners will have requirements that need to be satisfied, and capabilities that can contribute to the distribution operation. There is, therefore, a need to capture requirements and develop the COA to enable effective support. No system exists to provide for this requirement, other than the ad hoc use of liaison officers to achieve coordination. This is both inefficient and time consuming. At the very least, there should be a set of procedures that outline how multinational logistics is coordinated in theater.

(9) *Convoy communications.* Convoys currently use traditional line of sight communication assets which affect the ability of the convoy commander to control the convoy, react to incidents or contacts, or to liaison with external organizations about the current status of the route. Without guaranteed communications for all vehicles in a convoy, and to supporting and parent organizations, there is a real danger that lives and resources will be endangered unnecessarily. However, beyond line of sight communications can provide assured convoy communication with parent and supporting organizations.

(10) *Global ITV and asset tracking.* An ITV and asset tracking capability exists though it is not integrated across the JDDE in real time. It also does not provide complete coverage of all the nodes and modes employed in the distribution network. The capability is employed in most operations, but it takes time to establish. As a result, is not always operable in time to capture visibility at the commencement of an operation. This is normally at a time when the tempo is high and information on deployment and distribution status often critical to the GCC or JFC. The net affect is that the ITV and asset tracking picture often has gaps or the data is, at best, vague. The Army's Movement Tracking System (MTS) is in the process of additional development to fill some of the missing ITV information and will provide ITV data "in motion" to the central ITV databases.

c. Physical Distribution

(1) *Intertheater high speed vessels.* The future Modular Force will be required to rapidly deploy to locations across the globe to overmatch adversaries and prevent conflict escalation. Although units may be lighter and equipment smaller, there will continue to be a requirement to deploy equipment and sustainment stocks by sea. The air bridge will primarily be used to deploy forces and key stocks. There will therefore be a requirement to rapidly deploy equipment and stocks by sea, from the strategic base, to the theater of operations. The current

range of DOD or commercial vessels does not have the speed required to achieve deployment in the time frames required.

(2) *Rapid intratheater sealift.* Many of the locations to which the U.S. may wish to deploy forces lack the infrastructure to support the deployment and sustainment of forces by air. It is very likely that there will be a requirement to deploy and sustain forces from an adjacent territory or a staging base. In many instances the most effective means of providing support in the quantity required will be by sea. This supports the requirement for vessel that can provide a rapid intratheater deployment and distribution capability.

(3) *Strategic airlift.* The increase in expeditionary operations, often in distant and austere locations, and the future requirement for an effective rapid intervention capability means that the DOD intertheater airlift capability must be modern and capable of deploying and supporting a deployed force. The current fleet of strategic aircraft is based around the C-5, and C17 aircraft. The C-5 is able to lift and move large loads, but is old and in need of modernization. The C-17 is a versatile aircraft, capable of delivering direct to forward airfields in the theater, but the fleet is small.

(4) *Operational and tactical airlift.* The current fleet of Army fixed wing aircraft is ageing and inadequate for supporting disbursed forces in remote austere locations. The current fleet is relatively slow, has a limited payload and range, is not pressurized, and cannot accommodate a standard 463L pallet. It is underpowered, requires a long runway for takeoff and landing, and cannot operate in many areas where the Army is currently operating. This is a major weakness in the distribution system.

(5) *Heavy lift rotary wing capabilities.* The current range of heavy rotor craft will be nearing the end of their life by 2015. These aircraft are invaluable in providing the ability to quickly distribute large or heavy loads over reasonable distances. They are immune from improvised explosive devices (IEDs) and mines and their freedom of maneuver, speed, and agility make them a difficult target. Heavy lift rotary aircraft are a crucial enabler in the Future Force distribution arsenal and contribute substantially to improved force protection.

(6) *Aerial delivery capability.* Aerial delivery provides a means of delivering sustainment packages to distributed forces quickly and accurately while protecting the distribution asset by employing stand-off delivery. Aerial delivery is currently employed primarily as a means of delivering small consignments to small scale forces in isolated locations, by parachute. The future Modular Force envisions routine delivery of supplies and equipment by air, both air-land and airdrop. Delivery can be either by unmanned aerial assets, conventional airdrop equipment, or precision guided parachutes from low level or high altitude stand-off distances. Most loads delivered are less than 2000 lbs, though multiple weight capabilities are available and planned up to 45 000 lbs.

(7) *Crew and vehicle protection systems.* Adversaries, now and in the future may strike from any direction, at any time, against any organization; particularly against highly visible targets such as convoys. Most logistics surface distribution vehicles have some form of add on protection fitted to provide protection for the crew. Many of the protection systems are ad hoc

and fitted in theater to provide for a specific operational requirement. As a result the protection is not always easily adjusted to cope with evolving threats. Given that future adversaries will adapt their tactics and techniques as U.S. forces adapt defensive measures, there is a need for all surface distribution platforms, and supporting vehicles, to have light weight, protection capability that can be rapidly expanded to cope with new threats.

(8) *Unmanned aircraft systems (UAS)*. UAS currently provide an array of aerial sensors and a means of delivering munitions to distant targets with no risk to operators. The same systems could be used to deliver commodities to distant locations, especially high value, low usage items for key equipments. They can also provide real time convoy over-watch to improve convoy force protection. There are very few UAS currently developed and deployed on operations that are able to distribute commodities. Since they could contribute to improving force protection and enable the reduction of inventory for certain commodities, there is merit in developing the capability further.

(9) *Robotic ground vehicles*. Unmanned ground vehicles provide the means of delivering commodities to units without risk to operators. These systems are particularly effective in urban environments. In addition to unmanned systems there is also a requirement to reduce human involvement in basic transportation platforms by automating them to produce a 'leader-follower' capability that serves to improve force protection. There are very few unmanned or robotic distribution platforms currently in service.

(10) *Modular intermodal distribution system*. The Army uses a variety of containers to package materiel for shipment. These vary from cardboard containers to metal boxes, with each in different sizes and shapes. These items are generally consolidated in a 20 or 40 foot International Standards Organization (ISO) container and shipped to the theater of operations, where they are re-packaged and moved forward. This may be accomplished on a PLS flat rack or 463L aircraft pallet, or transferred to another type of vehicle. Because there is no standard modular distribution container, space is wasted in transit and time lost in transferring consignments from one mode to another. A series of standard modular containers are required that can be quickly built to fit in an aircraft, an ISO container, or a PLS flat rack that will greatly improve the flow of items through the distribution network.

(11) *Container management*. ISO containers and PLS flat racks are pushed into theater and then used to distribute consignments as far forward in the JOA as is practical. This enables rapid and precise distribution. However, unless there is a means of tracking where containers and flat racks are, there is a danger that the distribution system will be impeded by a lack of these platforms. The management of containers and flat racks is currently undertaken by units reporting locations and the information being collated at each command HQ. This is inefficient and unsuited to future high tempo operations. A capability is required that is embedded in each container and PLS flat rack that enables a theater container manager to track and manage these items to create a two way flow across the JOA.

(12) *Materiel Handling Capability (MHC)*. MHC is used to transfer containers or platforms (such as, PLS flat racks or 463L pallets) from one mode to another or to transfer it to a static location for subsequent movement or handling. The current range of equipment is nearing

the end of its life (such as the Halverson loader) and requires replacement in order to ensure that loads are rapidly and efficiently transferred between modes and at transshipment points. Moreover, each item of MHE requires a driver, who is exposed to a variety of threats. To reduce the threat and reduce the number of people employed on simple manual tasks, an automated MHE capability is required, especially within the maneuver brigades.

(13) *Common vehicle systems.* Each service has its own distribution vehicles, all of which have different capacities, training requirements, and maintenance requirements. Many of the heavy, medium, and logistics vehicles that are crucial enablers to distribution will require replacement by 2015. If every service were to use the same type of platform, for example, the same articulated truck or 10t truck, the savings in spares, and therefore the reduction in deployed stocks and distribution effort, would be substantial. The use of common distribution vehicles would also improve the flow of materiel through the distribution system as consignments would be configured for common envelopes and therefore flow through all nodes until they reached the user or a point where they would be broken out for issue to various users. There would also be a reduction in the training requirement, as well as a reduction in repair parts stockage and maintenance requirements.

(14) *Common intelligent protective packaging.* There are some commercial off the shelf items that currently exist which provide intelligent protective packaging systems. These systems provide the ability to protect high value; low density commodities in packaging that can also monitor and control item condition. The packaging could also report the status of an item or advise when it had been degraded or was approaching the end of its useable life. This would be particularly useful for temperature or condition sensitive items.

(15) *Prognostics.* Prognostic capability embedded in equipment provides an automated health and usage monitoring system, which diagnoses faults and advises the user before catastrophic failure occurs. The capability enables equipment maintenance to be effected in a proactive manner, preventing, not curing, faults. It saves time and resources and can be programmed or coordinated with operational events. Some of the more modern equipments have embedded prognostic capabilities, though many of the older items in the inventory do not. There is a need for a DOD prognostic policy that identifies what capabilities are required and how data is captured and managed.

(16) *Bulk water production and distribution.* With operations likely to occur in austere environments, in climatic extremes, there is a requirement for a modern, deployable bulk water production and distribution capability. This capability should be able to provide bottled water when required, primarily in support of maneuver formations. The adoption of this capability would also reduce the requirement to transport bulk water over long and insecure LOC.

d. Distribution Management

(1) *Clear functional boundaries.* Boundaries between the organizations involved in distribution operations are unclear. This creates confusion and uncertainty at the friction points, primarily at the strategic – operational interface. This juncture is where joint and service capabilities overlap and where there is the greatest potential for confusion. This results in a

waste of time and resources as organizations strive to identify their functional boundaries at the start of operations at the very time when the operation is at its most dynamic and the deployment and distribution effort at its most intense.

