



DEFENSE INFORMATION SYSTEMS AGENCY

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FORT MEADE, MARYLAND 20755-0549

IN REPLY
REFER TO: Joint Interoperability Test Command (JTE)

MEMORANDUM FOR DISTRIBUTION

7 Mar 11

SUBJECT: Special Interoperability Test Certification of the Cornet Technology Inc. MTX-256 and MTX-L with Software Version 2.5.1

References: (a) DOD Directive 4630.05, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008
(c) through (e), see Enclosure 1

1. References (a) and (b) establish the Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification.

2. The Cornet Technology Inc. MTX-256 and MTX-L with software version 2.5.1 are hereinafter referred to as the SUT. The SUT meets all of its critical interoperability requirements and is certified for joint use within the Defense Information System Network (DISN) as a Fixed Network Element. The SUT meets the critical interoperability requirements set forth in Reference (c), using test procedures derived from Reference (d). No other configurations, features, or functions, except those cited within this report, are certified by the JITC. This certification expires upon changes that affect interoperability, but no later than three years from the date of Defense Information Assurance (IA)/Security Accreditation Working Group (DSAWG) accreditation.

3. This finding is based on interoperability testing and DSAWG accreditation. Interoperability testing was conducted by JITC at the Global Information Grid Network Test Facility, Fort Huachuca, Arizona, from 20 through 22 October 2010. The DSAWG granted accreditation on 3 March 2011 based on the security testing completed by DISA-led IA test teams and published in a separate report, Reference (e). The Certification Testing Summary (Enclosure 2) documents the test results and describes the test network.

4. The overall interoperability status of the SUT is indicated in Table 1. The interfaces and associated Capability Requirements (CRs) and Feature Requirements (FRs) critical used to evaluate the interoperability status are listed in Table 2. The interoperability test status is based on the SUT's ability to meet:

a. Defense Switched Network (DSN) services for Network and Applications specified in Reference (c).

b. The overall system interoperability performance derived from test procedures listed in Reference (d).

Table 1. SUT Interoperability Test Summary

| DSN Access Interfaces | | | |
|--|-----------------|---------------|--|
| Interface & Signaling | Critical | Status | Remarks |
| T1 PRI (ANSI T1.607/ANSI T1.619a) | No ¹ | Certified | Met all CRs and FRs. |
| E1 PRI (ITU-T Q.931/ ITU-T Q.955.3) | No ¹ | Certified | Met all CRs and FRs. |
| T1 CAS (DTMF/MFR1/DP) | No ¹ | Certified | Met all CRs and FRs. |
| E1 CAS (DTMF/MFR1/DP) | No ¹ | Certified | Met all CRs and FRs. |
| ITU-T V.35, ITU-T V.36, ITU-T V.37 (See note 2.) | No ¹ | Certified | Met all CRs and FRs. |
| T1 SS7 (ANSI T1.619a) | No ¹ | Certified | Met all CRs and FRs. |
| E1 SS7 (ANSI T1.619a) | No ¹ | Certified | Met all CRs and FRs. |
| EIA-232 | No ¹ | Certified | Met all CRs and FRs. |
| EIA-530 | No ¹ | Certified | Met all CRs and FRs. |
| ITU-T X.21 (See note 3.) | No ¹ | Certified | Met all CRs and FRs. |
| FXS (2-Wire Analog) | No ¹ | Certified | Met all CRs and FRs. |
| FXO (2-Wire Analog) | No ¹ | Certified | Met all CRs and FRs. |
| E&M (Type I, II, III, IV) | No ¹ | Certified | Met all CRs and FRs. |
| DSN Transport Interfaces | | | |
| Transport Level | Critical | Status | Remarks |
| Proprietary Multi-Mode or Single Mode Fiber (1.3 Gigabit) | No ⁴ | Certified | Met all CRs and FRs. |
| Twisted Pair Copper (1.3 Gigabit) | No ⁴ | Certified | Met all CRs and FRs. |
| Features And Capabilities | | | |
| Features And Capabilities | Critical | Status | Remarks |
| Synchronization | Yes | Certified | Met all CRs and FRs. |
| Network Management | Yes | Certified | Met all CRs and FRs. |
| Voice Compression | No | Not Certified | Voice compression is not supported by the SUT. |
| Security | Yes | Certified | See note 5. |
| NOTES: | | | |
| 1 The UCR does not stipulate a minimum access interface requirement for a Fixed Network Element. | | | |
| 2 The electrical physical interface tested was ITU-T V.35 in accordance with ITU-T V.36/V.37. | | | |
| 3 Although the ITU-T X.21 interface was not tested, JITC determined it is similar to the EIA-232 interface and it is also certified for joint use. | | | |
| 4 The UCR does not stipulate a minimum transport interface requirement for a Fixed Network Element. | | | |
| 5 Information assurance testing is accomplished via DISA-led Information Assurance test teams and published in a separate report, Reference (e). | | | |

Table 1. SUT Interoperability Test Summary (continued)

| LEGEND: | |
|----------------|--|
| ANSI | American National Standards Institute |
| CAS | Channel Associated Signaling |
| CRs | Capability Requirements |
| DCE | Data Circuit-Terminating Equipment |
| DISA | Defense Information Systems Agency |
| DP | Dial Pulse |
| DSN | Defense Switched Network |
| DSS1 | Digital Subscriber Signaling 1 |
| DTE | Data Terminal Equipment |
| DTMF | Dual Tone Multi-Frequency |
| E&M | Ear and Mouth |
| E1 | European Basic Multiplex Rate (2.048 Mbps) |
| EIA | Electronic Industries Alliance |
| EIA-232 | Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices |
| EIA-530 | Standard for 25-position interface for data terminal equipment and data circuit-terminating equipment employing serial binary data interchange |
| FRs | Feature Requirements |
| ISDN | Integrated Services Digital Network |
| ITU-T | International Telecommunication Union - Telecommunication Standardization Sector |
| FXO | Foreign Exchange Office |
| FXS | Foreign Exchange Station |
| | kbps kilobits per second |
| | kHz kiloHertz |
| | Mbps Megabits per second |
| | MFR1 Multi-Frequency Recommendation 1 |
| | MLPP Multi-Level Precedence and Preemption |
| | PRI Primary Rate Interface |
| | Q.931 Signaling Standard for ISDN |
| | Q.955.3 ISDN Signaling standard for E1 MLPP |
| | SS7 Signaling System 7 |
| | SUT System Under Test |
| | T1 Digital Transmission Link Level 1 (1.544 Mbps) |
| | T1.607 ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1 |
| | T1.619a SS7 and ISDN MLPP Signaling Standard for T1 |
| | UCR Unified Capabilities Requirements |
| | V.35 Standard for data transmission at 48 kbps using 60-108 kHz group band circuits |
| | V.36 Modems for synchronous data transmission using 60-108 kHz group band circuits |
| | V.37 Synchronous data transmission at a data signaling rate higher than 72 kbps using 60-108 kHz group band circuits |
| | X.21 includes specifications for DTE/DCE physical interface elements, alignment of call control characters and error checking, elements of the call control phase for circuit switching services, and test loops |

