



DEFENSE INFORMATION SYSTEMS AGENCY

JOINT INTEROPERABILITY TEST COMMAND

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IN REPLY
REFER TO:

Battlespace Communications Portfolio (JTE)

17 January 2007

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of REDCOM High Density Exchange (HDX) Digital Switching System with Software Release 2.0A Revision 3, with Specified Patch Group 0 (2.0A R3P0), certified as a Deployable Voice Exchange (DVX)

References: (a) DoD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01D, "Interoperability and Supportability of Information Technology and National Security Systems," 8 March 2006

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. Additional references are provided in enclosure 1.
2. The REDCOM HDX Digital Switching System with Software Release 2.0A R3P0 is hereinafter referred to as the System Under Test (SUT). The SUT met all of its critical interoperability requirements and is certified as interoperable for joint use within the Defense Switched Network (DSN). The SUT was tested and met the critical interoperability requirements for a DVX. The identified test discrepancies shown in the Certification Testing Summary (enclosure 2), which remained open after a recompiled software load was applied and regression testing was completed, have an overall minor operational impact. The SUT offers a Voice over Internet Protocol capability. This capability was not tested and is not covered under this certification. This certification expires upon changes that could affect interoperability, but no later than three years from the date of this memorandum.
3. This finding is based on interoperability testing conducted by JITC and review of the vendor's Letters of Compliance (LoC). Interoperability testing was conducted at JITC's Global Information Grid Network Test Facility (GNTF) at Fort Huachuca, Arizona, from 17 July to 1 September 2006. Review of the vendor's LoC was completed on 11 December 2006. Enclosure 2 documents the test results and describes the tested network and system configurations. System interoperability should be verified before deployment in an operational environment that varies significantly from the test environment.
4. The interoperability test summary of the SUT is contained in table 1. The DVX Capability Requirements (CRs) and Feature Requirements (FRs) are listed in table 2. This interoperability test status is based on the SUT's ability to meet:

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- a. DSN services for Network and Applications specified in reference (c).
- b. DVX interface and signaling requirements for trunks/lines specified in reference (d) verified through JITC testing and/or vendor submission of LoC.
- c. DVX CRs/FRs specified in reference (d) verified through JITC testing and/or vendor submission of LoC.
- d. The overall system interoperability performance derived from test procedures listed in reference (e).
- e. Internet Protocol version 6 requirements specified in reference (d), paragraph 1.7, table 1-3, by 30 June 2008 in accordance with reference (f) verified through vendor submission of LoC signed by the Vice President of the company.

Table 1. SUT Interoperability Test Summary

| DSN Trunk Interfaces | | | |
|--------------------------------------|----------------------|---------------|---|
| Interface & Signaling | Critical | Status | Remarks |
| T1 CAS (DTMF, DP) | Yes | Certified | Met all CRs and FRs. |
| T1 CAS (MFR1) | No | Certified | Met all CRs and FRs. |
| E1 CAS (DTMF, MFR1, DP) | Yes (Europe only) | Certified | Met all CRs and FRs. |
| T1 ISDN PRI NI 1/2 (ANSI T1.619a) | Yes | Certified | Met all CRs and FRs. |
| E1 PRI (ITU-T Q.955.3) | No (Europe only) | Certified | Met all CRs and FRs. |
| T1 SS7 (ANSI T1.619a) | No | Certified | Met all CRs and FRs. |
| E1 SS7 (ITU-T Q.735.3) | No | Not Tested | This interface is supported; however it was not tested and is not covered under this certification. There was no risk of not testing because it is not a critical requirement. |
| Analog E&M Type I, II and V | Yes | Certified | Met all CRs and FRs. |
| DSN Line Interfaces | | | |
| Interface & Signaling | Critical | Status | Remarks |
| 2-Wire Analog (GR-506-CORE) | Yes | Certified | Met all CRs and FRs with the following minor exceptions: The SUT does not properly support Precedence Call Diversion on an analog set that is configured for Precedence Call Waiting. ¹ The SUT does not support the full complement of CoS tables. ² |
| ISDN BRI NI 1/2 | No | Certified | Met all CRs and FRs with the following minor exceptions: The SUT does not support the full complement of CoS tables. ² Full compliance of multiple call appearances for incoming calls was not supported. ³ |
| 2-Wire Proprietary Digital | No | Not Tested | This interface is not supported by the SUT. The operational impact is minor because it is not a critical requirement. |
| DSN Features and Capabilities | | | |
| Features and Capabilities | Critical | Status | Remarks |
| Common Features | No | Certified | Met all CRs and FRs. |
| Attendant | No | Certified | Met all CRs and FRs. |
| Public Safety | Yes | Certified | Met all CRs and FRs. |
| Preset Conferencing | Yes | Certified | Met all CRs and FRs. |
| Nailed-up Connections | No | Not Tested | This feature is not supported by the SUT. The operational impact is minor because it is not a critical requirement. |
| Precedence Access Threshold | No | Not Tested | This feature is not supported by the SUT. The operational impact is minor because it is not a critical requirement. |

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Table 1. SUT Interoperability Test Summary (continued)

| DSN Features and Capabilities (continued) | | | | |
|---|----------------------------------|------------------|--|---|
| Features and Capabilities | Critical | Status | Remarks | |
| DSN Hotline Services | Yes | Certified | Met all CRs and FRs. | |
| Network Management | Yes | Certified | Met all CRs and FRs. The certified network management interface is IEEE 802.3 10BaseT. ⁴ | |
| ISDN Services (EKTS) | No | Not Tested | This feature is not supported by the SUT. The operational impact is minor because it is not a critical requirement. | |
| Synchronization | Yes | Certified | Met all CRs and FRs. | |
| Reliability | No | Certified | Met all CRs and FRs. | |
| Security | Yes | See note 5. | See note 5. | |
| VoIP System | No | Not Tested | This feature is supported; however it was not tested and is not covered under this certification. There was no risk of not testing because it is not a critical requirement. | |
| Network Gateways | | | | |
| Gateway | Interface & Signaling | Critical | Status | Remarks |
| PSTN | T1 CAS (DTMF, DP) | Yes | Certified | Met all CRs and FRs. |
| | T1 CAS (MFR1) | No | Certified | Met all CRs and FRs. |
| | E1 CAS (DTMF, MFR1, DP) | No (Europe only) | Certified | Met all CRs and FRs. |
| | T1 ISDN PRI NI 1/2 (ANSI T1.607) | No | Certified | Met all CRs and FRs. |
| | E1 PRI (ITU-T Q.931) | No (Europe only) | Certified | Met all CRs and FRs. |
| | T1 SS7 | No | Certified | Met all CRs and FRs. |
| | E1 SS7 | No | Not Tested | This interface is supported; however, it was not tested and is not covered under this certification. There was no risk of not testing because it is not a critical requirement. |
| DRSN | Ground Start Line | Yes | Certified | Met all CRs and FRs. |
| | TPC 2-Wire analog (GR-506-CORE) | Yes | Certified ⁶ | Met all CRs and FRs. |

LEGEND:

| | | |
|--|--|--|
| 10BaseT - 10 Mbps (Baseband Operation, Twisted Pair) | E1 - European Basic Multiplex Rate (2,048 Mbps) | MLPP - Multi-Level Precedence and Preemption |
| Ethernet | EKTS - Electronic Key Telephone System | NI 1/2 - National ISDN Standard 1 or 2 |
| 802.3 - Standard for carrier sense multiple access with collision detection at 10 Mbps | FRs - Feature Requirements | PM - Program Manager |
| ANSI - American National Standards Institute | GR - Generic Requirement | PRI - Primary Rate Interface |
| BRI - Basic Rate Interface | GR-506-CORE - Telcordia Signaling for Analog Interface Generic Requirement | PSTN - Public Switched Telephone Network |
| CAS - Channel Associated Signaling | GSCR - Generic Switching Center Requirements | Q.735.3 - SS7 Signaling Standard for E1 MLPP |
| CoS - Class of Service | IEEE - Institute of Electrical and Electronics Engineers, Inc. | Q.931 - Signaling Standard for ISDN |
| CRs - Capability Requirements | IPV4 - Internet Protocol version 4 | Q.955.3 - ISDN signaling standard for E1 MLPP |
| DISA - Defense Information Systems Agency | IPV6 - Internet Protocol version 6 | SS7 - Signaling System 7 |
| DP - Dial Pulse | ISDN - Integrated Services Digital Network | SUT - System Under Test |
| DRSN - Defense Red Switch Network | ITU-T - International Telecommunication Union - Telecommunication Standardization Sector | T1 - Digital Transmission Link Level 1 (1,544 Mbps) |
| DSN - Defense Switched Network | Mbps - Megabits per second | T1.607 - ISDN - Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1 |
| DSS1 - Digital Subscriber Signaling 1 | MFR1 - Multifrequency Recommendation 1 | T1.619a - SS7 and ISDN MLPP Signaling Standard for T1 |
| DTMF - Dual Tone Multi-Frequency | | TPC - Twisted Pair Copper |
| E&M - Ear and Mouth | | VoIP - Voice over Internet Protocol |

NOTES:

- If an analog set, configured for Precedence Call Waiting on the SUT, is ringing with a precedence call above ROUTINE and another precedence call above ROUTINE is placed to the ringing analog set, the precedence call diversion timer does not start until the first call's precedence diversion timers expires and the first call is diverted. This limitation has posed a minor operational impact within the DSN since all calls are eventually diverted.
- The SUT does not support the full complement of CoS tables as specified in the GSCR. The SUT supports 255 CoS tables for analog lines and does not support CoS tables on access lines, number codes, trunks, or groups of trunks. This limitation has posed a minor operational impact within the DSN when assigning lines and trunks on the SUT. This limitation may result in additional time required when initially configuring the SUT.
- The SUT does not support multiple call appearances on the ISDN BRI for incoming calls. MLPP interaction functioned properly. The overall operational impact of the noted discrepancy is minor.
- An IPv6 capable system or product, as defined in the GSCR, paragraph 1.7, shall be capable of receiving, processing, and forwarding IPv6 packets and/or interfacing with other systems and protocols in a manner similar to that of IPv4. IPv6 capability is currently satisfied by a vendor Letter of Compliance signed by the Vice President of the company. The vendor stated, in writing, compliance to the following criteria by 30 June 2008:
 - Conformant with IPv6 standards profile contained in the Department of Defense Information Technology Standards Registry (DISR).
 - Maintaining interoperability in heterogeneous environments and with IPv4.
 - Commitment to upgrade as the IPv6 standard evolves.
 - Availability of contractor/vendor IPv6 technical support.
- Security is tested by DISA-led Information Assurance test teams and published in a separate report.
- Interoperability Certification of the SUT does not constitute DRSN PM's approval for connectivity to the DRSN. It is the user's responsibility to request connectivity approval directly from the PM.