(2) *Common procedures.* There are no common joint rules, tools, and procedures that define how distribution processes are undertaken. Without a set of common rules, tools, and procedures, provided in an endorsed, standing operating procedure (SOP), the various joint and Service organizations involved in distribution will be unable to unify their efforts in a coherent and coordinated fashion.

(3) *Common systems and standards.* A variety of information systems are employed by organizations and Services throughout the distribution network to identify distribution requirements, track movements and coordinate distribution activities and events. While some of these systems interact and transfer information, many do not. Without a common standard for information collection and exchange there will continue to be visibility gaps in the distribution network. These gaps in information inhibit the development of a coordinated flow throughout the network and occasion bottlenecks as items or information accumulate at choke points.

(4) *Non-standard item reference process.* The use of national stock numbers is common practice. However, when items are procured from the commercial sector, at short notice to meet urgent operational requirements, they are injected into the distribution system without the national stock numbers. As a result, there is confusion in the distribution system regarding the nature of the item and, if it is not clear, time is lost trying to identify the item and the destination. A common procedure is required to define how such items are codified so they will be recognized at all nodes in the distribution network.

(5) *Common performance measures.* Each of the joint and Service organizations involved in distribution operations use different rules, tools, and procedures. They also use different sets of standards and measures to measure and assess the effectiveness or efficiency of the distribution system. This inhibits the effectiveness of the distribution system.

(6) *Joint training.* There is no mission template or supporting tasks that clearly articulate the requirement for individual and collective training that are likely to be employed in appointments undertaking joint distribution activities. Unless joint training is developed there will continue to be a lack of appreciation and understanding of how joint distribution operations are managed and how the various organizations can contribute to the development of a distribution capability. This also manifests itself on operations where individuals employed in an ad hoc manner, in posts with joint functions, lack the knowledge to do their job. This holds true also for HQ and units that are involved in coordinating or controlling distribution operations with joint and multinational partners.

4-4. Capability Development Plans

a. The U.S. Military has undertaken distribution operations in locations across the globe, on both small and large scale operations, in complex terrain and austere conditions. As a result it has substantial current experience of how best to conduct distribution operations. This

experience has had a direct bearing on the development of the distribution capability and influenced the development and introduction of new distribution capabilities. This section will identify what, if any, plans exist to remedy the limitations or weaknesses exposed in the previous paragraph.

b. C2

(1) *JDDE*. The JDDE was conceived to build an agile and responsive network that optimizes the joint and service capabilities to deploy and sustain forces. The synchronization of joint and service capabilities inherent to the JDDE will markedly bolster the ability of contributing JDDE partners to execute flow of forces and material. USTRANSCOM, as the DPO, in concert with joint and Service partners, has recently been given the task of developing the capabilities that underpin the JDDE concept.

(2) *Joint Deployment and Distribution Operations Center*. The Focused Logistics Road Map identifies the requirement for a JDDOC that will operate in support of the GCC or JFC staff to coordinate and integrate strategic to theater operational deployment and distribution. The JDDOC is principally responsible for the provision of a staff capability that coordinates GCC/JFC strategic distribution priorities, and provides improved in-transit and asset visibility. Several combatant commands, including Central Command have fielded a baseline JDDOC capability.

(3) *Joint theater logistics C2*. The Focused Logistics Roadmap identified the need for a 'scalable joint and combined capability' that serves to enhance the coordination, integration, and synchronization of logistics in order to produce an operational result. There are a number of service and joint initiatives currently in development to render this problem.

(4) *OLLC*. The current Modular Force theater sustainment command is being introduced and will take time for the capability to establish itself; it is likely not to possess the range of systems and processes to enable it to effectively support future Modular Force concurrent, dispersed, and dynamic missions characterized by high operational tempo.

(5) *Networked communications*. The requirement for a networked communications capability that links all organizations across the JOA is recognized as a crucial enabler for both the current and future Modular Force. Without such a capability the Army will be unable to achieve the high operational tempo and coordinated and integrated effects required to defeat adversaries. In which case kinetic operations will continue to underpin operations, with the inevitable human and equipment casualties and cost growth. There are a number of projects underway, such as JC2 that are working to resolve the situation through a variety of means. Technology appears to offer solutions that are achievable in the next decade.

(6) *COP*. There are a number of systems currently employed that collectively provide a partial COP, but no single COP exists. Although there are initiatives identified that purport to provide a COP, they are not likely to be in place until after the year 2015. Until such time as the global information grid is established, that provides an integrated data environment; there will

continue to be a series of partial pictures, which impede the introduction of truly integrated operations.

(7) *Joint distribution information systems.* There are no dedicated joint distribution IT systems in use. All the systems that are employed were developed to meet specific functional requirements by individual organizations. There are, however, systems that have wide application, such as Global Transportation Network, MTS, and the Transportation Coordinators – Automated Information for Movements System II. The JL (D) JIC IDC recognized this weakness and noted that the DPO, in concert with Service partners, should take action to ‘manage the distribution IT portfolio. This portfolio includes: establishing management processes, a data strategy, data capture requirements, and data use standards; ensuring access to deployment, distribution, and sustainment data; developing a dynamic data capability’. When these requirements are translated into protocols, they will establish the standard by which joint distribution IT systems will be developed, if funded by the various organizations. Until such time as functional IT systems are funded, developed, procured, and introduced centrally, on a joint basis, there will continue to be problems integrating distribution operations.

(8) *Logistics information systems.* There are plans to reduce the number of functional logistics systems and migrate to a virtual SALE. This will take time to introduce and in the interim current systems will be phased out unless they provide a specific capability, in which case they will be maintained at the minimum accepted level. The second aspect to this initiative is the development of a logistics information warehouse, to provide a single repository for Army logistics data. The SALE is not merely a desirable outcome; it is essential as the current range of systems will not be supportable in the future Modular Force era. It is not yet clear when the SALE will be completely operational, though it is anticipated that it will be fielded by 2015.

(9) *Logistics decision support capability.* The requirement for a capability that automates planning and provides the logistician with a visualization of the situation is critical to enabling high tempo operations. This capability will enable support plans to be quickly developed and integrated into user plans. This is required across the JOA, but most importantly at the brigade level and below. The requirement is widely recognized and development and introduction of such a capability is well advanced. Today this type of system is linked directly to the FCS, but an Armywide decision support capability is critical for future distribution operations.

(10) *Joint distribution policy, guidance, and doctrine.* The JL (D) JIC ICD identifies the requirement to produce joint distribution policy and guidance. It notes that the Secretary of Defense needs to approve policy and guidance recommendations, as the result of recommendations provided by USTRANSCOM. It also notes that USTRANSCOM, in concert with its Service partners is to establish directives, instructions, and decision memos. This will have the affect of establishing common policy and guidance across the JDDE. Joint doctrine needs to be refined in light of the work undertaken on the JL (D) JIC and the resultant ICD that establish a more effective joint approach to distribution operations.

(11) *Common standards and measures.* The JL (D) JIC ICD notes the need for common standards and measures in order to develop integrated vertical and horizontal practices across the

JDDE. It also proposed that USTRANSCOM, in concert with Service partners, develop data standards, as well as establish and implement JDDE performance standards and metrics. These metrics will include time definite delivery to support GCC or JFCs and to monitor and discipline JDDE performance.

(12) *Integration of coalition and HN capabilities.* The requirement to identify coalition and HN requirements and capabilities and integrate both into the planning and execution of distribution operations is acknowledged in a variety of documents; most notably the Focused Logistics Joint Functional Concept. However, there are, as yet, no endorsed plans to remedy the matter. The JFCOM sponsored series of annual multinational experiments may provide an appropriate forum. The annual Army International Staff Talk program also presents a medium to develop and agree on a means of improving interoperability. The NATO Multinational Joint Logistics Center, which has been employed in both Bosnia and Kosovo, appears to provide a suitable model for consideration. Given the minimal cost and potential gains of developing a coalition standard operating procedure, it must be a priority of effort. More focus is required to take this issue forward.

(13) *Convoy communications.* A beyond line of sight capability is required for all convoys. There are programs in place to fit vehicles deployed on operations with single-channel ground-air radio system and MTS systems; though principally those on line haul tasks.

(14) *Global ITV and asset tracking.* Global ITV and asset tracking capability is essential to an effective distribution system. Without near real time visibility of requirements, resources, the environment and tactical situation, the distribution manager is unable to coordinate and control support to provide for the needs of the user. ITV and asset tracking systems are currently widely deployed. The challenge is providing sufficient coverage during the initial deployment and expanding the visibility network at the same pace the force is growing and deploying across the JOA. Given the import of the capability, it is projected that it will continue to expand and, by 2015, a robust ITV and asset tracking capability will be employed in all theaters.

c. Physical Distribution

(1) *Intertheater high speed vessels.* The requirement for vessels that can enable rapid deployment is widely acknowledged. A variety of projects are underway to develop capabilities that may satisfy the requirement and it is anticipated that the future Modular Force will undertake rapid intervention operations supported by Intertheater high speed vessels.

(2) *Rapid intratheater sealift.* The Focused Logistics Roadmap identifies JHSV and the theater support vessel as required capabilities to enable the rapid deployment and distribution. A program is in place to procure eight theater support vessels in the near future to provide the requirement. It is understood that the requirement may increase as the utility of these craft becomes apparent.

(3) *Operational and tactical airlift.* The joint cargo aircraft (JCA) is programmed for initial operational capability (IOC) in 2010. The JCA will replace the C-23 and selected C-12

aircraft. The JCA will be a multipurpose cargo aircraft capable of operating on austere, unimproved airstrips. To support intermodal transportation concepts, the JCA cargo compartment will be compatible with DOD standard 463L pallets. The JCA will also be night vision goggle-compatible and possess a day and night, adverse weather capability. The Army's primary mission for the JCA is on-demand transport of time-sensitive/mission-critical cargo and key personnel to forward deployed Army units operating in a JOA. Cargo will be delivered as far forward as feasible, either directly to the tactical maneuver units or the closest forward support base for further movement by Army rotary wing aircraft or ground transportation. The JCA will also be used to cross-level time-sensitive/mission-critical supplies between Army sustainment brigades and BCT, as required.