Table 2. SUT Capability and Feature Interoperability Requirements

| DSN Access Interfaces | | | |
|---|-----------------|---|--|
| Interface | Critical | Requirements Required or Conditional | References |
| T1 CAS (DTMF/MFR1/DP) | No ¹ | <ul style="list-style-type: none"> • DS1 Interface Characteristics (C) as specified in UCR 2008, Section 5.2.6.1 • DS1 Supervisory Channel Associated Signaling (C) as specified in UCR 2008, Section 5.2.6.1 • DS1 Clear Channel Capability (C) as specified in UCR 2008, Section 5.2.6.1 (SS7 and PRI only) • DS1 Alarm and Restoral Requirements (C) as specified in UCR 2008, Section 5.2.6.1 | <ul style="list-style-type: none"> • UCR Section 5.9.2.3.4 • UCR Section 5.9.2.3.4 • UCR Section 5.9.2.3.4 • UCR Section 5.9.2.3.4 |
| T1 PRI (ANSI T1.607/ANSI T1.619a) | No ¹ | <ul style="list-style-type: none"> • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) as specified in UCR 2008, Section 5.2.12.6 | <ul style="list-style-type: none"> • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 |
| T1 SS7 (ANSI T1.619a) | No ¹ | <ul style="list-style-type: none"> • Modem (R) • Facsimile (R) • Call Control Signals (R) • Alarms (R) as specified in UCR 2008, Section 5.2.1.5.7 • Call Congestion Control (R) • Call Congestion for TDM Transport (C) • Voice Compression (C) | <ul style="list-style-type: none"> • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1.1 • UCR Section 5.9.2.1.2 • UCR Section 5.9.2.1.2.1 • UCR Section 5.9.2.2 |
| E1 CAS (DTMF/MFR1/DP) | No ² | <ul style="list-style-type: none"> • E1 Interface Characteristics (C) as specified in UCR 2008, Section 5.2.6.2 • E1 Supervisory Channel Associated Signaling (C) as specified in UCR 2008, Section 5.2.6.2 • E1 Clear Channel Capability (C) as specified in UCR 2008, Section 5.2.6.2 • E1 Alarm and Restoral Requirements (C) as specified in UCR 2008, Section 5.2.6.2 | <ul style="list-style-type: none"> • UCR Section 5.9.2.3.5 • UCR Section 5.9.2.3.5 • UCR Section 5.9.2.3.5 • UCR Section 5.9.2.3.5 |
| E1 PRI (ITU-T Q.931/ ITU-T Q.955.3) | No ² | <ul style="list-style-type: none"> • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) as specified in UCR 2008, Section 5.2.12.6 | <ul style="list-style-type: none"> • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 |
| E1 SS7 (ANSI T1.619a) | No ² | <ul style="list-style-type: none"> • Modem (R) • Facsimile (R) • Call Control Signals (R) • Alarms (R) as specified in UCR 2008, Section 5.2.1.5.7 • Call Congestion Control (R) • Call Congestion for TDM Transport (C) • Voice Compression (C) | <ul style="list-style-type: none"> • UCR Section 5.9.3.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1.1 • UCR Section 5.9.2.1.2 • UCR Section 5.9.2.1.2.1 • UCR Section 5.9.2.2 |
| EIA-232, EIA-530, ITU-T X.21, ITU-T V.35, ITU-T V.36, ITU-T V.37 | No ² | <ul style="list-style-type: none"> • Serial Interface Characteristics (C) as specified in UCR 2008, Section 5.2.6.4 • BERT (R) | <ul style="list-style-type: none"> • UCR Section 5.9.2.3.2 • UCR Section 5.9.2.1 |
| E&M (Type I, II, III, IV), FXO and FXS (2-wire Analog) | No ² | <ul style="list-style-type: none"> • Analog 2 Wire and 4 Wire Interface Characteristics (C) as specified in UCR 2008, Section 5.2.6.4 • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) as specified in UCR 2008, Section 5.2.12.6 • Modem (R) • Facsimile (R) • Call Control Signals (R) • Alarms (R) as specified in UCR 2008, Section 5.2.1.5.7 • Call Congestion Control (R) • Call Congestion for TDM Transport (C) • Voice Compression (C) | <ul style="list-style-type: none"> • UCR Section 5.9.2.3.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1.1 • UCR Section 5.9.2.1.2 • UCR Section 5.9.2.1.2.1 • UCR Section 5.9.2.2 |

Table 2. SUT Capability and Feature Interoperability Requirements (continued)

| DSN Transport Interfaces | | | |
|--|-----------------|--|--|
| Interface | Critical | Requirements Required or Conditional | References |
| Multi-Mode or Single Mode Fiber (1.3 Gigabit) | No ² | <ul style="list-style-type: none"> • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) as specified in UCR 2008, Section 5.2.12.6 • Modem (R) • Facsimile (R) • Call Control Signals (includes MLPP) (R) • Congestion Control (C) (IP interface only) • Voice Compression (C) • Alarms • Delay (R) | <ul style="list-style-type: none"> • UCR Section 5.9.2.1 • UCR Section 5.9.3.7 • UCR Section 5.9.2.1.2.1 • UCR Section 5.9.2.2 • UCR Section 5.9.2.1.1 • UCR Section 5.9.2.1.2 |
| Twisted Pair Copper (1.3 Gigabit) | No ² | <ul style="list-style-type: none"> • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) as specified in UCR 2008, Section 5.2.12.6 • Modem (R) • Facsimile (R) • Call Control Signals (includes MLPP) (R) • Congestion Control (C) (IP interface only) • Voice Compression (C) • Alarms • Delay (R) | <ul style="list-style-type: none"> • UCR Section 5.9.2.1 • UCR Section 5.9.3.7 • UCR Section 5.9.2.1.2.1 • UCR Section 5.9.2.2 • UCR Section 5.9.2.1.1 • UCR Section 5.9.2.1.2 |
| SUT Features And Capabilities | | | |
| Feature/Capability | Critical | Requirements Required or Conditional | References |
| Compression | No | <ul style="list-style-type: none"> • Voice Compression standards | <ul style="list-style-type: none"> • UCR Section 5.9.2.2 |
| Synchronization | Yes | <ul style="list-style-type: none"> • Timing (R) as specified in UCR 2008, Section 5.2.10.1 | <ul style="list-style-type: none"> • UCR Section 5.9.2.3.7 |
| Network Management | Yes | <ul style="list-style-type: none"> • Management Option (R) Local Management (Front Panel and/or External Console) (C) ADIMSS (C) as specified in UCR 2008, sections 5.2.8, Network Management, 5.2.8.3, Fault Management, and 5.2.8.4, Configuration Management. • Fault Management (C) • Loop Back Capability (C) • Operational Configuration Restoral (R) | <ul style="list-style-type: none"> • UCR Section 5.9.2.4.1 • UCR Section 5.9.2.4.2 • UCR Section 5.9.2.4.3 • UCR Section 5.9.2.4.4 |
| Security | Yes | <ul style="list-style-type: none"> • STIGs and DoDI 8510.01 (DIACAP) (R) | <ul style="list-style-type: none"> • UCR Section 5.9.2.6 |
| NOTES: | | | |
| 1 The UCR does not stipulate a minimum required DSN access interface. | | | |
| 2 The UCR does not stipulate a minimum required DSN transport interface. | | | |

