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HEADQUARTERS
DEPARTMENT OF THE ARMY

Soldier's Manual and Trainer's Guide

MOS 250N

NETWORK MANAGEMENT TECHNICIAN

Ranks Warrant Officer (WO1), Chief Warrant Officer (CWO2), Chief Warrant Officer (CWO3), and Chief Warrant Officer (CWO4)

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PREFACE

<u>The Mission:</u> The mission of the Signal Corps is to provide rapid and reliable information to support the command and control of the Army's combat forces during both peace and war. Signal support is the collective, integrated, and synchronized use of information systems, services and resources and it encompasses the following disciplines: communications, automation, visual information, records management, and printing and publications.

<u>The Role of the Signal Officer:</u> Inherent with the Signal Corps' mission are command, supervisory, managerial, and technical leadership for the engineering, acquisition, design, programming, installation, operation, and maintenance of information systems in both fixed and mobile configurations. From the foxhole to the White House, Signal officers plan, direct, control, and manage signal support at all levels of the Army, which include tactical, strategic, and sustaining base operations. This requires the integration and/or interconnection of diverse types of automation, communications, visual information, records management, and printing and publications equipment and systems into local area and wide area information networks.

This manual applies to both Active and Reserve Component soldiers.

The proponent for this publication is the Signal School. Users of this publication are encouraged to report errors, recommend changes, and submit comments on its improvement. Comments should be keyed to the specific page, paragraph, and line of text in which the change is recommended. Reasons will be provided for each comment to ensure understanding and complete evaluation. Comments should be made on DA Form 2028 directly to Commander, US Army Signal Center and Fort Gordon, ATTN: ATZH-DTM-I, Fort Gordon, Georgia 30905-5074.

Unless this manual states otherwise, masculine pronouns do not refer exclusively to men.

CHAPTER 1

Introduction

1-1.   General. The soldier training publication (STP) identifies the individual military occupational specialty (MOS) and area of concentration (AOC) training requirements for soldiers in various specialties; for example, MOSs 11BCHM, infantry skill levels 2-4. Another source of STP task data is the General Dennis J. Reimer Training and Doctrine Digital Library at http://www.adtdl.army.mil/atdls.htm. Commanders, trainers, and soldiers should use the STP to plan, conduct, and evaluate individual training in units. The STP is the primary MOS/AOC reference to support the self-development and training of every soldier in the unit. It is used with the Soldier's Manual of Common Tasks, Army training and evaluation programs (ARTEPs), and FM 7-0, *Training the Force*, to establish effective training plans and programs that integrate soldier, leader, and collective tasks. This chapter explains how to use the STP in establishing an effective individual training program. It includes doctrinal principles and implications outlined in FM 7-0. Based on these guidelines, commanders and unit trainers must tailor the information to meet the requirements for their specific unit.

1-2.   Training Requirement. Every soldier, noncommissioned officer (NCO), warrant officer, and officer has one primary mission—to be trained and ready to fight and win our nation's wars. Success in battle does not happen by accident; it is a direct result of tough, realistic, and challenging training.

a.   Operational Environment

(1)   Commanders and leaders at all levels must conduct training with respect to a wide variety of operational missions across the full spectrum of operations; these operations may include combined arms, joint, multinational, and interagency considerations, and span the entire breadth of terrain and environmental possibilities. Commanders must strive to set the daily training conditions as closely as possible to those expected for actual operations.

(2)   The operational missions of the Army include not only war, but also military operations other than war (MOOTW). Operations may be conducted as major combat operations, a small-scale contingency, or a peacetime military engagement. Offensive and defensive operations normally dominate military operations in war along with some small-scale contingencies. Stability operations and support operations dominate in MOOTW. Commanders at all echelons may combine different types of operations simultaneously and sequentially to accomplish missions in war and MOOTW. These missions require training since future conflict will likely involve a mix of combat and MOOTW, often concurrently. The range of possible missions complicates training. Army forces cannot train for every possible mission; they train for war and prepare for specific missions as time and circumstances permit.

(3)   Our forces today use a train-alert-deploy sequence. We cannot count on the time or opportunity to correct or make up training deficiencies after deployment. Maintaining forces that are ready now, places increased emphasis on training and the priority of training. This concept is a key link between operational and training doctrine.

(4)   Units train to be ready for war based on the requirements of a precise and specific mission; in the process they develop a foundation of combat skills that can be refined based on the requirements of the assigned mission. Upon alert, commanders assess and refine from this foundation of skills. In the train-alert-deploy process, commanders use whatever time the alert cycle provides to continue refinement of mission-focused training. Training continues during time available between alert notification and deployment, between deployment and employment, and even during employment as units adapt to the specific battlefield environment and assimilate combat replacements.

b.   How the Army Trains the Army

(1)   Training is a team effort and the entire Army—Department of the Army, major commands (MACOMs), the institutional training base, units, the combat training centers (CTCs), each individual soldier and the civilian workforce—has a role that contributes to force readiness. Department of the Army and MACOMs are responsible for resourcing the Army to train. The Institutional Army, including schools, training centers, and NCO academies, for example, train soldiers and leaders to take their place in units in the Army by teaching the doctrine and tactics, techniques, and procedures (TTP). Units, leaders, and individuals train to standard on their assigned critical individual tasks. The unit trains first as an organic unit and then as an integrated component of a team. Before the unit can be trained to function as a team, each soldier must be trained to perform their individual supporting tasks to standard. Operational deployments and major training opportunities, such as major training exercises, CTCs, and ARTEPs provide rigorous, realistic, and stressful training and operational experience under actual or simulated combat and operational conditions to enhance unit readiness and produce bold, innovative leaders. The result of this Army-wide team effort is a training and leader development system that is unrivaled in the world. Effective training produces the force—soldiers, leaders, and units—that can successfully execute any assigned mission.

(2)   The Army Training and Leader Development Model (Figure 1-1) centers on developing trained and ready units led by competent and confident leaders. The model depicts an important dynamic that creates a lifelong learning process. The three core domains that shape the critical learning experiences throughout a soldier and leader's time span are the operational, institutional, and self-development domains. Together, these domains interact using feedback and assessment from various sources and methods to maximize warfighting readiness. Each domain has specific, measurable actions that must occur to develop our leaders.
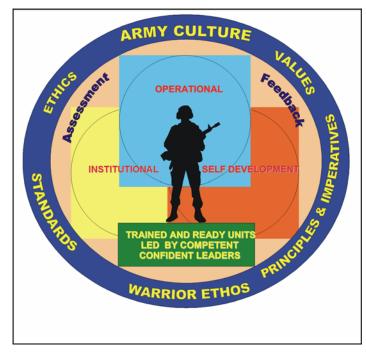

Figure 1-1. Army Training and Leader Development Model

(a)   The operational domain includes home station training, CTC rotations, and joint training exercises and deployments that satisfy national objectives. Each of these actions provides foundational experiences for soldier, leader, and unit development.

(b)   The institutional domain focuses on educating and training soldiers and leaders on the key knowledge, skills, and attributes required to operate in any environment. It includes individual, unit and joint schools, and advanced education.

(c)   The self-development domain, both structured and informal, focuses on taking those actions necessary to reduce or eliminate the gap between operational and institutional experiences.

(3)   Throughout this lifelong learning and experience process, there is formal and informal assessment and feedback of performance to prepare leaders and soldiers for their next level of responsibility. Assessment is the method used to determine the proficiency and potential of leaders against a known standard. Feedback must be clear, formative guidance directly related to the outcome of training events measured against standards.

c.   Leader Training and Leader Development

(1)   Competent and confident leaders are a prerequisite to the successful training of units. It is important to understand that leader training and leader development are integral parts of unit readiness. Leaders are inherently soldiers first and should be technically and tactically proficient in basic soldier skills. They are also adaptive, capable of sensing their environment, adjusting the plan when appropriate, and properly applying the proficiency acquired through training.

(2)   Leader training is an expansion of these skills that qualifies them to lead other soldiers. As such, doctrine and principles of training require the same level of attention of senior commanders. Leader training occurs in the Institutional Army, the unit, the CTCs, and through self-development. Leader training is just one portion of leader development.

(3)   Leader development is the deliberate, continuous, sequential, and progressive process, grounded in Army values, that grows soldiers and civilians into competent and confident leaders capable of decisive action. Leader development is achieved through the lifelong synthesis of the knowledge, skills, and experiences gained through institutional training and education, organizational training, operational experience, and self-development. Commanders play the key roll in leader development that ideally produces tactically and technically competent, confident, and adaptive leaders who act with boldness and initiative in dynamic, complex situations to execute mission-type orders achieving the commander's intent.

d.   Training Responsibility. Soldier and leader training and development continue in the unit. Using the institutional foundation, training in organizations and units focuses and hones individual and team skills and knowledge.

(1)   **Commander Responsibility**

(a)   The unit commander is responsible for the wartime readiness of all elements in the formation. The commander is, therefore, the primary trainer of the organization and is responsible for ensuring that all training is conducted in accordance with the STP to the Army standard.

(b)   Commanders ensure STP standards are met during all training. If a soldier fails to meet established standards for identified MOS/AOC tasks, the soldier must retrain until the tasks are performed to standard. Training to standard on MOS/AOC tasks is more important than completion of a unit-training event such as an ARTEP. The objective is to focus on sustaining MOS/AOC proficiency—this is the critical factor commanders must adhere to when training individual soldiers units.

(2)   **NCO Responsibility**

(a)   A great strength of the US Army is its professional NCO Corps who takes pride in being responsible for the individual training of soldiers, crews, and small teams. The NCO support channel parallels and complements the chain of command. It is a channel of communication and supervision from

the Command Sergeant Major (CSM) to the First Sergeants (1SGs) and then to other NCOs and enlisted personnel. NCOs train soldiers to the non-negotiable standards published in STPs. Commanders delegate authority to NCOs in the support channel as the primary trainers of individual, crew, and small team training. Commanders hold NCOs responsible for conducting standards-based, performance-oriented, battle-focused training and providing feedback on individual, crew, and team proficiency. Commanders define responsibilities and authority of their NCOs to their staffs and subordinates.

(b)   NCOs continue the soldierization process of newly assigned enlisted soldiers and begin their professional development. NCOs are responsible for conducting standards-based, performance-oriented, battle-focused training. They identify specific individual, crew, and small team tasks that support the unit's collective mission essential tasks; plan, prepare, rehearse, and execute training; and evaluate training and conduct after action reviews (AARs) to provide feedback to the commander on individual, crew, and small team proficiency. Senior NCOs coach junior NCOs to master a wide range of individual tasks.

(3)   **Soldier Responsibility**. Each soldier is responsible for performing individual tasks identified by the first-line supervisor based on the unit's mission essential task list (METL). Soldiers must perform tasks to the standards included in the task summary. If soldiers have questions about tasks or which tasks in this manual they must perform, they are responsible for asking their first-line supervisor for clarification, assistance, and guidance. First-line supervisors know how to perform each task or can direct soldiers to appropriate training materials, including current field manuals (FMs), technical manuals (TMs), and Army regulations (ARs). Soldiers are responsible for using these materials to maintain performance. They are also responsible for maintaining standard performance levels of all Soldier's Manual of Common Tasks at their current skill level and below. Periodically, soldiers should ask their supervisor or another soldier to check their performance to ensure that they can perform the tasks.