(4) *Heavy Lift Vertical Takeoff and Landing*

(a) Heavy lift helicopters are key enablers in the future Modular Force and provide a major contribution to distribution operations since they are able to quickly deliver items over relatively large distances, while minimizing the threat from mines and IEDs. The current CH-47 fleet is aging and the F model development program will extend the life of the helicopter for the immediate future. As the helicopter reaches the end of its useable life, it is anticipated that a replacement aircraft, with improved capabilities, will be fielded that will serve the future Modular Force.

(b) Although not envisioned as a direct replacement for the CH-47, the JHL aircraft, which is currently in the pre-milestone process, will provide intertheater and intratheater aerial extension to the joint deployment, employment, and sustainment and distribution process; contributing to a fully integrated National to theater to tactical distribution system from early entry through conflict termination. By virtue of its long-range, high-speed, and large capacity; the JHL will significantly expand current heavy lift vertical takeoff and landing maneuver sustainment, distribution and resupply capabilities.

(5) *Aerial delivery capability.* The development of the aerial delivery capability is currently in the pre-milestone B phase of the Joint Capability Integration and Development System process for the development of a joint precision airdrop system capability that will enable loads to be dropped from high altitude, at stand-off distances, which can be guided into a landing zone with great accuracy. Currently, to fulfill the Central Command joint urban operational need, a 2,500 lb version of joint precision airdrop system is being used successfully to support our troops in Afghanistan. This will provide the future Modular Force will the ability to support distant, dispersed operations in hostile environments while minimizing the threat.

(6) *UAS.* The use of UAS has risen exponentially in Iraq over the last few years. UAS are now regularly integrated into almost all operations at some level. In the main they are used as sensor platforms, though they are equally adept at delivering munitions, with precision and stealth. It is envisioned that the development of UAS will continue as potential benefits are identified and development and production costs reduce. The FCS program has identified a number of UAS platforms that provide sensor, communications, and reconnaissance, surveillance and targeting acquisition capabilities. It is only a matter of time before UAS are employed in other functions; distribution being just one option.

(7) *Robotic ground vehicles.* The FCS program is developing the use of armed robotic vehicles, small unmanned ground vehicles and multi-utility logistics and equipment vehicles. This work will contribute knowledge and understanding to the development of unmanned vehicle capabilities. In addition, there is work in progress to establish the viability of leader-follower capability for ground vehicles. The development of these capabilities will result in new robotic distribution platforms that reduce the threat to the Soldier and improve distribution effectiveness.

(8) *Joint Modular Intermodal Distribution System (JMIDS).* The JMIDS study is currently underway to develop a modular intermodal distribution system that can be employed across the Services. The JMIDS study envisages a distribution system that comprises three separate but integral parts: a platform, similar to the PLS platform, that can be carried on a PLS vehicles and can also fit in a C130/C-17/C-5 using side guidance and locking systems; a series of standard interlocking containers that can be locked to the platform using integral securing systems; and a tracking system (probably using the current ITV radio frequency identification tags). The study, which is being developed jointly with the United Kingdom MOD, will undertake a series of assessments from October 2006 to September 2007. A feasibility report will be produced and submitted to USTRANSCOM. USTRANSCOM will then make a recommendation on the viability of developing the capability.

(9) *Container management.* Containers and PLS flat racks will become the weak link in the distribution network if they are not recycled to enable the continued flow of materiel from ports of debarkation through the network to the end user. This will require them to be managed centrally, using an automated tracking system. All government-owned containers and PLS flat racks are envisioned to have inbuilt tracking tags of the type used to track equipment on the global ITV system.

(10) *MHC.* The development and routine use of 20 and 40 foot ISO containers and palletized loads have necessitated the introduction of MHC to transship loads from one mode to another. The requirement to produce faster flow of materiel through the distribution network will only serve to increase the need for MHC. The current range of MHC will need to be refurbished or replaced to provide for the needs of the future Modular Force. As, and when, systems are removed from service; they should be replaced with automated systems. Additionally, as new trucks are developed, the requirement for integral MHC, and interface with distribution modes (aircraft, rail flats, and water craft), should be designed into the vehicle. As most of these capabilities are available now on the commercial market, it is anticipated that the future Modular Force vehicle fleet will be fitted with these capabilities.

(11) *Common vehicle systems.* Replacement initiatives for the current range of Army light, medium, and heavy vehicle fleets are in various states of development. Part of this work is examining the feasibility of reducing the number of types of vehicles; possibly to a medium and a heavy fleet, with each comprising a number of variants, using a common chassis. It is anticipated that the new range of vehicles will be introduced during the future Modular Force era. The status of the vehicle replacement program in the other Services is unknown.

(12) *Common intelligent protective packaging.* A variety of systems are readily available on the commercial market that provide protective packaging and have inbuilt sensors that monitor and report on the condition of the contents of the package. The Army needs now to identify to what extent the capability is required.

(13) *Automated Improvised Explosive Device (IED) and mine detection and suppression.* There are various force protection initiatives underway that attempt to improve protection; including development of detection and suppression capabilities. It is anticipated that a capability will be available before 2015 that will provide an IED and mine detection and suppression capability that will operate at convoy speeds. However, it is equally probable that future adversaries will develop new methods of attack, for which new defense mechanisms will need to be developed.

(14) *Prognostics.* Technology is such that prognostic capabilities are readily available, the cost minimal, and they are now widely employed in the commercial and private vehicle fleets and associated equipment. Prognostic systems are now routinely fitted on all major equipment. The FCS fleet will incorporate a variety of sensors to provide the first Army fleet wide in built prognostic capability. The potential benefits associated with prognostics, including the ability to improve equipment availability while reducing spare parts usage and stock levels, are so attractive that the wide spread use of prognostics in the future Modular Force is inevitable. The issue that has yet to be resolved is how much of the legacy equipment will be retroactively fitted with prognostic systems.

(15) *Bulk water production and distribution.* A great many Service and commercial resources are committed to the production and distribution of bulk water. Water consumption, especially in climatic extremes, is often substantial and necessitates an almost continuous distribution cycle to sustain the quantities required, with the attendant force protection difficulties. Production and distribution of bulk and bottled water in close proximity to the user will reduce the size of convoys and help enable self sufficiency within the BCT.

d. Distribution Management

(1) *Clear functional boundaries.* The JL (D) JIC ICD identified the requirement for clear authorities but did not specify how this should be achieved within the JDDE. Further work is required to clearly delineate functional boundaries.

(2) *Common procedures.* The JL (D) JIC recognized the need for common procedures across the JDDE. USTRANSCOM, in concert with Service partners, is tasked with developing a set of DOD distribution procedures.

(3) *Common systems and standards.* The JL (D) JIC identified the requirement for common systems and standards across the JDDE. Accordingly, USTRANSCOM, in concert with Service partners, is tasked with developing a standard for systems and developing common standards across the JDDE.

(4) *Standard item reference process.* There are currently no specific efforts underway to help standardize item referencing and processing across the JDDE. This issue requires more detailed assessment to ascertain the COA and a way ahead.

(5) *Common performance measures.* The JL (D) JIC recognized the need for common procedures across the JDDE. USTRANSCOM in concert with Service partners, is tasked with developing a set of DOD distribution procedures.

(6) *Joint training.* Individual joint training is currently ad hoc and not focused on functional requirements at the operational level. Collective joint training for units and formations is, at best, in frequent and ad hoc. There are no identified plans to rectify the matter. Currently the JDDE COI is charged to provide guidance and structure for joint deployment and distribution training at both the strategic and operational levels IAW the Joint Requirements Oversight Council approved JL (D) JIC ICD.

(7) *Functional structures.* Some work is being undertaken by U.S. Army Combined Arms Support Command (CASCOM) to establish the viability of forming distribution companies, though the outcome is not yet clear. CASCOM will continue with the work and report once complete.

e. Force Protection

(1) *Crew and vehicle protection systems.* Developments in force protection are being introduced as adversaries adapt and threats evolve. The program in Iraq to fit vehicles with prefabricated armored panels, rather than ad hoc metal sheeting, is a good example of the modernization program. There are already capabilities available that provide protection against such threats as fire, which are employed in armored vehicles or can be procured from commercial sources.

(2) The Army will continue to develop protection capabilities, in response to evolving threats, and the future Modular Force will be equipped accordingly. It is anticipated that developments in the tactical wheeled vehicle fleet modernization effort will introduce enhancements. It is also likely that the FCS program will identify spin outs that might be employed to enhance protection as, and when, appropriate.

4-5. Required Future Capabilities

a. Expeditionary operations over the last two decades have highlighted the need for an effective distribution system that can rapidly deploy and support forces operating in austere locations where the infrastructure may be limited and the adversaries adaptable. This environment is unlikely to alter greatly over the next 20 years. It is envisaged that expeditionary operations will become the norm and high tempo will be used as the underpinning medium to bring about rapid defeat of the enemy. To support such operations the distribution system must be robust, unified, and deliver rapid and precise distribution. This section will outline the optimal capabilities required to provide an effective distribution system that will provide what is required, where, and when, consistently.

b. C2

(1) *JDDE*. Distribution must be managed as a common process across the global enterprise, with common rules, tools, and procedures. Real-time visibility, collaborative planning, and automated decision support systems will enable the JDDE to operate as two integrated segments, strategic and theater in a seamless fashion. Theater distribution will be managed by a joint or assigned augmented service HQ that will synchronize and coordinate strategic to operational distribution. Services will distribute forward from designated handoff points to tactical locations. USTRANSCOM will focus on delivery of stocks to locations designated by the Theater Logistics Headquarters.

(2) *JDDOC*. The future theater logistics HQ will possess a JDDOC that will automatically be fed real time information from a number of sources that will provide a complete picture of the current and projected deployment and distribution situation. This will enable strategic distribution to be synchronized and coordinated more effectively.

