



DEFENSE INFORMATION SYSTEMS AGENCY

P. O. BOX 4502
ARLINGTON, VIRGINIA 22204-4502

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

13 May 10

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of Ventraq NetPlus Release 6.2

References: (a) DoD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008
(c) through (e), see Enclosure 1

1. References (a) and (b) establish the Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification.
2. The Ventraq NetPlus Release 6.2 is hereinafter referred to as the system under test (SUT). The SUT met the interface and functional requirements for a Customer Premise Equipment (CPE) telecommunications management system as set forth in Reference (c). The SUT is certified only with specified Alcatel-Lucent, Cisco Communication Manager, and Avaya digital switching systems listed within this document and listed on the Unified Capabilities (UC) Approved Products List (APL). Testing was conducted using test procedures derived from Reference (d). No other configurations, features, or functions, except those cited within this report, are certified by the JITC. This certification expires upon changes that affect interoperability, but no later than three years from the date of Defense Information Assurance (IA)/Security Accreditation Working Group (DSAWG) accreditation.
3. This finding is based on interoperability testing conducted by JITC and DSAWG accreditation. Interoperability testing was conducted by JITC at the Global Information Grid Network Test Facility, Fort Huachuca, Arizona, from 18 January through 5 February 2010. DSAWG granted accreditation on 12 May 2010 based on the security testing completed by DISA-led IA test teams and published in a separate report, Reference (e). The Certification Testing Summary (Enclosure 2) documents the test results and describes the test configuration.
4. The SUT is certified with all software versions of the digital switching systems depicted in Table 1 which are on the UC APL. Functional Requirements used to evaluate the interoperability of the SUT and the interoperability statuses are depicted in Table 2.

Table 1. SUT Certified Switching System Configurations

Switch Name (See note 1.)	Network Management Functions	Interface																																												
Avaya CS2100 ²	Configuration Management, Fault Management, Performance Management, and Automated Message Accounting	EIA-232 Serial Asynchronous																																												
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Avaya S8710, S8720	Configuration Management, Fault Management, Performance Management, and Automated Message Accounting	IEEE 802.3u Ethernet																																												
<p>NOTES:</p> <p>1 The SUT is certified with all software versions of these digital switching systems which are listed on the UC APL with one exception: The SUT is certified with the Avaya CS2100 with the TDM interfaces only. This excludes VoIP end instruments and the MG9K IP Gateway.</p> <p>2 These switches were formerly Nortel products and may be listed on the UC APL under Nortel or Avaya.</p> <p>LEGEND:</p> <table border="0"> <tr> <td>5ESS</td> <td>Class 5 Electronic Switching System</td> <td>IEEE</td> <td>Institute of Electrical and Electronics Engineers</td> </tr> <tr> <td>802.3u</td> <td>Standard for carrier sense multiple access with collision detection at 100 Mbps</td> <td>IP</td> <td>Internet Protocol</td> </tr> <tr> <td>APL</td> <td>Approved Products List</td> <td>M1</td> <td>Meridian 1</td> </tr> <tr> <td>CS</td> <td>Communication Server</td> <td>Mbps</td> <td>Megabits per second</td> </tr> <tr> <td>CDX</td> <td>Compact Digital Exchange</td> <td>MG9K</td> <td>Media Gateway 9000</td> </tr> <tr> <td>DCE</td> <td>Data Circuit-terminating Equipment</td> <td>SG</td> <td>Single Group</td> </tr> <tr> <td>DSN</td> <td>Defense Switched Network</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>DTE</td> <td>Data Terminal Equipment</td> <td>TDM</td> <td>Time Division Multiplexing</td> </tr> <tr> <td>EIA</td> <td>Electronic Industries Alliance</td> <td>UC</td> <td>Unified Capabilities</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>VCDX</td> <td>Very Compact Digital Exchange</td> </tr> <tr> <td></td> <td></td> <td>VoIP</td> <td>Voice over Internet Protocol</td> </tr> </table>			5ESS	Class 5 Electronic Switching System	IEEE	Institute of Electrical and Electronics Engineers	802.3u	Standard for carrier sense multiple access with collision detection at 100 Mbps	IP	Internet Protocol	APL	Approved Products List	M1	Meridian 1	CS	Communication Server	Mbps	Megabits per second	CDX	Compact Digital Exchange	MG9K	Media Gateway 9000	DCE	Data Circuit-terminating Equipment	SG	Single Group	DSN	Defense Switched Network	SUT	System Under Test	DTE	Data Terminal Equipment	TDM	Time Division Multiplexing	EIA	Electronic Industries Alliance	UC	Unified Capabilities	EIA-232	Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices	VCDX	Very Compact Digital Exchange			VoIP	Voice over Internet Protocol
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Table 2. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Functional Requirements	Status	UCR Reference
Serial EIA-232	No ¹	Yes	In accordance with EIA-232 (C)	Met	5.2.8.1
			Fault Management (C)	Met ²	5.2.8.3
			Configuration Management (Switch Access) (C)	Met	5.2.8.4
			Automated Message Accounting (C)	Met	5.2.8.5
			Performance Management (C)	Met	5.2.8.6
IEEE 802.3u Ethernet	No ¹	Yes	In Accordance with IEEE 802.3u (C)	Met ³	5.2.8.1
			Fault Management (C)	Met	5.2.8.3
			Configuration Management (Switch Access) (C)	Met	5.2.8.4
			Automated Message Accounting (C)	Met	5.2.8.5
			Performance Management (C)	Met	5.2.8.6
	Yes	Yes	Security (R)	See note 4.	Section 3

