



DEFENSE INFORMATION SYSTEMS AGENCY

JOINT INTEROPERABILITY TEST COMMAND

P.O. BOX 12798

FORT HUACHUCA, ARIZONA 85670-2798

IN REPLY
REFER TO:

Battle Space Communications Portfolio (JTE)

3 January 2007

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of the K&R Custom Software Inc. Telecommunications Management System (TMS) with Software Release 5.2

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, Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification. Additional references are provided in enclosure 1.

2. The K&R Custom Software Inc. TMS with Software Release 5.2 is hereinafter referred to as the System Under Test (SUT). The SUT meets its interface requirements and all required functional capabilities and is certified for joint use within the Defense Switched Network (DSN). The SUT met the interface and functional requirements for a Customer Premise Equipment device as set forth in appendix 7 of reference (c). The SUT is certified specifically with switching systems listed in table 1. Testing was conducted using test procedures derived from reference (d). The Internet Protocol version 6 requirements set forth in references (c) and (e) were satisfied by the vendor's Letters of Compliance (LoC). This certification expires upon changes that affect interoperability, but no later than three years from the date of this memorandum.

Table 1. SUT Certified Switching System Configurations

Switch Name (See note 1.)	Software Release	NM Data Elements	Interfaces
Nortel MSL-100	SE06 with specific patch Groups	- CDR - Switch Interface - Alarm Monitoring - Traffic and Performance	- EIA-232 Synchronous ITU-T X.25 (CDR Only) - EIA-232 Asynchronous
<u>Nortel CS2100</u> (supports VoIP)	SE08 with specific patch Groups		
<u>Nortel DSN CS1000M Single Group</u> , DSN CS1000M Multi-Group (supports VoIP)	4.5W with product enhancement packages	- CDR - Switch Interface - Alarm Monitoring - Traffic and Performance	- EIA-232 Serial Asynchronous
<u>DSN M1 Option 61C</u> , DSN M1 Option 81C (supports VoIP)	4.5W with product enhancement packages	- CDR - Switch Interface - Alarm Monitoring - Traffic and Performance	- EIA-232 Serial Asynchronous

JITC Memo, JTE, Special Interoperability Test Certification of the K&R Custom Software Inc. Telecommunications Management System (TMS) with Software Release 5.2

Table 1. SUT Certified Switching System Configurations (continued)