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Table 2. DVX Requirements

| DSN Trunk Interfaces | | | | | |
|--------------------------------------|----------------------|---|--|--|--|
| Interface | Critical | Requirements Required or Conditional | | References | |
| T1 SS7 (ANSI T1.619a) | No | Trunking | <ul style="list-style-type: none"> • Framing (R) • Line Code (R) • Signaling (R) • Alarms (R) • WWNDP (R) • Outpulsing digit formats (R: CAS only) • Routing (R) • Trunk Groups (R) • Call Processing (R) • CAS to CCS trunk interworking (C) • PCM-24/PCM-30 Interoperation (R) • Direct Inward Dialing (C) | <ul style="list-style-type: none"> • GSCR Sect. 7 • GSCR Sect. 7 • GSCR Sect. 5 • GSCR Sect. 2.5.7, 7.1.4 & 7.2.2 • GSCR Sect. 4.5.1 • GSCR Sect. 4.5.2 • GSCR Sect. 4.2 • GSCR Sect. 2.5.5 & 2.5.6 • GSCR Sect. 4 • GSCR Sect. 3.10 • GSCR Sect. 7.3 • GSCR Sect. 2.3.2 | |
| E1 SS7 (ITU-T Q.735.3) | No | | | | |
| T1 CAS (MFR1) | Yes | | | | |
| T1 CAS (DTMF, DP) | Yes | | | | |
| E1 CAS (MFR1, DTMF, DP) | Yes (Europe only) | | Voice | <ul style="list-style-type: none"> • MOS (R) • MLPP (R) • Secure calls (R) | <ul style="list-style-type: none"> • CJCSI 6215.01B • GSCR Sect. 3 • CJCSI 6215.01B |
| T1 ISDN PRI NI 1/2 (ANSI T1.619a) | Yes | | Facsimile | <ul style="list-style-type: none"> • Analog: TIA/EIA-465-A (R) | <ul style="list-style-type: none"> • DISR |
| E1 ISDN PRI (ITU-T Q.955.3) | No (Europe only) | Data | <ul style="list-style-type: none"> • Modem (VBD) (R) • 56 kbps switched data (R: PRI only) • 64 kbps switched data (R: PRI only) • NX56 synchronous BER (R: PRI only) • NX64 synchronous BER (R: PRI only) • Secure data (STE/STU-III) (R) | <ul style="list-style-type: none"> • CJCSI 6215.01B • GSCR Sect. 3.10 • CJCSI 6215.01B | |
| Analog E&M Type I, II, V | Yes | | VTC | <ul style="list-style-type: none"> • ITU-T H.320 (R: PRI only) | <ul style="list-style-type: none"> • DISR |
| DSN Line Interfaces | | | | | |
| 2-Wire Analog | Yes | Access | <ul style="list-style-type: none"> • Directory Number Identification (R) • Line signaling (R) • Alerting Signals and Tones (R) • WWNDP (R) • Call Processing (R) • Call Treatments (R) • 2W user access (R: 2-Wire Analog only) • Analog busy/idle (R: 2-Wire Analog only) | <ul style="list-style-type: none"> • GSCR Sect. 2.1.1 • GSCR Sect. 5.2 • GSCR Sect. 5.5 • GSCR Sect. 4.5 • GSCR Sect. 4.4 • GSCR Sect. 4.1 • GSCR Sect. 4.3.3 • GSCR Sect. 4.3.4.1 | |
| ISDN BRI NI 1/2 (ANSI T1.619a) | No | Voice | <ul style="list-style-type: none"> • MOS (R) • Announcements (R) • MLPP (R) • Secure Calls (R) | <ul style="list-style-type: none"> • CJCSI 6215.01B • GSCR Sect. 3.1.3 • GSCR Sect. 3.4.3/3.9 • CJCSI 6215.01B | |
| 2-Wire Proprietary Digital | No | Facsimile | <ul style="list-style-type: none"> • Analog: TIA/EIA-465-A (R) | <ul style="list-style-type: none"> • DISR | |
| | | Data | <ul style="list-style-type: none"> • Modem (VBD) (R) • 56 kbps switched data (R) • 64 kbps switched data (R: BRI only) • NX56 synchronous BER (R: BRI only) • NX64 synchronous BER (R: BRI only) • Secure data (STE/STU-III) (R) | <ul style="list-style-type: none"> • CJCSI 6215.01B • GSCR Sect. 3.10 • CJCSI 6215.01B | |
| | | VTC | <ul style="list-style-type: none"> • ITU-T H.320 (R: BRI only) | <ul style="list-style-type: none"> • DISR | |

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Table 2. DVX Requirements (continued)

| DSN Features & Capabilities | | | |
|-----------------------------|----------|--|---|
| Feature/ Capability | Critical | Requirements Required or Conditional | References |
| Common Features | Yes | <ul style="list-style-type: none"> • Selective call rejection (C) • Denied originating service (C) • Code restriction and diversion (R) • Call waiting (C) • Three-way calling (C) • Add-on transfer and conference calling and call hold (C) • Call forwarding (C) • Call pick-up (C) | <ul style="list-style-type: none"> • GSCR Sect. 2.1.2 • GSCR Sect. 2.1.3 • GSCR Sect. 2.1.4 • GSCR Sect. 2.1.5 • GSCR Sect. 2.1.6 • GSCR Sect. 2.1.7 • GSCR Sect. 2.1.8 • GSCR Sect. 2.1.9 |
| Attendant | No | <ul style="list-style-type: none"> • Initiate all precedence levels (C) • Visual display (C) • Override class of service (C) • Override busy line (C) • Call deflection (C) • Auto recall (C) • Waiting queue (C) | <ul style="list-style-type: none"> • GSCR Sect. 2.2.1 • GSCR Sect. 2.2.2 • GSCR Sect. 2.2.3 • GSCR Sect. 2.2.4 • GSCR Sect. 2.2.5 • GSCR Sect. 2.2.6 • GSCR Sect. 2.2.7 |
| Public Safety | Yes | <ul style="list-style-type: none"> • Basic Emergency Service (911) (C) • Trace of terminating calls (R) • Outgoing call trace (R) • Tandem call trace (R) • Trace of a call in progress (R) | <ul style="list-style-type: none"> • GSCR Sect. 2.4.1 • GSCR Sect. 2.4.2 • GSCR Sect. 2.4.3 • GSCR Sect. 2.4.4 • GSCR Sect. 2.4.5 |
| Preset Conferencing | Yes | <ul style="list-style-type: none"> • Support 10 bridges; 1 originator and 20 conferees per bridge (C) • Assign up to 20 address numbers per bridge (C) • Use KXX codes for bridge access (C) • Conference notification recorded announcement (C) • Auto retrieval and alternate address (C) • Bridge release (C) • Lost connection (C) • Secondary conferencing (C) • Address translation (C) | <ul style="list-style-type: none"> • GSCR Sect. 2.6 • GSCR Sect. 2.6 • GSCR Sect. 2.6 • GSCR Sect. 2.6.1 • GSCR Sect. 2.6.2 • GSCR Sect. 2.6.3 • GSCR Sect. 2.6.4 • GSCR Sect. 2.6.5 • GSCR Sect. 2.7 |
| Nailed-up Connections | No | <ul style="list-style-type: none"> • Between any two like terminations (C) • PCM-24 and PCM-30, both CAS and CCS (C) • Supervision passed end-to-end for A/D or D/A (C) • Monitored and auto reconfigure (C) • Support at least 10% of circuits as nailed-up (C) • Non-preemptable (C) | <ul style="list-style-type: none"> • GSCR Sect. 2.8 |
| PAT | No | <ul style="list-style-type: none"> • Classmark for/not for PAT screening (C) • 7 PAT mechanisms (C) • Outgoing call screening (C) • Functional structure (C) • Simultaneous calls limitation (C) • Overflow process (C) • Decrementing call-in-progress count (C) • Call treatment (C) • Queuing (C) • Attendant calls (C) • Operations measurement registers (C) • Maintenance and Administration of thresholds (C) | <ul style="list-style-type: none"> • GSCR Sect. 2.11.1 • GSCR Sect. 2.11.1 • GSCR Sect. 2.11.1.1 • GSCR Sect. 2.11.1.2 • GSCR Sect. 2.11.1.3 • GSCR Sect. 2.11.1.4 • GSCR Sect. 2.11.1.5 • GSCR Sect. 2.11.1.6 • GSCR Sect. 2.11.1.7 • GSCR Sect. 2.11.1.8 • GSCR Sect. 2.11.1.9 • GSCR Sect. 2.11.1.10 |
| DSN Hotline Services | Yes | <ul style="list-style-type: none"> • Hotline restrictions (R) • Auto initiate (R) • Analog and digital (R) • Subscription basis (R) • Protected hotline calling (R) • WWNDP interoperable (R) | <ul style="list-style-type: none"> • GSCR Sect. 2.12 • GSCR Sect. 2.12 • GSCR Sect. 2.12 • GSCR Sect. 2.12 • GSCR Sect. 2.12.1-4 • GSCR Sect. 2.12.5 |