(3) *Joint theater logistics C2*. A theater logistics HQ will work for the GCC and JFC who will set priorities and provide guidance and policy on theater logistics matters. The HQ will coordinate operational level logistics activity across the JOA, supported by Service resources that will be assigned for specific missions.

(4) *OLLIC*. The future Modular Force will require a HQ that is adaptable, versatile, and agile. It will operate collaboratively, linking with the operators at all levels via subordinate organizations. It will command, control, synchronize, prioritize, direct, and coordinate distribution operations. It will be capable of undertaking the role of the theater logistics HQ when assigned and augmented, or commanding Army logistics operations. It will operate on the principle of centralized control and decentralized execution, with subordinate logistics brigades working in collaboration with maneuver brigades. It will employ information systems that enable it to operate with compressed decision cycles and exploit fleeting opportunities.

(5) *Networked communications*. The future Modular Force will have a network communication capability that will provide connectivity across the theater for all units, using a series of interactive gateways to link organization groupings. Communications managers will 'grow' adaptive communications architecture in real time, as the force structure is created, and adapt it as required. Emerging technical enhancements will have increased bandwidth and the potential development of practical quantum computers will offer significant increases in processing speeds. Secure voice and data communications will be robust and guaranteed. The theater communications architecture will be linked to an international network, enabling instant communications across the globe.

(6) *COP*. A net-enabled command capability will provide a COP for every unit and HQ that has a knowledge portal, enabling the staff to tailor displays and focus data mining efforts in real time. Automated data feeds will populate a series of representations that enable the user to operate at a macro or micro level, depending upon the unit role and missions, or the tactical situation. The COP will be displayed in a cockpit configuration. All information requirements

will be accessible via the COP, across the entire staff. For those operating at the joint level, there will also be a joint COP; available via the same cockpit.

(7) *Joint distribution information systems.* The future Modular Force must be enabled by a system that provides real time visibility of user requirements, distribution resources, operational and environmental conditions, and the current relevant situation. This will need to be a DOD standard deployment and distribution system that links all organizations in the JDDE in a collaborative environment. These systems will allow the distribution manager to be able to set protocols that enable automated decisions or require the system to flag issues that require interrogation by a human. This information will be displayed in a cockpit display that enables data mining and COA analysis of current and future distribution operations that will be integrated with superior, supported, and subordinate organizations. This is not likely to be completely operational until the later stages of the future Modular Force era.

(8) *Logistics information systems.* There will continue to be a number of functional logistics systems throughout the future Modular Force era, but the number will diminish over time. However, these systems will operate in a common logistics operating environment and feed into the SALE. This will be supported by data held in the logistics information warehouse, which will provide every logistics organization with a single cockpit capability to manage all logistics functions.

(9) *Logistics decision support capability.* Future Modular Forces will have logistics decision support system capabilities embedded in information systems. This will allow users to tailor information requirements and data feeds, develop visualizations, integrate various scenarios, and user requirement models, map effects, and develop the COA, all in real time and in concert with supported and supporting organizations. This will substantially improve the capability of the distribution system to support high tempo disbursed operations.

(10) *Joint distribution policy, guidance, and doctrine.* USTRANSCOM, in concert with Service partners, will have developed a DOD instruction that provides standard policy. It will coordinate the publication of appropriate guidance, as and when required, with the most appropriate organization. USTRANSCOM will also sponsor joint distribution doctrine that it will develop with Service partners and synchronize with JFCOM.

(11) *Common standards and measures.* USTRANSCOM, in concert with Service partners, will have developed and published common DOD distribution metric that enable the distribution system to be measured at each segment, and as an entity. This will allow the distribution network to be assessed in real time, limitations or impediments identified, and remedial action taken to optimize distribution across the JDDE.

(12) *Integration of coalition and HN capabilities.* A coalition logistics operations SOP will be produced that establishes how coalition and HN logistics organizations are integrated into U.S. logistics operations. It will define how requirements and capabilities are identified and how routine and emergency logistics operations are synchronized across the force to achieve optimal results. Coalition forces will be integrated at an early stage into each level of U.S. command to enable collaborative planning and monitoring of operations. Where available, coalition forces

will link networked logistics information systems to improve real time interoperability. Coalition staff will be routinely employed in U.S. HQs.

c. Physical Distribution

(1) *Intertheater high speed vessels.* Future Modular Force operations may be characterized by rapid deployments across the globe, to contain incidents and prevent conflict escalation. To undertake such missions the U.S. will employ a mix of strategic air and high speed surface ships that will be able to quickly deploy to ports of embarkation, upload deploying force packages and sustainment stocks, and deploy into the JOA. These high speed vessels will complement the strategic air capability to produce a DOD rapid intervention capability.

(2) *Rapid intratheater sealift.* The future may well see an increase in the size of populations living on, or in close proximity to, the coastal littoral. It is likely that these locations will not have sea PODs that will be sufficiently developed to enable them to support deployment and sustainment operations. To counter this, the DOD will have a fleet of fast, shallow draft vessels that can operate from a staging base adjacent to the region in conflict, or vessels at sea to deploy and sustain forces. These vessels will be able to operate from fixed facilities or floating platforms and into austere ports.

(3) *Strategic airlift.* Future operations will most likely be undertaken rapidly, across the globe, to contain and overmatch potential adversaries. To deploy forces quickly across such distances will require a fleet of strategic aircraft that can quickly embark modular units and deploy them to a theater of operations, and then provide an air bridge to sustain and support them with crucial equipment and stocks. The U.S. will need to expand and upgrade its current strategic air fleet to provide for a true rapid deployment capability. Consideration should be given to adopting a standardized pallet configuration across distribution platforms to facilitate transshipment.

(4) *Operational and tactical airlift.* Future operations on a non contiguous, less dense battlefield, with individual formation JOAs extending for hundreds of miles, against adversaries that strike at anytime from any location will require a distribution system that can quickly respond to user requirements. Stock piling commodities close to users is not always a viable proposition. The Army therefore requires a transport aircraft to replace the aging air fleet that can routinely deliver equipment and stocks across the JOA quickly, by air-land to austere airfields or by airdrop to designated drop zones.

(5) *Heavy lift rotary wing capabilities.* Heavy lift rotary wing platforms provide a capability to rapidly distribute items and improve force protection. The future force distribution system will employ heavy lift rotary wing resources to enable distribution in complex terrain and in environments where there is a substantial surface threat from adversaries. This will enable stocks to be centralized at specific nodes across the JOA and rapidly distributed to users, when required. This will result in a more accurate and precise distribution system and enable a reduction in stock holdings. Heavy lift rotary wing platforms will, in future, be allocated to the distribution manager for distribution operations and located at key nodes across the JOA to achieve distribution as required.

(6) *Aerial delivery capability.* Air drop systems must have a mix of delivery capabilities to support the future force using conventional parachutes, through platforms that can be dropped at ultra low altitude, to high altitude precision airdrop systems with substantial stand-off capabilities. Each will be employed to provide for the particular prevailing requirement. High altitude precision systems may be used to deliver stocks to units deployed across the JOA, in fixed locations, or on mobile patrol, for routine or emergency resupply missions. Such systems will be able to delivery loads up to 60,000 lbs. This capability will be managed centrally and located adjacent to the theater base where it can respond to urgent requirements. It will also contribute to a reduction in stock levels as stocks will be centralized and pushed forward when required.

(7) *Convoy communications.* Force protection requirements will dictate the need for all vehicles in a convoy to be able to communicate across the convoy using secure voice and data. Additionally at least 50% of all vehicles in the convoy must have secure voice and data communications with units adjacent to the LOC and with their superior HQ. They should also be able to draw information from UAS or aircraft that are operating in the vicinity of the convoy. It is also foreseen that there is a need to have a vehicle intercom systems installed to provide intra-vehicle communication between driver and passengers.

(8) *Crew and vehicle protection systems.* All vehicles in a convoy must have adequate protection from the threats posed by the adversaries operating in the JOA. The system should provide protection for the crew from blast, flame, and fragmentation, as well as enabling the vehicle to extricate itself from the site of any incident. In addition to these measures, protection measures must be implemented that immediately extinguish a fire on vehicles carrying flammable products. Automated electronic and physical self defense systems, which identify and defeat mines, IEDs, and incoming munitions, should be employed on all convoy escort systems.

(9) *Seabasing.* The future Modular Force may be denied access through established ports of entry, may wish to posture off an adversaries coast, or rapidly deploy a force from over the horizon. A sea based force is often able to provide these options. It therefore follows that this force may need to be supported, at least initially, from the seabase. The Seabasing CCP addresses the required capabilities.

(10) *UAS.* UAS will be required to provide aerial over-watch to monitor security around logistics nodes and react with an array of offensive capabilities. UAS will also be employed to provide over-watch for logistics convoys that allow convoy commanders to monitor the route and take appropriate action to avoid an incident. In addition to these widely recognized requirements, UAS will also be used to deliver, on a routine basis, high value, low volume items to units across the JOA. The UAS that undertake this task should be able to carry loads of up to 1,000 lbs. They should be able to deliver these loads by parachute or land and then return with any retrograde cargo.

(11) *Robotic ground vehicles.* Robotic vehicles will be routinely employed in the tactical arena to resupply units operating in complex environments or engaged in contact. Robotic vehicles will also be used to provide a leader-follower capability that reduces the

number of personnel required to drive vehicles; instead focusing people on security tasks in the convoy, operating from protected platforms.

(12) *Modular intermodal distribution system.* A modular intermodal distribution system will be used by all the Services and agencies to distribute all equipment and stocks from the strategic base to points of need in the theater of operations. The system will be compatible with all strategic, operational, and tactical transportation modes and provide integral securing and tracking capabilities.