Switch Name (See note 1.)	Software Release	NM Data Elements	Interfaces																										
Nortel Succession DSN 1000M Single-Group, Half-Group, and Multi-Group (supports VoIP)	Succession 3.0 with product enhancement packages	- CDR - Switch Interface - Alarm Monitoring - Traffic and Performance	- EIA-232 Serial Asynchronous																										
Nortel Succession DSN 1000M Cabinet, DSN 1000M Chassis, DSN 1000M (supports VoIP)	Succession 3.0 with product enhancement packages	- CDR - Switch Interface - Alarm Monitoring - Traffic and Performance	- EIA-232 Serial Asynchronous																										
Nortel Succession DSN Options 11C, 61C, and 81C	Succession 3.0 with product enhancement packages	- CDR - Switch Interface - Alarm Monitoring - Traffic and Performance	- EIA-232 Serial Asynchronous																										
Nortel M1Options 11C, 61C, and 81C	25.47 with specified software patches	- CDR - Switch Interface - Alarm Monitoring - Traffic and Performance	- EIA-232 Serial Asynchronous																										
Avaya S8700 (supports VoIP)	CM 2.0.1(R012X.00.1.221.1) with software patches 6960 and 6745	- CDR only	- IEEE 802.3 Ethernet ²																										
<u>Avaya S8700 and S8710</u> (supports VoIP)	CM 3.0 (R13X.00.0.340.5) with supported 11815	- CDR only	- IEEE 802.3 Ethernet ²																										
<u>Lucent 5ESS</u> (supports VoIP)	5E.16.2, SU 06-0002	- CDR - Alarm Monitoring - Traffic and Performance	- EIA-232 Serial Asynchronous																										
<p>LEGEND:</p> <table border="0"> <tr> <td>802.3 - Standard for carrier sense multiple access with collision detection at 10 Mbps</td> <td>IPv6 - Internet Protocol version 6</td> </tr> <tr> <td>5ESS - Class 5 Electronic Switching System</td> <td>ITU-T - International Telecommunication Union – Telecommunication Standardization Sector</td> </tr> <tr> <td>CDR - Call Detail Records</td> <td>JITC - Joint Interoperability Test Command</td> </tr> <tr> <td>CM - Communication Manager</td> <td>LoC - Letters of Compliance</td> </tr> <tr> <td>CS - Communications Server</td> <td>Mbps - Megabits per second</td> </tr> <tr> <td>DCE - Data Circuit-terminating Equipment</td> <td>MSL - Meridian Switching Load</td> </tr> <tr> <td>DSN - Defense Switched Network</td> <td>NM - Network Management</td> </tr> <tr> <td>DTE - Data Terminal Equipment</td> <td>SE - Succession Enterprise</td> </tr> <tr> <td>EIA - Electronic Industries Alliance</td> <td>SU - Software Update</td> </tr> <tr> <td>EIA-232 - Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices</td> <td>SUT - System Under Test</td> </tr> <tr> <td>GSCR - Generic Switching Center Requirements</td> <td>VoIP - Voice Internet Protocol</td> </tr> <tr> <td>IEEE - Institute of Electrical and Electronics Engineers, Inc.</td> <td>X.25 - Interface between DTE and DCE for terminals operating in the packet mode and connected to public data networks by dedicated circuit</td> </tr> <tr> <td>IPv4 - Internet Protocol version 4</td> <td></td> </tr> </table> <p>NOTES:</p> <p>1 Those switching systems bolded and underlined were tested specifically with the SUT by JITC. The other switching systems were not tested with the SUT; however, these systems were previously tested and certified by JITC with the same serial interfaces and JITC analysis determined them to be functionally identical for interoperability certification purposes and they are also certified with the SUT.</p> <p>2 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 LoC signed by the Vice President of the company. The vendor stated, in writing, compliance to the following criteria by 30 June 2008:</p> <p>(a) Conformance with IPv6 standards profile contained in the Department of Defense Information Technology Standards Registry (DISR).</p> <p>(b) Maintaining interoperability in heterogeneous environments and with IPv4.</p> <p>(c) Commitment to upgrade as the IPv6 standard evolves.</p> <p>(d) Availability of contractor/vendor IPv6 technical support.</p>				802.3 - Standard for carrier sense multiple access with collision detection at 10 Mbps	IPv6 - Internet Protocol version 6	5ESS - Class 5 Electronic Switching System	ITU-T - International Telecommunication Union – Telecommunication Standardization Sector	CDR - Call Detail Records	JITC - Joint Interoperability Test Command	CM - Communication Manager	LoC - Letters of Compliance	CS - Communications Server	Mbps - Megabits per second	DCE - Data Circuit-terminating Equipment	MSL - Meridian Switching Load	DSN - Defense Switched Network	NM - Network Management	DTE - Data Terminal Equipment	SE - Succession Enterprise	EIA - Electronic Industries Alliance	SU - Software Update	EIA-232 - Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices	SUT - System Under Test	GSCR - Generic Switching Center Requirements	VoIP - Voice Internet Protocol	IEEE - Institute of Electrical and Electronics Engineers, Inc.	X.25 - Interface between DTE and DCE for terminals operating in the packet mode and connected to public data networks by dedicated circuit	IPv4 - Internet Protocol version 4	
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3. This certification is based on interoperability testing and review of the vendor’s LoC. Interoperability testing was conducted by JITC at the Global Information Grid Network Test Facility, Fort Huachuca, Arizona, from 16 through 25 October 2006. Review of the vendor’s LoC was completed on 7 December 2006. The Certification Testing Summary (enclosure 2) documents the test results and describes the test configuration. Users should verify interoperability before deploying the SUT in an environment that varies significantly from that described.

4. The Functional Requirements used to evaluate the interoperability of the SUT and the interoperability statuses are indicated in table 2.