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Table 2. DVX Requirements (continued)

| DSN Features & Capabilities | | | |
|--|-----------------|---|--|
| Feature/ Capability | Critical | Requirements Required or Conditional | References |
| Network Management | Yes | <ul style="list-style-type: none"> • Interfaces (R) • Measurements and data generation (R) • Fault management (R) • Configuration management (R) • Accounting management (R) • Performance management (R) • Network Management controls (R) • Remote access (R) | <ul style="list-style-type: none"> • GSCR Sect. 9.1 • GSCR Sect. 9.2 • GSCR Sect. 9.3 • GSCR Sect. 9.4 • GSCR Sect. 9.5 • GSCR Sect. 9.6 • GSCR Sect. 9.7 • GSCR Sect. 9.8 |
| ISDN Services | No | <ul style="list-style-type: none"> • Electronic Key Telephone System (C) | <ul style="list-style-type: none"> • GSCR Sect. 10, table 10-3 |
| Synchronization | Yes | <ul style="list-style-type: none"> • Line timing mode (R) • Internal Stratum 4 (R) | <ul style="list-style-type: none"> • GSCR Sect. 11.1.1.2 • GSCR Sect. 11.1.2.2 |
| Reliability | No | <ul style="list-style-type: none"> • GR-512-CORE (R) | <ul style="list-style-type: none"> • GSCR Sect. 12 |
| Security | Yes | <ul style="list-style-type: none"> • GR-815, STIGs, and DIACAP (replacement for DITSCAP) (R) | <ul style="list-style-type: none"> • GSCR Sect. 13 |
| VoIP | | | |
| VoIP System | No | <p>VoIP function is conditional. If VoIP is provided, all of the following requirements must be met:</p> <ul style="list-style-type: none"> • Voice Quality with MOS of 4.0 or better • Class of Service (CoS) and Quality of Service (QoS) • ITU-T G.711 PCM Codec • Traffic Engineering • Security • NM • Line timing • Internal Clock • Latency ≤ 60 milliseconds • Packet Loss • IPv6 capable | <ul style="list-style-type: none"> • GSCR Appendix 3 • GSCR Appendix 3, paragraph 1.7 |

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Table 2. DVX Requirements (continued)

| Network Gateways | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--------------------------------------|--|--|---|----------|-------|---|-----|-------------------------------|-----|--------------------------------|----|-----------------------------------|-----|-------------------------|------|---|-------------|----------------------------------|--------|---------------------------------------|-----|-------------------|--------|--------------------------------------|--------|---------------------------------------|-----|------------------------|------|---|-----|--------------------------|---|---------------|-------|-------------------------------|------|-------------------------------------|-----|--------------------------------|------|-------------------------------|---------|--------------------------------------|-----|----------------------------|------|---------------------------------------|---------|---------------------------------------|-------|---|----|--------------------------|---|------------|--|-------------|-------|---|---------|-----------|-----|--------------------------------|--|-----------------------------------|-----|----------------------|--------|---|-------|---|-----|-----------------------------|------|-----------------------------|------|-----------------------|-------|--|---------|---|-----|--|---------|--|-----|-------------------------|------|-----------------------|----|--|----|--------------|------|------------------------------------|---------|--|------|------------------------------|------|---|-----|---|-----|----------------------------|-----|----------------------|---------------|---|------|-----------------------------|--------|---------------------------------|-----|---------------------|-----|-----------------------------|------|--|------|--------------------------------|-----|-----------------|------|--|-----|--------------------------|----|--|--|--|-------|--|-----|----------------------------------|--|--|--|--|
| Gateway | Critical | Requirements Required or Conditional | | References | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PSTN ¹ | Yes | Trunking | <ul style="list-style-type: none"> Positive Identification Control (R) On-Netting (R) Off-Netting (R) | <ul style="list-style-type: none"> CJCSI 6215.01B CJCSI 6215.01B CJCSI 6215.01B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DRSN ² | Yes | Access | <ul style="list-style-type: none"> Alerting Signals and Tones (R) Call Processing (R) Call Treatments (R) Analog busy/idle (R) | <ul style="list-style-type: none"> GSCR Sect. 5.5 GSCR Sect. 4.4 GSCR Sect. 4.1 GSCR Sect. 4.3.4.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Voice | <ul style="list-style-type: none"> MOS (C) MLPP (C) Secure calls (C) | <ul style="list-style-type: none"> CJCSI 6215.01B GSCR Sect. 3 CJCSI 6215.01B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LEGEND: <table border="0"> <tr> <td>2W</td><td>- 2-Wire</td> <td>G.711</td><td>- Standard for PCM of Voice Frequencies</td> <td>PAT</td><td>- Precedence Access Threshold</td> </tr> <tr> <td>A/D</td><td>- Analog to Digital Conversion</td> <td>GR</td><td>- Generic Requirement (Telcordia)</td> <td>PCM</td><td>- Pulse Code Modulation</td> </tr> <tr> <td>ANSI</td><td>- American National Standards Institute</td> <td>GR-512-CORE</td><td>- LSSGR: Reliability, Section 12</td> <td>PCM-24</td><td>- Pulse Code Modulation - 24 Channels</td> </tr> <tr> <td>BER</td><td>- Bit Error Ratio</td> <td>GR-815</td><td>- LSSGR: Synchronization, Section 18</td> <td>PCM-30</td><td>- Pulse Code Modulation - 30 Channels</td> </tr> <tr> <td>BRI</td><td>- Basic Rate Interface</td> <td>GSCR</td><td>- Generic Switching Center Requirements</td> <td>PRI</td><td>- Primary Rate Interface</td> </tr> <tr> <td>C</td><td>- Conditional</td> <td>H.320</td><td>- Standard for Narrowband VTC</td> <td>PSTN</td><td>- Public Switched Telephone Network</td> </tr> <tr> <td>CAS</td><td>- Channel Associated Signaling</td> <td>IPv6</td><td>- Internet Protocol version 6</td> <td>Q.735.3</td><td>- SS7 Signaling Standard for E1 MLPP</td> </tr> <tr> <td>CCS</td><td>- Common Channel Signaling</td> <td>ISDN</td><td>- Integrated Services Digital Network</td> <td>Q.955.3</td><td>- ISDN Signaling Standard for E1 MLPP</td> </tr> <tr> <td>CJCSI</td><td>- Chairman of the Joint Chiefs of Staff</td> <td>IT</td><td>- Information Technology</td> <td>R</td><td>- Required</td> </tr> <tr> <td></td><td>Instruction</td> <td>ITU-T</td><td>- International Telecommunication Union</td> <td>Section</td><td>- Section</td> </tr> <tr> <td>D/A</td><td>- Digital to Analog Conversion</td> <td></td><td>Telecommunication Standardization</td> <td>SS7</td><td>- Signaling System 7</td> </tr> <tr> <td>DIACAP</td><td>- DoD Information Assurance and Accreditation Process</td> <td>LSSGR</td><td>- Local Access and Transport Area (LATA) Switching Systems Generic Requirements</td> <td>STE</td><td>- Secure Terminal Equipment</td> </tr> <tr> <td>DISR</td><td>- DoD IT Standards Registry</td> <td>kbps</td><td>- kilobits per second</td> <td>STIGs</td><td>- Security Technical Implementation Guides</td> </tr> <tr> <td>DITSCAP</td><td>- DoD IT Security and Accreditation Process</td> <td>KXX</td><td>- K= any number 2-8; X= any number 1-9</td> <td>STU-III</td><td>- Secure Telephone Unit - 3rd Generation</td> </tr> <tr> <td>DoD</td><td>- Department of Defense</td> <td>Mbps</td><td>- Megabits per second</td> <td>T1</td><td>- Digital Transmission Link Level 1 (1.544 Mbps)</td> </tr> <tr> <td>DP</td><td>- Dial Pulse</td> <td>MFR1</td><td>- Multi-Frequency Recommendation 1</td> <td>T1.619a</td><td>- SS7 and ISDN Signaling Standard for T1</td> </tr> <tr> <td>DRSN</td><td>- Defense Red Switch Network</td> <td>MLPP</td><td>- Multi-Level Precedence and Preemption</td> <td>TIA</td><td>- Telecommunications Industry Association</td> </tr> <tr> <td>DSN</td><td>- Defense Switched Network</td> <td>MOS</td><td>- Mean Opinion Score</td> <td>TIA/EIA-465-A</td><td>- Group 3 Facsimile Apparatus for Document Transmission</td> </tr> <tr> <td>DTMF</td><td>- Dual Tone Multi-Frequency</td> <td>NI 1/2</td><td>- National ISDN Standard 1 or 2</td> <td>VBD</td><td>- Variable bit data</td> </tr> <tr> <td>DVX</td><td>- Deployable Voice Exchange</td> <td>NX56</td><td>- Data format restricted to multiples of 56 kbps</td> <td>VoIP</td><td>- Voice over Internet Protocol</td> </tr> <tr> <td>E&M</td><td>- Ear and Mouth</td> <td>NX64</td><td>- Data format restricted to multiples of 64 kbps</td> <td>VTC</td><td>- Video Teleconferencing</td> </tr> <tr> <td>E1</td><td>- European Basic Multiplex Rate (2.048 Mbps)</td> <td></td><td></td> <td>WWNDP</td><td>- Worldwide Numbering and Dialing Plan</td> </tr> <tr> <td>EIA</td><td>- Electronic Industries Alliance</td> <td></td><td></td> <td></td><td></td> </tr> </table> | | | | | 2W | - 2-Wire | G.711 | - Standard for PCM of Voice Frequencies | PAT | - Precedence Access Threshold | A/D | - Analog to Digital Conversion | GR | - Generic Requirement (Telcordia) | PCM | - Pulse Code Modulation | ANSI | - American National Standards Institute | GR-512-CORE | - LSSGR: Reliability, Section 12 | PCM-24 | - Pulse Code Modulation - 24 Channels | BER | - Bit Error Ratio | GR-815 | - LSSGR: Synchronization, Section 18 | PCM-30 | - Pulse Code Modulation - 30 Channels | BRI | - Basic Rate Interface | GSCR | - Generic Switching Center Requirements | PRI | - Primary Rate Interface | C | - Conditional | H.320 | - Standard for Narrowband VTC | PSTN | - Public Switched Telephone Network | CAS | - Channel Associated Signaling | IPv6 | - Internet Protocol version 6 | Q.735.3 | - SS7 Signaling Standard for E1 MLPP | CCS | - Common Channel Signaling | ISDN | - Integrated Services Digital Network | Q.955.3 | - ISDN Signaling Standard for E1 MLPP | CJCSI | - Chairman of the Joint Chiefs of Staff | IT | - Information Technology | R | - Required | | Instruction | ITU-T | - International Telecommunication Union | Section | - Section | D/A | - Digital to Analog Conversion | | Telecommunication Standardization | SS7 | - Signaling System 7 | DIACAP | - DoD Information Assurance and Accreditation Process | LSSGR | - Local Access and Transport Area (LATA) Switching Systems Generic Requirements | STE | - Secure Terminal Equipment | DISR | - DoD IT Standards Registry | kbps | - kilobits per second | STIGs | - Security Technical Implementation Guides | DITSCAP | - DoD IT Security and Accreditation Process | KXX | - K= any number 2-8; X= any number 1-9 | STU-III | - Secure Telephone Unit - 3 rd Generation | DoD | - Department of Defense | Mbps | - Megabits per second | T1 | - Digital Transmission Link Level 1 (1.544 Mbps) | DP | - Dial Pulse | MFR1 | - Multi-Frequency Recommendation 1 | T1.619a | - SS7 and ISDN Signaling Standard for T1 | DRSN | - Defense Red Switch Network | MLPP | - Multi-Level Precedence and Preemption | TIA | - Telecommunications Industry Association | DSN | - Defense Switched Network | MOS | - Mean Opinion Score | TIA/EIA-465-A | - Group 3 Facsimile Apparatus for Document Transmission | DTMF | - Dual Tone Multi-Frequency | NI 1/2 | - National ISDN Standard 1 or 2 | VBD | - Variable bit data | DVX | - Deployable Voice Exchange | NX56 | - Data format restricted to multiples of 56 kbps | VoIP | - Voice over Internet Protocol | E&M | - Ear and Mouth | NX64 | - Data format restricted to multiples of 64 kbps | VTC | - Video Teleconferencing | E1 | - European Basic Multiplex Rate (2.048 Mbps) | | | WWNDP | - Worldwide Numbering and Dialing Plan | EIA | - Electronic Industries Alliance | | | | |
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| A/D | - Analog to Digital Conversion | GR | - Generic Requirement (Telcordia) | PCM | - Pulse Code Modulation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| BRI | - Basic Rate Interface | GSCR | - Generic Switching Center Requirements | PRI | - Primary Rate Interface | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | - Conditional | H.320 | - Standard for Narrowband VTC | PSTN | - Public Switched Telephone Network | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAS | - Channel Associated Signaling | IPv6 | - Internet Protocol version 6 | Q.735.3 | - SS7 Signaling Standard for E1 MLPP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCS | - Common Channel Signaling | ISDN | - Integrated Services Digital Network | Q.955.3 | - ISDN Signaling Standard for E1 MLPP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CJCSI | - Chairman of the Joint Chiefs of Staff | IT | - Information Technology | R | - Required | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Instruction | ITU-T | - International Telecommunication Union | Section | - Section | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D/A | - Digital to Analog Conversion | | Telecommunication Standardization | SS7 | - Signaling System 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DIACAP | - DoD Information Assurance and Accreditation Process | LSSGR | - Local Access and Transport Area (LATA) Switching Systems Generic Requirements | STE | - Secure Terminal Equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DISR | - DoD IT Standards Registry | kbps | - kilobits per second | STIGs | - Security Technical Implementation Guides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DITSCAP | - DoD IT Security and Accreditation Process | KXX | - K= any number 2-8; X= any number 1-9 | STU-III | - Secure Telephone Unit - 3 rd Generation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DoD | - Department of Defense | Mbps | - Megabits per second | T1 | - Digital Transmission Link Level 1 (1.544 Mbps) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP | - Dial Pulse | MFR1 | - Multi-Frequency Recommendation 1 | T1.619a | - SS7 and ISDN Signaling Standard for T1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DRSN | - Defense Red Switch Network | MLPP | - Multi-Level Precedence and Preemption | TIA | - Telecommunications Industry Association | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DSN | - Defense Switched Network | MOS | - Mean Opinion Score | TIA/EIA-465-A | - Group 3 Facsimile Apparatus for Document Transmission | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DTMF | - Dual Tone Multi-Frequency | NI 1/2 | - National ISDN Standard 1 or 2 | VBD | - Variable bit data | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DVX | - Deployable Voice Exchange | NX56 | - Data format restricted to multiples of 56 kbps | VoIP | - Voice over Internet Protocol | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E&M | - Ear and Mouth | NX64 | - Data format restricted to multiples of 64 kbps | VTC | - Video Teleconferencing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E1 | - European Basic Multiplex Rate (2.048 Mbps) | | | WWNDP | - Worldwide Numbering and Dialing Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EIA | - Electronic Industries Alliance | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NOTES: 1 Voice, facsimile, data, and VTC service requirements for PSTN are identical to DSN with the exception of MLPP. 2 Facsimile, data, and VTC services are not provided via the DSN to DRSN interface. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