Table 2. SUT Functional Requirements and Interoperability Status (continued)

NOTES:			
1	The SUT is a CPE device that provides network monitoring functions. Therefore, the SUT interfaces are based on the UCR, section 5.2.8.1. The Network Management interoperability requirement can be met with any of the following interfaces: Ethernet, asynchronous serial, or synchronous serial.		
2	The SUT does not support Fault Management with the Alcatel-Lucent 5ESS, 5ESS VCDX, and CDX. This is not a critical requirement.		
3	In accordance with the UCR, Table 5.3.1-3, the OAM IP packets shall be tagged with a DSCP value of 16 to 23. Using the WireShark IP capture tool to capture DSCP tagging within the SUT enclave between the Remote Management Client, Database Server, and Application Server, it was determined that the SUT tagged the OAM packets at 0 which does not meet this requirement. However, this discrepancy was previously reviewed by DISA and was adjudicated as having a minor operational impact.		
4	Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).		
LEGEND:			
5ESS	Class 5 Electronic Switching System	EIA-232	Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices
802.3u	Standard for carrier sense multiple access with collision detection at 100 Mbps	IEEE	Institute of Electrical and Electronics Engineers
C	Conditional	IP	Internet Protocol
CDX	Compact Digital Exchange	Mbps	Megabits per second
CPE	Customer Premises Equipment	OAM	Operational Administration and Maintenance
DCE	Data Circuit-terminating Equipment	R	Required
DISA	Defense Information Systems Agency	SUT	System Under Test
DSCP	Differentiated Services Code Point	UCR	Unified Capabilities Requirements
DTE	Data Terminal Equipment	VCDX	Very Compact Digital Exchange
EIA	Electronic Industries Alliance		

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

6. The JITC point of contact is Mr. Cary Hogan, DSN 879-2589, commercial (520) 538-2589, FAX DSN 879-4347, or e-mail to Cary.Hogan@disa.mil. The JITC’s mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 0923906.