Table 2. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Functional Requirements	Met	GSCR Paragraph
Serial EIA-232	No ¹	Yes	In accordance with EIA-232 (C)	Met	A.7.5
			Configuration Management (C)	Met	
			Fault management (C)	Met	
			Performance management (C)	Met	
			Call Detail Records management (C)	Met	
IEEE 802.3 Ethernet ²	No ¹	Yes	Call Detail Records management (C)	Met	A.7.5
	Yes	See note 3.	Security (R)	See note 3.	A7.6.5

LEGEND:
802.3 - Standard for carrier sense multiple access with collision detection at 10 Mbps
A - Appendix
C - Conditional
DISA - Defense Information Systems Agency
EIA - Electronic Industries Alliance
EIA-232 - Standard for defining the mechanical and electrical characteristics for connecting Data Terminal Equipment and Data Circuit-terminating Equipment data communications devices
GSCR - Generic Switching Center Requirements
IEEE - Institute of Electrical and Electronics Engineers, Inc.
IPv4 - Internet Protocol version 4
IPv6 - Internet Protocol version 6
LoC - Letters of Compliance
Mbps - Megabits per second
PCM-24 - Pulse Code Modulation - 24 Channels
PCM-30 - Pulse Code Modulation - 30 Channels
R - Required
SUT - System Under Test

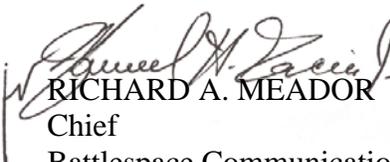
NOTES:
1 The SUT interoperability requirement can be met with any of the following interfaces: Ethernet, analog, digital, serial, PCM-24, or PCM-30.
2 An IPv6 capable system or product, as defined in the GSCR, paragraph 1.7, shall be capable of receiving, processing, and forwarding IPv6 packets and/or interfacing with other systems and protocols in a manner similar to that of IPv4. IPv6 capability is currently satisfied by a vendor LoC signed by the Vice President of the company. The vendor stated, in writing, compliance to the following criteria by 30 June 2008:
(a) Conformance with IPv6 standards profile contained in the Department of Defense Information Technology Standards Registry (DISR).
(b) Maintaining interoperability in heterogeneous environments and with IPv4.
(c) Commitment to upgrade as the IPv6 standard evolves.
(d) Availability of contractor/vendor IPv6 technical support.
3 Security is tested by DISA-led Information Assurance test teams and published in a separate report.

5. 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), 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>.

6. The JITC point of contact is Mike Napier, DSN 879-6787, commercial (520) 538-6787, FAX DSN 879-4347, or e-mail to michael.napier@disa.mil. The tracking number for the SUT is 0527901.

FOR THE COMMANDER:

2 Enclosures a/s


RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

JITC Memo, JTE, Special Interoperability Test Certification of the K&R Custom Software Inc. Telecommunications Management System (TMS) with Software Release 5.2

Distribution:

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Joint Interoperability Test Command, Liaison, ATTN: TED/JT1, 2W24-8C, P.O. Box 4502, Falls Church, VA 22204-4502

Defense Information Systems Agency, Net-Centricity Requirements and Assessment Branch, ATTN: GE333, Room 244, P.O. Box 4502, Falls Church, VA 22204-4502

Office of Chief of Naval Operations (N71CC2), CNO N6/N7, 2000 Navy Pentagon, Washington, DC 20350

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Department of the Army, Office of the Secretary of the Army, CIO/G6, ATTN: SAIS-IOQ, 107 Army Pentagon, Washington, DC 20310-0107

U.S. Marine Corps (C4ISR), MARCORSSYSCOM, 2200 Lester St., Quantico, VA 22134-5010
DOT&E, Net-Centric Systems and Naval Warfare, 1700 Defense Pentagon, Washington, DC 20301-1700

U.S. Coast Guard, CG-64, 2100 2nd St. SW, Washington, DC 20593

Defense Intelligence Agency, 2000 MacDill Blvd., Bldg 6000, Bolling AFB, Washington, DC 20340-3342

National Security Agency, ATTN: DT, Suite 6496, 9800 Savage Road, Fort Meade, MD 20755-6496

Director, Defense Information Systems Agency, ATTN: GS235, Room 5W24-8A, P.O. Box 4502, Falls Church, VA 22204-4502

Office of Assistant Secretary of Defense (NII)/DoD CIO, Crystal Mall 3, 7th Floor, Suite 7000, 1851 S. Bell St., Arlington, VA 22202

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) Defense Information Systems Agency, "Department of Defense Voice Networks Generic Switching Center Requirements (GSCR), Incorporated Change 1," 1 March 2005
- (d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 1, Revision 1" 1 June 2005.
- (e) Executive Office of the President, "Transition Planning for Internet Protocol version 6 (IPv6)," 2 August 2005