1-3.   Battle-Focused Training. Battle focus is a concept used to derive peacetime training requirements from assigned and anticipated missions. The priority of training in units is to train to standard on the wartime mission. Battle focus guides the planning, preparation, execution, and assessment of each organization's training program to ensure its members train as they are going to fight. Battle focus is critical throughout the entire training process and is used by commanders to allocate resources for training based on wartime and operational mission requirements. Battle focus enables commanders and staffs at all echelons to structure a training program that copes with non-mission-related requirements while focusing on mission essential training activities. It is recognized that a unit cannot attain proficiency to standard on every task whether due to time or other resource constraints. However, unit commanders can achieve a successful training program by consciously focusing on a reduced number of METL tasks that are essential to mission accomplishment.

a.   Linkage Between METL and STP. A critical aspect of the battle focus concept is to understand the responsibility for and the linkage between the collective mission essential tasks and the individual tasks that support them. For example, the commander and the CSM/1SG must jointly coordinate the collective mission essential tasks and supporting individual tasks on which the unit will concentrate its efforts during a given period. This task hierarchy is provided in the task database at the Reimer Digital Library. The CSM/1SG must select the specific individual tasks that support each collective task to be trained. Although NCOs have the primary role in training and sustaining individual soldier skills, officers at every echelon remain responsible for training to established standards during both individual and collective training. Battle focus is applied to all missions across the full spectrum of operations.

b.   Relationship of STPs to Battle-Focused Training. The two key components of any STP are the soldier's manual (SM) and training guide (TG). Each gives leaders important information to help implement the battle-focused training process. The training guide relates soldier and leader tasks in the MOS/AOC and skill level to duty positions and equipment. It states where the task is trained, how often training should occur to sustain proficiency, and who in the unit should be trained. As leaders assess and plan training, they should rely on the training guide to help identify training needs.

(1)   Leaders conduct and evaluate training based on Army-wide training objectives and on the task standards published in the soldier's manual task summaries or in the Reimer Digital Library. The task summaries ensure that trainers in every unit and location define task standards the same way and trainers evaluate all soldiers to the same standards.

(2)   Figure 1-2 shows how battle-focused training relates to the training guide and soldier's manual. The left column shows the steps involved in training soldiers and the right column shows how the STP supports each of these steps

BATTLE-FOCUS PROCESS	STP SUPPORT PROCESS
Select supporting soldier tasks	Use TG to relate tasks to METL
Conduct training assessment	Use TG to define what soldier tasks to assess
Determine training objectives	Use TG to set objectives
Determine strategy; plan for training	Use TG to relate soldier tasks to strategy
Conduct pre-execution checks	Use SM task summary as source for task performance
Execute training; conduct after action review	Use SM task summary as source for task performance
Evaluate training against established standards	Use SM task summary as standard for evaluation

Figure 1-2. Relationship of Battle-Focused Training and STP

1-4.   **Task Summary Format**. Task summaries outline the wartime performance requirements of each critical task in the SM. They provide the soldier and the trainer with the information necessary to prepare, conduct, and evaluate critical task training. As a minimum, task summaries include information the soldier must know and the skills that he must perform to standards for each task. The format of the task summaries included in this SM is as follows:

a.   Task Number. A 10-digit number identifies each task or skill. This task number, along with the task title, must be included in any correspondence pertaining to the task.

b.   Task Title. The task title identifies the action to be performed.

c.   Conditions. The task conditions identify all the equipment, tools, references, job aids, and supporting personnel that the soldier needs to use to perform the task in wartime. This section identifies any environmental conditions that can alter task performance, such as visibility, temperature, or wind. This section also identifies any specific cues or events that trigger task performance, such as a chemical attack or identification of a threat vehicle.

d.   Standards. The task standards describe how well and to what level the task must be performed under wartime conditions. Standards are typically described in terms of accuracy, completeness, and speed.

e.   Training and Evaluation. The training evaluation section identifies specific actions, known as performance steps, that the soldier must do to successfully complete the task. These actions are in the evaluation guide section of the task summary and are listed in a pass/fail format for easy evaluation. For some tasks, the training and evaluation section may also include detailed training information in a training information outline and an evaluation preparation section. The evaluation preparation section indicates necessary modifications to task performance in order to train and evaluate a task that cannot be trained to the wartime conditions. It may also include special training and evaluation preparation instructions to accommodate these modifications, and any instructions that should be given to the soldier before evaluation.

f.   References. This section identifies references that provide more detailed and thorough explanations of task performance requirements than those given in the task summary description.

g.   Warnings. Warnings alert users to the possibility of immediate personal injury or damage to equipment.

h.   Notes. Notes provide a supportive explanation or hint that relates to the performance standards.

1-5.   Training Execution. All good training, regardless of the specific collective, leader, and individual tasks being executed, must comply with certain common requirements. These include adequate preparation, effective presentation and practice, and thorough evaluation. The execution of training includes preparation for training, conduct of training, and recovery from training.

a.   Preparation for Training. Formal near-term planning for training culminates with the publication of the unit-training schedule. Informal planning, detailed coordination, and preparation for executing the training continue until the training is performed. Commanders and other trainers use training meetings to assign responsibility for preparation of all scheduled training. Preparation for training includes selecting tasks to be trained, planning the conduct of the training, training the trainers, reconnaissance of the site, issuing the training execution plan, and conducting rehearsals and pre-execution checks. Pre-execution checks are preliminary actions commanders and trainers use to identify responsibility for these and other training support tasks. They are used to monitor preparation activities and to follow up to ensure planned training is conducted to standard. Pre-execution checks are a critical portion of any training meeting. During preparation for training, battalion and company commanders identify and eliminate potential training distracters that develop within their own organizations. They also stress personnel accountability to ensure maximum attendance at training.

(1)   Subordinate leaders, as a result of the bottom-up feed from internal training meetings, identify and select the individual tasks necessary to support the identified training objectives. Commanders develop the tentative plan to include requirements for preparatory training, concurrent training, and training resources. At a minimum, the training plan should include confirmation of training areas and locations, training ammunition allocations, training simulations and simulators availability, transportation requirements, soldier support items, a risk management analysis, assignment of responsibility for the training, designation of trainers responsible for approved training, and final coordination. The time and other necessary resources for retraining must also be an integral part of the original training plan.

(2)   Leaders, trainers, and evaluators are identified, trained to standard, and rehearsed prior to the conduct of the training. Leaders and trainers are coached on how to train, given time to prepare, and rehearsed so that training will be challenging and doctrinally correct. Commanders ensure that trainers and evaluators are not only tactically and technically competent on their training tasks, but also understand how the training relates to the organization's METL. Properly prepared trainers, evaluators, and leaders project confidence and enthusiasm to those being trained. Trainer and leader training is a critical event in the preparation phase of training. These individuals must demonstrate proficiency on the selected tasks prior to the conduct of training.

(3)   Commanders, with their subordinate leaders and trainers, conduct site reconnaissance, identify additional training support requirements, and refine and issue the training execution plan. The training plan should identify all those elements necessary to ensure the conduct of training to standard. Rehearsals are essential to the execution of good training. Realistic, standards-based, performance-oriented training requires rehearsals for trainers, support personnel, and evaluators. Preparing for training in Reserve Component (RC) organizations can require complex pre-execution checks. RC trainers must often conduct detailed coordination to obtain equipment, training support system products, and ammunition from distant locations. In addition, RC pre-execution checks may be required to

coordinate Active Component (AC) assistance from the numbered Continental United States Army (CONUSA), training support divisions, and directed training affiliations.

　　　　b.　　　Conduct of Training. Ideally, training is executed using the crawl-walk-run approach. This allows and promotes an objective, standards-based approach to training. Training starts at the basic level. Crawl events are relatively simple to conduct and require minimum support from the unit. After the crawl stage, training becomes incrementally more difficult, requiring more resources from the unit and home station, and increasing the level of realism. At the run stage, the level of difficulty for the training event intensifies. Run stage training requires optimum resources and ideally approaches the level of realism expected in combat. Progression from the walk to the run stage for a particular task may occur during a one-day training exercise or may require a succession of training periods over time. Achievement of the Army standard determines progression between stages.

　　　　(1)　　　In crawl-walk-run training, the tasks and the standards remain the same; however, the conditions under which they are trained change. Commanders may change the conditions, for example, by increasing the difficulty of the conditions under which the task is being performed, increasing the tempo of the task training, increasing the number of tasks being trained, or by increasing the number of personnel involved in the training. Whichever approach is used, it is important that all leaders and soldiers involved understand in which stage they are currently training and understand the Army standard.

　　　　(2)　　　An AAR is immediately conducted and may result in the need for additional training. Any task that was not conducted to standard should be retrained. Retraining should be conducted at the earliest opportunity. Commanders should program time and other resources for retraining as an integral part of their training plan. Training is incomplete until the task is trained to standard. Soldiers will remember the standard enforced, not the one discussed.

　　　　c.　　　Recovery from Training. The recovery process is an extension of training, and once completed, it signifies the end of the training event. At a minimum, recovery includes conduct of maintenance training, turn-in of training support items, and the conduct of AARs that review the overall effectiveness of the training just completed.

　　　　(1)　　　Maintenance training is the conduct of post-operations preventive maintenance checks and services, accountability of organizational and individual equipment, and final inspections. Class IV, Class V, training aids, devices, simulators and simulations (TADSS), and other support items are maintained, accounted for, and turned-in, and training sites and facilities are closed out.

　　　　(2)　　　AARs conducted during recovery focus on collective, leader, and individual task performance, and on the planning, preparation, and conduct of the training just completed. Unit AARs focus on individual and collective task performance and identify shortcomings and the training required to correct deficiencies. AARs with leaders focus on tactical judgment. These AARs contribute to leader learning and provide opportunities for leader development. AARs with trainers and evaluators provide additional opportunities for leader development.

1-6.　**Training Assessment**. Assessment is the commander's responsibility. It is the commander's judgment of the organization's ability to accomplish its wartime operational mission. Assessment is a continuous process that includes evaluating individual training, conducting an organizational assessment, and preparing a training assessment. The commander uses his experience, feedback from training evaluations, and other evaluations and reports to arrive at his assessment. Assessment is both the end and the beginning of the training management process. Training assessment is more than just training evaluation, and encompasses a wide variety of inputs. Assessments include such diverse systems as training, force integration, logistics, and personnel and provide the link between the unit's performance and the Army standard. Evaluation of training is, however, a major component of assessment. Training evaluations provide the commander with feedback on the demonstrated training proficiency of soldiers, leaders, battle staffs, and units. Commanders cannot personally observe all training in their organization and, therefore, gather feedback from their senior staff officers and NCOs.

a.   Evaluation of Training. Training evaluations are a critical component of any training assessment. Evaluation measures the demonstrated ability of soldiers, commanders, leaders, battle staffs, and units against the Army standard. Evaluation of training is integral to standards-based training and is the cornerstone of leader training and leader development. STPs describe standards that must be met for each soldier task.

(1)   All training must be evaluated to measure performance levels against the established Army standard. The evaluation can be as fundamental as an informal, internal evaluation performed by the leader conducting the training. Evaluation is conducted specifically to enable the individual undergoing the training to know whether the training standard has been achieved. Commanders must establish a climate that encourages candid and accurate feedback for the purpose of developing leaders and trained soldiers.

(2)   Evaluation of training is not a test; it is not used to find reasons to punish leaders and soldiers. Evaluation tells soldiers whether or not they achieved the Army standard and, therefore, assists them in determining the overall effectiveness of their training plans. Evaluation produces disciplined soldiers, leaders, and units. Training without evaluation is a waste of time and resources.