FOR THE COMMANDER:

2 Enclosures a/s



for RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

JITC Memo, JTE, Special Interoperability Test Certification of Ventraq NetPlus Rel. 6.2

Distribution (electronic mail):

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DOT&E, Net-Centric Systems and Naval Warfare

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Defense Intelligence Agency

National Security Agency, DT

Defense Information Systems Agency, TEMC

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

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

Defense Information Systems Agency, GS23

ADDITIONAL REFERENCES

- (c) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008," 22 January 2009
- (d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP) Change 2," 2 October 2006
- (e) Joint Interoperability Test Command, Memo, "Information Assurance (IA) Assessment of Ventraq NetPlus Release 6.2 (Tracking Number 0923906)," 12 May 2010

CERTIFICATION TESTING SUMMARY

- 1. SYSTEM TITLE.** Ventraq NetPlus Release 6.2; hereinafter referred to as the system under test (SUT).
- 2. PROPONENT.** United States Air Force, 644th Electronic Systems Squadron.
- 3. PROGRAM MANAGER.** Ms. Amber Callahan-Bedworth, 644 ELSS/VF, 15 Eglin Street, Building 1612, Hanscom Air Force Base, Bedford, Massachusetts, 01731, e-mail: Amber.Callahan-Bedworth@hanscom.af.mil.
- 4. TESTER.** Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.
- 5. SYSTEM UNDER TEST DESCRIPTION.** The SUT is a rack-mounted Enterprise Operations Support System (EOSS) that provides Network Management (NM) for organizations and providers by allowing Fault Management, Configuration Management, Automated Message Accounting, and Performance Management information to be collected. All information is collected via the NetPlus6 modules and applications. The NetPlus6 modules are bundles of software applications that provide specific functionality for managing networks. The modules include Common Data Upkeep, Administration, Usage Collection and Rating, Accounts and Billing, Subscriber Services Records, Network and Equipment Inventory, Work Orders, Trouble Tickets, Alarm Processing, Traffic Data Collection and Analysis, Automated Switch Interface (ASI), and Reporting. All of these are a part of the NetPlus Release 6.2 and are accessed via Desktop PC. The SUT can operate on both Time Division Multiplexing-(TDM) and Internet Protocol-(IP) based networks. The system interfaces with a variety of current Department of Defense (DoD) telecommunication switches and network architectures.
- 6. OPERATIONAL ARCHITECTURE.** The Unified Capabilities Requirements (UCR) Defense Switched Network (DSN) architecture in Figure 2-1 depicts the relationship of the SUT to the DSN switches.

7. REQUIRED SYSTEM INTERFACES. Requirements specific to the SUT and interoperability results are listed in Table 2-1. These requirements are derived from UCR Interface and Functional Requirements (FRs) verified through JITC testing.

Table 2-1. SUT Functional Requirements and Interoperability Status

Switch Name (See note 1.)	Network Management Functions	Interface
Avaya CS2100 ²	Configuration Management, Fault Management, Performance Management, and Automated Message Accounting	EIA-232 Serial Asynchronous
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Cisco Unified Communications Manager	Configuration Management, Fault Management, Performance Management, and Automated Message Accounting	IEEE 802.3u Ethernet
Avaya S8710, S8720	Configuration Management, Fault Management, Performance Management, and Automated Message Accounting	IEEE 802.3u Ethernet

NOTES:

1 The SUT is certified with all software versions of these digital switching systems which are listed on the UC APL with one exception: The SUT is certified with the Avaya CS2100 with the TDM interfaces only. This excludes VoIP end instruments and the MG9K IP Gateway.

