ATTACHMENT - 4

# United States Special Operations Command (USSOCOM)

# Tactical Local Area Network (TACLAN)

# System Specification (TSS)


## Document Identification

| | |
|---|---|
| Date: | April 14, 2005 |
| Version: | 1.4.2 |
| Security/Classification: | Unclassified |
| Distribution | |

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# FIGURES AND TABLES

# 1 SCOPE

This specification establishes the technical and operational performance characteristics, manufacturing, quality assurance, and test requirements for the United States Special Operations Command (USSOCOM) Tactical Local Area Network (TACLAN). The purpose of this document is to define the system specification for the TACLAN production suites of equipment. Each major subsystem of TACLAN will be clearly specified and correlated to the TACLAN Capability Production Document (CPD).

## 1.1 BACKGROUND

The TACLAN concept originated in May 1998 when the PEO-IIS received a concept briefing and directed the Deputy Program Manager (DPM) for Special Operations Forces-Intelligence Vehicle-Migration (SOF-IV (M)) to coordinate with the PM for Command, Control, Communications, Computers, Intelligence and Automation (C4IA) and develop a consolidated recommendation for implementing a TACLAN program. SOIO was tasked to develop a TACLAN ORD, which was approved by the SOCREB in June 2001.

Following a requirements review, and implementation of the Joint Capabilities Integration and Development System (JCIDS), the ORD was superseded by a Capability Production Document (CPD) (22 March 2004) that established a Basis of Issue Plan (BOIP) of 133 TACLAN Suites, 5348 laptop workstations, and 5802 Field Computing Devices (FCD).

## 1.2 SYSTEM OVERVIEW

TACLAN extends Command, Control, Communications, Computers and Intelligence (C4I) to tactical Special Operations Forces (SOF) locations to facilitate the timely exchange of information between deployed and garrison SOF headquarters, and main operating locations, while facilitating liaison and coordination with regional combat commands, Services, Department of Defense (DOD) and national agencies concerning SOF operational support. TACLAN will scale to accommodate network resizing to meet mission requirements. TACLAN's primary operational mission is to provide tactical automation with flexible interfaces to communications, databases, and mission applications that will collectively extend the equivalent fixed base garrison C4I Surveillance and Reconnaissance (C4ISR) architecture to tactical units and remote operators. TACLAN will exploit the use of these communications interfaces, which will allow it to be utilized in any planned environment.

TACLAN is a modular, scalable suite of computer network equipment and workstations that provides functionality similar to the SOF garrison C4ISR capabilities. It currently includes the routers, hubs, switches, servers, network management and information assurance tools, printers, scanners, cabling, and workstations to interconnect deployed automation customers at three (3) classification levels or security domains (i.e., Unclassified, Secret, and Sensitive Compartmented Information [SCI]). The TACLAN CPD also requires additional interfaces for Coalition and Special Access users.

TACLAN will interconnect all deployed SOF elements, from the smallest team to a Joint Special Operations Task Force (JSOTF) headquarters, with one seamless network to share information and facilitate responsive knowledge based decisions. It also supports remote connectivity to interconnect liaison elements and tactical teams to the main network, to include the fielding of automation devices (i.e., FCDs) for tactical teams. Figure 1-1 depicts the notional high level TACLAN functional components.

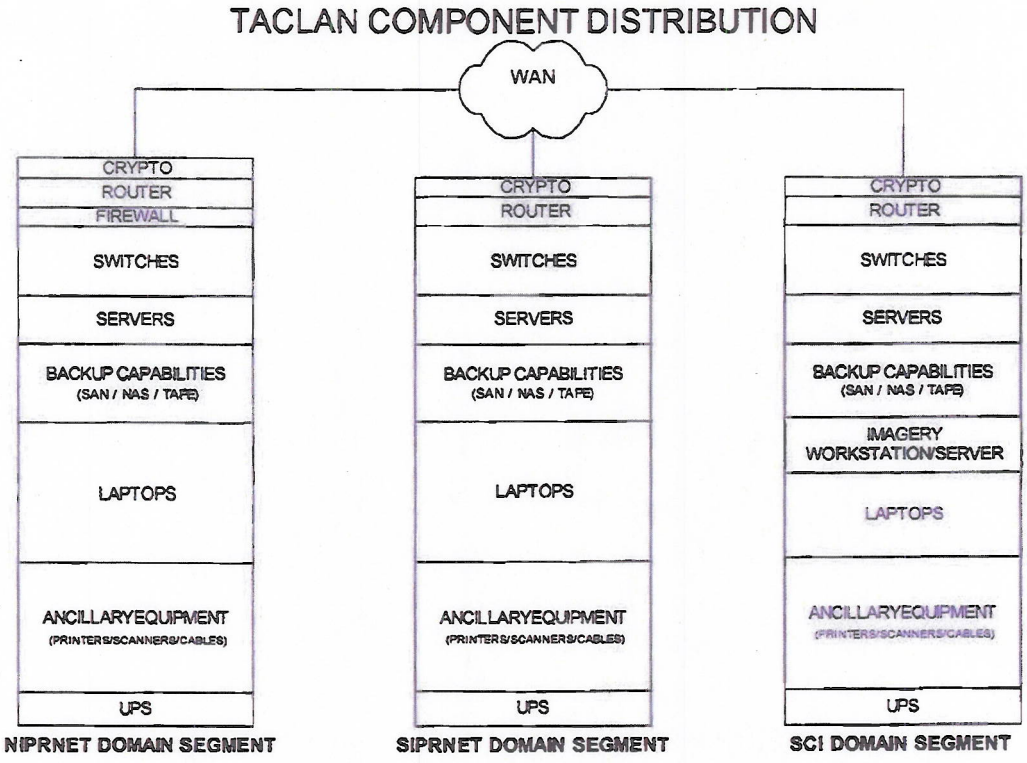


**Figure 1-1. TACLAN Functional Components**

TACLAN will fulfill a wide range of functions for deployed SOF including command and control, office automation, decision-making assistance, mission analysis, planning and execution support. It will interface with workstations that host mission applications to provide intelligence, operations, mission planning, administration, Psychological Operations (PSYOP), Civil Affairs (CA), and logistics functionality. TACLAN will have the flexibility to interface and operate with the various long-haul telecommunications transmission systems available to and programmed for SOF deployed forces. Through interfaces with data communications networks such as Unclassified but Sensitive Internet Protocol Router Network (NIPRNET), Secret Internet Protocol Router Network (SIPRNET), and Joint Worldwide Intelligence Communications System (JWICS), TACLAN will provide deployed SOF Command and Control (C2) nodes, staff elements and operators with multi-level information exchange among USSOCOM, the Joint Task Force (JTF) and Theater Special Operations Command (SOC) Headquarters and other

theater and national C4I nodes. Figure 1-2 depicts a notional TACLAN deployment configuration.

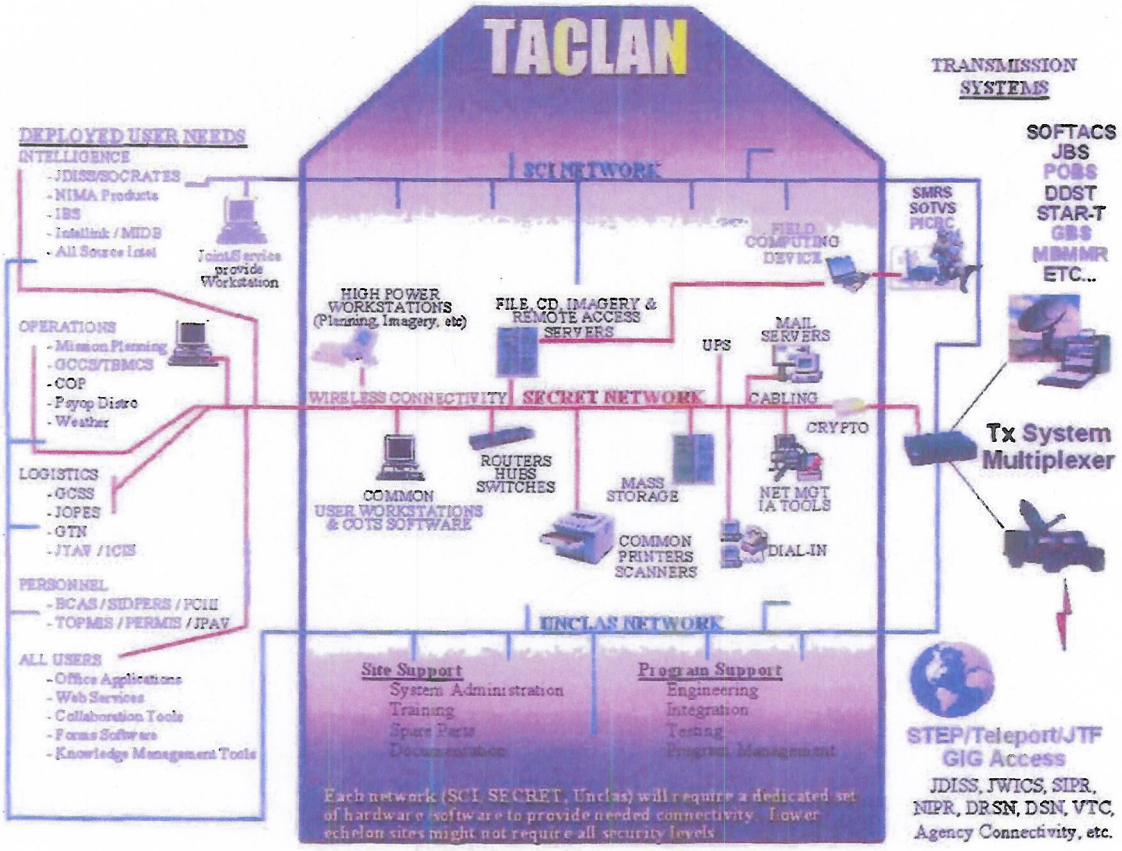


**Figure 1-2. TACLAN Notional Deployment**

TACLAN will consist primarily of Commercial Off-the-Shelf/Government Off-the-Shelf (COTS/GOTS) equipment and parts that are compliant with industry and DOD standards. It will implement an open-systems architecture in order to minimize interoperability issues. No new unique firmware will be developed requiring computer resources support. The USSOCOM Common Information Technology Baseline List (CIBL) will be leveraged for components that can be used as a part of TACLAN. This will involve the utilization of hardware and software standards, commercial software modifications, database maintenance, and introduction of new software packages. The CIBL shall not constrain the design of the TACLAN system.

## 2 APPLICABLE DOCUMENTS

The following tables identify the documents that form a part of this specification to the extent specified herein. In the event of conflict between the documents referenced herein,

and the contents of this specification, the contents of this specification shall be considered a superseding requirement.