(3)   Leaders use evaluations as an opportunity to coach and mentor soldiers. A key element in developing leaders is immediate, positive feedback that coaches and leads subordinate leaders to achieve the Army standard. This is a tested and proven path to develop competent, confident adaptive leaders.

b.   Evaluators. Commanders must plan for formal evaluation and must ensure the evaluators are trained. These evaluators must also be trained as facilitators to conduct AARs that elicit maximum participation from those being trained. External evaluators will be certified in the tasks they are evaluating and normally will not be dual-hatted as a participant in the training being executed.

c.   Role of Commanders and Leaders. Commanders ensure that evaluations take place at each echelon in the organization. Commanders use this feedback to teach, coach, and mentor their subordinates. They ensure that every training event is evaluated as part of training execution and that every trainer conducts evaluations.   Commanders use evaluations to focus command attention by requiring evaluation of specific mission essential and battle tasks. They also take advantage of evaluation information to develop appropriate lessons learned for distribution throughout their commands.

d.   After Action Review. The AAR, whether formal or informal, provides feedback for all training. It is a structured review process that allows participating soldiers, leaders, and units to discover for themselves what happened during the training, why it happened, and how it can be done better. The AAR is a professional discussion that requires the active participation of those being trained. FM 7-1 provides detailed instructions for conducting an AAR and detailed guidance on coaching and critiquing during training.

1-7.   Training Support. References have been identified for each task to assist in planning and conducting training. A consolidated list of references identified by type, publication number, and title and a comprehensive glossary of acronyms, abbreviations, and definitions are included in this STP.

1-8.   Feedback. Recommendations for improvement of this STP are requested. Feedback will help to ensure that this STP answers the training needs of units in the field.

CHAPTER 2

Training Guide

2-1.   General. The MOS Training Plan (MTP) identifies the essential components of a unit-training plan for individual training. Units have different training needs and requirements based on differences in environment, location, equipment, dispersion, and similar factors. Therefore, the MTP should be used as a guide for conducting unit training and not a rigid standard. The MTP consists of two parts. Each part is designed to assist the commander in preparing a unit training plan which satisfies integration, cross training, training up, and sustainment training requirements for soldiers in this MOS.

Part One of the MTP shows the relationship of an MOS skill level between duty position and critical tasks. These critical tasks are grouped by task commonality into subject areas.

Section I lists subject area numbers and titles used throughout the MTP. These subject areas are used to define the training requirements for each duty position within an MOS.

Section II identifies the total training requirement for each duty position within an MOS and provides a recommendation for cross training and train-up/merger training.

- **Duty Position column**. This column lists the duty positions of the MOS, by skill level, which have different training requirements.

- **Subject Area column**. This column lists, by numerical key (see Section I), the subject areas a soldier must be proficient in to perform in that duty position.

- **Cross Train column**. This column lists the recommended duty position for which soldiers should be cross-trained.

- **Train-up/Merger column**. This column lists the corresponding duty position for the next higher skill level or MOSC the soldier will merge into on promotion.

Part Two lists, by general subject areas, the critical tasks to be trained in an MOS and the type of training required (resident, integration, or sustainment).

- **Subject Area column**. This column lists the subject area number and title in the same order as Section I, Part One of the MTP.

- **Task Number column**. This column lists the task numbers for all tasks included in the subject area.

- **Title column**. This column lists the task title for each task in the subject area.

- **Training Location column**. This column identifies the training location where the task is first trained to soldier training publications standards. If the task is first trained to standard in the unit, the word "Unit" will be in this column. If the task is first trained to standard in the training base, it will identify, by brevity code (ANCOC, BNCOC, etc.), the resident course where the task was taught. Figure 2-1 contains a list of training locations and their corresponding brevity codes.

WOAC	Warrant Officer Advanced Course
WOBC	Warrant Officer Basic Course

Figure 2-1. Training Locations

- **Sustainment Training Frequency column**. This column indicates the recommended frequency at which the tasks should be trained to ensure soldiers maintain task proficiency. Figure 2-2 identifies the frequency codes used in this column.

AN	Annually
BN	Biannually
BW	Biweekly
MO	Monthly
OT	One Time
QT	Quarterly
SA	Semiannually
WK	Weekly

Figure 2-2. Sustainment Training Frequency Codes

- **Sustainment Training Skill Level column**. This column lists the skill levels of the MOS for which soldiers must receive sustainment training to ensure they maintain proficiency to soldier's manual standards.

2-2.   Subject Area Codes.

Skill Levels 1/2
- 1   CIRCUIT SWITCHING
- 2   MESSAGE SWITCHING
- 3   TRANSMISSION
- 4   ISYSCON
- 5   NETWORK PLANNING AND ENGINEERING
- 6   WIDE AREA NETWORKS

Skill Levels 3/4
- 1   CIRCUIT SWITCHING
- 2   MESSAGE SWITCHING
- 3   TRANSMISSION
- 4   ISYSCON
- 5   NETWORK PLANNING AND ENGINEERING
- 6   WIDE AREA NETWORKS

2-3. **Critical Tasks List**.

MOS TRAINING PLAN

CRITICAL TASKS

Subject Area	Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
Skill Levels 1/2					
1. CIRCUIT SWITCHING	113-528-7001	Plan a Circuit Switch Network at a Signal Battalion	WOBC	OT	1-2
	113-528-7003	Direct the Installation and Integration of a Circuit Switch at a Signal Battalion	WOBC	OT	1-2
	113-528-7002	Direct Technical Control of a Circuit Switch Network at a Signal Battalion	WOBC	OT	1-2
2. MESSAGE SWITCHING	113-324-7003	Direct the Installation and Integration of a Message Switch	WOBC	OT	1-2
	113-324-7002	Direct Technical Control of a Message Switch Network at a Signal Battalion	WOBC	OT	1-2
	113-324-7001	Plan a Message Switch Network at a Signal Battalion	WOBC	OT	1-2
3. TRANS-MISSION	113-413-7003	Plan a Transmission Network at a Signal Battalion	WOBC	OT	1-2
	113-413-7004	Direct Technical Control of a Transmission Network at a Signal Battalion	WOBC	OT	1-2
4. ISYSCON	113-482-7007	Perform ISYSCON Node Setup and Initialization at a Signal Battalion	WOBC	OT	1-2
5. NETWORK PLANNING AND ENGINEERING	113-494-7001	Conduct Network Planning and Engineering (NPE) at a Signal Battalion	WOBC	OT	1-2
6. WIDE AREA NETWORKS	113-408-7001	Direct Wide Area Network (WAN) Router Management at a Signal Battalion	WOBC	OT	1-2
Skill Levels 3/4					
1. CIRCUIT SWITCHING	113-528-8002	Direct Technical Control of a Circuit Switch Network at a Signal Brigade or Higher	WOAC	OT	3-4
	113-528-8001	Plan a Circuit Switch Network at Signal Brigade or Higher	WOAC	OT	3-4

CRITICAL TASKS

Subject Area	Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
2. MESSAGE SWITCHING	113-324-8002	Direct Technical Control of a Message Switch Network at a Signal Brigade or Higher	WOAC	OT	3-4
	113-324-8001	Plan a Message Switch Network at a Signal Brigade or Higher	WOAC	OT	3-4
3. TRANS-MISSION	113-413-8003	Plan a Transmission Network at a Signal Brigade or Higher	WOAC	OT	
	113-413-8004	Direct Technical Control of a Transmission Network at a Signal Brigade or Higher	WOAC	OT	3-4
4. ISYSCON	113-482-8001	Perform ISYSCON Node Setup and Initialization at a Signal Brigade or Higher	WOAC	OT	3-4
5. NETWORK PLANNING AND ENGINEERING	113-494-8001	Conduct Network Planning and Engineering (NPE) at a Signal Brigade or Higher	WOAC	OT	3-4
6. WIDE AREA NETWORKS	113-408-8001	Conduct Network Planning and Engineering (NPE) at a Signal Brigade or Higher	WOAC	OT	3-4

CHAPTER 3

MOS/Skill Level Tasks

Skill Levels 1/2

Subject Area 1: CIRCUIT SWITCHING

Plan a Circuit Switch Network at a Signal Battalion
113-528-7001

Conditions: You are in a Signal Battalion S3 environment and must design a circuit switch network (EAC, ECB, and Joint). You are given an OPORD, the subscriber requirements, appropriate references, and status of switching equipment.

Standards: Accepted the plan for inclusion in the OPORD.

Performance Steps

1. Determine the availability of resources.

2. Coordinate higher and adjacent system interface connectivity.

3. Identify area codes and autonomous system boundaries.
    a. TPN (net ID).
    b. Develop and interpret SAR/GAR.
    c. Special circuits.

4. Determine network-timing requirements.

5. Establish Parent Switch (master/slave) relationship.

6. Identify COMSEC Parent Switch.
    a. Determine network keying and rekeying requirements.
    b. Develop crypto-key distribution plan.
    c. Develop crypto-key variable management plan.

7. Determine transmission media requirements (SHF, TROPO, EHF, UHF, VHF/RAU, fiber or cable, ATM, wireless, COTS, multiplexers/modems, satellite, and standardized tactical entry point (STEP)).
    a. Determine signal equipment availability.
    b. Determine signal system and satellite interface and configuration requirements.
    c. Determine hybrid transmission interface and connectivity requirements.
    d. Determine digital transmission group requirements (8/9-channel modularity, radio frequency, etc.).
    e. Determine commercial leased lines and interface equipment requirements.
    f. Develop and interpret crew assignment worksheets.

8. Prepare system diagram, network diagram, and OPORD appendix.

9. Determine essential user bypass (EUB) and duplication scheme.

10. Determine preaffiliation list (PAL) requirements and develop PAL distribution plan.

Performance Measures	GO	NO GO
1. Determined the availability of resources.	——	——

Performance Measures	**GO**	**NO GO**
2. Coordinated higher and adjacent system interface connectivity.	――	――

3. Identified area codes and autonomous system boundaries.
    a. TPN (net ID).
    b. Developed and interpreted SAR/GAR.
    c. Special circuits.
	――	――

4. Determined network timing requirements.	――	――
5. Established Parent Switch (master/slave) relationship.	――	――

6. Identified COMSEC Parent Switch.
    a. Determined network keying and rekeying requirements.
    b. Developed crypto-key distribution plan.
    c. Developed crypto-key variable management plan.
	――	――

7. Determined transmission media requirements (SHF, TROPO, EHF, UHF, VHF/RAU, fiber or cable, ATM, wireless, COTS, multiplexers/modems, satellite, and STEP).
    a. Determined signal equipment availability.
    b. Determined signal system and satellite interface and configuration requirements.
    c. Determined hybrid transmission interface and connectivity requirements.
    d. Determined digital transmission group requirements (8/9-channel modularity, radio frequency, etc.).
    e. Determined commercial leased lines and interface equipment requirements.
    f. Developed and interpreted crew assignment worksheets.
	――	――

8. Prepared system diagram, network diagram, and OPORD appendix.	――	――
9. Determined EUB and duplication scheme.	――	――
10. Determined PAL requirements and developed PAL distribution plan.	――	――

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References

Required	**Related**
ARTEP 11-1-MTP	FM 101-5
ARTEP 11-2-MTP	FM 101-5-1
CJCSM 6231.02A	FM 11-45
TM 11-5805-778-12-1	FM 24-1
TM 11-5805-778-12-2	FM 24-11
TM 11-5805-778-12-3	
TM 11-5805-778-12-4	
TM 11-5805-778-12-5-1	
TM 11-5805-778-12-5-2	
TM 11-5805-778-12-6	
TM 11-5805-778-12-7	

Direct the Installation and Integration of a Circuit Switch at a Signal Battalion
113-528-7003

Conditions: You are assigned to a circuit switch team and must supervise the installation of a circuit switch. You are given an OPORD, a team of soldiers, appropriate references, and a circuit switch.

Standards: The circuit switch was operational IAW the OPORD.