2 These switches were formerly Nortel products and may be listed on the UC APL under Nortel or Avaya.

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5ESS	Class 5 Electronic Switching System	IEEE	Institute of Electrical and Electronics Engineers
802.3u	Standard for carrier sense multiple access with collision detection at 100 Mbps	IP	Internet Protocol
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DTE	Data Terminal Equipment	TDM	Time Division Multiplexing
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EIA-232	Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices	VCDX	Very Compact Digital Exchange
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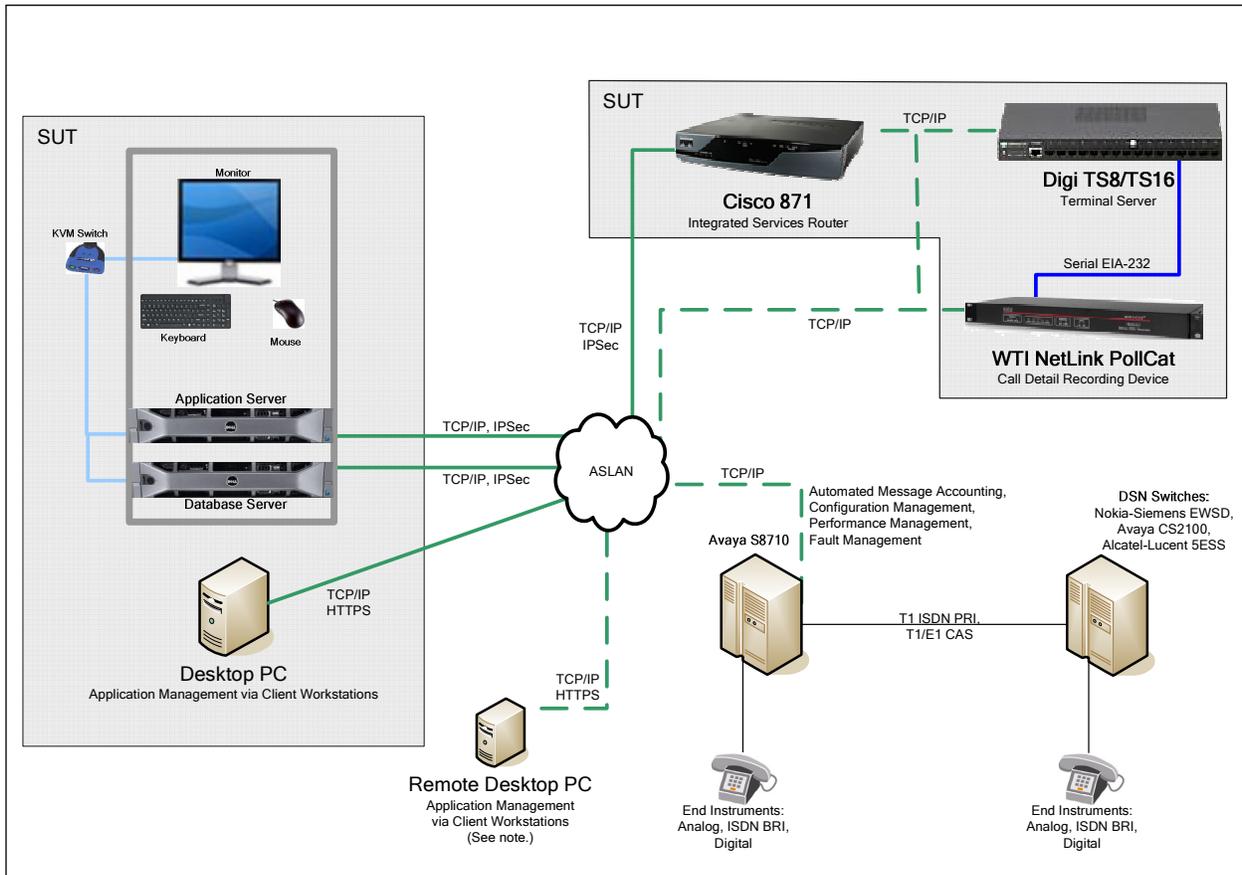
Table 2-2. SUT Certified Switching System Configurations

Interface	Critical	Certified	Functional Requirements	Status	UCR Reference
Serial EIA-232	No ¹	Yes	In accordance with EIA-232 (C)	Met	5.2.8.1
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Table 2-2. SUT Functional Requirements and Interoperability Status (continued)