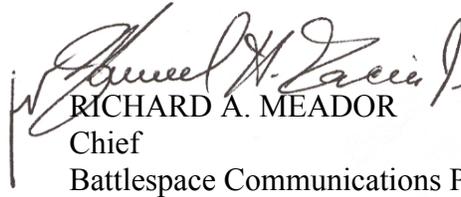
5. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive 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 <https://jit.fhu.disa.mil> (NIPRNet), or <http://199.208.204.125> (SIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>.

JITC Memo, JTE, Special Interoperability Test Certification of REDCOM High Density Exchange (HDX) Digital Switching System with Software Release 2.0A, Revision 3, with Specified Patch Group 0 (2.0A R3P0), certified as a Deployable Voice Exchange (DVX)

6. The JITC point of contact is Mr. John Hooper, DSN 879-5041, commercial (520) 538-5041, FAX DSN 879-4347, or e-mail to john.hooper@disa.mil. The tracking number for the SUT is 604702.

FOR THE COMMANDER:

2 Enclosures a/s


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Office of Under Secretary of Defense, AT&L, Room 3E144, 3070 Defense Pentagon, Washington, DC 20301

U.S. Joint Forces Command, J68, Net-Centric Integration, Communications, and Capabilities Division, 1562 Mitscher Ave., Norfolk, VA 23551-2488

Defense Information Systems Agency (DISA), ATTN: GS23 (Mr. Osman), Room 5w23, 5275 Leesburg Pike (RTE 7), Falls Church, VA 22041

ADDITIONAL REFERENCES

- (c) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01B, "Policy for Department of Defense Voice Services," 23 September 2001
- (d) Defense Information Systems Agency (DISA), "Defense Switched Network (DSN) New Generic Switching Center Requirements (GSCR), Change 1," 1 March 2005
- (e) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 1, Revision 1," 1 June 2005
- (f) Executive Office of the President, "Transition Planning for Internet Protocol version 6 (IPv6)," 2 August 2005

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. REDCOM High Density Exchange (HDX) Digital Switching System with Software Release 2.0A Revision 3, with Specified Patch Group 0 (2.0A R3P0), certified as a Deployable Voice Exchange (DVX); hereinafter referred to as the System Under Test (SUT).

2. PROPONENT. Defense Information Systems Agency (DISA).

3. PROGRAM MANAGER. Mr. Howard Osman, GS23, Room 5W23, 5275 Leesburg Pike, Falls Church, VA 22041, E-mail: Howard.Osman@disa.mil.

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

5. SYSTEM UNDER TEST DESCRIPTION. The SUT is a digital telecommunications switching system that supports both analog and digital Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) lines, and analog and digital trunks. The analog trunks supported by the SUT are Ear and Mouth (E&M) Type I, II, and V, and Ground Start. The SUT supports Digital Transmission Link Level 1 (T1) and European Basic Multiplex Rate (E1). The digital Common Channel Signaling (CCS) trunks supported by the SUT are T1 and E1 ISDN Primary Rate Interface and T1 and E1 Signaling System 7 (SS7). The SUT supports T1 ISDN PRI, E1 ISDN PRI, T1 Channel Associated Signaling (CAS), E1 CAS, T1 SS7, E1 SS7, and Analog E&M Type I, II, V interfaces. The E1 SS7 interfaces were not tested and are not covered under this certification. The SUT offers a distributed architecture, which includes dual processors and memory on each shelf, with the capability of stacking shelves in a non-blocking backplane. A single shelf can function as a complete system by itself or can be stacked with other shelves to make systems up to 16,000 ports (lines and trunks; 4000 non-blocking), up to 512 ports per shelf. The SUT is scalable and stackable up to 32 shelves. The SUT has been specifically designed to operate in a deployed environment and employs no fans, filters, or moving parts. All interface boards are hot swappable, making repairs easier. The SUT offers Voice over Internet Protocol (VoIP); however, this capability was not tested by JITC and is not covered by this certification.

4. OPERATIONAL ARCHITECTURE. The Defense Switched Network (DSN) architecture is a two-level network hierarchy consisting of DSN backbone switches and Service/Agency installation switches. Joint Staff policy and subscriber mission requirements determine which type of switch can be used at a particular location. The DSN architecture, therefore, consists of several categories of switches. The Generic Switching Center Requirements (GSCR) operational DSN Architecture is depicted in figure 2-1. This architecture depicts the relationship of the Military Department DVX to the other DSN switch types.