Performance Steps

   1. Ensure initialization of the Power Group.

   2. Ensure initialization of the workstation.

   3. Ensure initialization of the Packet Switch and gateway.

   4. Ensure initialization of the battery charger.

   5. Ensure initialization of the switch processing unit (SPU).

   6. Conduct risk assessment.

Performance Measures	GO	NO GO
1. Ensured initialization of the Power Group.	——	——
2. Ensured initialization of the workstation.	——	——
3. Ensured initialization of the Packet Switch and gateway.	——	——
4. Ensured initialization of the battery charger.	——	——
5. Ensured initialization of the SPU.	——	——
6. Conducted risk assessment.	——	——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References
    Required   **Related**
    TM 11-5805-778-12-1
    TM 11-5805-778-12-2
    TM 11-5805-778-12-3
    TM 11-5805-778-12-4
    TM 11-5805-778-12-5-1
    TM 11-5805-778-12-5-2
    TM 11-5805-778-12-6
    TM 11-5805-778-12-7

Direct Technical Control of a Circuit Switch Network at a Signal Battalion
113-528-7002

Conditions: As a network management technician assigned to a Signal Battalion S3 (EAC, ECB, or Joint), you are given an OPORD/SOP, an operating switch network, and appropriate references. A change of network status or configuration is required.

Standards: The circuit switch network was operational IAW the OPORD/SOP.

Performance Steps

1. Utilize network analysis tools.

2. Analyze the network status and database configuration.

3. Identify, control, and coordinate network troubleshooting.

4. Prioritize restoration/reconfiguration of circuit/trunks.

5. Engineer channel reassignment.

6. Implement and monitor switch recovery procedures.

7. Implement and monitor network rekeying.

8. Monitor and provide technical guidance for the restoration/reconfiguration of the circuit switch network.

9. Provide management information to the Brigade or higher.

10. Conduct risk assessment as appropriate.

Performance Measures	**GO**	**NO GO**
1. Utilized network analysis tools.	——	——
2. Analyzed the network status and database configuration.	——	——
3. Identified, controlled, and coordinated network troubleshooting.	——	——
4. Prioritized restoration/reconfiguration of circuit/trunks.	——	——
5. Engineered channel reassignment.	——	——
6. Implemented and monitored switch recovery procedures.	——	——
7. Implemented and monitored network rekeying.	——	——
8. Monitored and provided technical guidance for the restoration/reconfiguration of the circuit switch network.	——	——
9. Provided management information to the Brigade or higher.	——	——
10. Conducted risk assessment as appropriate.	——	——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References
    Required   **Related**

Required	Related
ARTEP 11-1-MTP	FM 11-45
ARTEP 11-2-MTP	FM 24-1
CJCSM 6231.01B	FM 24-11
CJCSM 6231.02A	GTE REF GUIDE
CJCSM 6231.04A	TM 11-5805-747-12-2
CSCE REF GUIDE	
FM 101-5	
FM 101-5-1	
TM 11-5805-778-12-1	
TM 11-5805-778-12-2	
TM 11-5805-778-12-3	
TM 11-5805-778-12-4	
TM 11-5805-778-12-5-1	
TM 11-5805-778-12-5-2	
TM 11-5805-778-12-6	
TM 11-5805-778-12-7	

Subject Area 2: MESSAGE SWITCHING

Direct the Installation and Integration of a Message Switch
113-324-7003

Conditions: You are assigned to a message switch team. You are given an OPORD, a team of soldiers, appropriate references, and a message switch.

Standards: The message switch was operational IAW the OPORD.

Performance Steps

1. Initialize the Power Group.

2. Initialize the Central Processor Group (CPG).

3. Initialize the Time Division Interface Module (TDIM) Group.

4. Initialize the Common Interface Group (CIG).

5. Initialize the Communications Group.

6. Perform on-line procedures.

7. Perform shutdown procedures.

8. Conduct risk assessment.

Performance Measures	GO	NO GO
1. Initialized the Power Group.	——	——
2. Initialized the CPG.	——	——
3. Initialized the TDIM Group.	——	——
4. Initialized the CIG.	——	——
5. Initialized the Communications Group.	——	——
6. Performed on-line procedures.	——	——
7. Performed shutdown procedures.	——	——
8. Conducted risk assessment.	——	——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References

    Required   **Related**

    TM 11-5805-790-12-1
    TM 11-5805-790-12-10
    TM 11-5805-790-12-2
    TM 11-5805-790-12-3
    TM 11-5805-790-12-4
    TM 11-5805-790-12-5
    TM 11-5805-790-12-6
    TM 11-5805-790-12-7
    TM 11-5805-790-12-8
    TM 11-5805-790-12-9

Direct Technical Control of a Message Switch Network at a Signal Battalion
113-324-7002

Conditions: As a network management technician assigned to a Signal Battalion S3 (EAC, ECB, or Joint), you are given an OPORD/SOP, an operating message switch network, and appropriate references. A change of network status or configuration is required.

Standards: The message switch network was operational IAW the OPORD/SOP.

Performance Steps

1. Analyze quality of service and network performance.
    a. Statistic reports.
    b. Backlog thresholds.
    c. Service messages.
    d. Traffic routing.
    e. Intercept overflows.
    f. Database configurations.

2. Identify, control, and coordinate network troubleshooting.

3. Prioritize restoration/reconfiguration of circuit/trunks.

4. Monitor message switch recovery procedures.

5. Ensure compliance with operational COMSEC procedures.

6. Direct reactivation of circuits.

7. Monitor restoration/reconfiguration of message switch network.

8. Provide management information to the Brigade.

9. Conduct risk assessment as appropriate.

Performance Measures	GO	NO GO

1. Analyzed quality of service and network performance.
    a. Statistic reports.
    b. Backlog thresholds.
    c. Service messages.
    d. Traffic routing.
    e. Intercept overflows.
    f. Database configurations.
	——	——

2. Identified, controlled, and coordinated network troubleshooting.	——	——
3. Prioritized restoration/reconfiguration of circuit/trunks.	——	——
4. Monitored message switch recovery procedures.	——	——
5. Ensured compliance with operational COMSEC procedures.	——	——
6. Directed reactivation of circuits.	——	——
7. Monitored restoration/reconfiguration of message switch network.	——	——
8. Provided management information to the Brigade.	——	——
9. Conducted risk assessment as appropriate.	——	——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References

Required	**Related**
ARTEP 11-1-MTP	
ARTEP 11-2-MTP	
DIAM 50-3	
TM 11-5805-790-12-1	
TM 11-5805-790-12-10	
TM 11-5805-790-12-2	
TM 11-5805-790-12-3	
TM 11-5805-790-12-4	
TM 11-5805-790-12-5	
TM 11-5805-790-12-6	
TM 11-5805-790-12-7	
TM 11-5805-790-12-8	
TM 11-5805-790-12-9	

Plan a Message Switch Network at a Signal Battalion
113-324-7001

Conditions: You are in a Signal Battalion S3 environment and must design a message switch network (EAC, ECB, and Joint). You are given an OPORD, the subscriber requirements, appropriate references, and status of switching equipment.

Standards: Accepted the plan for inclusion in the OPORD and the plan supported the communications requirements.

Performance Steps

1. Determine availability of resources.

2. Coordinate higher and adjacent system interface connectivity.

3. Determine switching equipment interface and connectivity requirements.

4. Determine subscriber terminal interface and connectivity requirements.

5. Determine network AUTODIN access requirements.
   a. Review telecommunications service request (TSR).
   b. Review telecommunications service order (TSO).
   c. Develop or interpret SAR/GAR.

6. Prepare system diagram, network diagram, and OPORD appendix.

7. Identify user communities (R, U, and Y).

8. Obtain Y routers, TCC, and TRC codes.

9. Prepare database.

10. Identify sensitive compartmented information facility (SCIF) activation and deactivation requirements/procedures.

11. Determine crypto-key requirements, distribution plan, and crypto-key variable management plan.

Performance Measures	GO	NO GO
1. Determined availability of resources.	——	——
2. Coordinated higher and adjacent system interface connectivity.	——	——
3. Determined switching equipment interface and connectivity requirements.	——	——
4. Determined subscriber terminal interface and connectivity requirements.	——	——
5. Determined network AUTODIN access requirements. a. Reviewed TSR. b. Reviewed TSO. c. Developed or interpreted SAR/GAR.	——	——
6. Prepared system diagram, network diagram, and OPORD appendix.	——	——
7. Identified user communities (R, U, and Y).	——	——
8. Obtained Y routers, TCC, and TRC codes.	——	——
9. Prepared database.	——	——
10. Identified SCIF activation and deactivation requirements/procedures.	——	——

Performance Measures   <u>GO</u>   <u>NO GO</u>

11. Determined crypto-key requirements, distribution plan, and crypto-key variable   ——   ——
     management plan.

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References
  Required   **Related**
  TM 11-5805-778-12-1
  TM 11-5805-778-12-2
  TM 11-5805-778-12-3
  TM 11-5805-778-12-4
  TM 11-5805-778-12-5-1
  TM 11-5805-778-12-5-2
  TM 11-5805-778-12-6
  TM 11-5805-778-12-7

Subject Area 3: TRANSMISSION

Plan a Transmission Network at a Signal Battalion
113-413-7003

Conditions: You are in a Signal Battalion S3 (EAC, ECB, or Joint). You are given an OPORD, the types of transmission systems (terrestrial, Enhanced Position Location Reporting System (EPLRS), Video Teleconference (VTC) suite and satellite), communication site locations, subscriber requirements, appropriate references, and equipment status.

Standards: Accepted the plan for inclusion in the OPORD and the plan supported the communications requirements.

Performance Steps

1. Determine availability of resources.

2. Determine subscriber (terminal) interface and connectivity.

3. Review engineering data to include SAR/GAR and RF requests.

4. Obtain system profiles of all site locations.

5. Determine digital transmission group requirements (8/9-channel modularity, radio frequency, timing, ring codes, etc.).

6. Prepare system diagram, network diagram, special circuit diagram, and OPORD appendix..

7. Interpret crew assignment worksheets and satellite/gateway access approvals (SAA/GAA).

8. Develop VTC network (H320) serial based.

9. Develop crypto-key variable management plan for TEDs and DVOW.

10. Determine transmission media requirements (SHF, TROPO, EHF, UHF, VHF/RAU, fiber or cable, ATM, wireless, COTS, multiplexers/modems, satellite, and STEP).

Performance Measures	**GO**	**NO GO**
1. Determined availability of resources.	——	——
2. Determined subscriber (terminal) interface and connectivity.	——	——
3. Reviewed engineering data to include SAR/GAR and RF requests.	——	——
4. Obtained system profiles of all site locations.	——	——
5. Determined digital transmission group requirements (8/9-channel modularity, radio frequency, timing, ring codes, etc.).	——	——
6. Prepared system diagram, network diagram, special circuit diagram, and OPORD appendix.	——	——
7. Interpreted crew assignment worksheets and satellite/gateway access approvals (SAA/GAA).	——	——
8. Developed VTC network (H320) serial based.	——	——
9. Developed a crypto-key variable management plan for TEDs and DVOW.	——	——

Performance Measures   <u>GO</u>   <u>NO GO</u>

  10. Determined transmission media requirements (SHF, TROPO, EHF, UHF,   ——   ——
       VHF/RAU, fiber or cable, ATM, wireless, COTS, multiplexers/modems, satellite,
       and STEP).