## 2.1 GOVERNMENT DOCUMENTS

### *2.1.1 Military Standards and Regulations*

| DOCUMENT | REVISION | TITLE |
|---|---|---|
| AR 70-38 | | *Research, Development, Test and Evaluation of Materiel for Extreme Climatic Conditions* |
| MIL-STD-209 | J | *Slinging and Tiedown Provisions for Lifting and Tying Down Military Equipment* |
| MIL-STD-471 | A w/Notice 2 | *Maintainability Verification/ Demonstration/Evaluation* |
| MIL-STD-781, Test Plan XVIII | D | *Reliability Design Qualification and Production Acceptance Tests: Exponential/ Distribution* |
| MIL-STD-810 | E | *Environmental Test Methods and Engineering Guidelines* |
| MIL-STD-1472 | F | *Human Engineering Design Criteria for Military Systems, Equipment and Facilities* |

### *2.1.2 Military Specifications*

| DOCUMENT | REVISION | TITLE |
|---|---|---|
| | | *COMSEC Encryption Device, KIV-7* |
| | | *TACLANE, KG-175* |
| | | *FASTLANE, KG-75* |
| | | *463L Pallet* |
| Spec No. 36024531 | Feb 1996 | *Performance and Interface Specification for KIV-19, Trunk Encryption Device (TED)* |

### 2.1.3 Other Guidelines and Publications

| DOCUMENT | REVISION | TITLE |
|---|---|---|
| CECOM Safety Office Technical Bulletin # 7 | | Guidelines for Equipment Using Sulfur Dioxide Batteries |
| CJCSI 6211.02A | 22 May 1996 | Defense Information System Network and Connected Systems |
| DoD Manual 5200.40 | 30 Dec 1997 | *Department of Defense Information Technology Security Certification and Accreditation Process (DITSCAP) Application Manual* |
| GIG | Version 1.0 Oct 1994 | *User Interface Specifications for the Global Command and Control System* |
| DISR | RIse 04-2.0<br>22 Dec 2004 | *DoD IT Standards Registry* |
| TACLAN | 14 June 2001 | *TACLAN Concept of Operations (CONOPS)* |
| TACLAN | 22 Mar 2004 | *TACLAN Capability Production Document (CPD)* |
| TACLAN | 29 May 2002 | *Reliability and Maintainability (R&M) Rationale report (RRR) for the TACLAN* |
| USSOCOM Directive 25-1 | 3 June 2003 | *Special Operations Forces (SOF) Information Enterprise (SIE)* |
| USSOCOM Directive 25-3 | 19 June 2002 | *Special Operations Forces (SOF) Information Enterprise (SIE) Common Information Technology Baseline (CIBL)* |

## 2.2 COMMERCIAL STANDARDS AND SPECIFICATIONS

| DOCUMENT | REVISION | TITLE |
|---|---|---|
| EIA/TIA-232 | September 1997 | Interface Between Data Terminal and Data Communication Equipment Employing Serial Binary Data Interchange |
| EIA/TIA-530 | June 1992 | High Speed 25-Position Interface for Data Terminal Equipment and Data Circuit-Terminating Equipment, Including Alternative 26-Position Connector |
| IEE 802.3 | | 10BaseT |

| DOCUMENT | REVISION | TITLE |
|---|---|---|
| IEEE 802.3u | | Fast Ethernet |
| IEEE 802.3z | | Gigabit Ethernet |
| IEE 802.11b | | High Rate Wireless LANs |
| IEEE 1284 | 21 Sep 2000 | Standard Signaling Method for a Bi-directional Parallel Peripheral Interface for Personal Computers |
| IEEE 1394 (Firewire) | 2000 | Standard for a High Performance Serial Bus – Ammendment 1 |
| ITU-T H.323 | July 2003 | Packet-based multimedia communications systems |
| ITU-T V.35 | Oct 1984 | Data transmission at 48 kbit/s using 60-108 kHz group band circuits |
| ITU-T X.21 | Sep 1992 | Interface between Data Terminal Equipment and Data Circuit-terminating Equipment for synchronous operation on public data networks |
| ITU-T X.25 | Oct 1996 | Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit |
| NFPA 70-93 | | National Fire Protection Association (NFPA) Requirements |
| RFC 791 | 1 Sep 1981 | Internet Protocol (IP) Version 4 |
| RFC 793 | September 1981 | Transmission Control Protocol, DARPA Internet Protocol Specification |
| RFC 904 | 1 Apr 1984 | Exterior Gateway Protocol Formal Specification |
| RFC1157, STD 15 | May 1990 | A Simple Network Management Protocol (SNMP) |
| RFC 1583 | 23 Mar 1994 | OSPF Version 2 |
| RFC 1654 | 21 Jul 1994 | Border Gateway Protocol 4 (BGP-4) |
| RFC 1655 | 21 Jul 1994 | Application of the Border Gateway Protocol in the Internet |
| RFC 1661 | 21 Jul 1994 | Point to Point Protocol (PPP) |
| RFC 1901 | January 1996 | Introduction to Community-based SNMPv2 |
| RFC 1906 | January 1996 | Transport Mappings for Version 2 of the SNMPv2 |

| DOCUMENT | REVISION | TITLE |
|---|---|---|
| RFC 2460 | Dec 1998 | Internet Protocol Version 6 (IPv6) Specification |
| RFC 2570 | April 1999 | Introduction to Version 3 of the Internet-standard Network Management Framework |
| RFC 2571 | April 1999 | An Architecture for Describing SNMP Management Frameworks |
| RFC 2572 | April 1999 | Message Processing and Dispatching for SNMP |
| RFC 2574 | April 1999 | User-based Security Model (USM) for version 3 of SNMPv3 |
| UL 1950 | | Electrical Requirements for Class I Equipment |
| | 27 Apr 2000 | Universal Serial Bus Specification, Rev 2 |

# 3 REQUIREMENTS

The TACLAN system consists of seven (7) subsystems: Communications Subsystem; Server Subsystem; Mass Storage Subsystem; Information Assurance Subsystem; Computing Equipment Subsystem; Power Subsystem; and Ancillary Devices. These are illustrated in Figure 3-1 below.

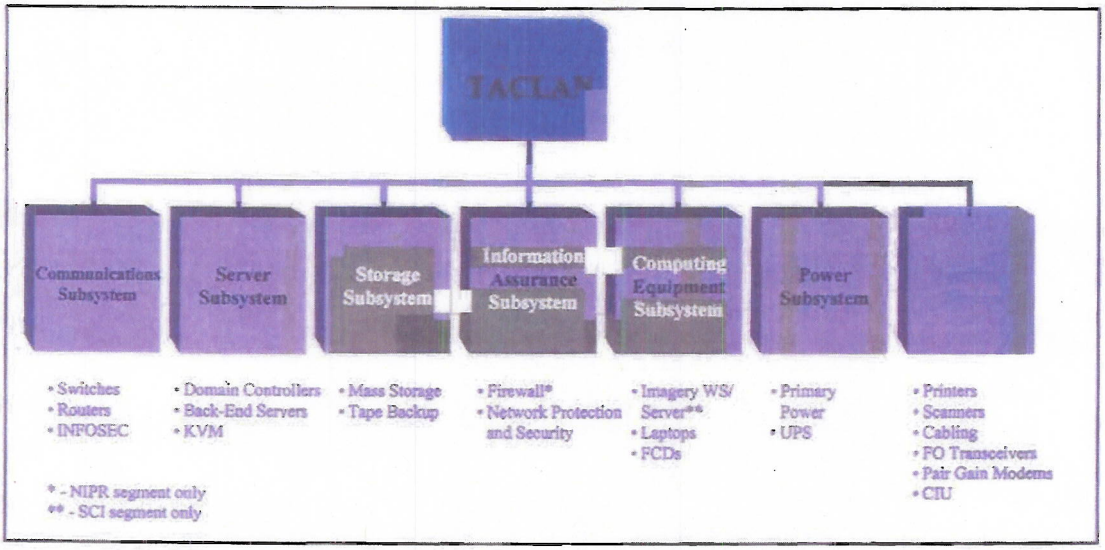


**Figure 3-1. TACLAN Subsystems**

The following paragraphs describe the specific functional, technical, physical, and design performance parameters required for the TACLAN system. Unless otherwise denoted,

the requirements listed below are applicable to all security domain (i.e., Unclassified, Collateral and SCI) segments of the TACLAN system.

## 3.1 COMMUNICATIONS SUBSYSTEMS (CS)

The CS shall provide data transport capabilities for LAN service, gateway access to Wide Area Network (WAN) resources, and remote subscriber access. It shall utilize National Security Agency (NSA)-endorsed Communications Security (COMSEC) devices for encrypting/decrypting WAN traffic. The CS will interface with collocated military and commercial telecommunications transmission systems to establish interoperable connectivity with other DOD tactical and strategic networks and services.

The CS shall be modular and permit the flexible addition of subscribers with minimal impact to Quality of Service (QoS). The CS components shall be packaged into transit-cased suites to enable operators to deploy tailored network configurations. Network configurations will be tailorable from 10 to 300 workstations per security domain with no degradation to the required QoS.

The components of this subsystem shall provide the necessary interface, switching, routing, and encryption/decryption devices to support the user's operational requirement to rapidly and reliably exchange data/information. The CS for each security domain shall support the information exchange requirements identified in Table 3-1 below.

**Table 3-1. Network Capacity and Timeliness of Service**

| Type of Data | Size | Timeliness (Threshold) | Timeliness (Objective) |
|---|---|---|---|
| Unit readiness and status reporting | < 500 KB | 10 seconds | 3 seconds |
| Intelligence analysis and reporting | < 10 MB | 1 minute | 30 seconds |
| Operations planning and reporting | < 1 MB | 30 seconds | 15 seconds |
| MPR&E support | < 500 KB | 10 seconds | 3 seconds |
| Orders dissemination and force execution | <500 KB | 10 seconds | 3 seconds |
| Weather data | < 5 MB | 1 minute | 30 seconds |
| Geographic data | < 5 MB | 1 minute | 30 seconds |
| Mapping data | < 10 MB | 1 minute | 30 seconds |
| Imagery data | < 10 MB | 1 minute | 30 seconds |
| Logistics planning, personnel administration, and other support functions | < 500 KB | 10 seconds | 3 seconds |

### *3.1.1 LAN Segment*

The CS shall provide a LAN segment for each TACLAN security domain that supports terminal access and provides maximum bandwidth performance to transport large volumes of data among mission critical applications within a deployed SOF node. It shall also incorporate a Network Management capability. TACLAN user terminals shall interface to the LAN segment through local network access points (e.g., switches). The LAN segment shall provide a concentrator(s) to interconnect multiple LAN access points/switches to reduce physical points of presence and traffic on the WAN gateway.