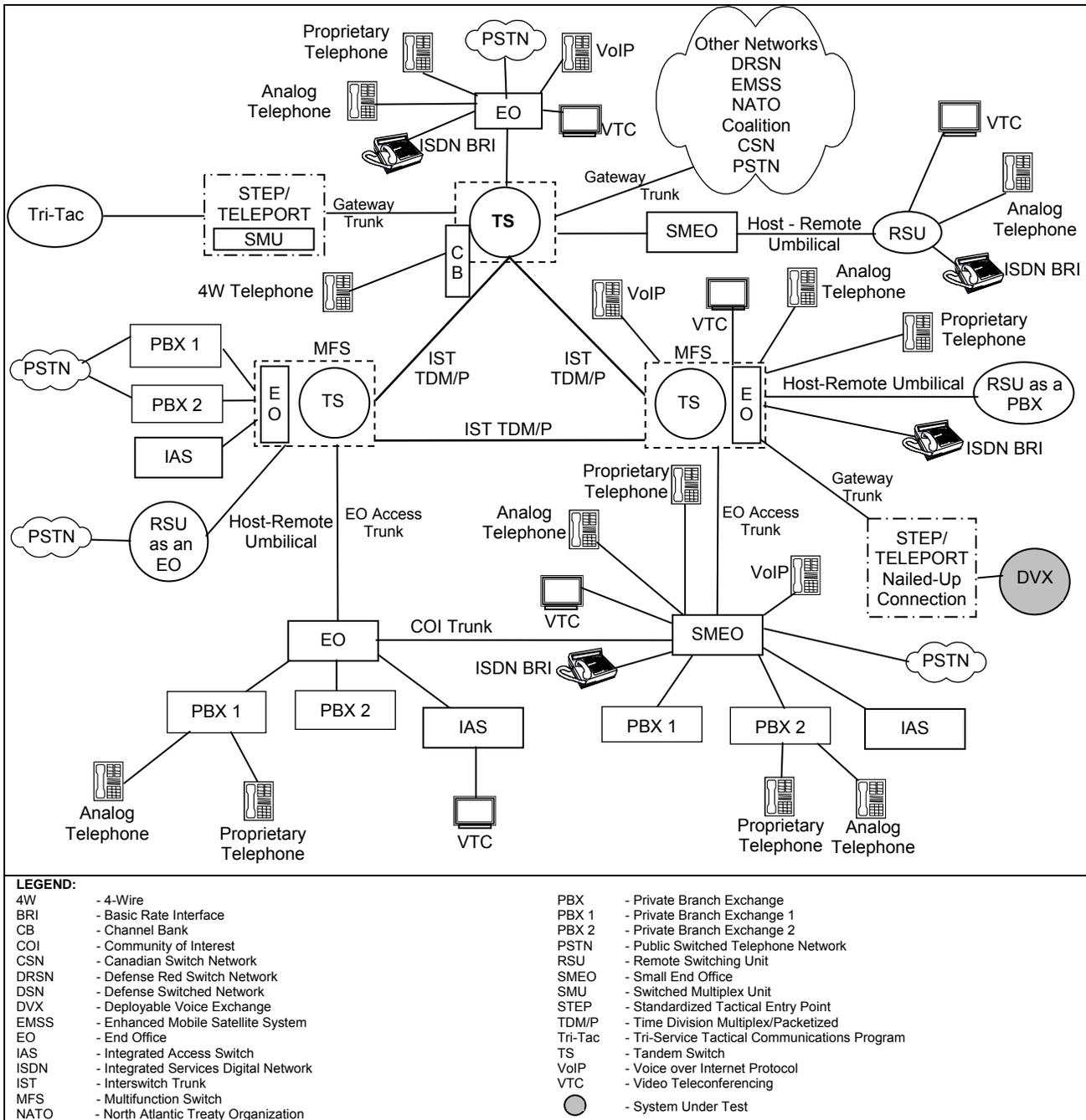


Figure 2-1. DSN Architecture

7. REQUIRED SYSTEM INTERFACES. Requirements specific to DVXs are listed in table 2-1. These requirements are derived from:

- a. DSN services for Network and Applications specified in Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01B, "Policy for Department of Defense Voice Services."

b. GSCR interface and signaling requirements for trunks/lines verified through JITC testing and/or vendor submission of Letters of Compliance (LoC).

c. GSCR DVX Capability Requirements (CRs) and Feature Requirements (FRs) verified through JITC testing and/or vendor submission of LoC.

Table 2-1. DVX Requirements

| DSN Trunk Interfaces | | | | |
|---|----------------------|---|--|--|
| Interface | Critical | Requirements Required or Conditional | | References |
| T1 SS7 (ANSI T1.619a) | No | Trunking | <ul style="list-style-type: none"> • Framing (R) • Line Code (R) • Signaling (R) • Alarms (R) • WWNDP (R) • Outpulsing digit formats (R: CAS only) • Routing (R) • Trunk Groups (R) • Call Processing (R) • CAS to CCS trunk interworking (C) • PCM-24/PCM-30 Interoperation (R) • Direct Inward Dialing (C) | <ul style="list-style-type: none"> • GSCR Sect. 7 • GSCR Sect. 7 • GSCR Sect. 5 • GSCR Sect. 2.5.7, 7.1.4 & 7.2.2 • GSCR Sect. 4.5.1 • GSCR Sect. 4.5.2 • GSCR Sect. 4.2 • GSCR Sect. 2.5.5 & 2.5.6 • GSCR Sect. 4 • GSCR Sect. 3.10 • GSCR Sect. 7.3 • GSCR Sect. 2.3.2 |
| E1 SS7 (ITU-T Q.735.3) | No | | | |
| T1 CAS (MFR1) | Yes | | | |
| T1 CAS (DTMF, DP) | Yes | | | |
| E1 CAS (MFR1, DTMF, DP) | Yes (Europe only) | Voice | <ul style="list-style-type: none"> • MOS (R) • MLPP (R) • Secure calls (R) | <ul style="list-style-type: none"> • CJCSI 6215.01B • GSCR Sect. 3 • CJCSI 6215.01B |
| T1 ISDN PRI NI 1/2 (ANSI T1.619a) | Yes | Facsimile | <ul style="list-style-type: none"> • Analog: TIA/EIA-465-A (R) | <ul style="list-style-type: none"> • DISR |
| E1 ISDN PRI (ITU-T Q.955.3) | No (Europe only) | Data | <ul style="list-style-type: none"> • Modem (VBD) (R) • 56 kbps switched data (R: PRI only) • 64 kbps switched data (R: PRI only) • NX56 synchronous BER (R: PRI only) • NX64 synchronous BER (R: PRI only) • Secure data (STE/STU-III) (R) | <ul style="list-style-type: none"> • CJCSI 6215.01B • GSCR Sect. 3.10 • GSCR Sect. 3.10 • GSCR Sect. 3.10 • GSCR Sect. 3.10 • CJCSI 6215.01B |
| Analog E&M Type I, II, V | Yes | VTC | <ul style="list-style-type: none"> • ITU-T H.320 (R: PRI only) | <ul style="list-style-type: none"> • DISR |
| DSN Line Interfaces | | | | |
| 2-Wire Analog | Yes | Access | <ul style="list-style-type: none"> • Directory Number Identification (R) • Line signaling (R) • Alerting Signals and Tones (R) • WWNDP (R) • Call Processing (R) • Call Treatments (R) • 2W user access (R: 2-Wire Analog only) • Analog busy/idle (R: 2-Wire Analog only) | <ul style="list-style-type: none"> • GSCR Sect. 2.1.1 • GSCR Sect. 5.2 • GSCR Sect. 5.5 • GSCR Sect. 4.5 • GSCR Sect. 4.4 • GSCR Sect. 4.1 • GSCR Sect. 4.3.3 • GSCR Sect. 4.3.4.1 |
| ISDN BRI NI 1/2 (ANSI T1.619a) | No | Voice | <ul style="list-style-type: none"> • MOS (R) • Announcements (R) • MLPP (R) • Secure Calls (R) | <ul style="list-style-type: none"> • CJCSI 6215.01B • GSCR Sect. 3.1.3 • GSCR Sect. 3.4.3/3.9 • CJCSI 6215.01B |
| | | Facsimile | <ul style="list-style-type: none"> • Analog: TIA/EIA-465-A (R) | <ul style="list-style-type: none"> • DISR |
| 2-Wire Proprietary Digital | No | Data | <ul style="list-style-type: none"> • Modem (VBD) (R) • 56 kbps switched data (R) • 64 kbps switched data (R: BRI only) • NX56 synchronous BER (R: BRI only) • NX64 synchronous BER (R: BRI only) • Secure data (STE/STU-III) (R) | <ul style="list-style-type: none"> • CJCSI 6215.01B • GSCR Sect. 3.10 • GSCR Sect. 3.10 • GSCR Sect. 3.10 • GSCR Sect. 3.10 • CJCSI 6215.01B |
| | | VTC | <ul style="list-style-type: none"> • ITU-T H.320 (R: BRI only) | <ul style="list-style-type: none"> • DISR |