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References

Required	**Related**
FM 6-02.41 (FM 24-41)	TM 11-5805-701-12
TM 11-5805-705-12	TM 11-5805-702-12
TM 11-5805-706-12	TM 11-5805-703-14
TM 11-5805-707-12	
TM 11-5805-726-12-1	
TM 11-5805-726-12-2	
TM 11-5805-770-12	
TM 11-5805-783-13&P	
TM 11-5820-540-12	
TM 11-5820-865-12-1	
TM 11-5820-926-12-1	
TM 11-5820-931-12-1	
TM 5-6115-465-12	

Direct Technical Control of a Transmission Network at a Signal Battalion
113-413-7004

Conditions: You are a network management technician assigned to a Signal Battalion S3 (EAC, ECB, or Joint). You are given an OPORD/SOP, an operating transmission network, and appropriate references. A change of network status or configuration is required.

Standards: The transmission network was operational IAW the OPORD/SOP.

Performance Steps

1. Utilize appropriate network management tools for transmission system analysis.

2. Analyze the transmission system status reports.

3. Identify, control, and coordinate network troubleshooting.

4. Prioritize restoration/reconfiguration of systems.

5. Provide technical guidance to nodal operation personnel in the restoration of transmission systems.

6. Provide management information to the Brigade.

7. Conduct risk assessment as appropriate.

8. Provide technical guidance during the installation of VTC.

Performance Measures	GO	NO GO
1. Utilized appropriate network management tools for transmission system analysis.	——	——
2. Analyzed the transmission system status reports.	——	——
3. Identified, controlled, and coordinated network troubleshooting.	——	——
4. Prioritized restoration/reconfiguration of systems.	——	——
5. Provided technical guidance to nodal operation personnel in the restoration of transmission systems.	——	——
6. Provided management information to the Brigade.	——	——
7. Conducted risk assessment as appropriate.	——	——
8. Provided technical guidance during the installation of VTC.	——	——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References

Required	Related
FM 6-02.41 (FM 24-41)	
TM 11-5805-701-12	
TM 11-5805-702-12	
TM 11-5805-703-14	
TM 11-5805-705-12	
TM 11-5805-706-12	
TM 11-5805-707-12	
TM 11-5805-726-12-1	
TM 11-5805-726-12-2	

References
    Required   **Related**
    TM 11-5805-770-12
    TM 11-5805-783-13&P
    TM 11-5820-540-12
    TM 11-5820-865-12-1
    TM 11-5820-926-12-1
    TM 11-5820-931-12-1
    TM 5-6115-465-12

Subject Area 4: ISYSCON

Perform ISYSCON Node Setup and Initialization at a Signal Battalion
113-482-7007

Conditions: You are a network management technician assigned to a Battalion S3. You are given an ISYSCON facility with preloaded system software, an OPORD, and appropriate references.

Standards: The ISYSCON facility was fully operational IAW the OPORD.

Performance Steps

   1. Setup.

   2. Start-up.
      a. Map data administration.
      b. File administration.
      c. Basic account and node administration.

Performance Measures	GO	NO GO
1. Setup.	⎯⎯	⎯⎯
2. Start-up.	⎯⎯	⎯⎯

      a. Mapped data administration.
      b. Filed administration.
      c. Basic account and node administration.

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References
   Required   **Related**
   TM 11-5895-1560-13&P
   TM 11-5895-1582-13&P

Subject Area 5: NETWORK PLANNING AND ENGINEERING

Conduct Network Planning and Engineering (NPE) at a Signal Battalion
113-494-7001

Conditions: You are a network management technician assigned to a Signal Battalion S3. You are given an OPORD; an operational, integrated system control facility/platform (ISYSCON, RAPTer, NPT, TNAPS, JNMS, etc.), user requirements, and appropriate references.

Standards: Accepted the plan for inclusion in the OPORD.

Performance Steps

1. Perform preplanning and network management functions for an integrated network.

2. Perform Battlefield Spectrum Management (BSM) planning.
   a. Direct planning allocation and deconfliction of frequency resources for switch and non-switch communication systems.
   b. Develop SOI/CEOI.

3. Conduct mission and plan management functions.

4. Identify COMSEC requirements.
   a. Determine network keying and rekeying requirements.
   b. Develop crypto-key distribution plan.
   c. Develop crypto-key variable management plan.

5. Perform wide area network (WAN) technical control.

6. Perform tactical Internet (TI) management functions.

7. Perform log and report management functions.

8. Plan local area networks (LANs).
   a. Determine location of hosts.
   b. Determine equipment requirements.
   c. Determine type of connection media (10baseT, remote access, etc.).
   d. Determine IP allocation.
   e. Determine user requirements (NIPRNET/SIPRNET).
   f. Determine security classification of the LAN and encryption requirements.
   g. Determine networking software requirements and interoperability with hardware.
   h. Identify system-training requirements.
   i. Identify maintenance requirements.
   j. Identify sustainment supply needs (connectors, NIC, etc.).
   k. Prepare system diagram, network diagram, and OPORD appendix.

9. Direct LAN system administration.
   a. Diagnose LAN system malfunctions.
   b. Determine LAN performance using available network monitoring tools.
   c. Reconfigure LAN based on user requirements.
   d. Configure server to user profiles and permission.
   e. Assign security features for users (names, passwords, etc.).
   f. Establish and implement fault tolerance measures.

10. Perform risk assessment.

11. Provide management information to Brigade or higher.

Performance Measures	**GO**	**NO GO**

1. Performed preplanning and network management functions for an integrated network.   ——   ——

2. Performed BSM planning.   ——   ——
    a. Directed planning allocation and deconfliction of frequency resources for switch and non-switch communication systems.
    b. Developed SOI/CEOI.

3. Conducted mission and plan management functions.   ——   ——

4. Identified COMSEC requirements.   ——   ——
    a. Determined network keying and rekeying requirements.
    b. Developed crypto-key distribution plan.
    c. Developed crypto-key variable management plan.

5. Performed WAN technical control.   ——   ——

6. Performed TI management functions.   ——   ——

7. Performed log and report management functions.   ——   ——

8. Planned LANs.   ——   ——
    a. Determined location of hosts.
    b. Determined equipment requirements.
    c. Determined type of connection media (10baseT, remote access, etc.).
    d. Determined IP allocation.
    e. Determined user requirements (NIPRNET/SIPRNET).
    f. Determined security classification of the LAN and encryption requirements.
    g. Determined networking software requirements and interoperability with hardware.
    h. Identified system-training requirements.
    i. Identified maintenance requirements.
    j. Identified sustainment supply needs (connectors, NIC, etc.).
    k. Prepared system diagram, network diagram, and OPORD appendix.

9. Directed LAN system administration.   ——   ——
    a. Diagnosed LAN system malfunctions.
    b. Determined LAN performance using available network monitoring tools.
    c. Reconfigured LAN based on user requirements.
    d. Configured server for user profiles and permission.
    e. Assigned security features for users (names, passwords, etc.).
    f. Established and implemented fault tolerance measures.

10. Performed risk assessment.   ——   ——

11. Provided management information to Brigade or higher.   ——   ——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References
    Required   **Related**
    AR 25-1
    AR 380-19
    AR 380-67
    ATA MANUAL
    COTS CUM
    CUM
    INFO MGT PLAN
    OM
    OSUM
    TM 11-5895-1560-13&P

Subject Area 6: WIDE AREA NETWORKS

Direct Wide Area Network (WAN) Router Management at a Signal Battalion
113-408-7001

Conditions: You are a network management technician assigned to a Signal Battalion S3 (ECB, EAC, or Joint). You are given an operational WAN, OPORD/SOP (high-speed network diagram), appropriate references, and equipment status.

Standards: The WAN was operational IAW the OPORD/SOP.

Performance Steps

1. Configure the router.

2. Determine connection protocol (PPP, HDLC, X.25, etc.).

3. Determine routing protocol (BGP, EIGRP, OSPF, etc.).

4. Determine IP address and subnet mask.

5. Determine network security management requirements.

6. Prepare high-speed data network (HSDN)/WAN diagram and OPORD appendix.

7. Identify available equipment.

8. Determine gateways.

9. Monitor the status of the network.

10. Report status to Brigade or higher.

11. Develop VTC network (H323) IP based.

12. Determine risk assessment.

Performance Measures	GO	NO GO
1. Configured the router.	——	——
2. Determined connection protocol (PPP, HDLC, X.25, etc.).	——	——
3. Determined routing protocol (BGP, EIGRP, OSPF, etc.).	——	——
4. Determined IP address and subnet mask.	——	——
5. Determined network security management requirements.	——	——
6. Prepared HSDN/WAN diagram and OPORD appendix.	——	——
7. Identified available equipment.	——	——
8. Determined gateways.	——	——
9. Monitored the status of the network.	——	——
10. Reported status to Brigade or higher.	——	——
11. Developed VTC network (H323) IP based.	——	——
12. Determined risk assessment.	——	——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References

Required	Related
ISBN 0201309661	
ISBN 0201379511	
ISBN 1578700442	
ISBN 1578700744	
ISBN 1578700760	
ISBN 1578700922	

Skill Levels ¾

Subject Area 1: CIRCUIT SWITCHING

Direct Technical Control of a Circuit Switch Network at a Signal Brigade or Higher
113-528-8002

Conditions: As a network management technician assigned to a Signal Brigade S3 (EAC, ECB, or Joint), you are given an OPORD/SOP, an operating switch network, and appropriate references. A change of network status or configuration is required.

Standards: The circuit switch network was operational IAW the OPORD/SOP.

Performance Steps

1. Utilize network analysis tools.

2. Analyze the network status and database configuration.

3. Identify, control, and coordinate network troubleshooting.

4. Prioritize restoration/reconfiguration of circuit/trunks.

5. Engineer channel reassignment.

6. Implement and monitor switch recovery procedures.

7. Implement and monitor network rekeying.

8. Monitor the restoration/reconfiguration of the circuit switch network.

9. Provide management information to the Joint Communications Control Center (JCCC) or higher.

10. Conduct risk assessment.

Performance Measures	GO	NO GO
1. Utilized network analysis tools.	——	——
2. Analyzed the network status and database configuration.	——	——
3. Identified, controlled, and coordinated network troubleshooting.	——	——
4. Prioritized restoration/reconfiguration of circuit/trunks.	——	——
5. Engineered channel reassignment.	——	——
6. Implemented and monitored switch recovery procedures.	——	——
7. Implemented and monitored network rekeying.	——	——
8. Monitored the restoration/reconfiguration of the circuit switch network.	——	——
9. Provided management information to the JCCC or higher.	——	——
10. Conducted risk assessment.	——	——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References
Required   **Related**
ARTEP 11-1-MTP   CJCSM 6231.01B
ARTEP 11-2-MTP   CJCSM 6231.02A
TM 11-5805-778-12-1   CJCSM 6231.04A
TM 11-5805-778-12-2   FM 101-5
TM 11-5805-778-12-3   FM 101-5-1
TM 11-5805-778-12-4   FM 11-45
TM 11-5805-778-12-5-1   FM 24-1
TM 11-5805-778-12-5-2   FM 24-11
TM 11-5805-778-12-6
TM 11-5805-778-12-7
TM 11-5895-1392-12

Plan a Circuit Switch Network at Signal Brigade or Higher
113-528-8001

Conditions: You are in a Signal Brigade or higher environment and must design a circuit switch network (EAC, ECB, and Joint). You are given an OPORD, the subscriber requirements, appropriate references, and the status of switching equipment.

Standards: Accepted the plan for inclusion in the OPORD and the plan supported the communications requirements.

Performance Steps

1. Determine the availability of resources.

2. Coordinate higher and adjacent system interface connectivity, to include other service component requirements.

3. Identify Area Codes and autonomous system boundaries.
    a. TPN (net ID).
    b. Develop and interpret SAR/GAR.
    c. Special circuits.