#### 3.1.1.1 LAN SEGMENT CAPABILITIES

The LAN segment and access points shall:

a. Form a scalable networking architecture that provides access for up to 300 TACLAN workstations/laptops, in addition to the other network-attached devices described elsewhere in this document.
b. As a goal, support an NSA Type-I secure wireless capability in accordance with (IAW) IEEE 802.11 and/or other emerging commercial standards (e.g., Bluetooth).
c. Provide sufficient throughput to comply with the Network Capacity and Timeliness of Service requirements defined in Table 3-1.
d. Support LAN switching and comply with "Fast Ethernet" (i.e., IEEE 802.3u) and Gigabit Ethernet standards, as a minimum; and support fiber optic interfaces as a goal.
e. Provide the capability to establish Virtual LAN (VLAN) architectures to segregate staff element (i.e., C2, LOG, etc.) traffic and to simplify moves, additions, and modifications of users within workgroups.

#### 3.1.1.2 NETWORK MANAGEMENT

The TACLAN Network Management functions shall include the following:

a. Support Simple Network Management Protocol (SNMP)v1, SNMPv2, SNMPv2c, and SNMPv3.
b. Provide the system administrator(s) with the necessary network management tools to manage the TACLAN network segments. As a minimum, the network management tools shall manage network performance through monitoring designated Internet Protocol (IP) components associated with the TACLAN system; provide statistical, graphical, and analytical functionality to support performance optimization; provide an integrated network management capability to further provide an automated means to plan, initialize, test, and manage the deployed network, both locally and remotely; automated fault management to include problem detection, fault isolation and diagnosis, problem tracking until corrective actions are completed, and historical archiving; maintain an audit trail including automatic discovery of network devices, automatic population of network management databases, and automatic reporting of network status. The TACLAN shall be compatible with the Joint Network Management System (JNMS) when it becomes available.

### *3.1.2 WAN Segment*

The CS WAN segment shall provide TACLAN users a gateway to other tactical and strategic networks and data sources. Each WAN segment shall include an IEEE 802.3-compliant routing device (e.g., router) to support wide area networking for each of the three security domains (Unclassified, Collateral, and SCI). The WAN gateway shall provide the port configurations and support the protocols listed below.

#### 3.1.2.1 PORT CONFIGURATION

The WAN gateway shall provide connectivity to the LAN segment, COMSEC equipment, and supporting telecommunications transmission equipment (for situations when COMSEC is not required). The following ports, at a minimum, shall be provided:

a. Minimum of four (4) "Fast Ethernet" ports to interface with the LAN segments/access points (e.g., switches). As a goal, the LAN segment/access points shall be Gigabit Ethernet compliant.
b. Minimum of four (4) serial ports. The serial ports shall be configurable either as host ports or as trunk ports and shall support the protocols in Paragraph 3.1.2.2. The serial trunk ports shall, as a minimum, interface and operate with the COMSEC equipment.
c. As a goal, one (1) wireless LAN access point that supports a minimum of 30 users per LAN over a 1-km distance.

#### 3.1.2.2 PROTOCOL SUPPORT

The WAN gateway routing device shall support the following protocols, as a minimum. It shall maintain its configuration database in non-volatile memory during power interruptions.

a. Software: Compliant with Industry and Government standards.
b. Layer 1 WAN Protocols: EIA/TIA-232, EIA/TIA-449, V.35, EIA-530, X.21, HSSI, DS3/T3/E3, DS1/T1/E1
c. Layer 1 LAN Protocols: 10/100Base-T, IEEE 801.1q
d. Layer 2 Protocols: IEEE 802.3 HD/FD flow control, IEEE 802.1d, IEEE 802.1q/802.1p, IEEE 802.3u, IEEE 802.1w/IEEE 802.1s
e. Layer 3 Protocols: IPv4 unicast and multicast routing and addressing, ping, Traceroute, ARP, RARP, Proxy ARP, IP unnumbered, IP helper, IPv6 (goal).
f. Layer 4 Protocols: TCP and UDP
g. Routing protocols: IPV4 Open Shortest Path First (OSPF) v2, BGP-4, inter-VLAN routing required; IPv6 (goal)
h. Application: DNS, FTP, TFTP, HTTP
i. Encapsulation: PPP, IEEE 802.1q, GRE, X.25, Ethernet version 2.0
j. Router Discovery Protocol: IPv4 ICMP and IRDP required; IPv6 (goal).
k. Network Management: CLI and Web-based interface/HTTP, auto configuration feature, SNMPv1, SNMPv2, SNMPv2c, SNMPv3, SNMP-II MIB, RMON I & II (4 groups), Syslog, BootP, DNS, TFTP, in-band and out-of-band management support, SSHv2 and Telnet management.
l. Access Control: L3/L4 ACLs

m. QoS: Congestion avoidance, congestion management, traffic shaping and policing, link efficiency, DiffServ, RSVP/IntServ, Classification/marking and remarking, queuing and scheduling, IP precedence, DSCP, policy filtering, COPS, CoS-based policing.

### *3.1.3 Communications Security (COMSEC)*

The CS shall support operations at three (3) possible security classification levels (Unclassified, Collateral, and SCI). Cross-security Domain Systems (CDS) techniques are a goal of the system and shall allow one CS to simultaneously process user data traffic at any security classification level.

The CS shall provide COMSEC equipment to encrypt/decrypt the WAN gateway interface. It shall have the capability to transport secure data utilizing NSA Type-I endorsed security protection mechanisms, IAW DoD policy. The TACLAN COMSEC architecture shall be based on the following:

#### 3.1.3.1 KIV-7

The TACLAN may be equipped with the KIV-7 Trunk Encryption Device which provides the same functionality as the KG-84 with significant size and weight reductions. Operating at traffic rates from 512 Kbps up to 2.048 Mbps.

#### 3.1.3.2 KIV-19

The TACLAN may be equipped with the KIV-19 Trunk Encryption Device which provides the same functionality as the KG-194/195 A with significant size and weight reductions.

#### 3.1.3.3 INLINE NETWORK ENCRYPTION (INE)

The TACLAN may be equipped with the IP/Asynchronous Transfer Mode (ATM) encryption devices such as the KG-75, KG-175, KG-235, and KG-250.

### *3.1.4 Network Interoperability*

"Interoperability" is defined as " *the ability of two or more systems or components to exchange information and to use the information that has been exchanged [IEEE 90]*[1]*.*". TACLAN shall comply with established GIG and JTA interface and interoperability standards. This shall include commercial-to-military information transfer and transfer between U.S. and Combined forces. TACLAN shall interface with the worldwide strategic and tactical networks and systems listed below.

- All USSOCOM information and intelligence networks. (i.e., SIE)
- Euro Integrated Services Digital Network (EuroISDN).
- SOFTACS
- Deployed SCAMPI

[1] Institute of Electrical and Electronics Engineers. IEEE Standard Computer Dictionary: A Compilation of IEEE Standard Computer Glossaries. New York, NY: 1990.

- Theater Deployable Communications (TDC)
- Public Switched Telephone Network (PSTN)
- NIPRNET
- SIPRNET
- JWICS
- Standardized Tactical Entry Points (STEP)
- Tactical Packet Network (TPN)
- Defense Message System (DMS) or equivalent
- All Source Analysis System (ASAS)
- Theater Battle Management Core Systems (TBMCS)
- Psychological Operations Broadcast System (POBS)
- Joint Deployable Intelligence Support System (JDISS)
- Global Command & Control System (GCCS) – JC2 when available
- Global Combat Support System (GCSS)
- Warfighter Information Network – Tactical (WIN-T) when available.

## 3.2 SERVER SUBSYSTEM

The subsystems referenced in this section provide the server component of the traditional client server architecture that shall be implemented by the TACLAN system. The TACLAN server subsystems shall support the approved TACLAN software baseline (ref Appendix A) and provide Directory Services, data and systems management, and common back-end services such as electronic mail, intranet/internet, streaming media, C2, file, print, and access control. The Server Subsystem consists of Domain Controllers (DC), Back-End servers, and the KVM switch as described in the following paragraphs.

### *3.2.1 Domain Controllers (DCs)*

One (1) primary and one (1) secondary DC shall be provided for each of the TACLAN security domains. Each of these DCs shall serve a dual purpose to reduce the footprint of the TACLAN suite and provide the most efficient use of resources within the physical characteristics of the overall system. This shall include any or all of the required back-end services and ORD requirements. The servers must be designed in compliance with the current TACLAN software baseline. Each of the DCs shall be designed, as a minimum, to comply with the specifications in Table 3-2 below.

**Table 3-2. Server Specifications**

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| PROCESSOR | |
| Clock Speed | Dual 3.0 GHz (Intel) or Dual 2.6 GHz (AMD) |
| FSB | 800 MHz |
| Internal Cache (L1) | 32KB |
| External Cache (L2) | 512KB |
| | |

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| **EXPANSION BUS** | |
| Bus Type | PCI |
| Expansion Slots | Three (3) |
| **MEMORY** | |
| Speed | 400 MHz |
| RAM | 4GB |
| **STORAGE** | |
| Diskette Drive | 3.5 in. floppy |
| Drive Controller | RAID with redundancy |
| Removable Hard Disk Drives (HDD) | 100 GB, RAID configured, hot-swappable |
| DVD/CD/RW drive | One (1) - Internal |
| HDD Speeds | 15,000 rpm |
| **PORTS (EXTERNAL)** | |
| Serial | One (1) - 9 pin connectors (EIA/TIA-232) |
| Parallel | One (1)- 25 pin connector (EIA/TIA-530) |
| USB 2.0 | Two (2) – 4 pin connectors |
| SCSI | Ultra3 (Ultra160) |
| RJ45 | Two (2)– for integrated GIG-E controller |
| Video | One (1) – 15 pin connector |
| PS/2 | Keyboard connector 6 pin mini-DIN |
| PS/2 | Mouse connector 6 pin mini-DIN |
| **VIDEO** | |
| Type | Integrated -AGP or better |
| Memory | 64 MB RAM or better |

### *3.2.2 Back-End Server(s)*

TACLAN has the requirement to have two (2) DCs for redundancy, however, some services may conflict with others already running. Separate physical servers shall be provided to host these required back-end services. These member servers will not be DCs, but shall host the required back-end services IAW vendor specifications (e.g., MS Exchange). They shall host back-end services such as, but not limited to: Database Base Management System (DBMS), Electronic Mail (email), Intranet/ Internet, streaming media, C2, file, print, and access control. In addition to the software baseline in Appendix A, the Government will provide back-end service details, as they become available. The back-end servers shall comply with the hardware specifications described in Table 3-2.