Table 2-1. DVX Requirements (continued)

| DSN Features & Capabilities | | | |
|--|-----------------|--|---|
| Feature/ Capability | Critical | Requirements Required or Conditional | References |
| Common Features | Yes | <ul style="list-style-type: none"> • Selective call rejection (C) • Denied originating service (C) • Code restriction and diversion (R) • Call waiting (C) • Three-way calling (C) • Add-on transfer and conference calling and call hold (C) • Call forwarding (C) • Call pick-up (C) | <ul style="list-style-type: none"> • GSCR Sect. 2.1.2 • GSCR Sect. 2.1.3 • GSCR Sect. 2.1.4 • GSCR Sect. 2.1.5 • GSCR Sect. 2.1.6 • GSCR Sect. 2.1.7 • GSCR Sect. 2.1.8 • GSCR Sect. 2.1.9 |
| Attendant | No | <ul style="list-style-type: none"> • Initiate all precedence levels (C) • Visual display (C) • Override class of service (C) • Override busy line (C) • Call deflection (C) • Auto recall (C) • Waiting queue (C) | <ul style="list-style-type: none"> • GSCR Sect. 2.2.1 • GSCR Sect. 2.2.2 • GSCR Sect. 2.2.3 • GSCR Sect. 2.2.4 • GSCR Sect. 2.2.5 • GSCR Sect. 2.2.6 • GSCR Sect. 2.2.7 |
| Public Safety | Yes | <ul style="list-style-type: none"> • Basic Emergency Service (911) (C) • Trace of terminating calls (R) • Outgoing call trace (R) • Tandem call trace (R) • Trace of a call in progress (R) | <ul style="list-style-type: none"> • GSCR Sect. 2.4.1 • GSCR Sect. 2.4.2 • GSCR Sect. 2.4.3 • GSCR Sect. 2.4.4 • GSCR Sect. 2.4.5 |
| Preset Conferencing | Yes | <ul style="list-style-type: none"> • Support 10 bridges; 1 originator and 20 conferees per bridge (C) • Assign up to 20 address numbers per bridge (C) • Use KXX codes for bridge access (C) • Conference notification recorded announcement (C) • Auto retrieval and alternate address (C) • Bridge release (C) • Lost connection (C) • Secondary conferencing (C) • Address translation (C) | <ul style="list-style-type: none"> • GSCR Sect. 2.6 • GSCR Sect. 2.6 • GSCR Sect. 2.6 • GSCR Sect. 2.6.1 • GSCR Sect. 2.6.2 • GSCR Sect. 2.6.3 • GSCR Sect. 2.6.4 • GSCR Sect. 2.6.5 • GSCR Sect. 2.7 |
| Nailed-up Connections | No | <ul style="list-style-type: none"> • Between any two like terminations (C) • PCM-24 and PCM-30, both CAS and CCS (C) • Supervision passed end-to-end for A/D or D/A (C) • Monitored and auto reconfigure (C) • Support at least 10% of circuits as nailed-up (C) • Non-preemptable (C) | <ul style="list-style-type: none"> • GSCR Sect. 2.8 |
| PAT | No | <ul style="list-style-type: none"> • Classmark for/not for PAT screening (C) • 7 PAT mechanisms (C) • Outgoing call screening (C) • Functional structure (C) • Simultaneous calls limitation (C) • Overflow process (C) • Decrementing call-in-progress count (C) • Call treatment (C) • Queuing (C) • Attendant calls (C) • Operations measurement registers (C) • Maintenance and Administration of thresholds (C) | <ul style="list-style-type: none"> • GSCR Sect. 2.11.1 • GSCR Sect. 2.11.1 • GSCR Sect. 2.11.1.1 • GSCR Sect. 2.11.1.2 • GSCR Sect. 2.11.1.3 • GSCR Sect. 2.11.1.4 • GSCR Sect. 2.11.1.5 • GSCR Sect. 2.11.1.6 • GSCR Sect. 2.11.1.7 • GSCR Sect. 2.11.1.8 • GSCR Sect. 2.11.1.9 • GSCR Sect. 2.11.1.10 |
| DSN Hotline Services | Yes | <ul style="list-style-type: none"> • Hotline restrictions (R) • Auto initiate (R) • Analog and digital (R) • Subscription basis (R) • Protected hotline calling (R) • WWNDP interoperable (R) | <ul style="list-style-type: none"> • GSCR Sect. 2.12 • GSCR Sect. 2.12 • GSCR Sect. 2.12 • GSCR Sect. 2.12 • GSCR Sect. 2.12.1-4 • GSCR Sect. 2.12.5 |

Table 2-1. DVX Requirements (continued)

| DSN Features & Capabilities | | | |
|--|-----------------|---|---|
| Feature/ Capability | Critical | Requirements Required or Conditional | References |
| Network Management | Yes | <ul style="list-style-type: none"> • Interfaces (R) • Measurements and data generation (R) • Fault management (R) • Configuration management (R) • Accounting management (R) • Performance management (R) • Network Management controls (R) • Remote access (R) | <ul style="list-style-type: none"> • GSCR Sect. 9.1 • GSCR Sect. 9.2 • GSCR Sect. 9.3 • GSCR Sect. 9.4 • GSCR Sect. 9.5 • GSCR Sect. 9.6 • GSCR Sect. 9.7 • GSCR Sect. 9.8 |
| ISDN Services | No | <ul style="list-style-type: none"> • Electronic Key Telephone System (C) | <ul style="list-style-type: none"> • GSCR Sect. 10, table 10-3 |
| Synchronization | Yes | <ul style="list-style-type: none"> • Line timing mode (R) • Internal Stratum 4 (R) | <ul style="list-style-type: none"> • GSCR Sect. 11.1.1.2 • GSCR Sect. 11.1.2.2 |
| Reliability | No | <ul style="list-style-type: none"> • GR-512-CORE (R) | <ul style="list-style-type: none"> • GSCR Sect. 12 |
| Security | Yes | <ul style="list-style-type: none"> • GR-815, STIGs, and DIACAP (replacement for DITSCAP) (R) | <ul style="list-style-type: none"> • GSCR Sect. 13 |
| VoIP | | | |
| VoIP System | No | <p>VoIP function is conditional. If VoIP is provided, all of the following requirements must be met:</p> <ul style="list-style-type: none"> • Voice Quality with MOS of 4.0 or better • Class of Service (CoS) and Quality of Service (QoS) • ITU-T G.711 PCM Codec • Traffic Engineering • Security • NM • Line timing • Internal Clock • Latency ≤ 60 milliseconds • Packet Loss • IPv6 capable | <ul style="list-style-type: none"> • GSCR Appendix 3 • GSCR Appendix 3, paragraph 1.7 |

Table 2-1. DVX Requirements (continued)

| Network Gateways | | | | |
|--|----------|--------------------------------------|--|--|
| Gateway | Critical | Requirements Required or Conditional | | References |
| PSTN ¹ | Yes | Trunking | <ul style="list-style-type: none"> Positive Identification Control (R) On-Netting (R) Off-Netting (R) | <ul style="list-style-type: none"> CJCSI 6215.01B CJCSI 6215.01B CJCSI 6215.01B |
| DRSN ² | Yes | Access | <ul style="list-style-type: none"> Alerting Signals and Tones (R) Call Processing (R) Call Treatments (R) Analog busy/idle (R) | <ul style="list-style-type: none"> GSCR Sect. 5.5 GSCR Sect. 4.4 GSCR Sect. 4.1 GSCR Sect. 4.3.4.1 |
| | | Voice | <ul style="list-style-type: none"> MOS (C) MLPP (C) Secure calls (C) | <ul style="list-style-type: none"> CJCSI 6215.01B GSCR Sect. 3 CJCSI 6215.01B |
| LEGEND: 2W - 2-Wire A/D - Analog to Digital Conversion ANSI - American National Standards Institute BER - Bit Error Ratio BRI - Basic Rate Interface C - Conditional CAS - Channel Associated Signaling CCS - Common Channel Signaling CJCSI - Chairman of the Joint Chiefs of Staff Instruction D/A - Digital to Analog Conversion DIACAP - DoD Information Assurance and Accreditation Process DISR - DoD IT Standards Registry DITSCAP - DoD IT Security and Accreditation Process DoD - Department of Defense DP - Dial Pulse DRSN - Defense Red Switch Network DSN - Defense Switched Network DTMF - Dual Tone Multi-Frequency DVX - Deployable Voice Exchange E&M - Ear and Mouth E1 - European Basic Multiplex Rate (2.048 Mbps) EIA - Electronic Industries Alliance G.711 - Standard for PCM of Voice Frequencies GR - Generic Requirement (Telcordia) GR-512-CORE - LSSGR: Reliability, Section 12 GR-815 - LSSGR: Synchronization, Section 18 GSCR - Generic Switching Center Requirements H.320 - Standard for Narrowband VTC IPv6 - Internet Protocol version 6 ISDN - Integrated Services Digital Network IT - Information Technology ITU-T - International Telecommunication Union Telecommunication Standardization Sector LSSGR - Local Access and Transport Area (LATA) Switching Systems Generic Requirements kbps - kilobits per second KXX - K= any number 2-8; X= any number 1-9 Mbps - Megabits per second MFR1 - Multi-Frequency Recommendation 1 MLPP - Multi-Level Precedence and Preemption MOS - Mean Opinion Score NI 1/2 - National ISDN Standard 1or 2 NX56 - Data format restricted to multiples of 56 kbps NX64 - Data format restricted to multiples of 64 kbps PAT - Precedence Access Threshold PCM - Pulse Code Modulation PCM-24 - Pulse Code Modulation - 24 Channels PCM-30 - Pulse Code Modulation - 30 Channels PRI - Primary Rate Interface PSTN - Public Switched Telephone Network Q.735.3 - SS7 Signaling Standard for E1 MLPP Q.955.3 - ISDN Signaling Standard for E1 MLPP R - Required Sect. - Section SS7 - Signaling System 7 STE - Secure Terminal Equipment STIGs - Security Technical Implementation Guides STU-III - Secure Telephone Unit – 3 rd Generation T1 - Digital Transmission Link Level 1 (1.544 Mbps) T1.619a - SS7 and ISDN Signaling Standard for T1 T1A - Telecommunications Industry Association TIA/EIA-465-A - Group 3 Facsimile Apparatus for Document Transmission VBD - Variable bit data VoIP - Voice over Internet Protocol VTC - Video Teleconferencing WWNDP - Worldwide Numbering and Dialing Plan | | | | |
| NOTES: 1 Voice, facsimile, data, and VTC service requirements for PSTN are identical to DSN with the exception of MLPP. 2 Facsimile, data, and VTC services are not provided via the DSN to DRSN interface. | | | | |

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. Testing of the system’s required functions and features was conducted using the test configuration depicted in figure 2-2. The SUT was tested as the end-point in relation to the other switches.