4. Determine network-timing requirements.

5. Establish Parent Switch (master/slave) relationship.

6. Identify COMSEC Parent Switch.
    a. Determine network keying and rekeying requirements.
    b. Develop crypto-key distribution plan.
    c. Develop crypto-key variable management plan.

7. Identify defense red switch connectivity requirements for CINC support.

8. Determine transmission media requirements (SHF, TROPO, EHF, UHF, VHF/RAU, fiber or cable, ATM, wireless, COTS, satellite, and STEP).
    a. Determine signal equipment availability.
    b. Determine signal system and satellite interface and configuration requirements.
    c. Determine hybrid transmission interface and connectivity requirements.
    d. Determine digital transmission group requirements (8/9-channel modularity, radio frequency, etc.).
    e. Determine commercial leased lines and interface equipment requirements.
    f. Develop and interpret crew assignments worksheets.

9. Prepare system diagram, network diagrams, and OPORD appendix.

10. Determine EUB and duplication scheme.

11. Determine PAL requirements and develop PAL distribution plan.

12. Develop reconstitution and contingency plan for the network.

Performance Measures	GO	NO GO
1. Determined the availability of resources.	——	——
2. Coordinated higher and adjacent system interface connectivity, to include other service component requirements.	——	——
3. Identified Area Codes and autonomous system boundaries.	——	——

Performance Measures	**GO**	**NO GO**

    a. TPN (net ID).
    b. Developed and interpreted SAR/GAR.
    c. Special circuits.

4. Determined network timing requirements.   ——   ——

5. Established Parent Switch (master/slave) relationship.   ——   ——

6. Identified COMSEC Parent Switch.   ——   ——
    a. Determined network keying and rekeying requirements.
    b. Developed crypto-key distribution plan.
    c. Developed crypto-key variable management plan.

7. Identified Defense Red Switch connectivity requirements for CINC support.   ——   ——

8. Determined transmission media requirements (SHF, TROPO, EHF, UHF,   ——   ——
   VHF/RAU, fiber or cable, ATM, wireless, COTS, satellite, and STEP).
    a. Determined signal equipment availability.
    b. Determined signal system and satellite interface and configuration
       requirements.
    c. Determined hybrid transmission interface and connectivity requirements.
    d. Determined digital transmission group requirements (8/9-channel modularity,
       radio frequency, etc.).
    e. Determined commercial leased lines and interface equipment requirements.
    f. Developed and interpreted crew assignment worksheets.

9. Prepared system diagram, network diagrams, and OPORD appendix.   ——   ——

10. Determined EUB and duplication scheme.   ——   ——

11. Determined PAL requirements and develop PAL distribution plan.   ——   ——

12. Developed reconstitution and contingency plan for the network.   ——   ——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References

Required	**Related**
TM 11-5805-778-12-1	
TM 11-5805-778-12-2	
TM 11-5805-778-12-3	
TM 11-5805-778-12-4	
TM 11-5805-778-12-5-1	
TM 11-5805-778-12-5-2	
TM 11-5805-778-12-6	
TM 11-5805-778-12-7	

Subject Area 2: MESSAGE SWITCHING

Direct Technical Control of a Message Switch Network at a Signal Brigade or Higher
113-324-8002

Conditions: As a network management technician assigned to a Signal Brigade S3 (EAC, ECB, or Joint), you are given an OPORD/SOP, an operating message switch network, and appropriate references. A change of network status or configuration is required.

Standards: The message switch network was operational IAW the OPORD/SOP.

Performance Steps

1. Analyze quality of service and network performance.
    a. Statistic reports.
    b. Backlog thresholds.
    c. Service messages.
    d. Traffic routing.
    e. Intercept overflows.
    f. Database configurations.

2. Identify, control, and coordinate network troubleshooting.

3. Prioritize restoration/reconfiguration of circuit/trunks.

4. Monitor message switch recovery procedures.

5. Ensure compliance with operational COMSEC procedures.

6. Direct reactivation of circuits.

7. Monitor restoration/reconfiguration of message switch network.

8. Provide management information to the JCCC or higher.

9. Conduct risk assessment.

Performance Measures	GO	NO GO

1. Analyzed quality of service and network performance.
    a. Statistic reports.
    b. Backlog thresholds.
    c. Service messages.
    d. Traffic routing.
    e. Intercept overflows.
    f. Database configurations.
	——	——

2. Identified, controlled, and coordinated network troubleshooting.	——	——
3. Prioritized restoration/reconfiguration of circuit/trunks.	——	——
4. Monitored message switch recovery procedures.	——	——
5. Ensured compliance with operational COMSEC procedures.	——	——
6. Directed reactivation of circuits.	——	——
7. Monitored restoration/reconfiguration of message switch network.	——	——
8. Provided management information to the JCCC or higher.	——	——

Performance Measures   <u>GO</u>   <u>NO GO</u>

  9. Conducted risk assessment.   ___   ___

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References
    Required   **Related**
    ARTEP 11-1-MTP
    ARTEP 11-2-MTP
    DIAM 50-3
    TM 11-5805-790-12-1
    TM 11-5805-790-12-10
    TM 11-5805-790-12-2
    TM 11-5805-790-12-3
    TM 11-5805-790-12-4
    TM 11-5805-790-12-5
    TM 11-5805-790-12-6
    TM 11-5805-790-12-7
    TM 11-5805-790-12-8
    TM 11-5805-790-12-9

Plan a Message Switch Network at a Signal Brigade or Higher
113-324-8001

Conditions: You are in a Signal Brigade S3 environment and must design a message switch network (EAC, ECB, and Joint). You are given an OPORD, the subscriber requirements, appropriate references, and the status of switching equipment.

Standards: Accepted the plan for inclusion in the OPORD and the plan supported the communications requirements.

Performance Steps

1. Determine availability of resources.

2. Coordinate higher and adjacent system interface connectivity;

3. Determine switching equipment interface and connectivity requirements.

4. Determine subscriber (terminal) interface and connectivity requirements.

5. Determine network AUTODIN access requirements.
    a. Review TSR.
    b. Review TSO.
    c. Develop or interpret SAR/GAR.

6. Prepare system diagram, network diagram, and OPORD appendix.

7. Identify user communities (R, U, and Y)

8. Obtain Y routers, TCC and TRC codes.

9. Prepare database.

10. Identify SCIF activation and deactivation requirements/procedures.

11. Determine crypto-key requirements, distribution plan, and crypto-key variable management plan.

12. Develop reconstitution and contingency plan for the network.

Performance Measures	**GO**	**NO GO**
1. Determined availability of resources.	——	——
2. Coordinated higher and adjacent system interface connectivity.	——	——
3. Determined switching equipment interface and connectivity requirements.	——	——
4. Determined subscriber (terminal) interface and connectivity requirements.	——	——
5. Determined network AUTODIN access requirements. a. Reviewed TSR. b. Reviewed TSO. c. Developed or interpreted SAR/GAR.	——	——
6. Prepared system diagram, network diagram, and OPORD appendix.	——	——
7. Identified user communities (R, U, and Y)	——	——
8. Obtained Y routers, TCC and TRC codes.	——	——
9. Prepared database.	——	——

Performance Measures	**GO**	**NO GO**
10. Identified SCIF activation and deactivation requirements/procedures.	——	——
11. Determined crypto-key requirements, distribution plan, and crypto-key variable management plan.	——	——
12. Developed reconstitution and contingency plan for the network.	——	——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References

Required	**Related**
ARTEP 11-1-MTP	
ARTEP 11-2-MTP	
DIAM 50-3	
TM 11-5805-790-12-1	
TM 11-5805-790-12-10	
TM 11-5805-790-12-2	
TM 11-5805-790-12-3	
TM 11-5805-790-12-4	
TM 11-5805-790-12-5	
TM 11-5805-790-12-6	
TM 11-5805-790-12-7	
TM 11-5805-790-12-8	
TM 11-5805-790-12-9	

Subject Area 3: TRANSMISSION

Plan a Transmission Network at a Signal Brigade or Higher
113-413-8003

Conditions: You are in a Signal Brigade S-3 (EAC, ECB or Joint). You are given an OPORD, the types of transmission systems (terrestrial, Enhanced Position Location Reporting System (EPLRS), Video Teleconference (VTC) suite and satellite), communication site locations, subscriber requirements, appropriate references, and equipment status.

Standards: The standard is met when the plan is acceptable for inclusion in the OPORD and supports the communications requirements.

Performance Steps

1. Determine availability of resources.

2. Determine subscriber (terminal) interface and connectivity.

3. Review engineering data to include SAR/GAR and RF requests.

4. Obtain system profiles of all site locations.

5. Determine digital transmission group requirements (8/9 channel modularity, radio frequency, timing, ring codes, etc.

6. Prepare system diagram, network diagram, special circuit diagram, and OPORD appendix.

7. Interpret crew assignment worksheets and satellite/gateway access approvals (SAA/GAA).

8. Develop VTC network (H320) Serial based.

9. Develop crypto-key variable management plan for TEDs and DVOW.

10. Determine transmission media requirements (SHF, TROPO, EHF, UHF, VHF/RAU, fiber or cable, ATM, wireless, COTS, Multiplexer/modems, satellite and STEP [standardized tactical entry point]).

11. Develop reconstitution and contingency plan for the network.

Performance Measures	GO	NO GO
1. Determine availability of resources.	——	——
2. Determine subscriber (terminal) interface and connectivity.	——	——
3. Review engineering data to include SAR/GAR and RF requests.	——	——
4. Obtain system profiles of all site locations.	——	——
5. Determine digital transmission group requirements (8/9 channel modularity, radio frequency, timing, ring codes, etc.	——	——
6. Prepare system diagram, network diagram, special circuit diagram, and OPORD appendix.	——	——
7. Interpret crew assignment worksheets and satellite/gateway access approvals (SAA/GAA).	——	——
8. Develop VTC network (H320) Serial based.	——	——
9. Develop crypto-key variable management plan for TEDs and DVOW.	——	——

Performance Measures	**GO**	**NO GO**
10. Determine transmission media requirements (SHF, TROPO, EHF, UHF, VHF/RAU, fiber or cable, ATM, wireless, COTS, Multiplexer/modems, satellite and STEP [standardized tactical entry point]).	——	——
11. Develop reconstitution and contingency plan for the network.	——	——

Evaluation Guidance: Score the soldier GO if all steps are passed (P). Score the soldier No-GO if any step is failed (F). If the soldier fails any step, show what was done wrong and how to do it correctly.

References
<table>
<tr><td>**Required**</td><td>**Related**</td></tr>
<tr><td>FM 6-02.41 (FM 24-41)</td><td></td></tr>
<tr><td>TM 11-5805-701-12</td><td></td></tr>
<tr><td>TM 11-5805-702-12</td><td></td></tr>
<tr><td>TM 11-5805-703-14</td><td></td></tr>
<tr><td>TM 11-5805-705-12</td><td></td></tr>
<tr><td>TM 11-5805-706-12</td><td></td></tr>
<tr><td>TM 11-5805-707-12</td><td></td></tr>
<tr><td>TM 11-5805-726-12-1</td><td></td></tr>
<tr><td>TM 11-5805-726-12-2</td><td></td></tr>
<tr><td>TM 11-5805-770-12</td><td></td></tr>
<tr><td>TM 11-5805-783-13&P</td><td></td></tr>
<tr><td>TM 11-5820-540-12</td><td></td></tr>
<tr><td>TM 11-5820-865-12-1</td><td></td></tr>
<tr><td>TM 11-5820-926-12-1</td><td></td></tr>
<tr><td>TM 11-5820-931-12-1</td><td></td></tr>
<tr><td>TM 5-6115-465-12</td><td></td></tr>
</table>

Direct Technical Control of a Transmission Network at a Signal Brigade or Higher
113-413-8004

Conditions: You are a network management technician assigned to a Signal Brigade S3 (EAC, ECB, or Joint). You are given an OPORD/SOP, an operating transmission network, and appropriate references. A change of network status or configuration is required.