(13) *Container management.* Twenty foot ISO containers will be procured and issued to units, on a recognized scale, to enable units to quickly prepare and deploy into a theater of operations. As a general rule DOD owned or leased containers should be used during the initial stages of contingency operations. All containers will be fitted with an integral passive tracking system that can be monitored across the ITV network. The theater logistics HQ will manage DOD leased containers to ensure a two-way flow and ensure a rapid return of leased containers to avoid excessive lease charges. PLS flat racks will be tagged and managed in a similar manner.

(14) *MHC.* MHC is a crucial enabler for effective distribution operations. At every transshipment point MHC is required to transfer loads or platforms from one mode to another, or move the item to a temporary storage site. This function takes time and resources and impedes the flow through the network. The future distribution system will seek to minimize the nodes, and therefore transshipment points, across the distribution network, to aid flow. However, where transshipment occurs, MHC will be required that can lift a variety of platforms (ISO and 463L pallets) and quickly transfer them to waiting vehicles. Where possible this process should be automated.

(15) *Common vehicle systems.* Adoption of common vehicle types across the Services will aid distribution by supporting the introduction of common pallet and platform configurations (such as, PLS or 20 foot ISO envelope), as well as reducing the spare parts holdings required in theater. There are also potential economies of scale in the research and development and training areas.

(16) *Common intelligent protective packaging.* The future force will use common, intelligent, protective packaging, supplied by the DLA, for all operations. Packaging will come in a variety of pre-defined sizes that will be compatible with the JMIDS. The packaging will have the capability to monitor and control certain conditions, such as temperature and movement, and provide an automated report on the condition of the item, as, and when, requested.

(17) *Automated IED and mine detection and suppression.* All convoys will have vehicles fitted with automated and physical systems to detect and suppress, or defeat, mines and IEDs, while on the move. The ratio of vehicles fitted with such systems to those without will depend on the tactical situation but must be at least sufficient to provide coverage for the entire convoy in the event that it should become fragmented into smaller elements.

(18) *Prognostics*. A DOD prognostic policy is required. This may specify the requirement for equipment to be fitted with prognostic capabilities, and set the standard for data exchange between prognostic systems, and information gathering systems. All new equipment should be procured with DOD standard prognostic systems.

(19) *Bulk water production and distribution*. There are a number of commercially available water production capabilities that are easily and rapidly transportable, which would provide for BCT size forces. Distribution of bulk water in the quantities required at the BCT level would probably only require units to have PLS mounted tanks or additional water trailers. Given that water is likely to be a scarce commodity in many of the potential deployment locations, and the dispersed nature of future operations, it is important that the capability to produce and distribute water is available at the tactical level.

d. Distribution Management

(1) *Clear functional boundaries*. Distinct functional boundaries are required so that each organization in the JDDE clearly understands its roles, tasks, and missions and can develop capabilities that enable it to undertake these in an effective manner. This is especially true in the strategic and theater area, where there is a degree of overlap and potential duplication. This is, in part, a purposeful omission to produce a flexible capability, but is potentially confusing. The situation will be resolved in the future because the theater logistics HQs will be responsible for coordination and control of operational distribution and the Services will focus on tactical distribution.

(2) *Common procedures*. USTRANSCOM in concert with Service partners, will have developed a set of standard procedures that will explain how distribution operations are managed across the JDDE.

(3) *Common systems and standards*. USTRANSCOM in concert with Service partners, will have identified and introduced information systems that enable JDDE wide coordination and control of distribution operations. There will also be an associated set of standard operating procedures that detail how distribution operations are managed and undertaken across the JDDE.

(4) *Standard item reference process*. USTRANSCOM in concert with Service partners, will have produced a SOP and policies that detail how items are referenced across the JDDE. The SOP will define how items procured in theater, or from commercial sources as urgent operational requirements, are identified, how the item details are fed into the distribution system network, and how the item is input to the distribution network.

(5) *Common performance measures*. USTRANSCOM in concert with Service partners, will have developed a set of standard performance measures that measure the performance of each node and mode in the distribution network across the JDDE. The measures will be able to be aggregated to measure the performance of a particular segment of the JDDE, or to review performance across the entire JDDE. The measures adopted will be output based and focused on optimizing a two-way flow throughout the distribution network.

(6) *Joint training.* Mandatory joint training will be provided for all individuals destined for a joint appointment. The training will be centrally managed and covers all the joint staff functions. Joint collective training will be undertaken by all units that are established to perform functions in a joint logistics setting.

(7) *Functional structures.* Functional units will be established, with subordinate functional company sized sub unit, from existing structures, to provide certain functional capabilities at the operational level. Examples of this include distribution battalions to operate the theater base; and port battalions to operate air and sea ports. Multi-functional units will continue to exist to provide formation and unit support, especially at the tactical level.

4-6. Summary

a. The future Modular Force requires a distribution network that is unified across strategic, operational, and tactical environments, using common rules, tools, and procedures to produce a more effective and responsible distribution network. This will be enabled by a unified virtual enterprise with a well defined set of authorities, collaborative relationships, and integrated capabilities that enhance unity of effort among enterprise partners. In order to establish a unified and integrated effort, there will have to be improvements in a number of separate but inextricably related capabilities.

b. Each of these capabilities is identified in this chapter and each provides a specific individual benefit. The real improvement will result from the quantum benefit that is derived from the sum of the individual proposals.

Chapter 5

Distribution Operations Operational Architecture

5-1. Introduction

a. The purpose of operational architecture is to provide a single pictorial representation of the future Modular Force distribution concept in the form of an operational view (OV) or OV-1. Figure 2-3, in section 2-15, is the OV-1 for Distribution Operations. The OV-1 portrays how theater distribution operations will be undertaken in the future. The OV-1 graphic is consistent with the concept as defined in this CCP. The Distribution Management OV-1, a subset of distribution operations is graphically illustrated in figure 5-1.

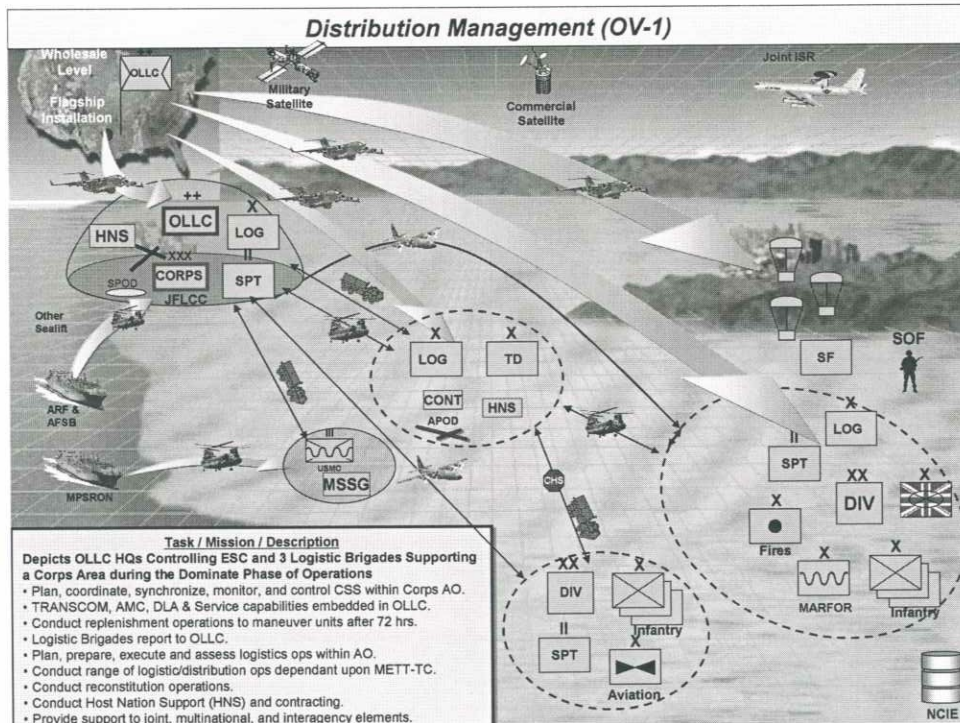


Figure 5-1: Distribution Management Concept

b. The graphic provides a single, top level view of the theater segment of the distribution enterprise with a primary focus on the theater operational and tactical distribution environments. The view is applicable across the ROMO, for all phases of operations. There are several key aspects represented in the OV-1. They are discussed below.

(1) A JDDE will provide global unity of effort, integrating all distribution organizations into an output focused, coherent entity, with clearly defined authorities, roles, and relationships, using common rules, tools, and procedures. The theater distribution operations will be commanded and controlled centrally under a single logistics HQ and executed locally by subordinate organizations.

(2) Domain-wide visibility will provide the ability to see requirements, capabilities, resources, and the current operational and logistics situation that will enable a rapid and precise distribution system.

(3) Information gathering and management will be fundamental to leveraging capability in the future. The future Modular Force will employ an information network that will link all organizations into a COI and enable supporting and supported organizations to collaborate at all levels. The SALE will provide logisticians with the information required to coordinate distribution operations in a coherent and integrated manner

(4) Joint, Service, coalition, HN, and commercial requirements and capabilities will be integrated into all distribution operations. Distribution will be effected using a multi-nodal and multi-modal network, coordinated as a coherent entity, to provide an agile and responsive distribution capability.

5-2. The Army Distribution Operations OV-5 Activity Model

a. An activity model identifies the higher level tasks that have to be performed by joint and Army organizations in order to provide an effective distribution operation capability. The model can delineate the detail to identify all supporting tasks, conditions, and standards that ultimately identify the various individual activities, resource requirements, information requirements and constraints.

b. The Army distribution operations activity model is organized at the highest level to show the major tasks that are performed to underpin distribution. See figure 5-2 for the key high level tasks.