Table 2. SUT Capability and Feature Interoperability Requirements (continued)

| LEGEND: | |
|---------|--|
| ADIMSS | Advanced DSN Integrated Management Support System |
| ANSI | American National Standards Institute |
| BERT | Bit Error Rate Test |
| C | Conditional |
| CAS | Channel Associated Signaling |
| DCE | Data Circuit-Terminating Equipment |
| DIACAP | Department of Defense Information Assurance Certification and Accreditation Process |
| DoDI | Department of Defense Instruction |
| DP | Dial Pulse |
| DS1 | Digital Signal Level 1 |
| DSN | Defense Switched Network |
| DSS1 | Digital Subscriber Signaling 1 |
| DTE | Data Terminal Equipment |
| DTMF | Dual Tone Multi-Frequency |
| E&M | Ear and Mouth |
| E1 | European Basic Multiplex Rate (2.048 Mbps) |
| EIA-232 | Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices |
| EIA-530 | Standard for 25-position interface for data terminal equipment and data circuit-terminating equipment employing serial binary data interchange |
| FXO | Foreign Exchange Office |
| FXS | Foreign Exchange Station |
| ISDN | Integrated Services Digital Network |
| ITU-T | International Telecommunication Union - Telecommunication Standardization Sector |
| | kbps kilobits per second |
| | kHz kiloHertz |
| | Mbps Megabits per second |
| | MFR1 Multi-Frequency Recommendation 1 |
| | MLPP Multi-Level Precedence and Preemption |
| | MOS Mean Opinion Score |
| | PRI Primary Rate Interface |
| | Q.931 Signaling Standard for ISDN |
| | Q.955.3 ISDN Signaling standard for E1 MLPP |
| | R Required |
| | SS7 Signaling System 7 |
| | STIGs Security Technical Implementation Guides |
| | SUT System Under Test |
| | T1 Digital Transmission Link Level 1 (1.544 Mbps) |
| | T1.607 ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1 |
| | T1.619a SS7 and ISDN MLPP Signaling Standard for T1 |
| | TDM Time Division Multiplexing |
| | UCR Unified Capabilities Requirements |
| | V.35 Standard for data transmission at 48 kbps using 60-108 kHz group band circuits |
| | V.36 Modems for synchronous data transmission using 60-108 kHz group band circuits |
| | V.37 Synchronous data transmission at a data signaling rate higher than 72 kbps using 60-108 kHz group band circuits |
| | X.21 includes specifications for DTE/DCE physical interface elements, alignment of call control characters and error checking, elements of the call control phase for circuit switching services, and test loops |

5. No detailed test report was developed in accordance with the Program Manager’s request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: ucco@disa.mil.

JITC, Memo, JTE, Special Interoperability Test Certification of the Cornet Technology Inc. MTX-256 and MTX-L with Software Version 2.5.1

6. The JITC point of contact is Mr. Khoa Hoang, DSN 879-4376, commercial (520) 538-4376, FAX DSN 879-4347, or e-mail to khoa.hoang@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 1022801.

FOR THE COMMANDER:

2 Enclosures a/s


for BRADLEY A. CLARK
Acting Chief
Battlespace Communications Portfolio

Distribution (electronic mail):

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DOT&E, Net-Centric Systems and Naval Warfare

U.S. Coast Guard, CG-64

Defense Intelligence Agency

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Defense Information Systems Agency, TEMC

Office of Assistant Secretary of Defense (NII)/DOD CIO

U.S. Joint Forces Command, Net-Centric Integration, Communication, and Capabilities Division, J68

Defense Information Systems Agency, GS23

ADDITIONAL REFERENCES

- (c) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008 Change 1," 22 January 2010
- (d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006
- (e) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Cornet Technology Incorporated (Inc.) MTX-Series Release (Rel.) 2.5.1 (Tracking Number 1022801)," 3 March 2011

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. The Cornet Technology Inc MTX-256 and MTX-L Software Version 2.5.1; hereinafter referred to as the SUT.

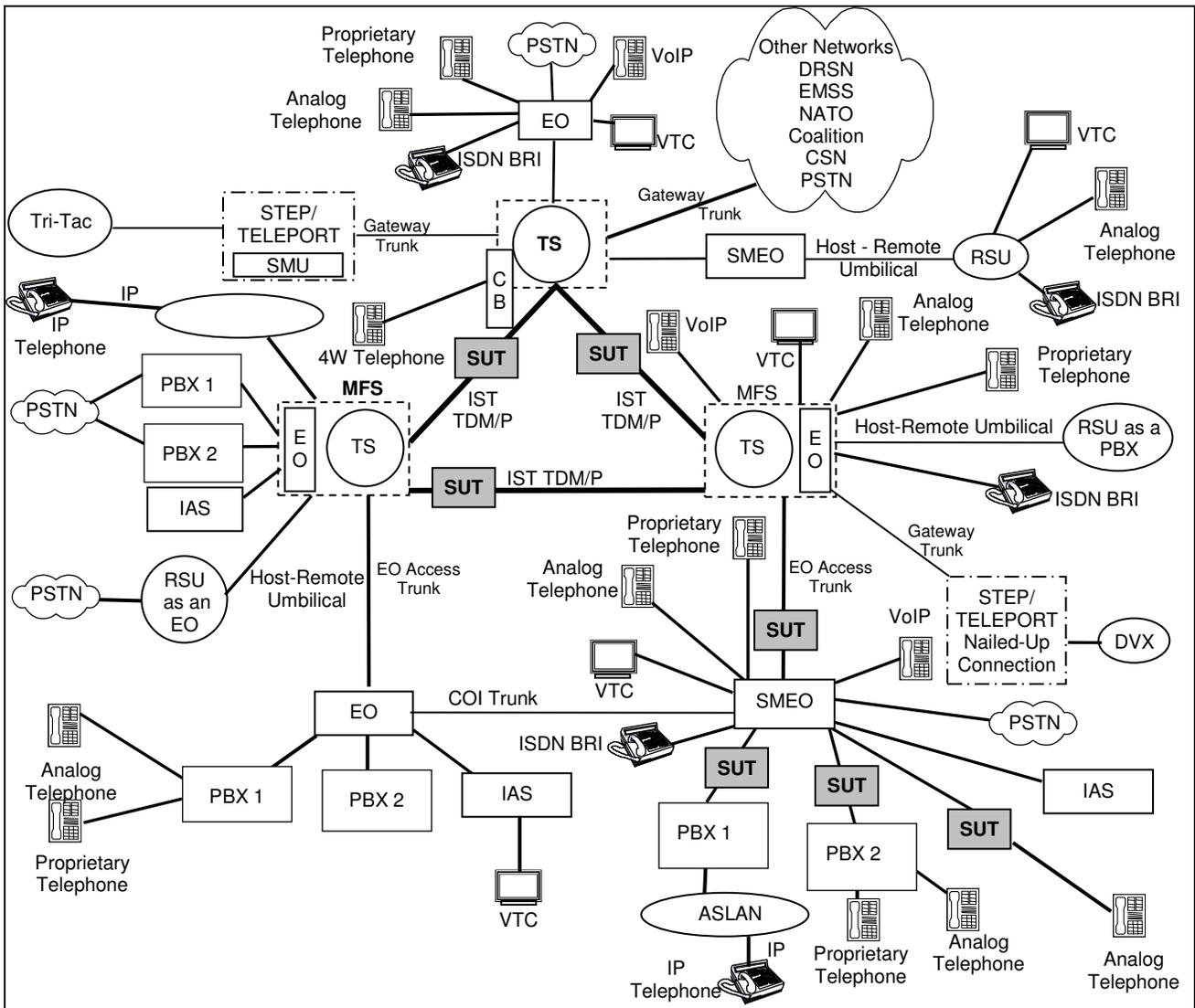
2. PROPONENT. Defense Wide Transmission Systems (DWTS).