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. K&R Custom Software Inc. Telecommunications Management System (TMS) with Software Release 5.2 is 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 an integrated and fully supported TMS for organizations managing all or part of their telephone switch operations. It is a modular, integrated set of applications for customer-owned telephone office management. The SUT applications tested for interoperability purposes and covered by this certification include the following:

- **Plant/Cable Records:** Handles various types of circuits consistently with multi-level Inquiry. The SUT is able to receive automatic updates that are reportable to a disk as American Standard Code Information Interchange (ASCII) text.

- **Telephone Service Requests:** Updates plant/cable records; files work orders and trouble calls, which contain detailed service records; generates expense/charge transactions, man-hours expended, and expenses incurred.

- **Work Flow Control:** Work status display maintains each individual task list and approval cycle, which prevents unauthorized work order distribution.

- **Troubles:** This module allows any user with computer network access to the TMS file server to submit a telephone trouble report and to get feedback on the disposition of the trouble report.

- **Electronic Directory:** Quick-response directory assistance plus directory publishing capabilities can manage simple directories to complex structures. Online updates are instantly available and can be passed from other TMS modules.

- **Routine Maintenance:** The programs in this module allow automatic or manual generation of work orders tracked through completion. Information is maintained on work done, changes made, and appropriate charges and costs involved.

- **Toll Call Message Accounting (TCMA):** Produces Call Detail Records (CDR) and reports directly from the digital switching system. The SUT is able to connect to the digital switching systems from serial or Institute of Electrical and Electronics Engineers, Inc. (IEEE) 802.3 Ethernet connections to produce CDR.

- **Traffic and Performance:** This module records traffic data and is able to record data onto a disk for historical purposes and for analysis. Detailed traffic reports are searchable and printable.

- **The Alarm Monitor:** This application alerts the user of critical, major, and minor switch alarms. Installation of remote monitoring on any networked, authorized Personal Computer allows configurable, audible and visual alarms to alert the user.

- **Switch Interface:** This module provides a two-way link between the SUT and a digital switching system. The SUT lines database is automatically synchronized to the switch's "lines database". During synchronization, line and set options/features, key assignments, and group information are captured. Custom instrument key assignment details are available for vendor multi-button business sets. Users can query the switch real-time and update the switch through the TMS work order subsystem. The desired task is selected from a customized list that is based on the work order type and user level.

The following applications are also provided by the SUT; however, they were not tested and are not covered under this certification: Basic Emergency Service 911, Image Management, ViaNet, and Network Usage Bill.

6. OPERATIONAL ARCHITECTURE. The Generic Switching Center Requirements (GSCR) Defense Switched Network (DSN) architecture in figure 2-1 depicts the relationship of the SUT to the DSN switches.