Interface	Critical	Certified	Functional Requirements	Status	UCR Reference																																								
	Yes	Yes	Security (R)	See note 4.	Section 3																																								
<p>NOTES:</p> <ol style="list-style-type: none"> The SUT is a CPE device that provides network monitoring functions. Therefore, the SUT interfaces are based on the UCR, section 5.2.8.1. The Network Management interoperability requirement can be met with any of the following interfaces: Ethernet, asynchronous serial, or synchronous serial. The SUT does not support Fault Management with the Alcatel-Lucent 5ESS, 5ESS VCDX, and CDX. This is not a critical requirement. In accordance with the UCR, Table 5.3.1-3, the OAM IP packets shall be tagged with a DSCP value of 16 to 23. Using the WireShark IP capture tool to capture DSCP tagging within the SUT enclave between the Remote Management Client, Database Server, and Application Server, it was determined that the SUT tagged the OAM packets at 0 which does not meet this requirement. However, this discrepancy was previously reviewed by DISA and was adjudicated as having a minor operational impact. Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e). <p>LEGEND:</p> <table> <tr> <td>5ESS</td> <td>Class 5 Electronic Switching System</td> <td>EIA-232</td> <td>Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices</td> </tr> <tr> <td>802.3u</td> <td>Standard for carrier sense multiple access with collision detection at 100 Mbps</td> <td>IEEE</td> <td>Institute of Electrical and Electronics Engineers</td> </tr> <tr> <td>C</td> <td>Conditional</td> <td>IP</td> <td>Internet Protocol</td> </tr> <tr> <td>CDX</td> <td>Compact Digital Exchange</td> <td>Mbps</td> <td>Megabits per second</td> </tr> <tr> <td>CPE</td> <td>Customer Premises Equipment</td> <td>OAM</td> <td>Operational Administration and Maintenance</td> </tr> <tr> <td>DCE</td> <td>Data Circuit-terminating Equipment</td> <td>R</td> <td>Required</td> </tr> <tr> <td>DISA</td> <td>Defense Information Systems Agency</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>DSCP</td> <td>Differentiated Services Code Point</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> <tr> <td>DTE</td> <td>Data Terminal Equipment</td> <td>VCDX</td> <td>Very Compact Digital Exchange</td> </tr> <tr> <td>EIA</td> <td>Electronic Industries Alliance</td> <td></td> <td></td> </tr> </table>						5ESS	Class 5 Electronic Switching System	EIA-232	Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices	802.3u	Standard for carrier sense multiple access with collision detection at 100 Mbps	IEEE	Institute of Electrical and Electronics Engineers	C	Conditional	IP	Internet Protocol	CDX	Compact Digital Exchange	Mbps	Megabits per second	CPE	Customer Premises Equipment	OAM	Operational Administration and Maintenance	DCE	Data Circuit-terminating Equipment	R	Required	DISA	Defense Information Systems Agency	SUT	System Under Test	DSCP	Differentiated Services Code Point	UCR	Unified Capabilities Requirements	DTE	Data Terminal Equipment	VCDX	Very Compact Digital Exchange	EIA	Electronic Industries Alliance		
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8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC’s Global Information Grid Network Test Facility (GNTF) 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 through 2-6. Figure 2-3 depicts the Alcatel-Lucent Class 5 Electronic Switching System (5ESS), 5ESS Very Compact Digital Exchange (VCDX), and Compact Digital Exchange (CDX) serial interface test configuration. Figure 2-4 depicts Avaya S8710 IP interface test configuration. Figure 2-5 depicts the Cisco Communications Manager IP interface test configuration. Figure 2-6 depicts the Avaya Communication Server (CS) 2100 and CS1000M serial interface test configuration.