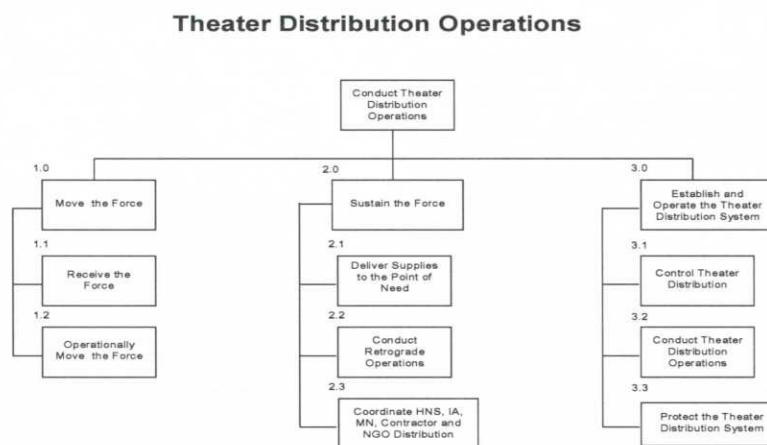


Figure 5-2. Distribution Operations Activity Node Tree

(1) *Move the Force*. This identifies those activities that need to be performed or supported by joint and Army organizations to receive the force into the theater or operations and then subsequently move it to staging or deployment locations.

(2) *Sustain the Force*. This identifies the activities that are required to be performed or supported by joint and Army organizations that are required to physically deliver items to the point of need, including routine operation of a retrograde capability and replenishment as an integrated activity, to provide for user requirements.

(3) *Establish and Operate the Theater Distribution System*. This identifies the activities that are required to be performed or supported by joint and Army organizations, in order to establish and maintain the distribution network that comprises a variety of nodes, linked by multi-modal distribution resources. Included in this task is the requirement for command, control, communications, computers, and intelligence systems and resources to establish control over the distribution system; including interacting with the COP and conducting assessment and planning in a collaborative manner with supported and supporting organizations.

Chapter 6

DOTMLPF Questions Architecture

6-1. Introduction

a. The JL (D) JIC and associated CBA identified issues that required further analysis. The subsequent ICD identified specific issues for resolution and apportioned responsibility for resolving these issues. Most of the issues are of a joint nature, though they will impact the Services and are therefore being staffed jointly by USTRANSCOM and the Services. Some of the joint issues will have an impact on specific DOTMLPF issues but until the development of the joint issues is complete it is not possible to establish the various effects. For example, one issue relates to the development of common distribution rules and processes. There are also lessons being learned on operations that will need to be incorporated into the Joint Capability Integration and Development System and DOTMLPF process as each are endorsed.

b. In addition to this work, but to be developed in harmony, are the required capabilities identified in chapter 4, which will need to be analyzed, as well as the issues identified in chapter 7 for future experimentation. This chapter sets out the primary questions that relate specifically to DOTMLPF related activities, some of which may need further refinement.

6-2. Doctrine

a. The Army is involved in dynamic change that is likely to become a constant as it incorporates technological spin outs and evolves and adapts capabilities. It is concurrently moving towards greater joint interdependence, with the attendant adoption of common rules, tools, and processes required for effective joint integration. All of this is to be hosted on a networked environment that will provide the opportunity for integration and collaboration at all levels.

b. The Army is also committed to a lengthy, ongoing global war. Coping with the combined effects of these change drivers will require officers and Soldiers who can adapt and respond quickly to rapidly changing circumstances. This serves to emphasize the need for less prescriptive doctrine that can guide officers and Soldiers; allowing them to employ the joint operation planning process JOPP to develop solutions that suit the specific requirement. The challenge for doctrine developers will be to keep pace with the speed of change in the joint and Army arenas while incorporating lessons learned from operations; all of which will influence the manner in which distribution operations will be undertaken in support of the future Modular Force. Doctrine must develop to describe how distribution operations will be undertaken in the JOA, at both the joint and Army level.

c. Doctrinal questions that must be answered include-

- Does joint doctrine adequately explain distribution operations at the operational level?
- What doctrine needs review to support future distribution operations?

- Can Army and joint doctrine be streamlined to reduce publications and better explain joint interdependencies?
- Should doctrine be standardized along NATO and ABCA lines to improve interoperability; and if so, how is this best achieved?
- How will contractors and commercial organizations be effectively integrated into military operations?
- How will contractors be effectively integrated into military operations?

6-3. Organization

a. Army HQ and units will be modular in design and, at the operational level, more joint interdependent, and employed around capability based force packages. These forces will be designed to be capable of “plugging” into any Service or joint structure for employment in any contingency or major combat operation. Units and formations will be structured, equipped, and trained to habitually operate with and alongside coalition and multinational partners, HN, NGOs, and commercial organizations. To cope with the demands of the operational environment, organizations will be more capable to multitask, robust, and less complex so they can adapt to the operational requirement.

b. Organization questions that must be answered include-

- What is the most appropriate organization solution to C2 operational level logistics?
- How can unity of effort most effectively be achieved across the theater segment of the JDDE?
- What are the most appropriate structure and relationships for the future Army distribution system?
- How is functional responsibility at the strategic and operational interface best delineated and managed?
- Are modular units the most appropriate means of providing a rapid response capability, where trust and confidence are key customer considerations?
- Is there a requirement for specialized distribution units?

6-4. Training

a. Future training will involve greater JIM training, which will require different skill sets and the adoption of more integrated individual and collective training. Joint and strategic objectives will be stressed through a combination of home station training, combat training center rotations, joint training exercises, joint training centers, and operational deployments. Modularity will occasion the adoption of more common SOPs if the Army is to employ a true ‘plug and play’ ethos. As new technologies are introduced there will be a need to incorporate these into training. Training will focus more on expeditionary operations and, given the nature of future adversaries, need to provide officers, enlisted, and civilians with a broad range of skills that they can adapt to the prevailing requirement. Greater emphasis will be placed on how to think than what to think and students will be encouraged to be innovative and adaptive. It may be necessary to review the structure and training for some MOS to foster development of more multifaceted officers and Soldiers.

b. Key Training questions that must be answered include-

- What JIM training is required to support future distribution operations?
- Is the joint operations planning process adequately emphasized in officer and non-commissioned officer NCO training?
- Are joint and Army distribution planning and coordination adequately addressed in training?
- What is the most effective means of conducting joint distribution training?
- Is there a requirement to integrate joint and Service distribution training?
- How are coalition and joint issues best incorporated into individual and collective training?
- Is there adequate training on the use of mission orders to execute distribution operations?

6-5. Materiel

a. As the Army adopts more capable and complex platforms and systems, the unit cost rises, availability improves, and the likelihood of smaller fleet populations increases. Ironically, although technology, maintainability, and reliability will improve with new technologies, the management and care of equipment will become more crucial with fewer platforms. The potential for creation of joint organizations as a means of focusing capabilities and making efficiencies will increase and impact Service structures. Protection of expensive and small population equipment will assume more importance and require new and innovative ideas to cope with changing threats.

b. New equipment will introduce new capabilities that will be integrated across the JOA. Habitual ownership of certain capabilities will become less common, but equipment management more dynamic and complex. Despite the introduction of new technologies there will continue to be a mix of innovative and enduring capabilities that will impact on supportability.

c. Key Materiel questions that must be answered include-

- To what extent can new platforms and distribution systems improve distribution?
- What percentage of distribution is likely to be undertaken by aerial delivery and what will be the impact on operational distribution?
- What is the most effective means of identifying and protecting against mines and IEDs?

6-6. Leadership and Education

a. Future operations may be fast moving, dynamic, and complex. This will require leaders who are adaptive and innovative. These leaders will need to be trained not “what to think,” but “how to think,” and allowed to learn by trial and error, before committing to operations. Commanders will need to employ mission command more rigorously and place greater emphasis on junior leader development. There will be more emphasis on information management and the

use of sophisticated systems and tools that provide real time information, which enables more improved decisionmaking. There will need to be improved training and education to enable officers and Soldiers to work in joint and multinational appointments and alongside coalition forces. Training should meet the requirements found in TRADOC Pam 525-3-0.

b. Leadership and education questions that must be answered include-

- What are the most effective means of developing adaptive junior leaders of the future?
- Is there a requirement to review leader selection and development programs?
- How does the Army develop leaders to operate in an age where information management offers the best chance to defeat adversaries?
- How are officers and non-commissioned officers being best prepared for joint assignments?
- Are current distribution operation focused military occupational specialty MOS structures appropriate for the future?
- Can synthetic training help develop better leaders?

6-7. Personnel

a. People are the Army's fundamental capability without which the military could not operate. The effective management of personnel must therefore be of paramount importance. Management of people must be a habitual activity that evolves as requirements evolve and adapt as circumstances warrant and social issues impact the DOD. The Army will continue to adopt the 'Army Strong' ethos, but will expand this to more closely integrate U.S. Army Reserve, U.S. National Guard, civilian, and contractor personnel as a holistic whole, leveraging their skills sets and experience where appropriate.

b. Personnel questions that must be answered include-

- Will future social, economic, and demographic trends affect the number and quality of people being retained by the Army?
- Is there a requirement to revise current, or introduce new, skill sets?

6-8. Facilities

a. Changes in organization and structure will require an investment in the infrastructure to support and train units, much of which will be dependant on the role of the units concerned. The infrastructure must include facilities that enable the rapid concentration, preparation, processing, and deployment of unit personnel and equipment to ports of embarkation. Installations will also need to provide the range of facilities required to support and sustain the families of those who deploy. There will be a requirement for installations to provide for the units and personnel who remain behind when the parent HQ or unit deploys. Ideally, facilities to train and prepare for operations should be developed adjacent to, or in proximity to, the units expected to deploy. Fewer, but state-of-the-art, distribution and storage facilities will be required to provide for more complex equipment.

b. Facility questions that must be answered include-

- What are the basic facility infrastructure requirement for a network comprising a theater base and regional hubs?
- Is it possible to develop and deploy mobile infrastructure and facilities?
- Do units have access to suitable training facilities to prepare for their role?
- Are there adequate facilities infrastructures on installations to train, prepare, and process units for rapid deployment?
- Are installation management offices able to support units that remain at home station when the parent formation or HQ deploy?