### *3.2.3 KVM Switch*

A single KVM switch shall be implemented for each of the classification levels (Unclassified, Secret, and SCI). These switches will be used to toggle between servers within a single security domain (per suite). At a minimum, one (1) monitor, switchable between viewable components, is required to limit the space/weight of the server subsystem. Each KVM switch and associated monitor(s) shall be designed to comply with the specifications in Table 3-3 below.

**Table 3-3. KVM Specifications**

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| Display | 15.1" Flat Panel |
| Resolution | 1024x768 |
| Keypad | 104 Key/compact /heavy duty |
| Rack space | 1U / 19" Rack mountable |
| Mouse | Microsoft PS/2 compatible mouse |
| Scanning | Manual or Auto |
| Operating System | Compliant with TACLAN VDD |
| Ports available | Five (5) VGA/ PS/2 Mouse/ PS/2 Keyboard |

## 3.3 STORAGE SUBSYSTEM

The Storage Subsystem (SS) shall provide additional storage externally to the servers. This storage will be used for disaster recovery and additional mass storage requirements. The SS shall consist of mass storage devices and tape backup systems. The performance parameters for these component systems are detailed below.

### *3.3.1 Mass Storage*

An external, scalable, RAID-capable mass storage medium, with a minimum capacity of two (2) TB, shall be provided to support online data storage and archiving for the SECRET and SCI security domains. This mass storage device shall support all file systems and protocols supported by the clients and servers. All storage media shall be removable. The mass storage device shall be no larger than 4U in height, with a goal of 1 U (i.e., 1.75 inches).

### *3.3.2 Storage Backup Systems*

A storage backup system shall be provided to facilitate a full system backup within an eight (8) hour time period for each security domain. The storage capacity of this device shall be sufficient to backup and store the contents of all attached network servers and mass storage devices within a single TACLAN security segment/domain. Backup software and required agents shall be included to support a full and selective restore requirement for all back-end services. These backups shall be performed in a manner to minimize the down time of the TACLAN system.

## 3.4 INFORMATION ASSURANCE SUBSYSTEM

### *3.4.1 Firewall*

A firewall shall be provided for protection of the Unclassified segment only. The firewall shall be manageable through management software and provide the ability to correlate events for threat prevention and vulnerability analysis. The firewall shall provide, as a minimum:

a. Denial of service attack prevention.
b. URL filtering.
c. Mail Guard Service.
d. JAVA applet filtering.
e. Support for up to 280,000 simultaneous connections.
f. Protected logging.
g. Cut-through Proxy.
h. Network Address Translation (NAT).
i. Stateful failover/hot standby.
j. Standards-based VPN.
k. Support for advanced Voice over IP (VoIP) standards including SIP, H.323 and others.
l. Concentrate and filter dial-in access.
m. Maximum interoperability with router protocol specifications listed in Paragraph 3.1.2.2.

### *3.4.2 Network Protection & Security*

The TACLAN hardware, hardware configuration, and overall system design shall ensure compliance with all DCID Security procedures and certification criteria. TACLAN shall be type accredited, based on network security requirements per DOD Manual 5200.40, Department of Defense Information Technology Security Certification and Accreditation Process (DITSCAP) Application Manual and the Chairman Joint Chiefs of Staff Instruction (CJCSI) 6211.02A, Defense Information System Network and Connected Systems.

#### 3.4.2.1 NETWORK ACCESS.

TACLAN shall prohibit unauthorized access to restricted network(s)/information, support continual security and system monitoring capabilities, determine database permissions, and will provide for user log-on anywhere within their network segment. TACLAN shall use approved security solutions to provide the system administrators with automated capabilities to monitor network activities such as intrusion attempts, audit trails, and system backup status and have the capability to affect defensive electronic responses (e.g., block IP address, disconnect attacker, notify system administrator, trace attack, etc.). The system shall use password protection software that requires unique user identification and password per security level for log-on.

#### 3.4.2.2 SYSTEM RECOVERY AND RESTORAL

TACLAN shall provide for network recovery from denial of service attacks and shall incorporate an automated means for malicious code detection (e.g., computer virus) including an update capability at the user and server level. TACLAN shall provide software to facilitate system backup and restoral.

## 3.5 COMPUTING EQUIPMENT SUBSYSTEM

The Computing Equipment Subsystem (CES) consists of specific computing/ workstations that shall interface with all three (3) TACLAN security domains to access the LAN segment/services. The CES shall consist of three (3) types of workstations: imagery workstations/server, laptops, and field computing devices. The performance parameters are described in the following paragraphs.

### *3.5.1 Imagery Workstation (IW)/Server*

The TACLAN Imagery Workstation (IW)/Server will be a Sun Solaris based platform that will eventually transition to a Microsoft Windows platform. The TACLAN shall include one (1) IW/Server that will only be employed on the SCI security domain. The IW/Server shall host specialized applications for specific SCI type requirement. The applications have varying degrees of complexity and require specific hardware to support the performance requirements. The IW/Server shall comply with all TACLAN SCI application software performance parameters. These applications can be referenced in Appendix A, Table 5-1. This table calls out applications required for the Sun Solaris baseline and USSOCOM Enhanced Imagery Workstation (EIW) based on the Microsoft Windows OS. The IW/Server shall comply with the performance parameters in Table 3-4A below for the Solaris based Laptop and Table 3-4B below for the Windows Laptop:

**Table 3-4A. IW/Server Specifications (Solaris)**

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| **PROCESSOR** | |
| CPU Type | RISC |
| Clock Speed | 500 MHz |
| **External Cache (L2)** | 1 MB |
| **MONITOR** | |
| Type | Color LCD |
| Screen Size | ≥ 14 inches |
| Resolution | 1600 x1200 |
| **EXPANSION BUS** | |
| Bus Type | PCI 2.1 |
| Expansion Slots | Three (3) |
| **MEMORY** | |
| RAM | ≥ 2 GB |
| **STORAGE** | |
| Diskette Drive | One (1)-3.5 inch floppy disk drive |
| Removal Hard Drive(s) | One (1) 40 GB |
| CD/DVD RW | One (1) |
| **PORTS (EXTERNAL)** | |
| Serial | One (1) – EIA/TIA-232/EIA/TIA-423 |
| | |

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| Headphone/ Speaker | One (1) mini-jack, stereo |
| | |
| Microphone | One (1) mini-jack, stereo |
| UltraSCSI-3 | 160 Mbps I/O |
| Network Interface | One (1) – 10/100 Ethernet |
| USB 2.0 | Two (2) |
| Firewire | One (1) IEEE-1394 |
| Keyboard/Mouse | One (1) USB 2.0 |
| **VIDEO** | |
| Memory | 64 MB |
| Resolution | 1280 x 1024 |
| Type | 2D/3D graphics |

**Table 3-4B. IW/Server Specifications (Windows)**

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| **PROCESSOR** | |
| Clock Speed | 2.0 GHz |
| FSB | 500 MHz |
| **External Cache (L2)** | 1 MB |
| **MONITOR** | |
| Type | Color LCD |
| Screen Size | ≥ 14 inches |
| Resolution | 1600 x1200 |
| **EXPANSION BUS** | |
| Bus Type | PCI 2.1 |
| Expansion Slots | Three (3) |
| **MEMORY** | |
| RAM | ≥ 2 GB |
| **STORAGE** | |
| Diskette Drive | One (1)-3.5 inch floppy disk drive |
| Removal Hard Drive(s) | Two (2) ≥80 GB (redundant) |
| CD/DVD RW | One (1) |
| **PORTS (EXTERNAL)** | |
| Serial | One (2) – EIA/TIA-232/EIA/TIA-423 |
| Parallel | One (1)- CENTRONIX-compatible |
| Headphone | One (1) mini-jack, stereo |
| Speaker | One (1) mini-jack, stereo |
| Microphone | One (1) mini-jack, stereo |
| UltraSCSI-3 | 160 Mbps I/O |
| Network Interface | One (1) – 10/100 Ethernet |

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| USB 2.0 | Two (2) |
| Video | Two (2) |
| Keyboard/Mouse | One (1) USB 2.0 |
| **VIDEO** | |
| Memory | 64 MB |
| Resolution | 1600 x 1200 |
| Type | 2D/3D graphics |

### *3.5.2 Laptops*

TACLAN shall have a common laptop specification for all security domain segments. The laptops shall be compatible with the TACLAN client software baseline. The number of laptops required will be commensurate with the scenarios described in section 3.8.3.1. The laptops shall comply with the performance parameters described in Table 3-5 below:

**Table 3-5. Laptop Specifications**

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| **MICROPROCESSOR** | |
| Clock Speed | 2.0 GHz |
| FSB | 533 MHz |
| External Cache (L2) | 2 MB |
| **MONITOR** | |
| Type | Color LCD |
| Viewable Size | 14 inches |
| Resolution | 1600 x 1200 |
| **EXPANSION** | |
| Expansion Slots | Two (2) - Type II PCMCIA or<br>One (1) - Type III PCMCIA |
| **MEMORY** | |
| Speed | 533 MHZ DDR SDRAM |
| RAM | 1 GB |
| **STORAGE** | |
| Diskette Drive | One (1) - 1.44 MB, 3.5 inch floppy |
| Removable Hard Drives | 80 GB |
| DVD-RW/CD-RW combination drive | One (1) Internal/hot swappable |
| **PORTS (EXTERNAL)** | |
| Serial | One (1) - EIA/TIA-232 |
| Parallel | One (1) - EIA/TIA-530 |
| USB 2.0 | Two (2) |
| Firewire | One (1) – IEEE 1394 |
| MODEM | One (1) - Integrated 56 Kbps |
| Network Interface Card | One (1) - Integrated 10/100/1000 Ethernet |

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| Video | One (1) - 15 pin VGA connector |
| Keyboard | One (1) |
| Mouse | One (1) |
| Port Replicator | One (1) |
| Headphone | One (1) mini-jack, stereo |
| Speaker | One (1) mini-jack, stereo |
| Microphone | One (1) mini-jack, stereo |
| **VIDEO** | |
| RAM | 64 MB |

### *3.5.3 Field Computing Device (FCD)*

The FCD shall be a highly portable, visual computing, and communications device that enhances the data collection and exchange capabilities for remotely deployed SOF operators. It shall allow the user to prepare, edit, send, and receive messages, data, and imagery to/from other SOF/C2 units and C4ISR systems.