3. PROGRAM MANAGER. Gary Heinemann, 6700 Springfield CTR. Dr. STE E, Springfield, Virginia 22150, E-mail: gary.henemann@us.army.mil.

4. TESTER. Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.

5. SYSTEM UNDER TEST DESCRIPTION. The MTX Series switches are Fixed Network Elements (FNE) that provide redundant physical layer switching capabilities for the purpose of patching, testing, and monitoring standards-based electrical interfaces to include Digital Transmission Link Level 1 (T1), European Basic Multiplex Rate (E1), Electronic Industries Alliance (EIA)-530, EIA-232, International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) V.35, ITU-T X.21, 4-wire Ear and Mouth (E&M), 2-wire Analog Foreign Exchange Service (FXS), and Foreign Exchange Office (FXO) interfaces. The switches are a non-blocking single stage cross-point, digital matrix design that is available in configurations ranging from 16 to 2048 ports. The basic system design consists of a matrix engine with user interfaces on an external chassis. The SUT includes two site-provided Personnel Computers (PCs) for management; one configured as the CorScan® Master and one the CorScan® Client PC. The two site-provided management PCs include Microsoft Windows XP Operating System with Service Pack 3, Corscan 400 v.2.5.1 software, and all applicable Security Technical Implementation Guides (STIGs).

6. OPERATIONAL ARCHITECTURE. The Unified Capabilities Requirements (UCR) Defense Switched Network (DSN) operational architecture is depicted in Figure 2-1. This figure depicts the relationship of the SUT to the DSN switches in the operational architecture.



LEGEND:

- | | | | |
|-------|-------------------------------------|---------|---|
| 4W | 4-Wire | NATO | North Atlantic Treaty Organization |
| ASLAN | Assured Services Local Area Network | PBX | Private Branch Exchange |
| BRI | Basic Rate Interface | PBX 1 | Private Branch Exchange 1 |
| CB | Channel Bank | PBX 2 | Private Branch Exchange 2 |
| COI | Community of Interest | PC | Personal Computer |
| CSN | Canadian Switch Network | PSTN | Public Switched Telephone Network |
| DRSN | Defense Red Switch Network | RSU | Remote Switching Unit |
| DSN | Defense Switched Network | SMEO | Small End Office |
| DVX | Deployable Voice Exchange | SMU | Switched Multiplex Unit |
| EMSS | Enhanced Mobile Satellite System | STEP | Standardized Tactical Entry Point |
| EO | End Office | TDM/P | Time Division Multiplex/Packetized |
| IAS | Integrated Access Switch | Tri-Tac | Tri-Service Tactical Communications Program |
| IP | Internet Protocol | TS | Tandem Switch |
| ISDN | Integrated Services Digital Network | SUT | System Under Test |
| IST | Interswitch Trunk | VoIP | Voice over Internet Protocol |
| MFS | Multifunction Switch | VTC | Video Teleconferencing |

Figure 2-1. DSN Architecture

7. REQUIRED SYSTEM INTERFACES. The SUT Interoperability Test Summary is shown in Table 2-1 and the Capability and Feature Requirements used to evaluate the interoperability of the SUT are indicated in Table 2-2. The SUT met these requirements through testing.

Table 2-1. SUT Interoperability Test Summary

| DSN Access Interfaces | | | |
|--|-----------------|---------------|--|
| Interface & Signaling | Critical | Status | Remarks |
| T1 PRI (ANSI T1.607/ANSI T1.619a) | No ¹ | Certified | Met all CRs and FRs. |
| E1 PRI (ITU-T Q.931/ ITU-T Q.955.3) | No ¹ | Certified | Met all CRs and FRs. |
| T1 CAS (DTMF/MFR1/DP) | No ¹ | Certified | Met all CRs and FRs. |
| E1 CAS (DTMF/MFR1/DP) | No ¹ | Certified | Met all CRs and FRs. |
| ITU-T V.35, ITU-T V.36, ITU-T V.37 (See note 2.) | No ¹ | Certified | Met all CRs and FRs. |
| T1 SS7 (ANSI T1.619a) | No ¹ | Certified | Met all CRs and FRs. |
| E1 SS7 (ANSI T1.619a) | No ¹ | Certified | Met all CRs and FRs. |
| EIA-232 | No ¹ | Certified | Met all CRs and FRs. |
| EIA-530 | No ¹ | Certified | Met all CRs and FRs. |
| ITU-T X.21 (See note 3.) | No ¹ | Certified | Met all CRs and FRs. |
| FXS (2-Wire Analog) | No ¹ | Certified | Met all CRs and FRs. |
| FXO (2-Wire Analog) | No ¹ | Certified | Met all CRs and FRs. |
| E&M (Type I, II, III, IV) | No ¹ | Certified | Met all CRs and FRs. |
| DSN Transport Interfaces | | | |
| Transport Level | Critical | Status | Remarks |
| Proprietary Multi-Mode or Single Mode Fiber (1.3 Gigabit) | No ⁴ | Certified | Met all CRs and FRs. |
| Twisted Pair Copper (1.3 Gigabit) | No ⁴ | Certified | Met all CRs and FRs. |
| Features And Capabilities | | | |
| Features And Capabilities | Critical | Status | Remarks |
| Synchronization | Yes | Certified | Met all CRs and FRs. |
| Network Management | Yes | Certified | Met all CRs and FRs. |
| Voice Compression | No | Not Certified | Voice compression is not supported by the SUT. |
| Security | Yes | Certified | See note 5. |
| NOTES: | | | |
| 1 The UCR does not stipulate a minimum access interface requirement for a Fixed Network Element. | | | |
| 2 The electrical physical interface tested was ITU-T V.35 in accordance with ITU-T V.36/V.37. | | | |
| 3 Although the ITU-T X.21 interface was not tested, JITC determined it is similar to the EIA-232 interface and it is also certified for joint use. | | | |
| 4 The UCR does not stipulate a minimum transport interface requirement for a Fixed Network Element. | | | |
| 5 Information assurance testing is accomplished via DISA-led Information Assurance test teams and published in a separate report, Reference (e). | | | |

Table 2-1. SUT Interoperability Test Summary (continued)

| LEGEND: | |
|----------------|---|
| ANSI | American National Standards Institute |
| CAS | Channel Associated Signaling |
| CRs | Capability Requirements |
| DCE | Data Circuit-Terminating Equipment |
| DISA | Defense Information Systems Agency |
| DP | Dial Pulse |
| DSN | Defense Switched Network |
| DSS1 | Digital Subscriber Signaling 1 |
| DTE | Data Terminal Equipment |
| DTMF | Dual Tone Multi-Frequency |
| E&M | Ear and Mouth |
| E1 | European Basic Multiplex Rate (2.048 Mbps) |
| EIA | Electronic Industries Alliance |
| EIA-232 | Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices |
| EIA-530 | Standard for 25-position interface for data terminal equipment and data circuit-terminating equipment employing serial binary data interchange |
| FRs | Feature Requirements |
| ISDN | Integrated Services Digital Network |
| ITU-T | International Telecommunication Union - Telecommunication Standardization Sector |
| FXO | Foreign Exchange Office |
| FXS | Foreign Exchange Station |
| kbps | kilobits per second |
| kHz | kiloHertz |
| Mbps | Megabits per second |
| MFR1 | Multi-Frequency Recommendation 1 |
| MLPP | Multi-Level Precedence and Preemption |
| PRI | Primary Rate Interface |
| Q.931 | Signaling Standard for ISDN |
| Q.955.3 | ISDN Signaling standard for E1 MLPP |
| SS7 | Signaling System 7 |
| SUT | System Under Test |
| T1 | Digital Transmission Link Level 1 (1.544 Mbps) |
| T1.607 | ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1 |
| T1.619a | SS7 and ISDN MLPP Signaling Standard for T1 |
| UCR | Unified Capabilities Requirements |
| V.35 | Standard for data transmission at 48 kbps using 60-108 kHz group band circuits |
| V.36 | Modems for synchronous data transmission using 60-108 kHz group band circuits |
| V.37 | Synchronous data transmission at a data signaling rate higher than 72 kbps using 60-108 kHz group band circuits |
| X.21 | includes specifications for DTE/DCE physical interface elements, alignment of call control characters and error checking, elements of the call control phase for circuit switching services, and test loops |