Standards: The transmission network was operational IAW the OPORD/SOP.

Performance Steps

1. Utilize appropriate network management tools for transmission system analysis.

2. Analyze the transmission system status reports.

3. Identify, control, and coordinate network troubleshooting.

4. Prioritize restoration/reconfiguration of systems.

5. Provide technical guidance to nodal operation personnel in the installation of transmission systems.

6. Provide management information to the JCCC or higher.

7. Provide technical guidance during the installation of VTC.

8. Conduct risk assessment.

Performance Measures	GO	NO GO
1. Utilized appropriate network management tools for transmission system analysis.	——	——
2. Analyzed the transmission system status reports.	——	——
3. Identified, controlled, and coordinated network troubleshooting.	——	——
4. Prioritized restoration/reconfiguration of systems.	——	——
5. Provided technical guidance to nodal operation personnel in the installation of transmission systems.	——	——
6. Provided management information to the JCCC or higher.	——	——
7. Provided technical guidance during the installation of VTC.	——	——
8. Conducted risk assessment.	——	——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References

Required	Related
FM 6-02.41 (FM 24-41)	
TM 11-5805-701-12	
TM 11-5805-703-14	
TM 11-5805-705-12	
TM 11-5805-706-12	
TM 11-5805-707-12	
TM 11-5805-726-12-1	
TM 11-5805-726-12-2	
TM 11-5805-770-12	

References
    Required   **Related**
    TM 11-5805-783-13&P
    TM 11-5820-540-12
    TM 11-5820-865-12
    TM 11-5820-926-12-1
    TM 11-5820-931-12-1
    TM 5-6115-465-12

Subject Area 4: ISYSCON

Perform ISYSCON Node Setup and Initialization at a Signal Brigade or Higher
113-482-8001

Conditions: You are a network management technician assigned to a Brigade or higher. You are given an ISYSCON facility with preloaded system software, an OPORD, and appropriate references.

Standards: The ISYSCON facility was operational IAW the OPORD.

Performance Steps

   1. Setup.

   2. Start-up.
      a. Map data administration.
      b. File administration.
      c. Basic account and node administration.

Performance Measures	GO	NO GO
1. Setup.	――	――
2. Start-up.	――	――
a. Map data administration.		
b. File administration.		
c. Basic account and node administration.		

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References
    Required   **Related**
    TM 11-5895-1560-13&P
    TM 11-5895-1582-13&P

Subject Area 5: NETWORK PLANNING AND ENGINEERING

Conduct Network Planning and Engineering (NPE) at a Signal Brigade or Higher
113-494-8001

Conditions: You are a network management technician assigned to a Signal Brigade or higher. You are given an OPORD; an operational, integrated system control facility/platform (ISYSCON, RAPTer, NPT, TNAPS, JNMS, etc.), user requirements, and appropriate references.

Standards: Accepted the plan for inclusion in the OPORD.

Performance Steps

1. Perform preplanning and network management functions for an integrated network.

2. Perform BSM planning.
   a. Direct planning allocation and deconfliction of frequency resources for switch and non-switch communication systems.
   b. Develop SOI/CEOI.

3. Conduct mission and plan management functions.

4. Identify COMSEC requirements.
   a. Determine network keying and rekeying requirements.
   b. Develop crypto-key distribution plan.
   c. Develop crypto-key variable management plan.

5. Perform WAN technical control.

6. Perform log and report management functions.

7. Plan LANs.
   a. Determine location of hosts.
   b. Determine equipment requirements.
   c. Determine type of connection media (10baseT, remote access, etc.).
   d. Determine IP allocation.
   e. Determine user requirements (NIPRNET/SIPRNET).
    f. Determine security classification of the LAN and encryption requirements.
   g. Determine networking software requirements and interoperability with hardware.
   h. Identify system-training requirements.
    i. Identify maintenance requirements.
    j. Identify sustainment supply needs (connectors, NIC, etc.).
   k. Prepare network diagram and OPORD appendix.

8. Direct LAN system administration.
   a. Diagnose LAN system malfunctions.
   b. Determine LAN performance using available network monitoring tools.
   c. Reconfigure LAN based on user requirements.
   d. Configure server for user profiles and permission.
   e. Assign security features for users (names, passwords, etc.).
    f. Establish and implement fault tolerance measures.

9. Perform risk assessment.

10. Provide management information to the JCCC or higher.

11. Develop reconstitution and contingency plan for the network.

Performance Measures	**GO**	**NO GO**

1. Performed preplanning and network management functions for an integrated network.   ——   ——

2. Performed BSM planning.   ——   ——
    a. Directed planning allocation and deconfliction of frequency resources for switch and non-switch communication systems.
    b. Developed SOI/CEOI.

3. Conducted mission and plan management functions.   ——   ——

4. Identified COMSEC requirements.   ——   ——
    a. Determined network keying and rekeying requirements.
    b. Developed crypto-key distribution plan.
    c. Developed crypto-key variable management plan.

5. Performed WAN technical control.   ——   ——

6. Performed log and report management functions.   ——   ——

7. Planned LANs.   ——   ——
    a. Determined location of hosts.
    b. Determined equipment requirements.
    c. Determined type of connection media (10baseT, remote access, etc.).
    d. Determined IP allocation.
    e. Determined user requirements (NIPRNET/SIPRNET).
    f. Determined security classification of the LAN and encryption requirements.
    g. Determined networking software requirements and interoperability with hardware.
    h. Identified system-training requirements.
    i. Identified maintenance requirements.
    j. Identified sustainment supply needs (connectors, NIC, etc.).
    k. Prepared network diagram and OPORD appendix.

8. Directed LAN system administration.   ——   ——
    a. Diagnosed LAN system malfunctions.
    b. Determined LAN performance using available network monitoring tools.
    c. Reconfigured LAN based on user requirements.
    d. Configured server for user profiles and permission.
    e. Assigned security features for users (names, passwords, etc.).
    f. Established and implemented fault tolerance measures.

9. Performed risk assessment.   ——   ——

10. Provided management information to the JCCC or higher.   ——   ——

11. Developed reconstitution and contingency plan for the network.   ——   ——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References
    Required   **Related**
    AR 25-1
    AR 380-19
    AR 380-67
    ATA MANUAL
    COTS CUM
    CUM
    FM 24-7
    TM 11-5895-1560-13&P
    TM 11-5895-1582-13&P

Subject Area 6: WIDE AREA NETWORKS

Conduct Network Planning and Engineering (NPE) at a Signal Brigade or Higher
113-408-8001

Conditions: You are a network management technician assigned to a Signal Brigade or higher. You are given an OPORD; an operational, integrated system control facility/platform (ISYSCON, RAPTer, NPT, TNAPS, JNMS, etc.), user requirements, and appropriate references.

Standards: Accepted the plan for inclusion in the OPORD.

Performance Steps

  1. Configure the router.

  2. Determine connection protocol (PPP, HDLC, X.25, etc.).

  3. Determine routing protocol (BGP, EIGRP, OSPF, etc.).

  4. Determine IP address and subnet mask.

  5. Determine network security management requirements.

  6. Prepare HSDN/WAN diagram and OPORD appendix.

  7. Identify available equipment.

  8. Determine gateways.

  9. Monitor the status of the network.

10. Report status to higher headquarters.

11. Develop reconstitution and contingency plan for the network.

12. Develop VTC network (H323) IP based.

13. Determine risk assessment.

Performance Measures	**GO**	**NO GO**
1. Configured the router.	――	――
2. Determined connection protocol (PPP, HDLC, X.25, etc.).	――	――
3. Determined routing protocol (BGP, EIGRP, OSPF, etc.).	――	――
4. Determined IP address and subnet mask.	――	――
5. Determined network security management requirements.	――	――
6. Prepared HSDN/WAN diagram and OPORD appendix.	――	――
7. Identified available equipment.	――	――
8. Determined gateways.	――	――
9. Monitored the status of the network.	――	――
10. Reported the status to higher headquarters.	――	――
11. Developed reconstitution and contingency plan for the network.	――	――

Performance Measures   <u>**GO**</u>   <u>**NO GO**</u>

  12. Developed VTC network (H323) IP based.   ——   ——

  13. Determined risk assessment.   ——   ——

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly.

References

Required	Related
ISBN 0201309661	
ISBN 0201379511	
ISBN 1578700442	
ISBN 1578700744	
ISBN 1578700760	
ISBN 1578700922	

GLOSSARY

(C)
CONFIDENTIAL

(O)
FOR OFFICIAL USE ONLY

(S)
SECRET

(U)
Unclassified

(V)
version

ACCP
Army Correspondence Course Program

AFB
Air Force Base

AN
Annually (frequency code)

ANCOC
Advanced Noncommissioned Officer Course

AR
Army Regulation/Army Reserve

Army Training and Evaluation Program (ARTEP)
The US Army's collective training program. The ARTEP establishes unit-training objectives critical to unit survival and performance in combat. They combine the training and the evaluation processes into one integrated function. The ARTEP is a training program and not a test. The sole purpose of external evaluation under this program is to diagnose unit requirements for future training.

ARTEP-MTP
Army Training and Evaluation Program-Mission Training Plan

ATA
Army Technical Architecture

ATM
Asynchronous Transfer Mode; Adobe Type Manager

ATTN/attn
attention

AUTODIN
automatic digital network

BGP
   bogus gateway protocol; border gateway protocol

BN
   Biannually (frequency code)

BNCOC
   Basic Noncommissioned Officer Course

BSM
   Battlefield Spectrum Management

C
   centigrade; change

CA
   civil affairs or Civil Affairs; California

CAW
   Certification Authority Workstation

CAWEG
   Certification Authority Workstation Establishment Guide

CD-ROM
   Compact Disk-Read Only Memory

CEOI
   Communications-Electronics Operating Instructions

CHAP/Chap
   chapter

CIG
   communications interface group

CINC
   Commander In Chief

CIR/Cir
   Circular

CJCSM
   Chairman, Joint Chiefs of Staff Manual

COMSEC
   communications security

COTS
   commercial-off-the-shelf

CPG
   central processor group

CPS
composite picture signal; Certification Practice Statement

CSCE
Communications System Control Element

CUM
Computer User's Manual

DA
Department of the Army; distribution amplifier

DA PAM
Department of the Army Pamphlet

DCA
Defense Communications Agency

DCAC
Defense Communications Agency Circular

DCRM
Data Communications Reference Manual

DCS
Defense Communications System; Defense Courier Service

DIAM
Defense Intelligence Agency Manual

DISA
Defense Information Systems Agency

DISAC
Defense Information Systems Agency Circular

DMS
Defense Message System

DMS-IG
Defense Message System Implementation Guide

DoD/DOD
Department of Defense

DOD-STD
Department of Defense-Standard

DOI
Defense Operating Instruction(s)

DS
direct support

DTM
Draft Technical Manual

DVOW
digital voice orderwire

EAC
echelons above corps

ECB
echelons corps and below

EHF
extremely high frequency

EIGRP
Enhanced Interior Gateway Routing Protocol

EPLRS
Enhanced Position Location Reporting System

etc
et cetera (and so forth)

EUB
essential user bypass

FC
field circular

Field Manual (FM)
A DA publication that contains doctrine that prescribes how the Army and its organizations function on the battlefield in terms of missions, organizations, personnel, and equipment. The level of detail should facilitate an understanding of "what" and "how" for commanders and staffs to execute their missions and tasks. The FM may also be used to publish selected alliance doctrinal publications that are not readily integrated into other doctrinal literature.