#### 3.5.3.1 FUNCTIONALITY

The FCD shall utilize a Windows-based operating system and be able to host/run, as a minimum, the following software applications/programs:

- TACLAN software baseline
- ViaSat VMail
- SOF Planning Tools such as FalconView and SOMPE
- Image Editing (e.g., PocketELT)
- White Board/Sketch applications
- Data Compression Utilities
- PRC-137F DMD

#### 3.5.3.2 PERFORMANCE SPECIFICATIONS

The FCD shall comply with the performance parameters in Table 3-6 below:

**Table 3-6. FCD Specifications**

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| **MICROPROCESSOR** | |
| Clock Speed | 1.0 GHz |
| FSB | 400 MHz |
| External Cache (L2) | 512KB |
| **SCREEN** | |
| Type | Color LCD, Touchscreen |
| Viewable Size | 8 inches |
| Resolution | 800 x 600 |
| **EXPANSION** | |
| Expansion Slots | One (1) - Type II PCMCIA |

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| | |
| **MEMORY** | |
| RAM | 512 MB |
| **STORAGE** | |
| Diskette Drive | One (1) - 1.44 MB, 3.5 inch floppy |
| Removable Hard Drives | 40 GB(Threshold)/80GB (Objective) |
| Memory Card Slot | One (1) |
| DVD-ROM/CD-RW combination drive | One (1) |
| **PORTS (EXTERNAL)** | |
| Serial | One (1) – EIA/TIA-232 |
| USB 2.0 | Two (2) |
| MODEM | One (1) - Integrated 56 Kbps |
| Network Interface Card | One (1) - Integrated 10/100BASE-T |
| Video | One (1) - 15 pin VGA connector |
| Keyboard | One (1) |
| Mouse | One (1) |
| Port Replicator | One (1) |
| Headphone | One (1) mini-jack, stereo |
| Speaker | One (1) mini-jack, stereo |
| Microphone | One (1) mini-jack |
| **VIDEO** | |
| RAM | 32 MB |
| **PHYSICAL** | |
| Size | Maximum 2" H x 9" D x 11" W |
| Weight | ≤ 5 pounds |

#### 3.5.3.3 INTEROPERABILITY.

The FCD shall be interoperable with SOF tactical radios and other C4ISR devices. As a minimum, it shall interface and be interoperable with the following SOF equipment:

TACLAN Networks
PRC-117F
PRC-137F

- PRC-150
- PSC-5D
- Digital Data Controllers (e.g., VDC-400, VDC-600)
- Special Operations Tactical Video System (SOTVS)
- Long Range Video Surveillance System (LVRS)

## 3.6 POWER SUBSYSTEM

The TACLAN system shall be designed to use available worldwide military or commercial power as its primary power. An uninterruptible power supply (UPS) shall be

provided for each security domain to power key components in the event of primary power loss. The UPS shall provide both visual and audio indications when primary power is lost.

### *3.6.1 Primary power*

The TACLAN shall operate from externally supplied power sources within the following parameters:

a. Voltage: 90 - 250 VAC
b. Frequency: at 43 - 63 Hz
c. Phase: Single Phase

### *3.6.2 Uninterruptible Power Supply*

Each TACLAN security domain shall include an UPS capability that provides back up power to key components for a minimum of eight (8) minutes in the event of primary power loss. The eight (8) minute period will be used to gracefully shutdown the key components. The key components that must be powered by the UPS include switching devices, servers, storage subsystem, COMSEC equipment and the KVM. The UPS shall be capable of over voltage protection, lightening/surge protection, and line conditioning. It shall be interoperable with domestic, international, and field generator power sources/systems within the parameters described in Paragraph 3.7.1 above.

The UPS shall provide features and options that include removable battery packs, user selectable output voltages, an input isolation transformer, and automatic by-pass. It shall comply with the specifications in Table 3-7 below:

**Table 3-7. UPS Specifications**

| FEATURE | MINIMUM REQUIREMENT |
|---|---|
| **ELECTRICAL** | |
| Input Power/Freq. | Consistent with Paragraph 3.6.1 |
| Output Rating | Critical Component Load plus 10% |
| Output Voltage | 100/110/120/127 VAC |
| Output Frequency | 50/60 Hz |
| **BATTERY** | |
| Reserve Time | Eight (8) minutes @ critical component load (full load) |
| Recharge Time | Five (5) hours to 95% @ full load |
| Rating | ≅ 48VDC/7Ahr |
| Type | Approved for Military Transport/Use |
| **NETWORK** | |
| Remote management | TACLAN NMS Compliant |
| **MECHANICAL** | |
| Input power cord | Six (6) feet with 5-15P plug |
| Receptacles | Four (4) and One (1) Aux. |
| Rack Mountable | Standard 19" |

### *3.6.3 Grounding System*

The TACLAN system documentation shall identify the necessary steps to ground the system. Each security domain/segment must be grounded separately.

### *3.6.4 Protection Devices*

All power strips shall provide spike/surge suppression, as a minimum, to protect system equipment.

## 3.7 ANCILLARY DEVICES

### *3.7.1 Printing Services*

Each TACLAN security domain shall include two (2) black & white printers (i.e., one (1) high end and one (1) low end)accessed by subscribers through a printer server capability. The SCI-segment shall include an additional high speed, photo quality printer, accessed by subscribers through a printer server capability. The printers shall comply with the performance parameters described in Table 3-8 below.

**Table 3-8. TACLAN Printer Performance Parameters**

| Capability | B&W (high end) | B&W (low end) | SCI-Color |
|---|---|---|---|
| Type | Laser | Laser | Laser |
| Minimum Resolution | 1200 x1200 dpi | 600 x 600dpi | 1200 x 1200 dpi |
| Paper Sizes | B5, A4, Executive, Letter, Legal | B5, A4, Executive, Letter, Legal | B5, A4, Executive, Letter, Legal |
| Memory, MB (min) | 128 | 32 | 128 |
| Pages Per Minute | 35 | 19 | 16 |
| Interfaces | USB, Fast Ethernet, IEEE 1284 | USB, Fast Ethernet, IEEE 1284 | USB, Fast Ethernet, IEEE 1284 |
| | | | |

### *3.7.2 Scanner*

TACLAN shall provide a scanner for each security domain with the capabilities shown in Table 3-9 below.

**Table 3-9. TACLAN Scanner Performance Parameters**

| CAPABILITY | MINIMUM REQUIREMENT |
|---|---|
| Minimum Resolution | Optical 1200 x 1200 |
| Paper Sizes | 8.5 x 11.7 |
| Bit Depth/Grey Scale | 48bits/256 |
| Interfaces | USB |
| Weight (maximum) | 10 lbs |

### *3.7.3 Cabling*

#### 3.7.3.1 CAT 5

One (1) 1000-foot spool of shielded twisted pair CAT 5 cable shall be provided with each TACLAN security segment.

#### 3.7.3.2 FIBER OPTIC

One (1) 500-foot spool of six (6) conductor, multimode, tactical field fiber optic cable shall be provided with each TACLAN security segment.

### *3.7.4 Fiber Optic Transceiver*

TACLAN shall provide six (6) fiber optic transceivers (FOTS) to extend three (3) independent Gigabit links from the LAN segment. These multi-mode fiber links will allow clusters of users to access the TACLAN domain(s) from remote areas within the local operating environment. Each FOTS shall provide full-duplex operation over 850nm multimode fiber optic cable. The data interface shall comply with ISO/IEC 8802.3 (Gigabit); and the fiber interface shall comply with ANSI X3.237-1995. The FOTS shall operate with the same power sources as 3.6.1. The FOTS shall have the capability to be 19" rack-mountable.

### *3.7.5 Pair Gain Modems*

Two (2) high-speed modems shall be provided for each TACLAN security domain to allow the system to be remotely located from the tactical WAN transmission systems. The modem pair shall support full duplex communications at data rates up to 1.544 Mbps (T1) to distances up to 5000 feet.

### *3.7.6 Training Package*

The "Training Package" will be a rapidly deployable subset of the TACLAN system supporting deployed SOF nodes with no more than ten (10) user workstations/laptops. The "Training Package" equipment shall be integrated into ruggedized transit case(s) and shall meet the Environmental Condition requirements of Paragraph 3.11; and the Packaging and Transportability requirements of Paragraph 3.12. The "Training Package" shall include, at a minimum, the equipment described below.

#### 3.7.6.1 NAS

The "Training Package" shall provide one (1) server that establishes the local area network environment in support of the components included in the "Training Package" system. The server shall consist of a laptop that comply with the performance parameters of Paragraph 3.5.2 above and provides a minimum storage of 1TB.

#### 3.7.6.2 ROUTER

The "Training Package" shall provide a router that complies with the performance parameters of Paragraph 3.1.2 above.

#### 3.7.6.3 LAN SEGMENT

The "Training Package" shall provide a switch that complies with the performance parameters of Paragraph 3.1.1 above, and supports the laptops and peripheral equipment.

#### 3.7.6.4 COMSEC

The "Training Package" shall provide link encryption device, consistent with paragraph 3.1.3, to support Type-I secure WAN communications.

#### 3.7.6.5 WIRE LINE ADAPTER

The "Training Package" shall include wire line adapters to support extended range communications to the WAN point of presence. The wire line adapter shall support data rates up to T1/E1.

#### 3.7.6.6 PAIR GAIN MODEMS

The "Training Package" shall provide two (2) pair gain modems to support extended range communications. The modems shall comply with the performance parameters of Paragraph 3.7.6.5 above.

#### 3.7.6.7 PRINTER

The "Training Package" shall include two (2) printers, one (1) B&W (low end) and one (1) color, consistent with performance parameters listed in Table 3-8.

#### 3.7.6.8 SCANNER

The "Training Package" shall include one (1) scanner consistent with performance parameters listed in Table 3-9.

### *3.7.7 Tool Kit*

A tool kit shall be provided with each TACLAN system that includes, as a minimum:

- T-stripper
- LAN ProNavigator
- Multimeter
- 10 BaseT toolkit
- Fiber optic connectors ST
- Fiber optic connectors SC
- Fiber optic adapter set

## 3.8 PHYSICAL CHARACTERISTICS

### *3.8.1 Size*

The TACLAN system (i.e., all three security domains), including spares and test equipment when configured for transport in its transit cases, shall not exceed the maximum loading profile for a 463L pallet.

### *3.8.2 Weight*

All TACLAN equipment is mounted/packaged in multiple transit cases for flexible, tactical deployment. Each loaded transit case shall not exceed the ability of two (2) personnel to safely handle and maneuver as defined in MIL-STD-1472F. "Two-man-lift", per MIL-STD-1472F defines a maximum weight of 174 pounds to a maximum height of three (3) feet. "Two-man-lift-and-carry", is defined as 164 pounds maximum carried a distance of up to 33 feet (goal).