Table 2-2. SUT Capability and Feature Interoperability Requirements

| DSN Access Interfaces | | | |
|--|-----------------|---|---|
| Interface | Critical | Requirements Required or Conditional | References |
| T1 CAS (DTMF/MFR1/DP) | No ¹ | <ul style="list-style-type: none"> • DS1 Interface Characteristics (C) as specified in UCR 2008, Section 5.2.6.1 • DS1 Supervisory Channel Associated Signaling (C) as specified in UCR 2008, Section 5.2.6.1 • DS1 Clear Channel Capability (C) as specified in UCR 2008, Section 5.2.6.1 (SS7 and PRI only) • DS1 Alarm and Restoral Requirements (C) as specified in UCR 2008, Section 5.2.6.1 | <ul style="list-style-type: none"> • UCR Section 5.9.2.3.4 • UCR Section 5.9.2.3.4 • UCR Section 5.9.2.3.4 • UCR Section 5.9.2.3.4 |
| T1 PRI (ANSI T1.607/ANSI T1.619a) | No ¹ | <ul style="list-style-type: none"> • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) as specified in UCR 2008, Section 5.2.12.6 | <ul style="list-style-type: none"> • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 |
| T1 SS7 (ANSI T1.619a) | No ¹ | <ul style="list-style-type: none"> • Modem (R) • Facsimile (R) • Call Control Signals (R) • Alarms (R) as specified in UCR 2008, Section 5.2.1.5.7 • Call Congestion Control (R) • Call Congestion for TDM Transport (C) • Voice Compression (C) | <ul style="list-style-type: none"> • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1.1 • UCR Section 5.9.2.1.2 • UCR Section 5.9.2.1.2.1 • UCR Section 5.9.2.2 |
| E1 CAS (DTMF/MFR1/DP) | No ² | <ul style="list-style-type: none"> • E1 Interface Characteristics (C) as specified in UCR 2008, Section 5.2.6.2 • E1 Supervisory Channel Associated Signaling (C) as specified in UCR 2008, Section 5.2.6.2 • E1 Clear Channel Capability (C) as specified in UCR 2008, Section 5.2.6.2 • E1 Alarm and Restoral Requirements (C) as specified in UCR 2008, Section 5.2.6.2 | <ul style="list-style-type: none"> • UCR Section 5.9.2.3.5 • UCR Section 5.9.2.3.5 • UCR Section 5.9.2.3.5 • UCR Section 5.9.2.3.5 |
| E1 PRI (ITU-T Q.931/ITU-T Q.955.3) | No ² | <ul style="list-style-type: none"> • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) as specified in UCR 2008, Section 5.2.12.6 | <ul style="list-style-type: none"> • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 |
| E1 SS7 (ANSI T1.619a) | No ² | <ul style="list-style-type: none"> • Modem (R) • Facsimile (R) • Call Control Signals (R) • Alarms (R) as specified in UCR 2008, Section 5.2.1.5.7 • Call Congestion Control (R) • Call Congestion for TDM Transport (C) • Voice Compression (C) | <ul style="list-style-type: none"> • UCR Section 5.9.3.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1.1 • UCR Section 5.9.2.1.2 • UCR Section 5.9.2.1.2.1 • UCR Section 5.9.2.2 |
| EIA-232, EIA-530, ITU-T X.21, ITU-T V.35, ITU-T V.36, ITU-T V.37 | No ² | <ul style="list-style-type: none"> • Serial Interface Characteristics (C) as specified in UCR 2008, Section 5.2.6.4 • BERT (R) | <ul style="list-style-type: none"> • UCR Section 5.9.2.3.2 • UCR Section 5.9.2.1 |
| E&M (Type I, II, III, IV), FXO and FXS (2-wire Analog) | No ² | <ul style="list-style-type: none"> • Analog 2 Wire and 4 Wire Interface Characteristics (C) as specified in UCR 2008, Section 5.2.6.4 • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) as specified in UCR 2008, Section 5.2.12.6 • Modem (R) • Facsimile (R) • Call Control Signals (R) • Alarms (R) as specified in UCR 2008, Section 5.2.1.5.7 • Call Congestion Control (R) • Call Congestion for TDM Transport (C) • Voice Compression (C) | <ul style="list-style-type: none"> • UCR Section 5.9.2.3.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1.1 • UCR Section 5.9.2.1.2 • UCR Section 5.9.2.1.2.1 • UCR Section 5.9.2.2 |

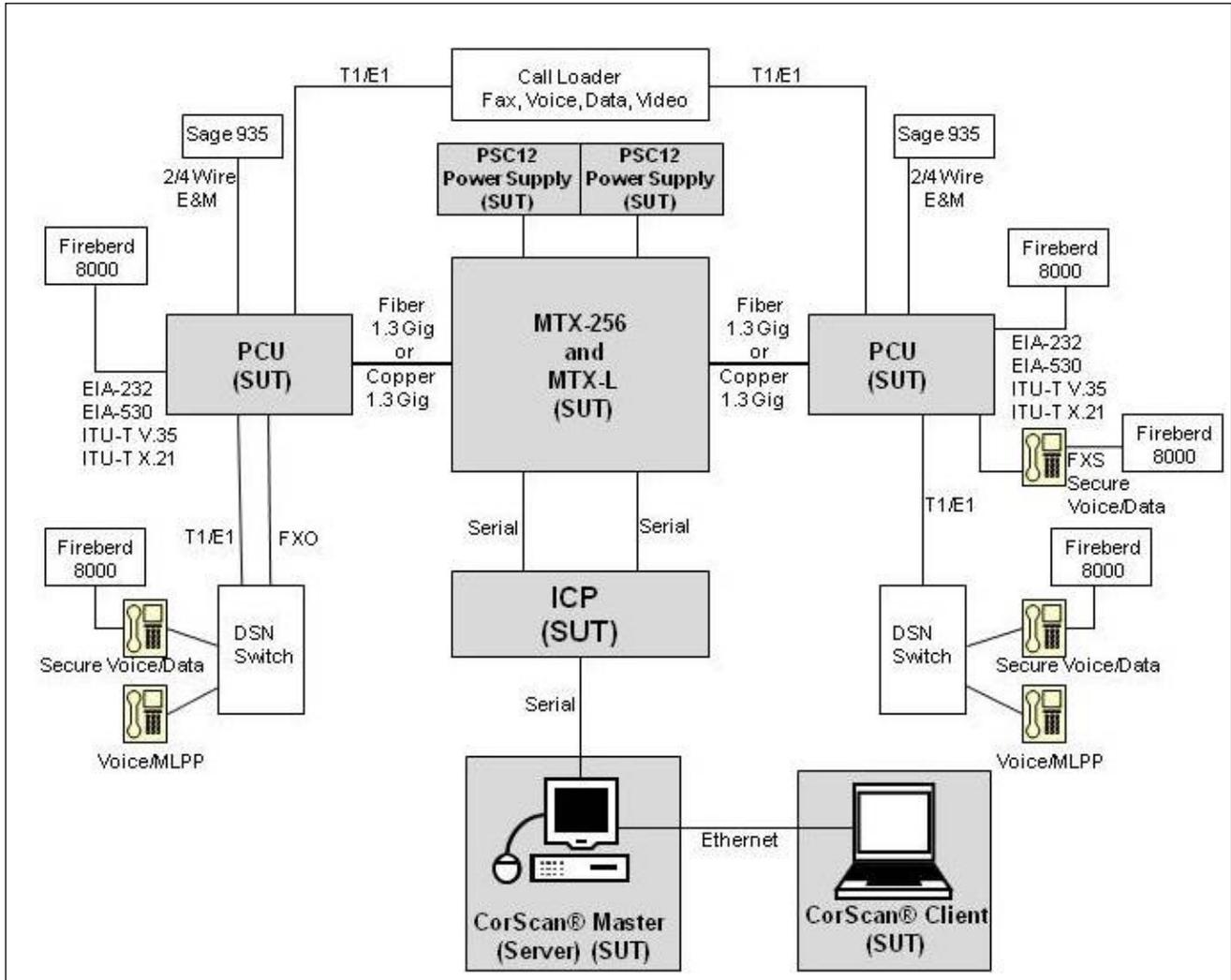
Table 2-2. SUT Capability and Feature Interoperability Requirements (continued)