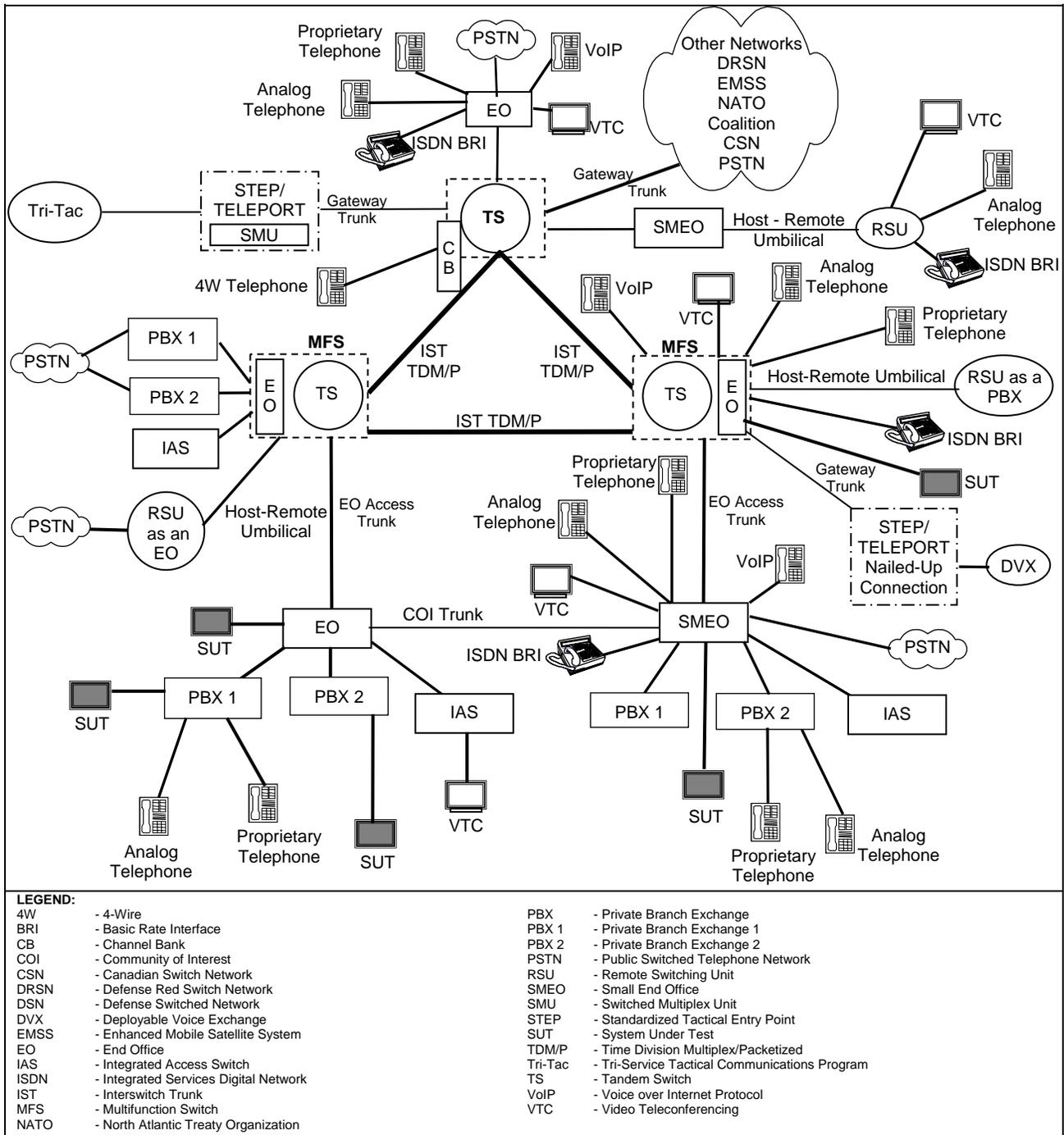


Figure 2-1. DSN Architecture

7. REQUIRED SYSTEM INTERFACES. Requirements specific to the SUT and interoperability results are listed in table 2-1. These requirements are derived from the GSCR Interface and Functional Requirements and were verified through JITC testing and vendor submission of Letters of Compliance.

Table 2-1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Functional Requirements	Met	GSCR Paragraph
Serial EIA-232	No ¹	Yes	In accordance with EIA-232 (C)	Met	A.7.5
			Configuration Management (C)	Met	
			Fault management (C)	Met	
			Performance management (C)	Met	
			Call Detail Records management (C)	Met	
IEEE 802.3 Ethernet ²	No ¹	Yes	Call Detail Records management (C)	Met	A.7.5
	Yes	See note 3.	Security (R)	See note 3.	A7.6.5

LEGEND:
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 IPv4 - Internet Protocol version 4
 IPv6 - Internet Protocol version 6
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 PCM-24 - Pulse Code Modulation - 24 Channels
 PCM-30 - Pulse Code Modulation - 30 Channels
 R - Required
 SUT - System Under Test

NOTES:
 1 The SUT interoperability requirement can be met with any of the following interfaces: Ethernet, analog, digital, serial, PCM-24, or PCM-30.
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 (c) Commitment to upgrade as the IPv6 standard evolves.
 (d) Availability of contractor/vendor IPv6 technical support.
 3 Security is tested by DISA-led Information Assurance test teams and published in a separate report.

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 the system's required functions and features was conducted using the test configurations depicted in figures 2-2 and 2-3.