The FCD shall weigh no more than 5 pounds with the battery pack

### *3.8.3 Set-Up/Teardown*

The TACLAN shall comply with the set-up and teardown requirements outlined below. Set-up/teardown times may be longer in extreme environmental conditions.

#### 3.8.3.1 SET-UP

Set-up time shall begin after the TACLAN system transit cases have been unloaded and ends when the system has been completely assembled. No special tools shall be required. The server configuration will be accomplished prior to deployment. Laptop software baseline installation and configuration will be accomplished prior to or after setup time completion. Two operators shall be able to complete physical system setup of:

- A 10-workstation network within one hour.
- A 100-workstation network within 48 hours.
- A 300- workstation network within 72 hours.

As a goal two operators shall be able to complete physical system setup of:

- A 10-workstation network within 30 minutes.
- A 100-workstation network within 24 hours.
- A 300-workstation network within 48 hours.

#### 3.8.3.2 TEARDOWN

Two operators shall be able to teardown and redeploy:

- A 10-workstation network, including full system disassembly and complete network degradation, within 30 minutes.
- A 100-workstation network within 24 hours.
- A 300-workstation network within 36 hours.

As a goal, two operators shall be able to:

- Re-deploy a 10-workstation network, including full system disassembly and complete network degradation, within 20 minutes.
- A 100-workstation network within 12 hours.
- A 300-workstation network within 24 hours.

## 3.9 QUALITY FACTORS

### *3.9.1 Reliability*

The TACLAN reliability will be consistent with the requirements of the TACLAN Operational Mode Summary/Mission Profile (OMS/MP) found in the TACLAN R&M Rationale Report (RRR).

### *3.9.2 Maintainability*

#### 3.9.2.1 MAINTENANCE CONCEPT

The maintenance concept consists of two levels of maintenance: Organizational and Above Organizational (Contractor Support & Depot). Organizational Level maintenance is the equivalent to Unit-level maintenance and will consist of unit personnel performing Preventive Maintenance, Checks and Services (PMCS), removal and replacement of major end-items or components, cable replacement, and minor hardware replacement (fuses, lamps, switches). Above Organizational Level entails all maintenance beyond the established capabilities of the Organizational Level, including Direct Support, General Support, and Depot Level maintenance.

No special tools shall be required to do routine maintenance. Decontamination procedures shall be addressed in appropriate technical manuals. The system shall include a diagnostic capability that will automatically notify system administration personnel by email, or other automated means, of system failures and malfunctions. The system will automatically generate a log for system usage and errors.

#### 3.9.2.2 MEAN TIME TO REPAIR (MTTR)/MEAN DOWNTIME (MDT)

The TACLAN shall:

1) Demonstrate an MTTR of 15 minutes or less.

2) Demonstrate a Maximum Time-To-Repair of (MaxTTR) of 60 minutes or less.

3) Demonstrate an MDT for laptops of 60 minutes or less.

4) Demonstrate an MDT for other TACLAN components of 30 minutes or less.

## 3.10 LOGISTICS

The TACLAN shall be capable of being logistically supported within the existing USSOCOM logistics infrastructure. The logistics support program shall be an integral part of the contractor's management system. The contractor shall ensure that all products are supportable through their life cycle. In addition, the contractor should be capable of supporting all products as necessary for the entire length of the contract. The logistics support program will be used to develop and optimize an approach that allows for the

best operational value to USSOCOM, and to develop, acquire or apply the necessary resources to achieve this best value. The support approach shall reflect best commercial practices with minimal tailoring to achieve USSOCOM support objectives. At a minimum, supportability efforts should include plans for the following: maintenance support, supply support, technical manuals, training, technical support, safety and human systems integration.

## 3.11 ENVIRONMENTAL CONDITIONS

TACLAN will be deployed worldwide. The system will be exposed to various environmental conditions that include, wind, rain, snow, ice, sand, and dust when deployed. With the exception of the tactical teams (using FCDs vice TACLAN workstations), TACLAN will be typically setup in an area with some type of sheltered facility (tent, warehouse, building, etc.) with varying degrees of environmental control. The following paragraphs apply to the TACLAN workstations, network components, and "Training Package". The FCD shall only meet the Non-operating and Operating Temperature requirements described below.

### *3.11.1 Non-Operating*

The TACLAN, when packaged for transport or storage and in any non-operating configuration, shall meet the performance requirements of this specification after exposure to any combination of the following conditions:

a. **Temperature:** Continuous exposure with air temperatures from -50°F to +160°F without solar radiation and with negligible air movement.

b. **Relative Humidity:** ≤ 100% non-condensing.

c. **Altitude:** Up to 40,000 feet above sea level.

d. **Salt Spray:** As encountered in coastal environments.

e. **Sand and Dust:** As encountered in coastal and industrial locations. During storage and transport, the system shall be protected when exposed to sand and dust in accordance with the best commercial practices.

f. **Rain:** Up to two (2) inches per hour.

g. **Shock and Vibration:** The selected packaging method shall allow the system to withstand the shock and vibration encountered while being transported by commercial and military aircraft, sealift, and vehicular systems in accordance with the Environmental Conditions Distribution described in Paragraph 3.11.3 below. In addition, TACLAN shall be protected from shocks induced during handling, setup, and tear down.

### *3.11.2 Operating*

The TACLAN shall meet the performance requirements of this specification while being subjected to any combination of the following conditions:

a. **Temperature:** Operating Temperatures: +40° F to +90° F
Operating Temperatures (*FCD*): -20°F to +130° F

b. **Relative Humidity:** ≤ 100% non-condensing

c. **Altitude:** Up to 10,000 feet above sea level.

d. **Salt Spray:** As encountered in coastal and industrial locations.

e. **Sand and Dust:** As encountered in coastal and industrial locations. During operation with covers removed, the system shall withstand sand and dust in accordance with the best commercial practices for natural conditions.

f. **Rain:** Up to two (2) inches per hour.

### *3.11.3 Environmental Conditions Distribution*

Table 3-10 depicts the distribution of environmental conditions for all scenarios. A deployed TACLAN can be transported by tactical vehicle over roads to include unimproved roads for distances up to 25 miles.

**Table 3-10. Environmental Conditions**

| Climate (IAW AR 70-38) | Daily Cycle | Ambient Air (°F) | Ambient Relative Humidity (%) | Profile |
|---|---|---|---|---|
| Hot | Hot-Dry | 90-120 | 3-8 | 30% |
| | Hot-Humid | 88-105 | 59-88 | |
| Basic | Constant High Humidity | Nearly constant 75 | 95-100 | 70% |
| | Variable High Humidity | 78-95 | 74-100 | |
| | Basic Hot | 86-110 | 14-44 | |
| | Basic Cold | -5 to -25 | Tending toward saturation | |

## 3.12 PACKAGING AND TRANSPORTABILITY

The TACLAN system shall be integrated into ruggedized transit cases that utilize a 19-inch equipment rack mount system. All fully configured/loaded transit cases shall be able to withstand the shock, vibration, and climatic requirements specified in Paragraph 3.11. The transit cases, with their covers in place, shall be designed to protect the TACLAN

equipment from direct exposure to the environmental conditions (i.e., rain, snow, ice, dust, etc.) that are likely to be encountered during worldwide military and commercial transport.

The system will be deployed worldwide, as restrained cargo, in military and commercial land/sea/air mobility platforms, and all SOF fixed and rotary winged aircraft. The transit cases shall have the ability to be securely tied down for vehicular and/or palletized mode for air, sea, and rail transport. The system shall be compliant with 463L pallet requirements when packaged for transport. The transit cases shall have the ability to stack on top of and mechanically interlock with each other. A capability shall be provided to facilitate transit case movement (e.g., removable wheels/casters) from the transport mechanism/truck to the system setup location.

## 3.13 ELECTROMAGNETIC ENVIRONMENT

Commercial best practices shall be used to ensure electromagnetic compatibility with co-located equipment and to mitigate adverse effects of electromagnetic interference.

## 3.14 HUMAN PERFORMANCE/HUMAN ENGINEERING

The system design, to include controls, displays, configuration, connections, required procedures and operating environment shall minimize human performance errors, interface problems and workload requirements. All design and operation aspects of the components/network operating environment must conform to applicable human engineering design criteria to support ease of operation.

### *3.14.1 Safety*

The system shall be designed IAW all applicable system safety standards so as to minimize safety risks associated with operating, maintaining, managing or supporting the system. Any residual hazards or risks associated with installing, operating or maintaining the system or its components must be identified, attended to in training and support materials, and made manageable. Particular emphasis shall be placed on minimizing risks of electrical shock and visual strain. A Safety Certification shall be completed on all new equipment.

#### 3.14.1.1 Safety Markings and Labels

a. Safety markings and labels shall be provided identifying any potential hazards to personnel.
b. Markings shall be readily visible.
c. All Safety hazards not eliminated through design shall be addressed in the appropriate Technical Manuals (TMs). Information regarding hazard-avoiding procedures and safety warning labels on equipment shall be included in all manuals. Maintenance TMs shall address replacement procedures for damaged or missing safety labels.

d. All transit cases shall be labeled, identifying the function and contents of the case. Permanent marking shall be prominently placed on the module body to indicate fully-loaded weight, lift requirements, center of gravity, and top of case.
e. All cabling within and between transit cases will be labeled appropriately.
f. All cabling will be color coded to insure classification isolation (black for Unclassified, red for Collateral, purple for SCI).
g. Colors of safety critical controls and indicators shall be yellow for caution and red for danger. Any color is permitted for functional controls or indicators provided it is clear that safety is not involved.

3.14.1.2 MECHANICAL SAFETY

a. The equipment shall provide maximum access and safety to personnel during installation, operation, and maintenance.
b. Under the operating conditions specified herein, the equipment shall not become physically unstable to the degree that it could become a hazard to operators or maintainers.
c. Provisions shall be made to prevent accidental pulling out of rack mounted equipment. Latches used to safely secure drawers, etc. in an open or closed position shall be reliable and accessible.
d. Equipment exceeding single person lift limits shall be labeled with the total weight and required number of handlers. The values are doubled for two (2) person lift limits (uniformly distributed equipment) with 75% added thereafter per person.
e. Equipment enclosures, as well as switches, wiring, etc. that enclose hazardous voltages, shall have adequate mechanical strength to withstand rough handling during expected use.
f. Equipment power switches shall be protected so as to prevent accidental actuation and deactivation, if such an action could pose a hazard to operators or maintainers or interrupt terminal operation.
g. Equipment shall comply with the requirements of Underwriters Laboratory (UL) 1950, Paragraphs 4.1.2 through 4.1.5.