6-9. Summary

a. Change is becoming a constant in the DOD. Some of the change is contrived in the form of programmed measures designed to evolve better capabilities; and some is forced upon the Service by adversaries on the battlefield. The result is the twin track approach of revolutionary and evolutionary change that has obvious and opaque, individual and collective effects. This requires analysis, development, and introduction via a managed, coherent change program.

b. The questions identified in this chapter will be subject to analysis to establish potential benefits that warrant funding and development.

Chapter 7

Wargaming & Experimentation Study Questions

7-1. Introduction

a. The Army Transformation Program is wide ranging and dynamic. The program will bring about change in the structure of the Army, and the way it thinks, trains, and operates. At the core of the program are new platforms, systems, and technologies that will better enable the Army to rapidly deploy on expeditionary operations, and routinely sustain high tempo distributed operations, in order to out think and decisively defeat its adversaries. Transformation is a managed multifaceted program that is being developed via a series of individual programs that are collectively orchestrated and experimented to culminate in a coherent capability.

b. Operational Lessons. Concurrent with the transformation program the Army is engaged in a protracted global war on terror that is exposing lessons that are contributing to current and future conceptual and doctrinal developments. The lessons learned tend to have an immediate affect as the Army adapts to a change in threat or enemy tactics. The challenge for the transformation program is to keep pace with operational driven change and orchestrate a program of experimentation that proves capabilities before they are employed. Additionally, the future Modular Force Logistics Concept is currently being implemented throughout the Army and will also have an immediate impact on how the Army operates its operational level logistics.

c. Evolution of Capability Development. The Army is continually evolving as new threats, geopolitical trends, and opportunities arise. The pace of evolution often varies, but is most profound during periods of conflict when the consequence of rapid change is starkest. Historically, the Army evolves routinely through a managed process, starting with a requirement, for which a conceptual solution is developed. This is followed by experimentation, to develop new capabilities and test them to observe benefit, before fielding. The experimentation program employs a variety of tools, to rigorously test and assess benefit, to minimize risk that may be associated with new products, systems, or practices.

7-2. Previous Experimentation

a. There has already been limited experimentation on future Modular Force distribution operations and most of that has been focused at the tactical level, which, by virtue of the scope and size, has produced limited value. The future Modular Force Logistics Concept is currently being developed and, as it is introduced and begins to produce lessons learned, the appropriate issues will be used to contribute to future Modular Force distribution operations.

b. Experiments and ongoing studies of particular relevance include-

- Operational level logistics C2 seminar hosted by CASCOM.
- Unified Quest.
- The Modular Force Logistics Concept seminar.
- Comprehensive Force Protection Initiative study.

7-3. Future Experimentation Opportunities

a. To undertake effective experimentation on distribution operations requires a theater level scenario, to expose and assess the relevant issues. There are few experiments that afford this level of coverage. However, there are a number of planned and annual experiments that offer the opportunity to identify and assess issues that could contribute to the development of future distribution operation capabilities over the next five years.

b. Those exercises and events that are considered to offer the most beneficial outcomes include-

- Exercise Unified Quest 07 – 10.
- Exercise Urban Resolve 07 – 10.
- Exercise Omni Fusion 07 – 10.
- The Integrated Logistics Analysis Plan.

7-4. Analysis of Wargaming and Experimentation

a. The findings of this CCP will be subject to during the CBA phase, to identify the areas that offer most benefits while minimizing risk. The experimentation efforts that support this work will validate the DOTMLPF issues identified in chapter 6 and expand these where a valid alteration or addition is identified. Experimentation and wargaming will establish how

organizations will conduct distribution operations in support of the future Modular Force as stated in chapter 3.

b. Standard, endorsed vignettes will be used in the experimentation unless a specific divergence is required, in which case an excursion will be employed to define the relevant issues.

7-5. Study Questions

Questions that will be answered in future experimentation include-

- How can the GCC and JFC most effectively prioritize, influence, and monitor theater distribution operations?
- What is the most effective means of integrating strategic and operational distribution operations?
- How will increasing the amount of operational routine air supply benefit the user and the distribution operators?
- What organizational options produce the most effective theater distribution operations capability?
- How can Service distribution capabilities be most effectively coordinated to achieve optimum results at the theater level?
- How can Service distribution capabilities be employed to optimize the logistics footprint?
- What is the most effective means of integrating joint, interagency, and multinational requirements to distribution operations?
- What technological opportunities offer the most benefit for improving distribution operations?
- How can emerging airlift, UAS, and aerial delivery capabilities improve the effectiveness of the distribution operations?
- What is the most appropriate mix of surface and airlift platforms to sustain distribution operations for the Future Force?
- How can Inter and Intra sealift most effectively contribute to the effectiveness of the distribution operations?
- What is the most effective means of protecting the distribution network from asymmetric threats, as well as conventional symmetrical threats?
- What, if any, commodities need to be monitored and managed in near real time, and which commodities can be managed as they transit the various distribution nodes?
- Where is the most effective location for consolidating unit shipments to achieve pure pallets?
- Are there existing, emerging training technologies and capabilities that could contribute to the development of distribution operations that warrant investigation and funding?

Chapter 8 Alternative CCP

8-1. Introduction

a. Logistics is about synchronizing all elements of the system to deliver the “right things” to the “right place” at the “right time” to support the geographic combatant commander. Distribution is a process that links the supplier to the user, via a series of network nodes, using a variety of modal options, to satisfy the user requirement. Distribution is a key enabler of military capability as it provides the right items at the right place, in the right condition, at the right time, to enable the user to undertake operations. Distribution operations are undertaken in support of humanitarian and warfighting operations in a variety of locations where infrastructure can range from austere through well established.

b. The challenge for future Modular Force distribution operations is to support dynamic, simultaneous, dispersed operations at the high tempo required to defeat the opposition of the future adversaries. Rapid and precise distribution operations will be required.

8-2. Joint Distribution

a. Distribution is segmented across the strategic, operational, and tactical environs; this indicates the need for a joint approach to distribution. The JL (D) JIC CBA examined how to improve the distribution effort and concluded that a unified approach is required that coordinates the application of all logistics capabilities focused on the JFC’s intent.

b. The JIC CBA looked at two aspects of distribution.

(1) *Functional solution.* A functional solution analysis was conducted to determine the most effective functional solution. Four options were considered and the selected option was a combination of two options: enhancement of the DPO responsibilities to coordinate and synchronize JDDE operations through defined business rules, tools, and processes and creation of a standardized, regional joint deployment and distribution control capability to support the GCC.

(2) *Visibility.* The functional area analysis FAA was conducted to determine the most effective way of improving visibility of distribution operations. Seven options were considered, including commercial off the shelf and other nation systems. The selected option involves the DPO, in coordination with Service partners, to coordinate and synchronize JDDE operations to provide a rapid and precise response to GCC and JFC requirements. The DPO will be the lead agent for capabilities definition, implementation, and integration.

8-3. Focused Logistics

a. The Functional Logistics Joint Functional Concept identifies a number of capabilities, systems, and platforms, across the DOD that are required to support distribution operations. These include the JHSV, the global command support system, and the joint cargo aircraft.

Individual capabilities, systems, and platforms are developed in more detail in the Focused Logistics Road Maps (Volume I & II). Although the Focused Logistics Road Maps identify required capabilities, many of the proposals have yet to be accorded funding.

b. Distribution Capability Development. This CCP identifies a number of capabilities that are required to develop distribution operations to provide the requirements of the future Modular Force; many of which are already identified in the Focused Logistics Road Maps. Others are being resolved in the ICD that was produced following the JL (D) JIC CBA. The remaining proposals, where appropriate, will be developed in the CBA that follows this CCP.

8-4. Summary

a. Effective distribution is achieved by identifying user requirements and satisfying them by use of an integrated network of capabilities and systems. Improvement to distribution operations requires introduction or development of a variety of capabilities, systems, platforms, and processes. The Focused Logistics Joint Functional Concept and JL (D) JIC have already identified the majority of these capabilities.

b. This CCP identifies issues requiring further assessment in the CBA phase. It is not therefore possible to identify an alternate CCP with any confidence, aside from those already acknowledged.

Appendix A

References

Section I

Required Publications

Capstone Concept for Joint Operations.

Focused Logistics Joint Functional Concept.

Focused Logistics Road Maps Volume I and II.
<http://www.acq.osd.mil/log/lmr/programs/focuslog.pdf>

Joint Pub 3-0
Joint Operations.

The Joint Operational Environment-The World Through 2030 and Beyond.

TRADOC Pam 525-3-0
The Army in Joint Operations: The Army's Future Force Capstone Concept 2015-2024.

TRADOC Pam 525-4-1
The United States Army Functional Concept for Sustain 2015-2024.

TRADOC Pam 525-96
Future Modular Force Distribution Operations.

Section II

Related Publications

Army Concept & Capability Developments Plan (AC2DP).

Chairman of the Joint Chiefs of Staff INST 3170.01E, 11 May 2005, Joint Capabilities Integration, and Development System.

Chairman of the Joint Chiefs of Staff M 3500.04C, Universal Joint Task List.

Command and Control Joint Integrating Concept.

Defense Planning Guidance (DPG) FY 04 (classified document).

DOD Logistics Transformation Strategy.

Field Manual 7-15
Army Universal Task List (AUTL).

Focused Logistics Campaign Plan.
<https://acc.dau.mil/CommunityBrowser.aspx?id=32577>

Focused Logistics. A Joint Logistics Roadmap.
<https://acc.dau.mil/CommunityBrowser.aspx?id=32577>

Global Strike Joint Integrating Concept.

Joint Logistics (Distribution) Joint Integrating Concept.

Joint Concept Development and Revision Plan.

Joint Forcible Entry Operations Joint Integrating Concept.

Joint Pub 1-02
DOD Dictionary of Military and Associated Terms.