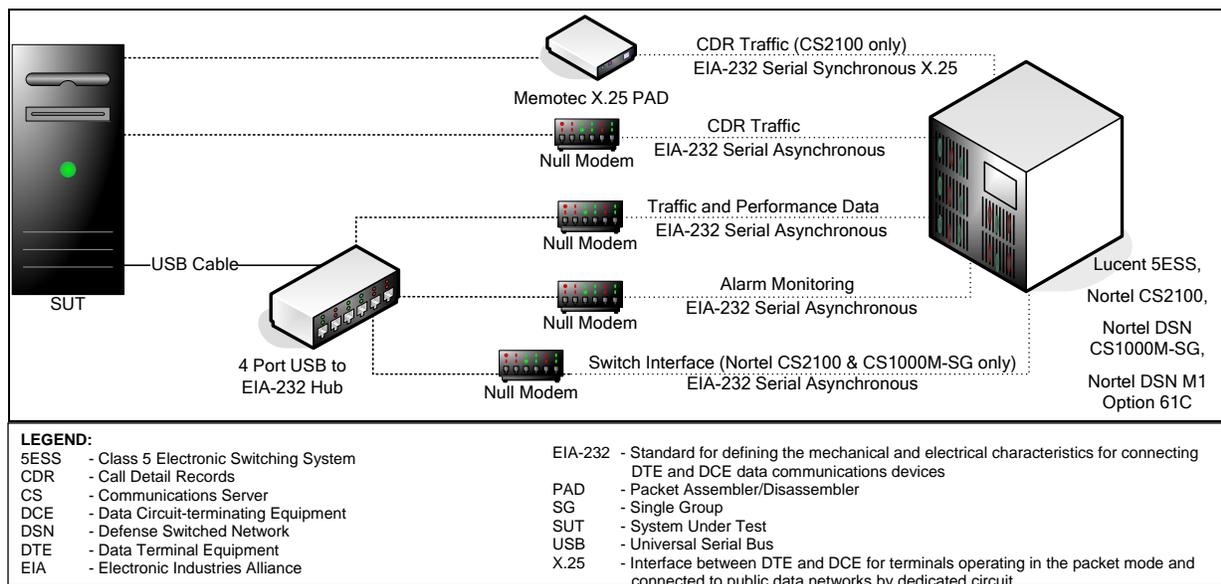


Figure 2-2. SUT Serial Test Configuration

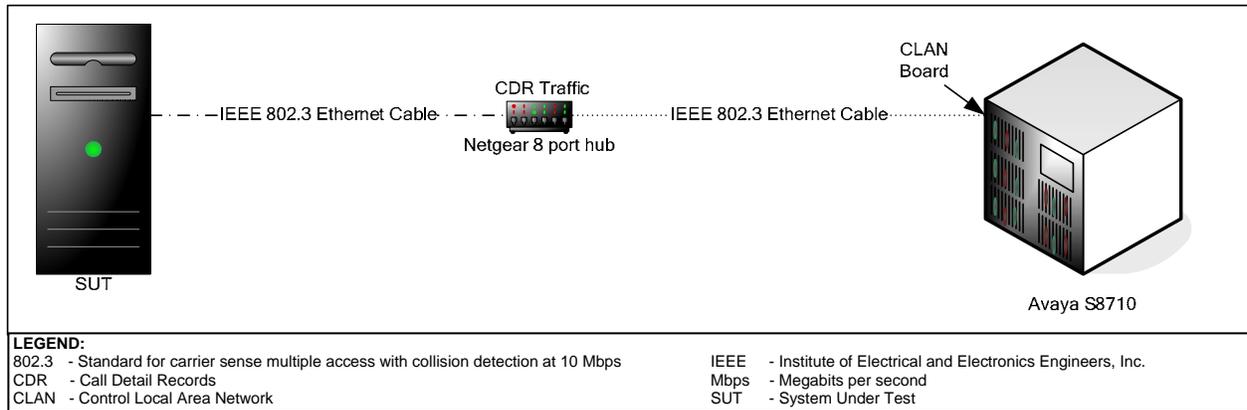


Figure 2-3. SUT IEEE 802.3 Ethernet Test Configuration

9. SYSTEM CONFIGURATIONS. The tested system configurations are depicted in table 2-3 and the switching systems specifically certified with the SUT are shown in table 2-4.