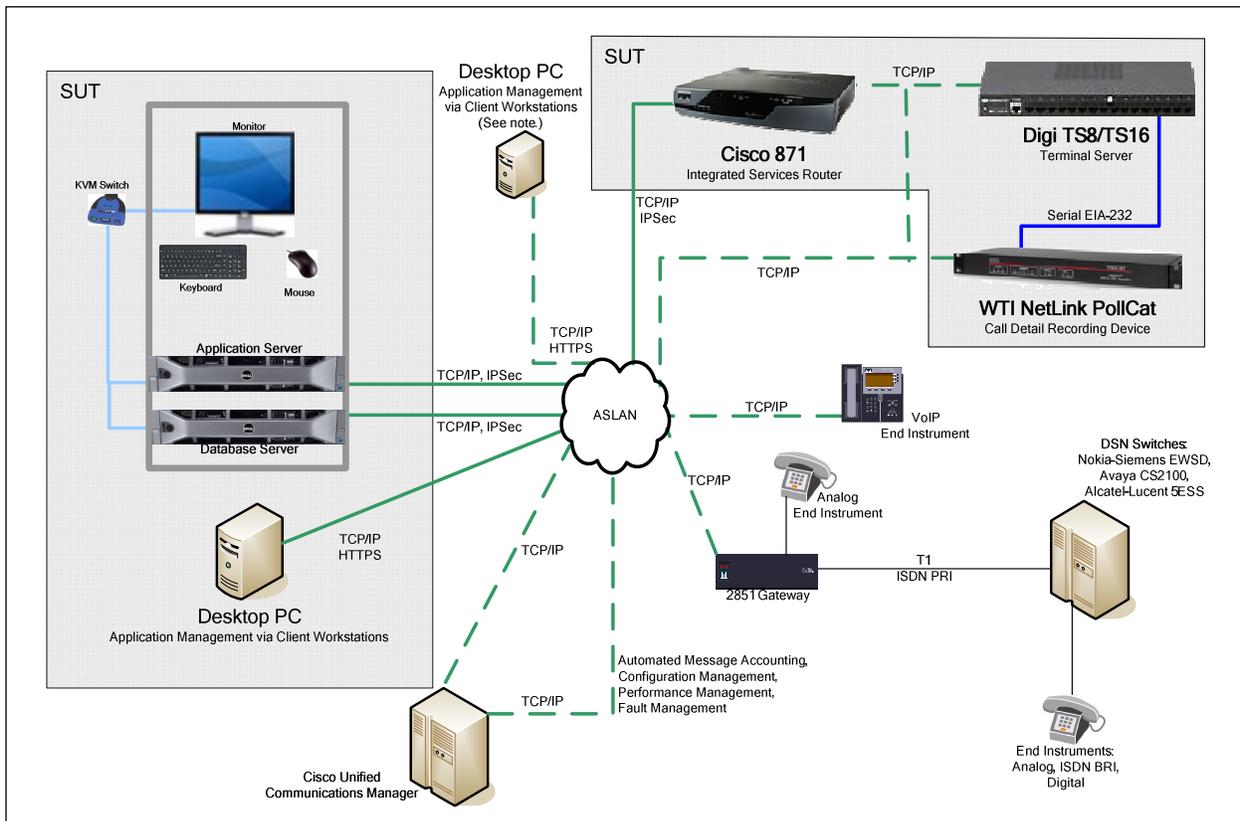


NOTE: The Remote Desktop PC can be connected to an ASLAN or WAN.

LEGEND:

5ESS	Class 5 Electronic Switching System	HTTPS	Hypertext Transfer Protocol Secure
ASLAN	Assured Services Local Area Network	IP	Internet Protocol
BRI	Basic Rate Interface	IPsec	Internet Protocol Security
CAS	Channel Associated Signaling	ISDN	Integrated Services Digital Network
CS	Communication Server	KVM	Keyboard Video Mouse
DSN	Defense Switched Network	Mbps	Megabits per second
E1	European Basic Multiplex Rate (2.048 Mbps)	PC	Personal Computer
EIA	Electronic Industries Alliance	PC	Personal Computer
EIA-232	Standard for defining the mechanical and electrical characteristics for connecting Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) data communications devices	PRI	Primary Rate Interface
EWSD	Elektronisches Wählsystem Digital	SUT	System Under Test
		T1	Digital Transmission Link Level 1 (1.544 Mbps)
		TCP/IP	Transmission Control Protocol/Internet Protocol
		WAN	Wide Area Network

Figure 2-4. SUT IP Interface Test Configuration with the Avaya S8710



NOTE: The Remote Desktop PC can be connected to an ASLAN or WAN.