Joint Pub 3-17
Joint Doctrine and Joint Tactics, Techniques, and Procedures for Air Mobility Operations.

Joint Pub 3-35
Joint Deployment Operations.

Joint Pub 4.0
Doctrine for Logistic Support of Joint Operations.

Joint Pub 4-01.4
Joint Tactics, Techniques, and Procedures for Joint Theater Distribution.

Joint Pub 4-02
Doctrine for Health Service Support in Joint Operations.

Joint Pub 4-01.3
Joint Tactics, Techniques, and Procedures for Movement Control.

Joint Pub 4-01.5
Joint Tactics, Techniques, and Procedures for Transportation Terminal Operations.

Joint Pub 4-01.2
Joint Tactics, Techniques, and Procedures for Sealift Support to Joint Operations.

Joint Pub 4-06
Joint Tactic, Techniques, and Procedures for Mortuary Affair in Joint Operations.

Joint Pub 4-09
Joint Doctrine for Global Distribution.

TRADOC Pam 525-7-2

JROCM 042-05

DOTMLPF Recommendation Deployment Planning and Execution Lessons Learned.
<http://www.dtic.mil/whs/directives/index.html>

JROCM 218-04

Joint Force Projection FY05 ACTD. <http://www.dtic.mil/whs/directives/index.html>

Joint Seabasing Joint Integrating Concept.

Joint Theater Logistics Management Implementation Plan.

Joint Undersea Superiority Joint Integrating Concept.

Joint Urban Operations Joint Integrating Concept.

Logistics Transformational Roadmap. <http://www.dla.mil/library/DLATransRoadmap.pdf>

Major Combat Operations Joint Operating Concept.

Naval Doctrine Publication 4, Naval Logistics.

Net Centric Environment Joint Functional Concept.

TRADOC Pam 525-3-3

The U.S. Army Functional Concept for Battle Command 2015-2024.

TRADOC Pam 525-3-4

The U.S. Army Functional Concept for Strike 2015-2024.

TRADOC Pam 525-3-5

The U.S. Army Functional Concept for Protect 2015-2024.

TRADOC Pam 525-3-6

The U.S. Army Functional Concept for Move 2015-2024.

Glossary Section I

Abbreviations

ABCA	American, British, Canadian and Australian
ABCS	Army Battle Command System
AMBL	Aviation Maneuver Battle Lab
AO	area of operation
BCS3	Battle Command and Sustainment Support System
BCT	brigade combat teams
C2	command and control
CAISI	combat service support automated information systems interface
CASCOM	Combined Arms Support Command
CBA	capabilities based assessment
CCP	concept capability plan
CMOC	civil -military operations center
COA	course of action
COI	community of interest
CONUS	continental United States
COP	common operating picture
DLA	Defense Logistics Agency
DOD	Department of Defense
DOTMLPF	doctrine, organization, training, material, leadership and education, personnel, facilities
DPO	distribution process owner
FCS	Future Combat Systems
FSO	full spectrum operations
GCC	geographic combatant commander
HA	humanitarian assistance
HN	host nation
HNS	host nation support
HQ	headquarters
ICD	initial capabilities document
IED	improvised explosive devices
IGO	international governmental organization
ISO	International Standards Organization
IT	information technology
ITV	in-transit visibility (see AV)
JCA	joint cargo aircraft
JDDE	joint deployment and distribution enterprise
JDDOC	Joint Deployment and Distribution Operations Center
JFC	joint force commander
JFCOM	U.S. Joint Forces Command
JHL	joint heavy lift
JHSV	joint high speed vessel

TRADOC Pam 525-7-2

JIM	joint, interagency, and multinational
JL (D) JIC	Joint Logistics (Distribution) Joint Integrating Concept
JMIDS	joint modular intermodal distribution system
JOA	joint operations area
JTF	joint task force
LOC	lines of communications
MHC	materiel handling capability
MHE	materiel handling equipment
MTS	movement tracking system
NATO	North Atlantic Treaty Organization
NGO	nongovernmental organization
OE	operational environment
OGA	other government agency
OLLC	operational level logistics command and control
Pam	pamphlet
PLS	palletized load system
POD	port of debarkation
ROMO	range of military operations
RSO	reception staging onward movement
SALE	single Army logistics enterprise
SOF	special operations forces
SOP	standard operating procedure
TRADOC	United States Army Training and Doctrine Command
UAS	unmanned aircraft systems
USTRANSCOM	United States Transportation Command
USC	United States Code

Glossary Section II

Terms

action

A structured behavior of limited duration.

activity

A structured behavior of continuous duration.

assumption

A supposition on the current situation or a presupposition on the future course of events, either, or both, assumed to be true in the absence of positive proof, necessary to enable the commander, in the process of planning, to complete an estimate of the situation and make a decision on the course of action.

attribute

A testable or measurable characteristic that describes an aspect of a system or capability.

capability

The ability to achieve a result to a standard under specified conditions through multiple combinations of means and ways to perform a set of tasks.

command and control (C2)

The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.

commander's intent

A concise expression of the purpose of an operation and the desired end state that serves as the initial impetus for planning.

condition

A variable of the operational environment that affects performance of a task.

concept of operations

The overall picture and broad flow of tasks within a plan by which a commander maps capabilities to effects, and effects to end state for a specific scenario.

configure

To arrange, construct, or build, as in “scalable, modular forces” with a known degree of sustainment, allowing immediate engagement/support of the JTF upon arrival at a designated theater point-of-action.

criterion

A critical, threshold, or specified value of a measure.

deployment

The relocation of forces and materiel to desired areas of operations. Deployment encompasses all activities from origin or home station through destination, specifically including intra-CONUS, intertheater, and intratheater movement legs, staging, and holding areas. (JP 1-02).

distribution

The operational process of synchronizing all elements of the logistics system to deliver the right things to the right place at the right time to support the geographic combatant commander. (JP1-02).

end state

The set of conditions, behaviors, and freedoms of action that defines achievement of the commander's objectives.

enterprise*

Any significant undertaking united by a set of common and fully integrated processes, standards, systems, people, organizations, shared-knowledge, and technical connectivity to accomplish a broad, enduring mission.

*Note: In the context of this integrating concept, the JDDE is that complex of equipment, procedures, doctrine, leaders, communication networks, shared information, organizations, facilities, training, and material necessary to conduct joint distribution operations.

force

1. An aggregation of military personnel, weapon systems, equipment, and necessary support, or combination thereof. 2. A major subdivision of a fleet. (JP 1-02).

interagency

A broad generic term that describes the collective elements or activities of the DOD and other U.S. government agencies, regional and international organizations, nongovernmental organizations, and commercial organizations engaged in a common effort.

joint interdependence

Purposefully combines service capabilities to maximize their total complementary and reinforcing effects, while minimizing their relative vulnerabilities. Joint logistics interdependence is achieved through the deliberate, mutual reliance of each Service on the core logistics competencies of other Services. (TRADOC Pam 525-3-0).

joint interagency and multinational (JIM)

Ann environment under which the Army executes missions as a part of a joint force in the conduct of joint military operations and across the full spectrum of conflict; conducting decisive land operations along with air, sea, and space-based operations and expanding the commander's range of military options. Commander's tailor forces to react quickly to any crisis and may serve

as the joint force land component commander, a combined forces commander, or as the joint task force commander.

measure

Quantitative or qualitative basis for describing the quality of task performance.

measures of performance

Measures designed to quantify the degree of perfection in accomplishing functions or tasks.

measures of effectiveness

Measures designed to correspond to accomplishment of mission objectives and achievement of desired effects.

metric

A quantitative measure associated with an attribute.

mission

The end state, purpose, and associated tasks assigned to a single commander.

near real time

The time delay introduced by automated data processing, between the occurrence of an event and the use of the processed data, for example, for display or feedback and control purposes.

objective

A desired end derived from guidance.

operational environment

A composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander.

point of need

A physical location designated by the JFC as a receiving point for forces or commodities, for subsequent employment, emplacement, or consumption.

real time

The timeliness of data or information that has been delayed only by the time required for electronic communication.

reconstitution

Those actions taken by a military force during or after operational employment to restore its combat capability to full operational readiness.

redeployment

The transfer of forces and materiel to support another JFC's operational requirements, or to return personnel, equipment, and materiel to the home and/or demobilization stations for reintegration and/or out processing. (JP 1-02).

retrograde

Retrograde is the return of forces, system components, and carcasses requiring maintenance (or re-set).

sense and respond logistics

Sense and respond logistics is a transformational network-centric concept that enables joint effects-based operations and provides precise, agile support. Sense and respond logistics relies upon highly adaptive, self-synchronizing, and dynamic physical and functional processes. It predicts, anticipates, and coordinates actions that provide competitive advantage spanning the full range of military operations across the strategic, operational, and tactical levels of war. Sense and respond logistics promotes doctrinal and organizational transformation, and supports scalable coherence of command and control, operations, logistics, intelligence, surveillance, and reconnaissance. Implemented as a cross-service, cross-organizational capability, sense and respond logistics provide an comprehensive, point-of-need to source-of-support network of logistics resources and capabilities. Within sense and respond logistics, every entity, whether military, government, or commercial, is both a potential consumer and a potential provider of logistics. It delivers flexibility, robustness, and scalability for joint expeditionary warfare through adaptive, responsive, real-time, demand and support networks within U.S., allied, and coalition operations. (Office of Force Transformation Concept Document (short version) *Operational Sense and Respond Logistics*.)

standard

The minimum proficiency required in the performance of a task. For mission-essential tasks of joint forces, each task standard is defined by the JFC and consists of a measure and criterion.

sustainment

The provision of personnel, logistics, and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or of the national objective.

task

An action or activity based upon doctrine, standard procedures, mission analysis, or concepts that may be assigned to an individual or organization.

vignette

A concise, narrative description that illustrates and summarizes pertinent circumstances and events from a scenario.