3.14.1.3 ELECTRICAL SAFETY

a. All equipment shall meet the applicable requirements of the National Electrical Code, National Fire Protection Association (NFPA) 70-93.
b. Operators shall not have access to components with voltages exceeding 30 V. The operator will not be exposed to stored energy shock at the disconnecting means IAW UL 1950, Paragraph 2.1.10.
c. Protection shall be provided to personnel during maintenance and repair to prevent unintentional contact with voltages exceeding 70 V. Current sources exceeding 25A shall be protected from accidental short-circuiting. Where interlocks are used, they shall comply with UL 1950, Paragraphs 2.8.3 through 2.8.5.

d. Interface with power sources and disconnecting means shall be IAW NFPA 70-93 and UL 1950, Section 2.6. Equipment designed to have multiple-input power capabilities, or powered by a generator with multiple-voltage output capabilities, shall be protected from damage when connected to incorrect input power/voltage levels or polarity.

e. Equipment grounding shall comply with the requirements of NFPA 70-93, Article 250, and the requirements of UL 1950, Paragraph 1.6.3, and Section 2.5 for Class I equipment. Hinges and slides shall not be relied upon as the sole means of grounding.

f. Wiring shall comply with the requirements of UL 1950, Paragraphs 3.1.1-3.1.3. Alternating current supply conductors shall be color-coded black and white for line and neutral conductors, respectively. Direct current supply conductors shall be color-coded red and black for plus and minus polarity, respectively.

g. Connector selection and design shall comply with or exceed the requirements of UL 1950, Paragraph 3.1.12, 3.2.1, and 4.3.17.

#### 3.14.1.4 Battery Box Safety

a. Battery enclosures shall prevent electrolyte from being expelled in the event of battery leakage or venting.
b. Battery box venting will be provided to minimize gas build-up. Explosive or harmful battery gases shall not leak into the equipment or to any other source of ignition.
c. Enclosures for lithium batteries shall be designed to preclude major system damage or serious personnel injury in the event of a violent gas venting or rupture of battery cells causing high pressure within the box. Free-volume versus expected-pressure ratios for specific batteries is available in CECOM Safety Office Technical Bulletin No. 7, Battery Box Design Guidelines for Equipment Using Lithium Sulfur Dioxide Batteries.
d. Transport/disposal requirements shall be identified.

### *3.14.2 Security*

There are up to four (4) separate Cryptologic Controlled Items (CCI) categories of equipment in the TACLAN system, not including other GOTS subsystems (i.e., STAR, MATT, etc.): KIV-7, KIV-19, and inline network encryptors. All users are responsible for operational key material.

### *3.14.3 System Design*

The TACLAN shall use MIL-STD-1472E as a guideline in meeting the Human Engineering requirements for system design. The design must allow adequate connector and ancillary equipment spacing for operator and maintenance tasks to be performed without disassembly of equipment. The equipment layout, including ancillary equipment such as printers, manuals, and writing surfaces, shall provide ease of use for right- and left-handed operation.

### *3.14.4 Manpower*

TACLAN operators will be required to setup/teardown, operate, perform systems administration functions, and maintain the TACLAN. The manpower necessary to operate, maintain, support, and train TACLAN will be within the SOF Component force structure. No new occupational specialties will be required to operate or maintain TACLAN equipment. While in a deployed status, the TACLAN must be available for 24 hours per day operation, and will require three shifts of personnel.

### *3.14.5 Training*

The TACLAN shall be designed such that personnel possessing the pre-requisite skills and cognitive abilities described for the designated MOS for operators and maintainers may be easily trained to operate and maintain the system. The TACLAN design shall:

a. Simplify, through commonality, the performance of operation and maintenance tasks.
b. Limit the number of steps to effect an operation or repair.
c. Limit the sophistication of skills required to operate and maintain the system/ equipment to those already possessed by designated personnel.

## 3.15 DESIGN AND CONSTRUCTION

### *3.15.1 Parts and Materials*

a. Insofar as possible, nonflammable material shall be used.
b. Materials capable of producing dangerous toxic effects, or causing an explosion, shall not be used.
c. Parts and materials that are not nutrients for fungus and are resistant to moisture shall be used wherever possible. Where uses of fungi-nutrient materials are essential to the design, the materials shall be treated with fungicide agent.
d. The equipment, including hardware such as handles, hinges, screws, etc., shall be given a protective finish with necessary touchup after mounting. No finish or finish processing shall be utilized that incorporates the use of Class I Ozone Depleting Substances (ODS), for example 1,1,1 trichloroethane.

### *3.15.2 Configuration Identification*

All applicable TACLAN parts shall have permanent and permanently attached identification and safety markings. Nameplates, safety markings and warnings, cable labeling and other markings shall be accomplished in such a way to ensure they remain securely attached and legible when the equipment is subjected to the environmental conditions of this specification. The markings shall withstand the effects of wear and tear during transport, installation, operation, and maintenance of the system.

### *3.15.3 Interchangeability*

All TACLAN equipment assemblies and subassemblies shall be interchangeable IAW the following:

a. Like assemblies and replaceable parts shall be physically and functionally interchangeable without modification or modification to other equipment.
b. Individual parts shall not be hand-picked for fit or performance.
c. Reliance shall not be placed on any unspecified dimension, rating, characteristic, etc.
d. All dimensions and tolerances shall be consistent with the best shop practices.
e. Where dimensions and tolerances affect interchangeability, operation, or performance of the TACLAN, they shall be held or limited accordingly and shall not be degraded throughout the service life specified.

### *3.15.4 Electrostatic Discharge Control*

Components, items, and assemblies that are sensitive to Electrostatic Discharge (ESD) shall be designed, packaged, installed, and processed to prevent inadvertent ESD damage during storage, assembly, test, maintenance, and handling.

### *3.15.5 Corrosion*

Parts and materials shall be selected to limit, or eliminate to the fullest extent possible, corrosion under the environmental conditions required by this specification. The TACLAN shall avoid construction that promotes corrosion through the admission of water, either directly or by condensation. The design shall avoid the possibility of deterioration due to incompatibility of dissimilar metals and materials. Corrosion prevention to include the selection of materials and processes shall be IAW established industry practices.

### *3.15.6 Workmanship*

All parts shall be manufactured and assembled in a thoroughly workmanlike manner. Particular attention shall be paid to neatness and thoroughness of riveting, machine screw assemblies, welding, brazing, soldering, plating, and marking of parts and assemblies. All components, including finished equipment, shall be free from any defects which may affect serviceability or appearance, or which may lead to malfunction or out of limit performance. Cabling and connectors shall be arranged to satisfy material bend radius limits, and to minimize crimps, breaks, safety hazards, and unservicability.

## 3.16 SOFTWARE BASELINE

The TACLAN system shall be designed to function with a standard suite of software applications. The software suite may be different for each of the classification levels. The standard software suite must be compliant with the latest released version of the TACLAN VDD. The USSOCOM SOF Integration Facility (SIF) will test and integrate all TACLAN mission area applications, administrative, and management software described in the VDD. The Government will provide specific details upon request.

# 4 VERIFICATION REQUIREMENTS

## 4.1 GENERAL

The test program shall consist of an In-Plant Burn-in Test, Product Qualification Test (PQT) and Government acceptance as described in the paragraphs below. The Contractor shall develop and conduct a Test Program to ensure the design verification and acceptance test program requirements are fully satisfied.

## 4.2 IN-PLANT BURN-IN TEST

The Contractor shall perform an "In-Plant Burn-In Test", at ambient temperature, for all suites. The system shall be power-cycled, one half hour off for every 3 hours on. If a failure occurs, the unit under test will be repaired and the burn-in will continue from that point on with the exception that the burn-in will continue until the last 24 hours are failure-free. Daily test consisting of simulated traffic shall be conducted to verify system performance. The Contractor shall provide a burn-in test report. The Government reserves the right to observe this test.

## 4.3 PRODUCT QUALIFICATION TEST (PQT) AND GOVERNMENT ACCEPTANCE

The Government will witness qualification tests at the contractor's facility. The in-plant qualification tests shall verify system compliance with Specification and certification requirements, safety of operation and radiation hazard protection, and shall be conducted IAW contractor proposed and Government approved product qualification and acceptance test procedures. All suites defined by the Government will undergo full PQT before acceptance. The Contractor shall provide all the necessary equipment for testing purposes with the exception of any identified GFE. The Contractor shall provide a PQT test report to the Government at least 7 days prior to the shipment of any suite.

## 4.4 VERIFICATION CROSS REFERENCE MATRIX (VCRM)

The verification method(s) for PQT and Government acceptance shall be as outlined in Table 4-1, Verification Cross Reference Matrix (VCRM).

The Contractor may submit past test or inspection data, or vendor certification data as a means of showing compliance to selected requirements of this specification as long as the approach is documented in the Test Plan and approved by the Government. This test/inspection data shall be included as part of the Test Plan. Acceptance of any such past data or analysis to satisfy specification requirements in lieu of testing shall be at the Government's discretion. Rejection by the Government of the suppliers' data or Contractor data analysis shall require the Contractor to perform a test to show compliance to the technical specification requirement that was not satisfactorily addressed by data/data analysis. When an analysis is used as a method for the verification of a requirement, the Test Plan shall provide:

a. Rationale for why analysis has been selected.

b. An explanation of the analysis method.

c. Results of the analysis.

## 4.5 VERIFICATION METHODS

The following subparagraphs define the verification methods used in Table 4-1, Verification Cross Reference Matrix (VCRM).

### *4.5.1 Inspection (I)*

Inspection is a method of verification involving a visual examination of the item, reviewing descriptive documentation, and comparing the pertinent characteristics against a predetermined qualitative or quantitative standard to determine conformance to requirements without operation of the item or the use of special laboratory equipment or procedures. Inspection may require moving or partially disassembling the item to accomplish the verification.

### *4.5.2 Analysis (A)*

Analysis is a method of verification involving the evaluation of theoretical data, empirical data, or both. Such data may be in the form of equation, charts, graphs, circuit diagrams, tables, calculations, specifications, and representative (legacy) data or evaluation of previously qualified equipment.

### *4.5.3 Test (T)*

Test involves the systematic exercising of the item under specific conditions, including instrumentation as appropriate, and collection, analysis, and evaluation of quantitative data.

### *4.5.4 Demonstration (D)*

Demonstration is a method of verification involving the operation, movement, or adjustment of an item in performing its design functions under a specific set of conditions and comparing the item performance against a qualitative standard. The item may be instrumented to compare its functional operation to the requirement.