| DSN Transport Interfaces | | | |
|--|-----------------|---|--|
| Interface | Critical | Requirements Required or Conditional | References |
| Multi-Mode or Single Mode Fiber (1.3 Gigabit) | No ² | <ul style="list-style-type: none"> • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) as specified in UCR 2008, Section 5.2.12.6 • Modem (R) • Facsimile (R) • Call Control Signals (includes MLPP) (R) • Congestion Control (C) (IP interface only) • Voice Compression (C) • Alarms • Delay (R) | <ul style="list-style-type: none"> • UCR Section 5.9.2.1 • UCR Section 5.9.3.7 • UCR Section 5.9.2.1.2.1 • UCR Section 5.9.2.2 • UCR Section 5.9.2.1.1 • UCR Section 5.9.2.1.2 |
| Twisted Pair Copper (1.3 Gigabit) | No ² | <ul style="list-style-type: none"> • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) as specified in UCR 2008, Section 5.2.12.6 • Modem (R) • Facsimile (R) • Call Control Signals (includes MLPP) (R) • Congestion Control (C) (IP interface only) • Voice Compression (C) • Alarms • Delay (R) | <ul style="list-style-type: none"> • UCR Section 5.9.2.1 • UCR Section 5.9.3.7 • UCR Section 5.9.2.1.2.1 • UCR Section 5.9.2.2 • UCR Section 5.9.2.1.1 • UCR Section 5.9.2.1.2 |
| SUT Features And Capabilities | | | |
| Feature/Capability | Critical | Requirements Required or Conditional | References |
| Compression | No | <ul style="list-style-type: none"> • Voice Compression standards | <ul style="list-style-type: none"> • UCR Section 5.9.2.2 |
| Synchronization | Yes | <ul style="list-style-type: none"> • Timing (R) as specified in UCR 2008, Section 5.2.10.1 | <ul style="list-style-type: none"> • UCR Section 5.9.2.3.7 |
| Network Management | Yes | <ul style="list-style-type: none"> • Management Option (R) • Local Management (Front Panel and/or External Console) (C) • ADIMSS (C) as specified in UCR 2008, sections 5.2.8, Network Management, 5.2.8.3, Fault Management, and 5.2.8.4, Configuration Management. • Fault Management (C) • Loop Back Capability (C) • Operational Configuration Restoral (R) | <ul style="list-style-type: none"> • UCR Section 5.9.2.4.1 • UCR Section 5.9.2.4.2 • UCR Section 5.9.2.4.3 • UCR Section 5.9.2.4.4 |
| Security | Yes | <ul style="list-style-type: none"> • STIGs and DoDI 8510.01 (DIACAP) (R) | <ul style="list-style-type: none"> • UCR Section 5.9.2.6 |
| NOTES: | | | |
| 1 The UCR does not stipulate a minimum required DSN access interface. | | | |
| 2 The UCR does not stipulate a minimum required DSN transport interface. | | | |

Table 2-2. SUT Capability and Feature Interoperability Requirements (continued)

| LEGEND: | | | |
|----------------|--|---------|---|
| ADIMSS | Advanced DSN Integrated Management Support System | kbps | kilobits per second |
| | | kHz | kiloHertz |
| ANSI | American National Standards Institute | Mbps | Megabits per second |
| BERT | Bit Error Rate Test | MFR1 | Multi-Frequency Recommendation 1 |
| C | Conditional | MLPP | Multi-Level Precedence and Preemption |
| CAS | Channel Associated Signaling | MOS | Mean Opinion Score |
| DCE | Data Circuit-Terminating Equipment | PRI | Primary Rate Interface |
| DIACAP | Department of Defense Information Assurance Certification and Accreditation Process | Q.931 | Signaling Standard for ISDN |
| DoDI | Department of Defense Instruction | Q.955.3 | ISDN Signaling standard for E1 MLPP |
| DP | Dial Pulse | R | Required |
| DS1 | Digital Signal Level 1 | SS7 | Signaling System 7 |
| DSN | Defense Switched Network | STIGs | Security Technical Implementation Guides |
| DSS1 | Digital Subscriber Signaling 1 | SUT | System Under Test |
| DTE | Data Terminal Equipment | T1 | Digital Transmission Link Level 1 (1.544 Mbps) |
| DTMF | Dual Tone Multi-Frequency | T1.607 | ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1 |
| E&M | Ear and Mouth | T1.619a | SS7 and ISDN MLPP Signaling Standard for T1 |
| E1 | European Basic Multiplex Rate (2.048 Mbps) | TDM | Time Division Multiplexing |
| EIA-232 | Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices | UCR | Unified Capabilities Requirements |
| EIA-530 | Standard for 25-position interface for data terminal equipment and data circuit-terminating equipment employing serial binary data interchange | V.35 | Standard for data transmission at 48 kbps using 60-108 kHz group band circuits |
| FXO | Foreign Exchange Office | V.36 | Modems for synchronous data transmission using 60-108 kHz group band circuits |
| FXS | Foreign Exchange Station | V.37 | Synchronous data transmission at a data signaling rate higher than 72 kbps using 60-108 kHz group band circuits |
| ISDN | Integrated Services Digital Network | X.21 | includes specifications for DTE/DCE physical interface elements, alignment of call control characters and error checking, elements of the call control phase for circuit switching services, and test loops |
| ITU-T | International Telecommunication Union - Telecommunication Standardization Sector | | |

8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC’s Global Information Grid Network Test Facility in a manner and configuration similar to that of the DSN operational environment. This testing was conducted using the test configurations shown in Figure 2-2. Non-secure voice, non-secure data, video, secure voice, secure data, bit error ratio, test calls were placed over the SUT test matrix as shown in Table 2-3.