FREQ/freq
frequency

GS
General Support

GTE
General Telephone and Electronics

HDLC
High-Level Data Link Control

HMMWV
high mobility multipurpose-wheeled vehicle

HR
hand receipt

HSDN
 High Speed Data Network

IAW
 in accordance with

ICOM
 integrated communications

ID
 identification

INFO
 information

INFOSEC
 information security

Integrated System Control (ISYSCON)
 The Army system that will provide overall automated system command and management for Army communication systems at the corps and division levels. ISYSCON will mange the time/frequency resource allocation, geographic deployment and citing, key management, CONOPS, and the common library of data.

IP
 Internet protocol; implementation procedures

ISBN
 International Standard Book Number

ISYSCON
 Integrated System Control

JANAP
 joint Army-Navy-Air Force publication

JCCC
 Joint Communications Control Center; Joint Combat Camera Center

JNMS
 Joint Network Management System

JP
 Joint Publication

LAN
 local area network

LCM
 local country modulation

LOS
 line of sight

METT-T
  Mission, Enemy, Terrain, Troops, and Time

MF
  microfilm/microfiche

MFG
  manufacturer

MGT/mgt
  management

MO
  Monthly (frequency code)

MOS
  Military Occupational Specialty

MOS training plan (MTP)
  The MTP is a guide for the conduct of individual training in units. An MTP is developed for each MOS and addresses all skill levels of an MOS and all duty positions. The MTP lists all MOS-specific and shared critical tasks for which the MOS is responsible. It will not include common tasks.

MOSC
  Military Occupational Specialty Code

MSE
  mobile subscriber equipment

MTP
  Mission Training Plan; MOS Training Plan

NAG
  Network Administrator's Guide

NIC
  network interface card

NIPRNET
  Non-Secure Internet Protocol Routing Network

NJ
  New Jersey

NPE
  Network Planning and Engineering

NPT
  network planning terminal

NSA
  National Security Agency

NSUM
Network Software User's Manual

OM
operation/operator's manual

OPER
operate; operator

OPLAN
operation plan

OPORD
operation order

OSPF
open shortest path first

OSUM
Operating System User's Manual

OT
Observer Target; One Time (frequency code)

PAL
preaffiliation subscriber list; phase alternate line

performance measures (PM)
Those behavior or product characteristics which the trainer observes/checks to determine if the soldier has performed the task correctly.

PPP
Point-to-Point Protocol

PROC/Proc
Processing; Procedure; Procedural

QT
Quarterly (frequency code)

RAPTer
Reporting and Planning Terminal

RAU
radio access unit

REF
reference

REG/Reg
Regulation; Regiment

RF
Reserve Forces; radio frequency

S3
> Operations and Training Officer (U.S. Army)

SA
> situational awareness; semiannually (frequency code)

SAA/GAA
> Satellite Access Approval/Gateway Access Approval

SAR/GAR
> Satellite Access Request/Gateway Access Request

SAT
> Systems Approach to Training; satellite

SATCOM
> satellite communication(s)

SB
> Supply Bulletin

SCIF
> Sensitive Compartmented Information Facility

SHF
> super high frequency

SINCGARS
> Single-Channel Ground and Airborne Radio System

SIPRNET
> Secure Internet Protocol Routing Network

SL
> skill level

SOI
> signal operation instructions

Soldier's manual (SM)
> List critical task summaries for a specific MOS and skill level (SL); provide conditions, standards, and performance measures for each critical task.; and are the base documents for all MOS-specific individual task training and evaluation.

SOP
> standing operating procedure

SPU
> Switch Processing Unit

STEP
> standardized tactical entry point

STP
soldier training publication

Sust
sustainment

Task Performance Steps
The required unit/individual actions that must be performed to accomplish the critical task. Each step must be specific and detailed and contain only one action or unit of work. Note: A collective task step may be a supporting individual or collective task.

task summary (TS)
A statement of the task in an action-verb format plus all essential performance measures. A standard format fully describes the task for the soldier in the field. It will accommodate any product or process task whether it is in fixed sequence, alternate sequence, or combination. The task summary is used both to train the soldier to perform the task and to evaluate the soldier's ability to perform the task (within testing constraints).

TB
technical bulletin

TC
technical coordinator; training circular; thermocouple

TCC
telecommunications center; terrestrial critical control unit

TDIM
Time Division Interface Module

TED
trunk encryption device

TF
Task Force; training film

TG
trainer's guide

TI
Tactical Internet; test instrument; technical inspection

TM
technical manual

TNAPS
Tactical Network Analysis Planning System

TNG/Tng
training

TPN
Tactical Packet Network

TRADOC
Training and Doctrine Command

TRC
Technical Reference Code

TROPO
tropospheric scatter

TSO
telecommunications service order

TSR
Telecommunications Service Request; Training Support Requirements

UHF
ultra high frequency

US
United States

VHF
very high frequency

VTC
video teleconference

WAN
Wide Area Network

WK
Weekly (frequency code)

WO
Warrant Officer

WOAC
Warrant Officer Advanced Course

WOBC
Warrant Officer Basic Course

REFERENCES

New reference material is being published all the time. Present references, as listed below, may become obsolete. To keep up-to-date, see DA Pam 25-30 or DA Pam 25-35. Many of these publications and forms are available in electronic format from the sites listed below:

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>Administrative Departmental Publications and Forms
>>(ARs, CIRs, PAMs, OFs, SFs, DD and DA Forms)

General Dennis J. Reimer Training and Doctrine Digital Library (RDL)
>Army Doctrinal and Training Publications
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U.S. Army Materiel Command (AMC) Logistics Support Activity
>Technical and Equipment Publications
>>(TMs, TBs, & SCs)

Washington Headquarters Services, Communications & Directives Directorate
>DOD Directives, Instructions, & Publications

Required Publications

Required publications are sources that users must read in order to understand or to comply with this publication.

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AR 380-67	The Department of the Army Personnel Security Program. 9 September 1988

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CJCSM 6231.02A	Manual for Employing Joint Tactical Communications - Joint Voice Communications Systems. 1 August 1998
CJCSM 6231.04A	Manual for Employing Joint Tactical Communications: Joint Transmission Systems. 29 February 2000

Other Product Types

ATA MANUAL	Army Technical Architecture (ATA) Manual
COTS CUM	Commercial-off-the-Shelf (COTS) Computer User's Manuals (CUM)
CSCE REF GUIDE	CSCE Quick Reference (REF) Guide for CSCE-QRG for the Communications System Control Element (CSCE) Version 2.4. 30 April 1995
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OSUM	Operating System User's Manuals (OSUM)

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TM 11-5895-1560-13&P	ISYSCON AN/TYQ-XX(V) 1 Operator, Unit and Direct Support Maintenance Manual
TM 11-5895-1582-13&P	Operator's, Unit, and DS Maintenance Manual (Including Repair Parts and Special Tools List) for Integrated System Control (ISYSCON) Echelons Corps and Below (ECB), Battalion Control (BATCON) AN/TYQ-76(V)2. 1 September 1997
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OSC MANUALS	Operating System Control (OSC) Statement Manuals
PUBLIC LAW 100-235	Computer Security Act of 1987
PUBLIC LAW 99-474	Computer Fraud and Abuse Act of 1986
SAT REF DATA HANDBOOK	Satellite (SAT) Reference (REF) Data Handbook (Volume 2)
SAT STATION (EURSAT)	Satellite (SAT) Station (EURSAT)
SATCOM ARCHITECTURE	The Army Satellite Communications (SATCOM) Architecture. 1 April 1997
SLRM	Software Language Reference Manual (SLRM)
SOI	Signal Operation Instructions (SOI)
SOI KTC 1400(*)	Numeral Cipher/Authentication System
SOI KTC 600(*)	Tactical Operations Code
SRM	Software Reference Manual (SRM)
SUM NSM	Software User's Manual (SUM) for the Network Security Manager (NSM) Version 4.2.1. 1 March 2000
TCT #1	Functions of Internetworking.
TCT #2	LAN Configurations
TCT #3	Network Operating Systems
TCT #4	LAN Troubleshooting and Global Network Management
TRAINEE REF GUIDE	Network Planner's Trainee Reference (REF) Guide Version 2.4. 30 April 1995
UNIT SOI	Unit/Unit's Signal Operation Instructions (SOI)

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TB 385-4	Safety Requirements for Maintenance of Electrical and Electronic Equipment. 1 August 1992
TB 43-0001 SERIES	Equipment Improvement Report and Maintenance Digest. Dates vary, refer to DA Pam 25-30
TB 43-0122	Identification of US Army Communications-Electronics Command Managed Radioactive Items in the Army Supply System. 15 February 1989
TB 43-0124	Maintenance and Repair Procedure for Shelters, Electrical Equipment S-141/G and S-141B/G; S-144/G, S-144A/G, S-144B/G, S-144C/G, and S-144D/G...... (Reprinted w/Basic Incl C1-3). 5 June 1979
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DMS-NSA-FORTEZZA	National Security Agency (NSA) Policy on Use of Fortezza for Protecting Classified Information, Draft. 15 June 1999
DMS-OPP-DC31070	Defense Message System Operational Policies and Procedures, DISA Circular 310-70-XX, Draft. 1 February 1998
DMS-SDA	Defense Message System (DMS) Recommended System Design Architecture (SDA), Release 2.2. 21 December 1999

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DTM 11-7025-308-12&P   Operator's and Unit Maintenance Manual (Including Repair Parts and Special Tools List) for Disk Drive Units MU-1039(V)1/U, MU-1039(V)2/U, and MU-1039(V)3/U. Validated Draft Date: 30 March 1994. DRAFT ONLY. 17 March 1994

TM 11-2300-475-13&P-1   Operator's, Organizational, & DS Maint Manual (Incl Repr Parts & Special Tools List) for Install Kit, Elect Eq MK-2462/GRC-193A in Truck Cargo, 1 1/4 Ton, 4x4, M882 or M1008A1 (CUCV)....Radio Set AN/GRC-193A (Reprinted w/Basic Incl C1). 1 September 1987

TM 11-2300-475-13&P-2   Operator's, Organizational, and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Installation Kit, Electronic Equipment MK-2459/GRC-193A in General Purpose Installations for Radio Set AN/GRC-193A. 1 September 1987

TM 11-2300-475-13&P-6   Operator's, Unit and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Installation Kit, Electronic Equipment, MK-2541/GRC-193A in HMMWV, Cargo/Troop Carrier M998, M1038. 1 July 1988

TM 11-2300-476-14&P   Operator's, Unit, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Installation Kits, Electronic Equipment: MK-2442/GRC-213 for Armored Personnel Carrier-M113A1; MK-2443/GRC-213 ..... 1 January 1987

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TM 11-5800-218-10-1   Operator's Manual System Interconnectivity and Troubleshooting Procedures Communications Patching Panels SB-675/MSE and SB-675A/MSC Communications Technical Control Centers AN/TSQ-84 and AN/TSQ-84A. 1 January 1988

TM 11-5805-304-14   Operator's, Organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Manual Telephone Switchboard SB-86/P Installation and Operation. 15 August 1988

TM 11-5805-356-34-1   Direct Support and General Support Maintenance Manual for Terminal, Telegraph, TH-22/TG and TH-22B/TG and Filter Assembly, Electrical, F-316/U (C1) (Reprinted w/Basic Incl C1). 13 October 1972

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