Table 2-3. Tested System Configurations

System Name	Hardware/Software Release	
Lucent 5ESS	5E.16.2, SU 06-0002	
Nortel CS2100	SE08 with specific patch Groups	
Nortel DSN CS1000M-SG	Software Release 4.5w with Product Enhancement Packages	
Avaya S8710	CM3.0 (R013x.00.0.340.3: Super Patch 11815)	
SUT Release 5.2	Hardware	Firmware/Software
	Dell Dimension 1100, E176FP Pentium III CPU, 1.40GHz, 512 MB of RAM	MS Windows Server 2003, Standard Addition, Service pack 1,
	Kerridge Client Application	V06.00.80.11321
	Digi 4-port USB serial hub (Edgeport/4)	NA
	Memotec X.25 PAD	NA
	Omnitronix Serial Buffer	NA
LEGEND:		
5ESS - Class 5 Electronic Switching System	NA - Not Applicable	
CM - Communication Manager	PAD - Packet Assembler/Disassembler	
CPU - Central Processing Unit	RAM - Random Access Memory	
CS - Communications Server	SE - Succession Enterprise	
DSN - Defense Switched Network	SG - Single Group	
GHz - Giga Hertz	SU - Software Update	
FP - Factory Preset	SUT - System Under Test	
MB - Megabyte	USB - Universal Serial Bus	
MS - Microsoft		

Table 2-4. SUT Certified Switching System Configurations

Switch Name (See note 1.)	Software Release	NM Data Elements	Interfaces																																																				
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<u>Avaya S8700 and S8710</u> (supports VoIP)	CM 3.0 (R13X.00.0.340.5) with supported 11815	- CDR only	- IEEE 802.3 Ethernet ²																																																				
<u>Lucent 5ESS</u> (supports VoIP)	5E.16.2, SU 06-0002	- CDR - Alarm Monitoring - Traffic and Performance	- EIA-232 Serial Asynchronous																																																				
<p>LEGEND:</p> <table border="0"> <tr> <td>802.3</td> <td>- Standard for carrier sense multiple access with collision detection at 10 Mbps</td> <td>IPv6</td> <td>- Internet Protocol version 6</td> </tr> <tr> <td>5ESS</td> <td>- Class 5 Electronic Switching System</td> <td>ITU-T</td> <td>- International Telecommunication Union – Telecommunication Standardization Sector</td> </tr> <tr> <td>CDR</td> <td>- Call Detail Records</td> <td>JITC</td> <td>- Joint Interoperability Test Command</td> </tr> <tr> <td>CM</td> <td>- Communication Manager</td> <td>LoC</td> <td>- Letters of Compliance</td> </tr> <tr> <td>CS</td> <td>- Communications Server</td> <td>Mbps</td> <td>- Megabits per second</td> </tr> <tr> <td>DCE</td> <td>- Data Circuit-terminating Equipment</td> <td>MSL</td> <td>- Meridian Switching Load</td> </tr> <tr> <td>DSN</td> <td>- Defense Switched Network</td> <td>NM</td> <td>- Network Management</td> </tr> <tr> <td>DTE</td> <td>- Data Terminal Equipment</td> <td>SE</td> <td>- Succession Enterprise</td> </tr> <tr> <td>EIA</td> <td>- Electronic Industries Alliance</td> <td>SU</td> <td>- Software Update</td> </tr> <tr> <td>EIA-232</td> <td>- Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices</td> <td>SUT</td> <td>- System Under Test</td> </tr> <tr> <td>GSCR</td> <td>- Generic Switching Center Requirements</td> <td>VoIP</td> <td>- Voice Internet Protocol</td> </tr> <tr> <td>IEEE</td> <td>- Institute of Electrical and Electronics Engineers, Inc.</td> <td>X.25</td> <td>- Interface between DTE and DCE for terminals operating in the packet mode and connected to public data networks by dedicated circuit</td> </tr> <tr> <td>IPv4</td> <td>- Internet Protocol version 4</td> <td></td> <td></td> </tr> </table> <p>NOTES:</p> <p>1 Those switching systems bolded and underlined were tested specifically with the SUT by JITC. The other switching systems were not tested with the SUT; however, these systems were previously tested and certified by JITC with the same serial interfaces and JITC analysis determined them to be functionally identical for interoperability certification purposes and they are also certified with the SUT.</p> <p>2 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 LoC signed by the Vice President of the company. The vendor stated, in writing, compliance to the following criteria by 30 June 2008:</p> <p>(a) Conformant with IPv6 standards profile contained in the Department of Defense Information Technology Standards Registry (DISR).</p> <p>(b) Maintaining interoperability in heterogeneous environments and with IPv4.</p> <p>(c) Commitment to upgrade as the IPv6 standard evolves.</p> <p>(d) Availability of contractor/vendor IPv6 technical support.</p>				802.3	- Standard for carrier sense multiple access with collision detection at 10 Mbps	IPv6	- Internet Protocol version 6	5ESS	- Class 5 Electronic Switching System	ITU-T	- International Telecommunication Union – Telecommunication Standardization Sector	CDR	- Call Detail Records	JITC	- Joint Interoperability Test Command	CM	- Communication Manager	LoC	- Letters of Compliance	CS	- Communications Server	Mbps	- Megabits per second	DCE	- Data Circuit-terminating Equipment	MSL	- Meridian Switching Load	DSN	- Defense Switched Network	NM	- Network Management	DTE	- Data Terminal Equipment	SE	- Succession Enterprise	EIA	- Electronic Industries Alliance	SU	- Software Update	EIA-232	- Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices	SUT	- System Under Test	GSCR	- Generic Switching Center Requirements	VoIP	- Voice Internet Protocol	IEEE	- Institute of Electrical and Electronics Engineers, Inc.	X.25	- Interface between DTE and DCE for terminals operating in the packet mode and connected to public data networks by dedicated circuit	IPv4	- Internet Protocol version 4		
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10. TEST LIMITATIONS. None.