LEGEND:

5ESS	Class 5 Electronic Switching System	IP	Internet Protocol
ASLAN	Assured Services Local Area Network	IPsec	Internet Protocol Security
BRI	Basic Rate Interface	ISDN	Integrated Services Digital Network
CS	Communication Server	KVM	Keyboard Video Mouse
DSN	Defense Switched Network	Mbps	Megabits per second
EIA	Electronic Industries Alliance	PC	Personal Computer
EIA-232	Standard for defining the mechanical and electrical characteristics for connecting Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) data communications devices	PRI	Primary Rate Interface
EWSD	Elektronisches Wählsystem Digital	SUT	System Under Test
HTTPS	Hypertext Transfer Protocol Secure	T1	Digital Transmission Link Level 1 (1.544 Mbps)
		TCP/IP	Transmission Control Protocol/Internet Protocol
		VoIP	Voice over Internet Protocol
		WAN	Wide Area Network

Figure 2-5. SUT IP Interface Test Configuration with the Cisco Unified Communications Manager

9. SYSTEM CONFIGURATIONS. Table 2-2 provides the system configurations, hardware, and software components tested with the SUT. The SUT was tested in an operationally realistic environment to determine interoperability with a complement of DSN switches noted in Table 2-2. Table 2-2 lists the DSN switches which depict the tested configuration and is not intended to identify the only switches that are certified with the SUT. The SUT is certified with switching systems listed in Table 2-3 which are on the Unified Capabilities (UC) Approved Products List (APL).

Table 2-2. Tested System Configurations

System Name	Hardware/Software Release		
Avaya S8710	Communication Manager (CM) 4.0 (R014x.00.2.732.1: Super Patch 16538)		
Alcatel-Lucent 5ESS	5E16.2 Broadcast Warning Message (BWM) 08-0010		
Avaya CS2100	Succession Enterprise (SE) 09.1		
Avaya CS1000M	5.0		
Cisco Unified Communications Manager	7.1(2) with Internetwork Operating System (IOS) 12.4 (22)T2		
Nokia-Siemens EWSD	19d with Patch set 46		
Ventraq NetPlus Rel. 6.2	Hardware	Software/Firmware	
	Desktop PC (Management PC)	Windows XP SP2	
		Internet Explorer 8 (Web Browser)	
		Acrobat Reader	
	Dell PowerEdge Server (Application Server)	Windows Server 2003 Standard Edition R2	
		NetPlus 6.2.2 Application	
		Java VM version 1.6	
		Internet Explorer 8 (6.0.26 or Higher)	
		Oracle Client 10g	
		Crystal Reports version 10	
		Java JRE version 1.6	
		Microsoft IIS Web Server Version 6.0	
		Apache/Tomcat version 6.0	
		SSH Tectia Client (F) 5.0	
		SSH Tectia Server 6.0	
		OpenSSL FIPS Object Module version 1.0	
		FIPS 140-2 Certified Encryption Modules Library	
Acrobat Reader			
Tripwire for Servers			
Symantec Corporate Edition			
Dell PowerEdge Server (Database Server)	Windows Server 2003 Enterprise Edition R2		
	Oracle Server Enterprise Edition 10g		
	Symantec Corporate Edition		
Cisco 871 Integrated Services Router	12.4 (22)T3		
DIGI TS8/TS16 Terminal Server	82000684_U2		
WTI NetLink PollCat Call Detail Recording Device	2.1		
Client Workstation XP (Site-provided)	Windows XP SP3, Internet Explorer 6.0		
Client Workstation Vista (Site-provided)	Windows Vista SP1, Internet Explorer 6.0		
LEGEND:			
5ESS	Class 5 Electronic Switching System	PC	Personal Computer
CS	Communication Server	SSH	Secure Shell
EWSD	Elektronisches Wählsystem Digital	SSL	Secure Socket Layer
FIPS	Federal Information Processing Standard	SP	Service Pack
IIS	Internet Information Services	VM	Virtual Machine
JRE	Java Runtime Environment	XP	Experience

10. TEST LIMITATIONS. The Avaya S8710 located in the GNTF did not generate SNMP alarms for all critical failure conditions. The limited alarms generated by the Avaya S8710 were correctly handled and reported by the SUT.