## Table 4-1. Verification Cross-Reference Matrix (VCRM)

| Paragraph | Title | N | I | T | A | D | Notes |
|---|---|---|---|---|---|---|---|
| 3.0 | REQUIREMENTS | | | | | | |
| 3.1 | COMMUNICATION SUBSYSTEMS | | | | | | |
| 3.1.1 | LAN Segment | | X | X | | X | |
| 3.1.2 | WAN Segment | | X | X | | X | |
| 3.1.4 | COMSEC | | X | | | X | |
| 3.1.5 | Network Interoperability | | | X | | X | |
| 3.2 | SERVER SUBSYSTEMS | | | | | | |
| 3.2.1 | Domain Controllers | | X | | | X | |
| 3.2.2 | Back-End Servers | | X | | | X | |
| 3.2.3 | KVM Server Switch | | X | | | X | |
| 3.3 | STORAGE SUBSYSTEMS | | X | | | X | |
| 3.3.1 | Tape Backup | | X | | | X | |
| 3.3.2 | Mass Storage | | X | | | X | |
| 3.4 | INFORMATION ASSURANCE SUBSYSTEM | | | | | | |
| 3.4.1 | Firewall | | X | | | X | |
| 3.4.2 | Network Protection and Security | | | X | | X | |
| 3.5 | COMPUTING EQUIPMENT SUBSYSTEM | | | | | | |
| 3.5.1 | Imagery Workstation/Server | | X | | | X | |
| 3.5.2 | Laptops | | X | | | X | |
| 3.5.3 | Field Computing Device | | X | | | X | |
| 3.6 | ANCILLARY DEVICES | | | | | | |
| 3.6.1 | Printing | | X | | | X | |
| 3.6.2 | Copier | | X | | | X | |
| 3.6.3 | Scanner | | X | | | X | |
| 3.6.4 | Cabling | | X | | | | |
| 3.6.5 | "Training Package" | | X | | | X | |
| 3.7 | PHYSICAL CHARACTERISTICS | | | | | | |
| 3.7.1 | Size | | | | | X | |
| 3.7.2 | Weight | | | | | X | |
| 3.7.3 | Power | | | | X | X | |
| 3.7.4 | Set-up/Teardown | | | | | X | |
| 3.8 | QUALITY FACTORS | | | | | | |
| 3.8.1 | Reliability | | | X | | | |
| 3.8.2 | Availability | | | X | | | |
| 3.8.3 | Maintainability | | | | | X | |
| 3.9 | LOGISTICS | | | | | X | |
| 3.10 | ENVIRONMENTAL CONDITIONS | | | | | | |

| Paragraph | Title | N | I | T | A | D | Notes |
|---|---|---|---|---|---|---|---|
| 3.10.1 | Non-Operating | | | X | X | | |
| 3.10.2 | Operating | | | X | X | | |
| 3.10.3 | Environmental Distribution | | | X | X | | |
| 3.11 | PACKAGING AND TRANSPORTABILITY | | X | X | X | | |
| 3.12 | ELECTROMAGNETIC ENVIRONMENT | | | | X | | |
| 3.13 | HUMAN PERFORMANCE/ENGINEERING | | | | | | |
| 3.13.1 | Safety | | X | | | | |
| 3.13.2 | Security | | | | X | | |
| 3.13.3 | MOPP IV Degradation | | | | | X | |
| 3.13.4 | System Design | | X | | | X | |
| 3.13.5 | Manpower | X | | | | | |
| 3.13.6 | Training | | | | X | | |
| 3.14 | Design and Construction | | X | | | | |
| 3.14.1 | Parts and Materials | | X | | | | |
| 3.14.2 | Configuration Identification | | X | | | | |
| 3.14.3 | Interchangeability | | X | | | X | |
| 3.14.4 | Electrostatic Discharge Control | | X | | | | |
| 3.14.5 | Corrosion | | X | | | | |
| 3.14.6 | Workmanship | | X | | | | |

Legend:

(N) Not Applicable (N/A)
(I) Inspection
(T) Test
(A) Analysis
(D) Demonstration

## 4.6 PRODUCTION QUALIFICATION TEST (PQT)

PQT shall verify all of the technical specification requirements as delineated in Table 4-1, Verification Cross-Reference Matrix (VCRM). Verification shall be via the methods outlined within Paragraphs 4.10.1 through 4.10.5. PQT shall be conducted at the contractor's facility, at various Government locations or at a Government approved test facility.

## 4.7 PRODUCTION VERIFICATION TEST (PVT)

PVT shall consist of the tests specified in the "Test" column of the VCRM and formal Government verification of any corrective actions to non-verified anomalies that occurred during any previous test phase. Paragraph 4.10 summarizes the required verification tests. This shall be conducted on the first TACLAN system manufactured under the contract.

## 4.8 PRODUCTION ACCEPTANCE TEST (PAT)

After the successful completion of the PVT test phase, PAT shall be performed on all subsequently produced terminals. PAT shall be performed by the contractor at the contractor's facility IAW the requirements of the VCRM. During the performance of PAT, emphasis shall be placed on end-to-end system performance testing on final build, production terminals after the new configuration baseline is established as a result of PQT.

## 4.9 ADDITIONAL PRODUCTION ACCEPTANCE TEST (APAT)

The contractor shall, on an as-requested basis, perform an APAT IAW the technical requirements outlined within the VCRM. The system to be subject to APAT shall be randomly chosen by the Government. The APAT series of tests are designed to provide continued confidence to the Government that the initial level of quality which was established and confirmed during PQT and PVT has not deteriorated. VCRM test requirements which address both PAT and APAT tests shall require an enhanced series of tests which will verify technical compliance to parameters not normally verified during PAT.

## 4.10 VERIFICATION TESTS

### *4.10.1 Reliability and Maintainability*

#### 4.10.1.1 RELIABILITY DEMONSTRATION

A statistically valid test shall be conducted by the contractor to demonstrate that the lower test MTBCF requirements defined in Paragraph 4.2 (Reliability) are met. The Government's risk shall be no greater than twenty (20) percent (reference MIL-STD-781, Test Plan XVII). During this test, the TACLANs under test shall be in an operational configuration with all equipment operating and performing the required functions, as defined in Paragraph 3.0 of this specification. If more than one (1) TACLAN is used during reliability testing, no one (1) individual TACLAN shall accumulate (in operating hours) more than one-half (1/2) the total test time. The environment for this test shall be as follows:

a. **Input voltage:** The input voltage from the external power source shall vary during the entire reliability test from 120 ± 10% Vac. The duty cycle shall be as follows:
   - System operates at 120 Vac for 24 hours
   - System operates at 132 Vac for 24 hours
   - System operates at 120 Vac for 24 hours
   - System operates at 108 Vac for 24 hours
   - System operates at 120 Vac for 24 hours
   - System steps (2) through (5) for entire test

b. **Power Cycle:** The TACLAN shall be powered off one-half (½) hour for every 24 hours of operation for 18 consecutive days during the reliability test.
c. **Temperature Range:** During the reliability test, the TACLAN shall be temperature cycled IAW MIL-STD-810E, Method 501.3, Procedure 2 (Cycling Temperature Exposure), and Method 502.3, Procedure 2.
d. **Vibration:** During the reliability test, the TACLAN shall be subject to a vibration profile similar to that expected to be encountered during ground transportation. The unit(s) under test, in their transport configuration, shall be subject to a Munson Road test or equivalent (reference MIL-STD 810E, Method 514.4, Procedure II, Category 2). Each vibration test interval shall be 5 hours in length and shall be done 5 times over the reliability test duration. The course shall be profiled to induce Primary Road shock and vibration effects forty (60) percent of the time, Secondary Road shock and vibration effects forty (20) percent of the time, and Moderate Cross Country shock and vibration effects twenty (20) percent of the time. Time accrued while undergoing the vibration test intervals shall not be included in the reliability test time.

#### 4.10.1.2 Maintainability Demonstration

A maintainability demonstration shall be conducted by the contractor to verify the Unit/ Organizational Level MTTR and MAXTTR requirements of Paragraph 3.9.2.2 are met. The contractor shall use a statistically valid test with the Government's risk no greater than twenty (20) percent (reference MIL-STD-471A, Test Method 9). The minimum number of maintenance tasks to be demonstrated shall be thirty (30). The total sample size shall be sixty (60) tasks. The corrective maintenance times shall include localization, isolation, disassembly, interchange, re-assembly, alignment, and check out.

### *4.10.2 Transportation Shock*

The TACLAN in its transport configuration shall be subjected to the following system level transportability shock tests:

#### 4.10.2.1 Transit Drop

The TACLAN shall be subjected to the test of MIL-STD-810E, Method 516.4, Procedure IV, Transit Drop.

#### 4.10.2.2 Rail Impact

The TACLAN, in its transport configuration, shall be subjected to the test of MIL-STD-810E, Method 516.4, Procedure VIII, Rail Impact. Tiedown procedures of the TACLAN to the rail car will be provided by the Government.

### *4.10.3 Transportation Vibration*

The TACLAN, in its transport configuration, shall be subjected to the test of MIL-STD-810E, Method 514.4, Procedure II, Category 2, Large Assembly Transport (Munson Road) test.

### *4.10.4 Transportability*

The TACLAN, in its transport configuration, shall be subjected to the following system level transportability tests:

a. **Roadability**: The TACLAN shall be weighed to determine gross weights.

b. **Tie Down Provisions:** The tiedown provisions on the TACLAN shall be subjected to a pull test to show compliance with MIL-STD-209. The provisions shall be tested in all directions for tiedown and lift.

### *4.10.5 Safety*

#### 4.10.5.1 Leakage Current Test

Leakage current for the entire TACLAN shall be measured utilizing the method outlined in ANSI C101.1. Results of this test shall be reported in the Safety Assessment Report (SAR).

#### 4.10.5.2 Retained Charge Test

A test shall be performed to verify the requirements in Paragraph 3.5.5.1.b. Measurements shall be made with the equipment main power switch in both the ON and OFF positions. Results of this test shall be reported in the SAR.

# 5 APPENDIX A: SOFTWARE BASELINE

**Table 5-1. TACLAN Applications UNIX Server**

| Software | Version | SCI | Functionality |
|---|---|---|---|
| ***Applications:*** | | | |
| Solaris | 8 | X | Operating System |
| Solaris Patches | January 05 | X | OS Patches |
| VITec ELT | 6.0 | X | Imagery |
| Erdas Imagine | 8.7 | X | Imagery |
| DataMaster | 3.3.1 | X | Imagery |
| McAfee Net Shield | | X | Anti-virus utility |
| MATRIX | 6.2 | X | Imagery |
| Netscape Navigator | 4.7.9 | X | Browser |
| Gale Lite | 4.3.5 | X | SIGINT |
| Adobe Acrobat | 4.0 | X | Reader |