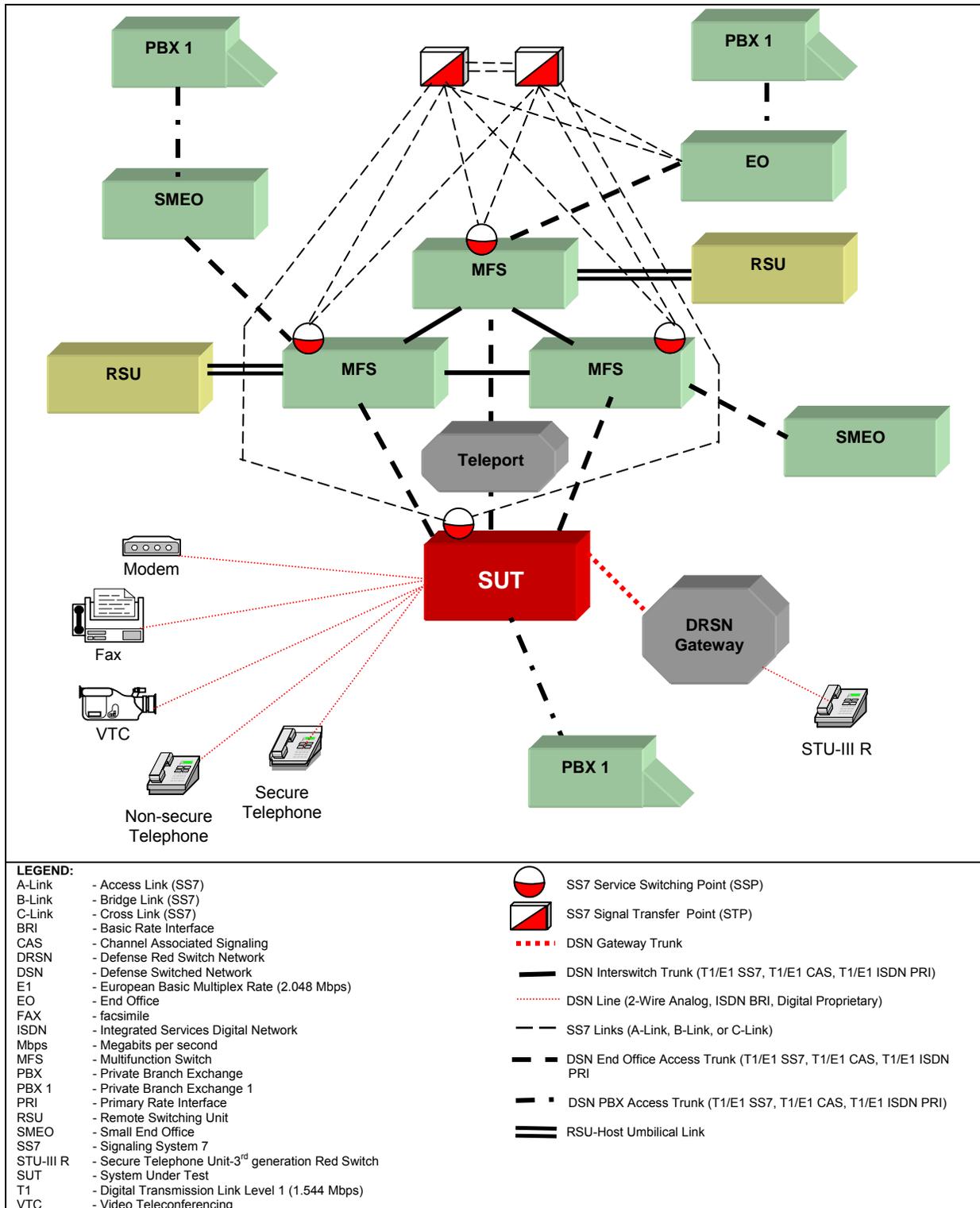


Figure 2-2. Test Configuration

9. SYSTEM CONFIGURATIONS. Table 2-3 provides the system configurations, hardware and software components tested with the SUT.

Table 2-3. Tested System Configurations

| System Name | | Software Release | |
|--|---|---------------------------|--|
| Nortel Networks CS2100 (MSL-100) (MFS, EO) | | SE08 | |
| Avaya S8710 (SMEO, PBX 1, PBX 2) | | CM 3.0 (R013x.00.0.340.3) | |
| Siemens EWSD (MFS, EO) | | 19d with Patch Set 46 | |
| Lucent 5ESS (MFS, EO) | | 5E16.2 SU 05.0005 | |
| Raytheon Secure Digital Switch (DRSN) | | 15.02.03 | |
| Raytheon Digital Small Switch (DRSN) | | 8.05.00 | |
| Subcomponent | | Part Number | |
| SUT Software Release V2.0AR3PO | U Interface BRI Line Card | MA0530-322 | |
| | S/T Interface BRI Line Card | MA0531-322 | |
| | MSU Processor Board | MA0656-001 | |
| | Expanded Digital Announcer Card | MA0647-002 | |
| | Universal Clock | MA0473-163 | |
| | Analog Card | MA0653-115 | |
| | | MA0702-302 | |
| | | MA0708-115 | |
| | | MA0317-904 | |
| | Analog E&M Card | MA0079-113 | |
| | DS1 Interface Card | MA0697-013 | |
| | E1 Interface Card | MA0337-002 | |
| | T1/E1 Interface Card | MA0683-144 | |
| | Digital Signal Processor | MA0609-310 | |
| | Message Transceiver Interface Card | MA0463-101 | |
| | Expanded R1/R2 Send/Receive Card | MA0520-102 | |
| Attendant Card | MA0366-101 | | |
| Time Slot Interchange | MA0648-002 | | |
| Signaling System 7 Interface | MA0688-101 | | |
| TELEPHONE INSTRUMENTS | | | |
| Interface Type | Model (s)/ Release | | |
| 2-Wire Analog | Panasonic KX-T2365 | | |
| 2-Wire Analog | Panasonic KX-TS15-W | | |
| ISDN BRI | REDCOM VOTPS / Push-To-Talk type firmware version – 111 204.00D | | |
| | REDCOM VOTPS / E type firmware version – 111 204.00D | | |
| LEGEND: | | | |
| 5ESS | - Class 5 Electronic Switching System | MSU | - Module Switching Unit |
| BRI | - Basic Rate Interface | PBX 1 | - Private Branch Exchange 1 |
| CM | - Communications Manager | PBX 2 | - Private Branch Exchange 2 |
| CS | - Call Server | R2 | - Region Two MF signaling (R1 is for North American MF signaling and is normally not used except to show the contrast with R2 MF signaling.) |
| DRSN | - Defense Red Switch Network | SE | - Succession Enterprise |
| DS1 | - Digital Signal Level 1 | SMEO | - Small End Office |
| E&M | - Ear and Mouth | S/T | - ISDN BRI 4-Wire interface |
| E1 | - European Basic Multiplex Rate (2.048 Mbps) | SU | - Software Update |
| EO | - End Office | SUT | - System Under Test |
| EWSD | - Elektronisches Wählsystem Digital | T1 | - Digital Transmission Link Level 1 (1.544 Mbps) |
| ISDN | - Integrated Services Digital Network | U | - ISDN BRI 2-Wire interface |
| Mbps | - Megabits per second | VOTPS | - Voice Only Teleset Plus S (S is an S/T interface) |
| MF | - Multi-frequency | | |
| MFS | - Multifunction Switch | | |
| MSL | - Meridian Switching Load | | |

10. TESTING LIMITATIONS. None.

11. TEST RESULTS

a. Discussion

(1) DSN Trunk Interfaces. The SUT met all critical interoperability certification CRs and FRs for T1 ISDN PRI National ISDN Standard 1 or 2 (NI 1/2), E1 ISDN PRI, T1 CAS, E1 CAS, T1 SS7, and Analog E&M Type I, II, and V interfaces. Detailed trunk configurations and associated lessons learned can be found on the DISA web page: <http://jitc.fhu.disa.mil/tssi>

(2) DSN Line Interfaces. The SUT met all critical interoperability certification requirements for 2-Wire Analog (GR-506-CORE) and ISDN BRI NI 1/2 with the exceptions noted in the following subparagraphs. Refer to table 2-3 for specific instrument models tested under this certification test. The overall operational impact of these discrepancies is minor.

(a) The SUT does not properly support Precedence Call Diversion on an analog set that is configured for Precedence Call Waiting. If an analog set, configured for Precedence Call Waiting on the SUT, is ringing with a precedence call above ROUTINE and another precedence call above ROUTINE is placed to the ringing analog set the precedence call diversion timer does not start until the first call's precedence diversion timer expires and the first call is diverted. This limitation has posed a minor operational impact within the DSN since all calls are eventually diverted.

(b) The SUT does not support the full complement of CoS tables as specified in the GSCR. The SUT supports 255 CoS tables for analog lines and does not support CoS tables on access lines, number codes, trunks, or groups of trunks. This limitation has posed a minor operational impact within the DSN when assigning lines and trunks on the SUT. This limitation may result in additional time required when initially configuring the SUT.

(c) The SUT does not fully support multiple line appearances on the ISDN BRI line for incoming calls. Since Multi-Level Precedence and Preemption interaction is not affected with a single line appearance the operational impact is minor.

(3) Features and Capabilities

(a) Common Features. The SUT met all CRs and FRs for common features.

(b) Attendant. The SUT met all CRs and FRs for attendant services.

(c) Public Safety. The SUT met all CRs and FRs for public safety.

(d) Preset Conferencing. The SUT met all CRs and FRs for preset conferencing.

(e) Nailed-up Connections. This feature is not supported by the SUT. The operational impact is minor because it is not a critical requirement for a DVX.

(f) Precedence Access Threshold. This feature is not supported by the SUT. The operational impact is minor because it is not a critical requirement for a DVX.

(g) DSN Hotline Services. The SUT met all CRs and FRs for DSN Hotline Services.

(h) Network Management. The SUT met all CRs and FRs for Network Management with an Institute of Electrical and Electronics Engineers, Inc. 802.3 Ethernet 10/100BaseT interface. This interface met the Internet Protocol version 6 requirements with an LoC in accordance with references (d) and (f).

(i) ISDN Services Electronic Key Telephone System. This feature is not supported by the SUT. The operational impact is minor because it is not a critical requirement for a DVX.