11. TEST RESULTS

a. Discussion. The SUT indirectly connects to the DSN via certified digital switching systems over serial and Ethernet interfaces.

(1) Test Conduct

(a) TCMA Application. The SUT TCMA application was tested with the switches in the configuration depicted in figure 2-2 via EIA-232 asynchronous and synchronous (ITU-T X.25 protocol) interfaces. The synchronous interface was tested and certified only with the Nortel CS2100. The IEEE 802.3 interface to the SUT was tested only with the Avaya S8710 switch in the configuration depicted in figure 2-3. Only the TCMA (CDR) application was tested over the IEEE 802.3 interface. Simulated calls were generated using the Spirent Abacus 5000 bulk call generator. These calls generated CDR and traffic and performance reports within the tested switches. With the Nortel CS2100, the CDR traffic was tested with the SUT over both asynchronous and synchronous interfaces. The CDR data was stored at a prescribed interval on the CS2100 system hard drive. This file was then automatically pulled by the SUT via the synchronous interface and parsed into a simulated detailed billing report. The CDR traffic via the asynchronous interface was tested with the CS2100 and the other switches as depicted in figure 2-3. This data was pushed by the switches via the asynchronous interface to the SUT at specified intervals and then parsed into a simulated detailed billing report.

(b) Traffic and Performance Application. The Traffic and Performance application was tested over the EIA-232 asynchronous interface to the SUT from the switches as depicted in figure 2-2. This information was pushed to the SUT at specified intervals then parsed into a detailed traffic and performance report by the SUT.

(c) Alarm Monitor. The SUT Alarm Monitor application was tested over the EIA-232 asynchronous interface to the SUT from the switches as depicted in figure 2-2. The switches pushed real time alarm data via the EIA-232 asynchronous interface and it was parsed by the SUT into an alarm report.

(d) Switch Interface. The SUT application for Switch Interface was tested with all Nortel switches listed in table 2-4. The SUT Switch Interface application specifically supports the Nortel product line of switches and was tested was tested over the EIA-232 asynchronous interface using the configuration depicted in figure 2-2. This application, as tested, allows the SUT with an assigned access account to access the respective switches and make software line additions, changes, and deletions.

(e) Other applications. The following applications were also tested with the SUT demonstrating no interoperability issues: Plant/Cable Records, Telephone Service Requests, Work Flow Control, Troubles, Electronic Directory, and Routine Maintenance.

(2) Test Results. The SUT applications tested over the EIA-232 (synchronous and asynchronous), and IEEE 802.3 Ethernet interfaces had no negative interoperability impact on the DSN.

b. Test Summary. The SUT met the critical interoperability requirements for a customer premise equipment device and is certified for joint use within the DSN.

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), 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>.