LEGEND:

| | | | |
|---------|--|------|---|
| DCE | Data Circuit-Terminating Equipment | kbps | kilobits per second |
| DSN | Defense Switch Network | kHz | kiloHertz |
| DTE | Data Terminal Equipment | Mbps | Megabits per second |
| EIA | Electronic Industries Alliance | MLPP | Multi-Level Precedence and Preemption |
| E&M | Ear and Mouth | PCU | Port Concentrator Unit |
| E1 | European Basic Multiplex Rate (2.048 Mbps) | PSC | Power Supply Cornet |
| EIA-232 | Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices | SUT | System Under Test |
| EIA-530 | Standard for 25-position interface for data terminal equipment and data circuit-terminating equipment employing serial binary data interchange | T1 | Digital Transmission Link Level 1 (1.544 Mbps) |
| FXO | Foreign Exchange Office | V.35 | Standard for data transmission at 48 kbps using 60-108 kHz group band circuits |
| FXS | Foreign Exchange Station | X.21 | includes specifications for DTE/DCE physical interface elements, alignment of call control characters and error checking, elements of the call control phase for circuit switching services, and test loops |
| Gig | gigabit | | |
| ICP | Interface Control Processor | | |
| ITU-T | International Telecommunication Union - Telecommunication Standardization Sector | | |

Figure 2-2. SUT Test Configuration

Table 2-3. SUT Fiber/Copper Transport Test Matrix

| Output: Input | T1 | E1 | 2W FXS | 2W FXO | E&M | ITU-T V.35 | EIA-232 | EIA-530 |
|------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| T1 | X ^(see note) | | | | | | | |
| E1 | | X ^(see note) | | | | | | |
| 2W FXO | | | X ^(see note) | | | | | |
| 2W FXS | | | | X ^(see note) | | | | |
| E&M | | | | | X ^(see note) | | | |
| ITU-T V.35 | | | | | | X ^(see note) | | |
| EIA-232 | | | | | | | X ^(see note) | |
| EIA-530 | | | | | | | | X ^(see note) |

NOTE: X in this matrix denotes the input/output interface combinations tested with the SUT via both copper and fiber transport interfaces.

LEGEND:

| | | | |
|---------|--|-------|---|
| 2W | 2-Wire Analog | FXO | Foreign Exchange Office |
| DCE | Data Circuit-Terminating Equipment | FXS | Foreign Exchange Subscriber |
| DTE | Data Terminal Equipment | ITU-T | International Telecommunication Union - Telecommunication Standardization Sector |
| E1 | European Basic Multiplex Rate (2.048 Mbps) | kbps | kilobits per second |
| E&M | Ear and Mouth | kHz | kiloHertz |
| EIA | Electronic Industries Alliance | Mbps | Megabits per second |
| EIA-232 | Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices | SUT | System Under Test |
| EIA-530 | Standard for 25-position interface for DTE and DCE employing serial binary data interchange | T1 | Digital Transmission Link Level 1 (1.544 Mbps) |
| | | V.35 | Standard for data transmission at 48 kbps using 60-108 kHz group band circuits |

9. SYSTEM CONFIGURATIONS. Table 2-4 provides the system configurations, hardware, and software components tested with the SUT. The SUT was tested in an operationally realistic environment to determine interoperability with a complement of DSN switches noted in Table 2-4. Table 2-4 lists the DSN switches, which depict the tested configuration, and is not intended to identify the only switches that are certified with the SUT. The SUT is certified with switching systems listed on the Unified Capabilities (UC) Approved Products List (APL) that offer the same certified access interfaces as the SUT. The SUT is fielded in pairs and each pair must have the same software release.

Table 2-4. Tested System Configurations

| System Name | Software |
|--------------|---------------------------------|
| Avaya CS2100 | Succession Enterprise (SE) 09.1 |
| Siemens EWSD | 19d Patch Set 46 |
| REDCOM HDX | 3.0a r3p0 |

Table 2-4. Tested System Configurations (Continued)

| System Under Test | | | |
|---|---------------------------------------|--------------------|------------------|
| System name | Hardware | Part Name/Number | Software Version |
| Cornet Technology Inc. MTX Series Rel. 2.5.1 (SUT) | Port Concentrator Unit CCHA40351-5 | C05200E-4 | N/A |
| | | C05200E-5 | |
| | | C99250-1 | |
| | | C99250-4 | |
| | | C99250-3 | |
| | | C98320-5 | |
| | | C99330-2 | |
| | | C02002F-1 | |
| | | C02002F-2 | |
| | Port Concentrator Unit CCHA40351-7 | C05200E-4 | N/A |
| | | C05200E-5 | |
| | | C99250-1 | |
| | | C99250-4 | |
| | | C99250-3 | |
| | | C98320-5 | |
| | | C99330-2 | |
| | | C02002F-1 | |
| | | C02002F-2 | |
| | Switch Engine MTX-256 | C02225A-2 | V1.13 |
| | | C97343D-1 | N/A |
| | | C02201C-1 | |
| | | C03025F-1 | |
| | | C97345B-3 | |
| | | C02002F-1 | |
| | | PSC-700 | |
| | | PCP-16 | |
| | | PCU/2 | |
| | Switch Engine MTX-L | C97150-1 | V2.3P |
| | | C96310-2 | N/A |
| | | C97008-1 | |
| | | C00180-2 | |
| | | C96257-5 | |
| | | C02002F-1 | |
| PSC-12 | | | |
| PCP-16 | | | |
| PCU/2 | | | |
| Interface Control Processor (ICP)-12 | CCHA161-2 | V1.37 | |
| CorScan® Master (Server) (Site-provided) | N/A | Corscan 400 v2.5.1 | |
| | | Windows XP SP3 | |
| CorScan® Client (Site- provided) | N/A | Corscan 400 v2.5.1 | |
| | | Windows XP SP3 | |
| LEGEND: | | | |
| CS | Communication Server | N/A | Not Applicable |
| EWSD | Elektronisches Wählsystem Digital | SP3 | Service Pack 3 |
| HDX | High Density Exchange | | |

10. TESTING LIMITATIONS. None.

11. TEST RESULTS

a. Discussion

(1) DSN Access/Transport Interfaces. The SUT supports T1, E1, FXO, FXS, E&M, and serial ITU-T V.35, EIA-232, EIA-530, and ITU-T X.21 access interfaces. The SUT is a physical layer matrix switch, which supports both fiber and copper proprietary transport interfaces. Testing was conducted with the use of simulated test tools in lieu of actual edge devices as depicted Figure 2-2 and actual switches were used to conduct Multi-Level Precedence and Preemption and secure voice and data calls. The Abacus 5000 bulk call loader was used to emulate T1 and E1 switch interfaces generating ITU-T H.320 video (NX64), facsimile, data, and voice traffic. Other test tools were used to conduct bit error ratio testing via the SUT serial interfaces. The specific requirements and test results tested over the SUT DSN access and transport interfaces are described in the subparagraphs below.

(a) T1 Interface Characteristics. The UCR 2008 Change 1, section 5.9.2.3.4, states that the T1 interface shall meet the requirements in accordance with UCR 2008, section 5.2.6.1. The Sunrise T10 test set was used to measure the SUT Digital Signal Level 1 (DS1) pulse mask to verify compliance to this requirement. The SUT supports the ITU-T G.711 and ANSI T.102 pulse mask characteristics, which meets this requirement. The SUT T1 interface supports Bipolar Eight Zero Substitution (B8ZS) line coding as required in the UCR 2008, section 5.2.6.1.1.