(j) Synchronization. All critical interoperability certification CRs and FRs were met for this feature by the SUT. The SUT supports line timing mode and Internal Stratum 4 for synchronization.

(k) Reliability. All critical interoperability certification CRs and FRs for this feature were met by the SUT and verified by vendor LoC.

(l) Security. Security CRs and FRs are verified using the Information Assurance Test Plan. Results of the security testing are reported in a separate test report generated by the DISA Information Assurance test personnel.

(m) VoIP. The SUT offers VoIP; however, this capability was not tested by JITC and is not covered by this certification.

(4) Network Gateways. The SUT met all critical interoperability certification CRs and FRs the following Network Gateways: Public Switched Telephone Network (PSTN) and the Defense Red Switch Network (DRSN). The certified interfaces for the PSTN are T1 CAS, E1 CAS, T1 ISDN PRI (ANSI T1.607), E1 PRI (ITU-T Q.931), T1 SS7, and Ground Start Line. The certified interface for the DRSN is 2-Wire analog (GR-506-CORE). Interoperability Certification of the SUT does not constitute DRSN Program Manager (PM)'s approval for connectivity to the DRSN. It is the user's responsibility to request connectivity approval directly from the PM.

b. System Interoperability Results. The SUT is certified for joint use within the DSN as a DVX in accordance with the requirements set forth in the GSCR. The identified test discrepancies shown that remained open after software patches were applied and

regression testing was completed have an overall minor operational impact. The interoperability test summary is shown in table 2-4.

Table 2-4. SUT Interoperability Test Summary

| DSN Trunk Interfaces | | | |
|--------------------------------------|----------------------|---------------|---|
| Interface & Signaling | Critical | Status | Remarks |
| T1 CAS (DTMF, DP) | Yes | Certified | Met all CRs and FRs. |
| T1 CAS (MFR1) | No | Certified | Met all CRs and FRs. |
| E1 CAS (DTMF, MFR1, DP) | Yes (Europe only) | Certified | Met all CRs and FRs. |
| T1 ISDN PRI NI 1/2 (ANSI T1.619a) | Yes | Certified | Met all CRs and FRs. |
| E1 PRI (ITU-T Q.955.3) | No (Europe only) | Certified | Met all CRs and FRs. |
| T1 SS7 (ANSI T1.619a) | No | Certified | Met all CRs and FRs. |
| E1 SS7 (ITU-T Q.735.3) | No | Not Tested | This interface is supported; however it was not tested and is not covered under this certification. There was no risk of not testing because it is not a critical requirement. |
| Analog E&M Type I, II and V | Yes | Certified | Met all CRs and FRs. |
| DSN Line Interfaces | | | |
| Interface & Signaling | Critical | Status | Remarks |
| 2-Wire Analog (GR-506-CORE) | Yes | Certified | Met all CRs and FRs with the following minor exceptions: The SUT does not properly support Precedence Call Diversion on an analog set that is configured for Precedence Call Waiting. ¹ The SUT does not support the full complement of CoS tables. ² |
| ISDN BRI NI 1/2 | No | Certified | Met all CRs and FRs with the following minor exceptions: The SUT does not support the full complement of CoS tables. ² Full compliance of multiple call appearances for incoming calls was not supported. ³ |
| 2-Wire Proprietary Digital | No | Not Tested | This interface is not supported by the SUT. The operational impact is minor because it is not a critical requirement. |
| DSN Features and Capabilities | | | |
| Features and Capabilities | Critical | Status | Remarks |
| Common Features | No | Certified | Met all CRs and FRs. |
| Attendant | No | Certified | Met all CRs and FRs. |
| Public Safety | Yes | Certified | Met all CRs and FRs. |
| Preset Conferencing | Yes | Certified | Met all CRs and FRs. |
| Nailed-up Connections | No | Not Tested | This feature is not supported by the SUT. The operational impact is minor because it is not a critical requirement. |
| Precedence Access Threshold | No | Not Tested | This feature is not supported by the SUT. The operational impact is minor because it is not a critical requirement. |
| DSN Hotline Services | Yes | Certified | Met all CRs and FRs. |
| Network Management | Yes | Certified | Met all CRs and FRs. The certified network management interface is IEEE 802.3 10BaseT. ⁴ |
| ISDN Services (EKTS) | No | Not Tested | This feature is not supported by the SUT. The operational impact is minor because it is not a critical requirement. |
| Synchronization | Yes | Certified | Met all CRs and FRs. |
| Reliability | No | Certified | Met all CRs and FRs. |
| Security | Yes | See note 5. | See note 5. |
| VoIP System | No | Not Tested | This feature is supported; however it was not tested and is not covered under this certification. There was no risk of not testing because it is not a critical requirement. |

Table 2-4. SUT Interoperability Test Summary (continued)

| Network Gateways | | | | |
|------------------|----------------------------------|---------------------|------------------------|---|
| Gateway | Interface & Signaling | Critical | Status | Remarks |
| PSTN | T1 CAS (DTMF, DP) | Yes | Certified | Met all CRs and FRs. |
| | T1 CAS (MFR1) | No | Certified | Met all CRs and FRs. |
| | E1 CAS (DTMF, MFR1, DP) | No (Europe only) | Certified | Met all CRs and FRs. |
| | T1 ISDN PRI NI 1/2 (ANSI T1.607) | No | Certified | Met all CRs and FRs. |
| | E1 PRI (ITU-T Q.931) | No (Europe only) | Certified | Met all CRs and FRs. |
| | T1 SS7 | No | Certified | Met all CRs and FRs. |
| | E1 SS7 | No | Not Tested | This interface is supported; however, it was not tested and is not covered under this certification. There was no risk of not testing because it is not a critical requirement. |
| | Ground Start Line | Yes | Certified | Met all CRs and FRs. |
| DRSN | TPC 2-Wire analog (GR-506-CORE) | Yes | Certified ⁶ | Met all CRs and FRs. |

LEGEND:

| | | | | | |
|----------|--|-------------|--|---------|---|
| 10BaseT | - 10 Mbps (Baseband Operation, Twisted Pair) | EKTS | - Electronic Key Telephone System | NI 1/2 | - National ISDN Standard 1 or 2 |
| Ethernet | | FRs | - Feature Requirements | PM | - Program Manager |
| 802.3 | - Standard for carrier sense multiple access with collision detection at 10 Mbps | GR | - Generic Requirement | PRI | - Primary Rate Interface |
| ANSI | - American National Standards Institute | GR-506-CORE | - Telcordia Signaling for Analog Interface Generic Requirement | PSTN | - Public Switched Telephone Network |
| BRI | - Basic Rate Interface | GSCR | - Generic Switching Center Requirements | Q.735.3 | - SS7 Signaling Standard for E1 MLPP |
| CAS | - Channel Associated Signaling | IEEE | - Institute of Electrical and Electronics Engineers, Inc. | Q.931 | - Signaling Standard for ISDN |
| CoS | - Class of Service | | | Q.955.3 | - ISDN signaling standard for E1 MLPP |
| CRs | - Capability Requirements | IPv4 | - Internet Protocol version 4 | SS7 | - Signaling System 7 |
| DISA | - Defense Information Systems Agency | IPv6 | - Internet Protocol version 6 | SUT | - System Under Test |
| DP | - Dial Pulse | ISDN | - Integrated Services Digital Network | T1 | - Digital Transmission Link Level 1 (1.544 Mbps) |
| DRSN | - Defense Red Switch Network | ITU-T | - International Telecommunication Union - Telecommunication Standardization Sector | T1.607 | - ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1 |
| DSN | - Defense Switched Network | | | T1.619a | - SS7 and ISDN MLPP Signaling Standard for T1 |
| DSS1 | - Digital Subscriber Signaling 1 | Mbps | - Megabits per second | TPC | - Twisted Pair Copper |
| DTMF | - Dual Tone Multi-Frequency | MFR1 | - Multifrequency Recommendation 1 | VoIP | - Voice over Internet Protocol |
| E&M | - Ear and Mouth | MLPP | - Multi-Level Precedence and Preemption | | |
| E1 | - European Basic Multiplex Rate (2.048 Mbps) | | | | |

NOTES:

- If an analog set, configured for Precedence Call Waiting on the SUT, is ringing with a precedence call above ROUTINE and another precedence call above ROUTINE is placed to the ringing analog set, the precedence call diversion timer does not start until the first call's precedence diversion timers expires and the first call is diverted. This limitation has posed a minor operational impact within the DSN since all calls are eventually diverted.
- The SUT does not support the full complement of CoS tables as specified in the GSCR. The SUT supports 255 CoS tables for analog lines and does not support CoS tables on access lines, number codes, trunks, or groups of trunks. This limitation has posed a minor operational impact within the DSN when assigning lines and trunks on the SUT. This limitation may result in additional time required when initially configuring the SUT.
- The SUT does not support multiple call appearances on the ISDN BRI for incoming calls. MLPP interaction functioned properly. The overall operational impact of the noted discrepancy is minor.
- An IPv6 capable system or product, as defined in the GSCR, paragraph 1.7, shall be capable of receiving, processing, and forwarding IPv6 packets and/or interfacing with other systems and protocols in a manner similar to that of IPv4. IPv6 capability is currently satisfied by a vendor Letter of Compliance signed by the Vice President of the company. The vendor stated, in writing, compliance to the following criteria by 30 June 2008:
 - Conformant with IPv6 standards profile contained in the Department of Defense Information Technology Standards Registry (DISR).
 - Maintaining interoperability in heterogeneous environments and with IPv4.
 - Commitment to upgrade as the IPv6 standard evolves.
 - Availability of contractor/vendor IPv6 technical support.
- Security is tested by DISA-led Information Assurance test teams and published in a separate report.
- Interoperability Certification of the SUT does not constitute DRSN PM's approval for connectivity to the DRSN. It is the user's responsibility to request connectivity approval directly from the PM.

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 <https://jit.fhu.disa.mil> (NIPRNet), or <http://199.208.204.125> (SIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>.