11. TEST RESULTS

a. Discussion. The SUT was tested using the test configurations shown in Figures 2-2 through 2-6. A bulk call loader was configured to generate call traffic via the Avaya CS2100. The SUT was then used to poll the respective Call Detail Recording (CDR) records, parse the data, and then display it on the Desktop PC and save it to a file. The CDR data was adequately polled by the SUT with no noted interoperability problems. The SUT adequately polled line features and configurations using the respective switches command lines through an ASI when logged-in, or connected to the respective digital switching system without any disruption of local changes on the maintenance terminal. The SUT was also able to display, and store Fault Management (alarm) information in near-realtime to when the digital switching system would generate the alarms. The SUT also displayed all time records generated from the connected switching system. The requirements listed in the UCR, section 5.2.8, are detailed as Network Management (NM) requirements for DSN switches. The SUT was tested with these requirements as the NM system connected to the DSN switches.

(1) In accordance with the UCR, section 5.2.8.1, DSN switching systems shall provide DSN NM data to the Advanced DSN Integrated Management Support System (ADIMSS) via one of the three following physical interfaces: Ethernet, serial asynchronous (Electronic Industries Alliance [EIA]-232, or serial synchronous International Telecommunication Union - Telecommunication Standardization Sector [ITU-T] X.25. The SUT, as a telecommunications management system, met all critical interoperability certification requirements for physical interfaces with Ethernet and EIA-232 interfaces.

(2) In accordance with the UCR, section 5.2.8.3, DSN switching systems shall detect fault (alarm) conditions and generate alarm notifications. The alarm messages must be sent to the assigned NM alarm channel in near-realtime. No alarm restriction/filtering are necessary. In addition to the data formats in UCR, section 5.2.8.1, alarms may be sent as Simple Network Management Protocol (SNMP). The SUT as a telecommunications management system met all critical interoperability certification requirements in accordance with the UCR with the following caveat: The SUT does not support Fault Management with the Alcatel-Lucent 5ESS, 5ESS VCDX, and CDX. This is not a critical requirement.

(3) In accordance with the UCR, section 5.2.8.4, Configuration Management in a switching system shall be in accordance with Telcordia Technologies GR-472-CORE, Network Element Configuration Management, Revision 2, Feb. 1999, Section 4. The SUT met all critical interoperability requirements for Configuration Management by connecting to the switching systems remotely and using an ASI configured in a manner

to adequately provide removal, installation, and changes to subscriber lines as necessary.

(4) In accordance with the UCR, section 5.2.8.5, the Automated Message Accounting (AMA) process in a switching system provides usage related data to perform customer billing and CDR. The SUT met all critical interoperability requirements for AMA by collecting, storing, and reporting all CDR data with the following stipulation: The Avaya S8710 must be configured with a 59-character format.

(5) In accordance with the UCR, section 5.2.8.6, Performance Management Data, shall contain the minimum DSN switch performance data requirements as seen in UCR Table 5.2.8-2. The SUT was able to display all required fields and met all critical interoperability requirements for Performance Management.

(6) In accordance with the UCR, Table 5.3.1-3, Operational Administration and Maintenance (OAM) IP packets shall be tagged with a Differentiated Services Code Point (DSCP) value of 16 to 23. Using the WireShark IP capture tool to capture DSCP tagging within the SUT enclave between the Remote Management Client, Database Server, and Application Server, it was determined that the SUT tagged the OAM packets at 0 which does not meet this requirement. However, this discrepancy was previously reviewed by DISA and was adjudicated as having a minor operational impact.

b. Test Summary. The SUT met the interface and functional requirements for a Customer Premise Equipment (CPE) telecommunications management system as set forth in Reference (c). The SUT is certified specifically with switching systems and their respective interfaces listed in Table 2-2 that are on the UC APL.

12. TESTS 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://jtc.fhu.disa.mil/tssi>. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: ucco@disa.mil.