(b) T1 Clear Channel Capability. The UCR 2008 Change 1, section 5.9.2.3.4, states that the T1 interface shall meet the clear channel capability requirements in accordance with UCR 2008, section 5.2.6.1.3. The SUT is capable of transmitting and receiving B8ZS line coding in accordance with UCR 2008, section 5.2.6.1.3, which meets this requirement.

(c) Mean Opinion Score (MOS). The UCR 2008 Change 1, section 5.9.2.1, states that the introduction of FNEs shall not cause the end-to-end average MOS to fall below 4.0 over any five-minute time interval. Each voice codec was tested using the EMODEL Mean Opinion Score (EMOS) and the Sage Mean Opinion Score (SMOS) with the Sage 960b. Testing resulted in an EMOS of 4.2 and SMOS of 4.3

(d) Bit Error Rate Test (BERT). The UCR 2008 Change 1, section 5.9.2.1, states that the introduction of an NE shall not degrade the end-to-end measured bit error rate to no more than .03 percent from the baseline minimum end-to-end digital bit error rate requirement which is not more than 1 error in 1×10^9 bits (averaged over a 9-hour period). The SUT met this requirement for all interfaces with a recorded bit error ratio of 1×10^{-9} over a 24-hour period with multiple tests with no errors.

(e) Secure Transmission (Voice and Data). The UCR 2008 Change 1, section 5.9.2.1, states that the introduction of NE(s) shall not degrade secure transmission for secure end devices as defined by UCR 2008, section 5.2.12.6. There were 10 secure calls placed between each combination of Secure Terminal Equipment (STEs) and Secure Wireline Terminal (SWTs), STE to STE, SWT to SWT, Viper to Viper, and all combinations of all these devices without degrading transmissions between end devices. The SUT secure call test results are shown in Table 2-5.

Table 2-5. SUT Secure Call Test Results

| DSN Access Interfaces | DSN Transport Interface | Secure Call Matrix (10 calls placed per combination with a 99% completion rate) | | | | |
|---|--|--|--|------------|-----------------|-----------|
| | | From / To | STE (SCIP mode) | PSTN Viper | STE (ISDN mode) | SWT |
| T1 (PRI, CAS, SS7), E1 (PRI, CAS, SS7), FXO, FXS | 1.3 Gigabit Copper or Fiber | STE (SCIP mode) | Completed | Completed | Completed | Completed |
| | | PSTN Viper | Completed | Completed | Completed | Completed |
| | | STE (ISDN mode) | Completed | Completed | Completed | Completed |
| | | SWT | Completed | Completed | Completed | Completed |
| | | OMNI | Completed | Completed | Completed | Completed |
| LEGEND: | | | | | | |
| CAS | Channel Associated Signaling | SCIP | Secure Communications Internet Protocol | | | |
| DSN | Defense Switched Network | SS7 | Signaling System 7 | | | |
| E1 | European Basic Multiplex Rate (2.048 Mbps) | STE | Secure Terminal Equipment | | | |
| ISDN | Integrated Services Digital Network | SUT | System Under Test | | | |
| Mbps | Megabits per second | SWT | Secure Wireline Terminal | | | |
| PRI | Primary Rate Interface | T1 | Digital Transmission Link Level (1.544 Mbps) | | | |
| PSTN | Public Switched Telephone Network | | | | | |

(f) Modem. The UCR 2008 Change 1, section 5.9.2.1 states that the NE(s) shall support a minimum modem transmission speed of 9.6 kilobits per second (kbps) across the associated pair of NE(s). There were over 100,000 modem calls placed through the SUT using the Abacus call loader. All modem calls had a transmission rate of 9.6 kbps or better with a call success rate of 100 percent, which met the requirement.

(g) Facsimile. The UCR 2008 Change 1, section 5.9.2.1, states that the NE(s) shall support a minimum facsimile transmission speed of 9.6 kbps across the associated NE(s). There were over 100,000 facsimile calls placed through the SUT using the Abacus call loader. All facsimile calls had a transmission rate of 14.4 kbps, with a call success rate of 100 percent, which met the requirement.

(h) Call Control Signals. The UCR 2008 Change 1, section 5.9.2.1, states that the NE shall transport all call control signals transparently on an end-to-end basis. This requirement was verified via testing. The SUT transparently all signaling, to include MLPP call control signals, which met the requirement.

(i) Alarm and Restoral Requirements. The UCR 2008 Change 1, section 5.9.2.1.1, states that the NE shall be able to propagate Carrier Group Alarms (CGAs), in accordance with UCR 2008, section 5.2.1.5.7, upon physical loss of either the access or transport interfaces. The SUT is capable of transparently passing the appropriate alarms, which met the requirement. This was verified by capturing the alarm status between the DSN switches and the SUT with the Sage 375A and Ultra-T1 test equipment.

(j) Call Congestion. The UCR 2008 Change 1, section 5.9.2.1.2, states that the NE shall assure that congestion between paired NEs does not affect DSN calls in progress or subsequent calls. Call congestion handling shall be met in one or more of the following three ways: dynamic load control signal; software capability which

makes congestion impossible; or congestion is not possible in the SUT. Call congestion in the SUT is met because congestion is not possible in the SUT.

(2) Device Management

(a) Management Option. The UCR 2008 Change 1, section 5.9.2.4.1, states that the NE devices must be managed by at least one of the following: The device may be managed locally by a front or back panel and/or external console control capability shall be provided for local management. The NE may be able to be centrally monitored and managed by the Advanced DSN Integrated Management Support System (ADMISS) in accordance with UCR 2008, sections 5.2.8.3 and 5.2.8.4. The SUT is managed from a remote client, which can be used to monitor multiple units. The SUT is monitored by a management workstation. The workstation connects to the SUT via serial interface. Administrative tasks are performed via the proprietary CorScan® 400 V2.5.1 application. The application allows an administrator to configure general settings, create or edit services, manage media processor units, and perform maintenance.

(b) Fault Management. The UCR 2008 Change 1, section 5.9.2.4.2, states that NEs may be capable of performing a self-test diagnostic function on non-active and active channels on a noninterference basis and report any failures to the assigned network management system. The SUT supports fault management using a secure management workstation.

(c) Loop Back Capability. The UCR 2008 Change 1, section 5.9.2.4.3, states that the NE may provide loop back capability on each of the trunk side interfaces in accordance with ITU-T Recommendation V.54. The SUT met this requirement through testing.

(d) Operational Configuration Restoral. The UCR 2008 Change 1, section 5.9.2.4.4, states that loss of power should not remove configuration settings. The unit should be restored to the last customer configured state prior to the power loss, without intervention when power is restored. The SUT was placed into a power failure condition. The SUT returned to the last customer configured state prior to the power failure, which met the requirement.

(3) Security. The UCR Change 1, section 5.9.2.6, states that the NE shall conform to the requirements outlined in Department of Defense Instruction (DoDI) 8510.01, "DoD Information Assurance Certification and Accreditation Process (DIACAP)". Security is tested as part of the Information Assurance testing and is covered under a separate report, Reference (e).

b. System Interoperability Results. The SUT meets all of its critical interoperability requirements set forth in Reference (c) for a FNE and is certified as interoperable for joint use within the Defense Information System Network (DISN). When connected to the interfaces certified in this letter, the SUT and its associated

applications were transparent to the switching systems interfaced causing no degradation of service or negative impact, and met all the critical interoperability requirements.

12. TEST AND ANALYSIS REPORT. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssj>. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: ucco@disa.mil.