DEFENSE INFORMATION SYSTEMS AGENCY
P. O. BOX 4502
ARLINGTON, VIRGINIA 22204-4502

IN REPLY REFER TO: Joint Interoperability Test Command (JTE) **19 Aug10**

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of the Veramark VeraSMART™ with Software Release 8.1

References: (a) DOD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01C, "Interoperability and Supportability of Information Technology and National Security Systems," 8 March 2006
(c) through (e), see Enclosure 1

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

2. The Veramark VeraSMART™ with Software Release 8.1 is hereinafter referred to as the system under test (SUT). The SUT met the interface and functional requirements for a Customer Premises Equipment (CPE) telecommunications management system as set forth in Reference (c). The SUT connects to a digital switching system to collect Call Detail Records (CDR) via an Internet Protocol (IP) or serial interface. 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 12 through 16 October 2009. DSAWG granted accreditation on 19 August 2010 based on the security testing completed by DISA-led IA test teams and published in a separate report, Reference (e).

4. The SUT is certified with all software versions of the digital switching systems depicted in Table 1 which are on the Unified Capabilities (UC) Approved Products List (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.)	Network Management Functions	Interface
Nortel CS2100	Automated Message Accounting	EIA-232 Serial Asynchronous
Nortel CS1000M, CS1000M-SG, Succession DSN M1 Option 61C, and Succession DSN M1 Option 81C	Automated Message Accounting	EIA-232 Serial Asynchronous
CS-1000E, CS1000M-Cabinet, CS1000M-Chassis, Succession DSN M1 Option 11C Cabinet, and Succession DSN M1 Option 11C chassis	Automated Message Accounting	EIA-232 Serial Asynchronous
Alcatel-Lucent 5ESS, CDX	Automated Message Accounting	EIA-232 Serial Asynchronous
Cisco CallManager/Communication Manager	Automated Message Accounting	IEEE 802.3u Ethernet
Avaya S8720, S8710, S8700	Automated Message Accounting	IEEE 802.3u Ethernet

NOTE:
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 Nortel CS2100 TDM only.

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
APL	Approved Products List	M1	Meridian 1
CS	Communication Server	Mbps	Megabits per second
CDX	Compact Digital Exchange	SG	Single Group
DCE	Data Circuit-terminating Equipment	SUT	System Under Test
DSN	Defense Switched Network	TDM	Time Division Multiplexing
DTE	Data Terminal Equipment	UC	Unified Capabilities
EIA	Electronic Industries Alliance		

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
			Automated Message Accounting (C)	Met	5.2.8.5
IEEE 802.3u Ethernet	No[1]	Yes	In Accordance with IEEE 802.3u (C)	Met[2]	5.2.8.1
			Automated Message Accounting (C)	Met	5.2.8.5
			IPv6 (C)	Not Met[3]	5.3.5
	Yes	Yes	Security (R)	See note 4.	Section 3

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. The functional requirements are based on the UCR, section 5.2.8.
2 In accordance with the UCR, Table 5.4.1-3, OAM IP packets shall be tagged with a DSCP value of 16 to 23. The SUT tagged the OAM packets at 0 which does not meet this requirement. However, this discrepancy was reviewed by DISA and was adjudicated as having a minor operational impact.
3 IPv6 is not supported by the SUT. In accordance with the Interim Unified Capabilities (UC) IPv6 Rules of Engagement (ROE) signed by the Office of the Secretary of Defense on 31 July 2009, IPv6 is not required for a Customer Premises Equipment Telecommunications Management System. There is no risk associated with the SUT not supporting this requirement.
4 Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).

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

LEGEND:

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
CPE	Customer Premises Equipment	IPv6	Internet Protocol version 6
DCE	Data Circuit-terminating Equipment	Mbps	Megabits per second
DISA	Defense Information Systems Agency	OAM	Operational Administration and Maintenance
DSCP	Differentiated Services Code Point	R	Required
DTE	Data Terminal Equipment	SUT	System Under Test
EIA	Electronic Industries Alliance	UCR	Unified Capabilities Requirements
EIA-232	Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices		

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/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.

6. The JITC point of contact is Ms. Anita Mananquil, DSN 879-5164, commercial (520) 538-5164, FAX DSN 879-4347, or e-mail to anita.mananquil@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 0910401.

FOR THE COMMANDER:

Steve Lasseski

2 Enclosures a/s

for RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

Distribution (electronic mail):
Joint Staff J-6
Joint Interoperability Test Command, Liaison, TE3/JT1
Office of Chief of Naval Operations, CNO N6F2
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Department of the Army, Office of the Secretary of the Army, DA-OSA CIO/G-6 ASA (ALT), SAIS-IOQ
U.S. Marine Corps MARCORSYSCOM, SIAT, MJI Division I
DOT&E, Net-Centric Systems and Naval Warfare
U.S. Coast Guard, CG-64
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 Veramark VeraSMART™ with Software Release 8.1 (Tracking Number 0910401)," 19 August 2010

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. Veramark VeraSMART™ with Software Release 8.1 hereinafter referred to as the system under test (SUT).

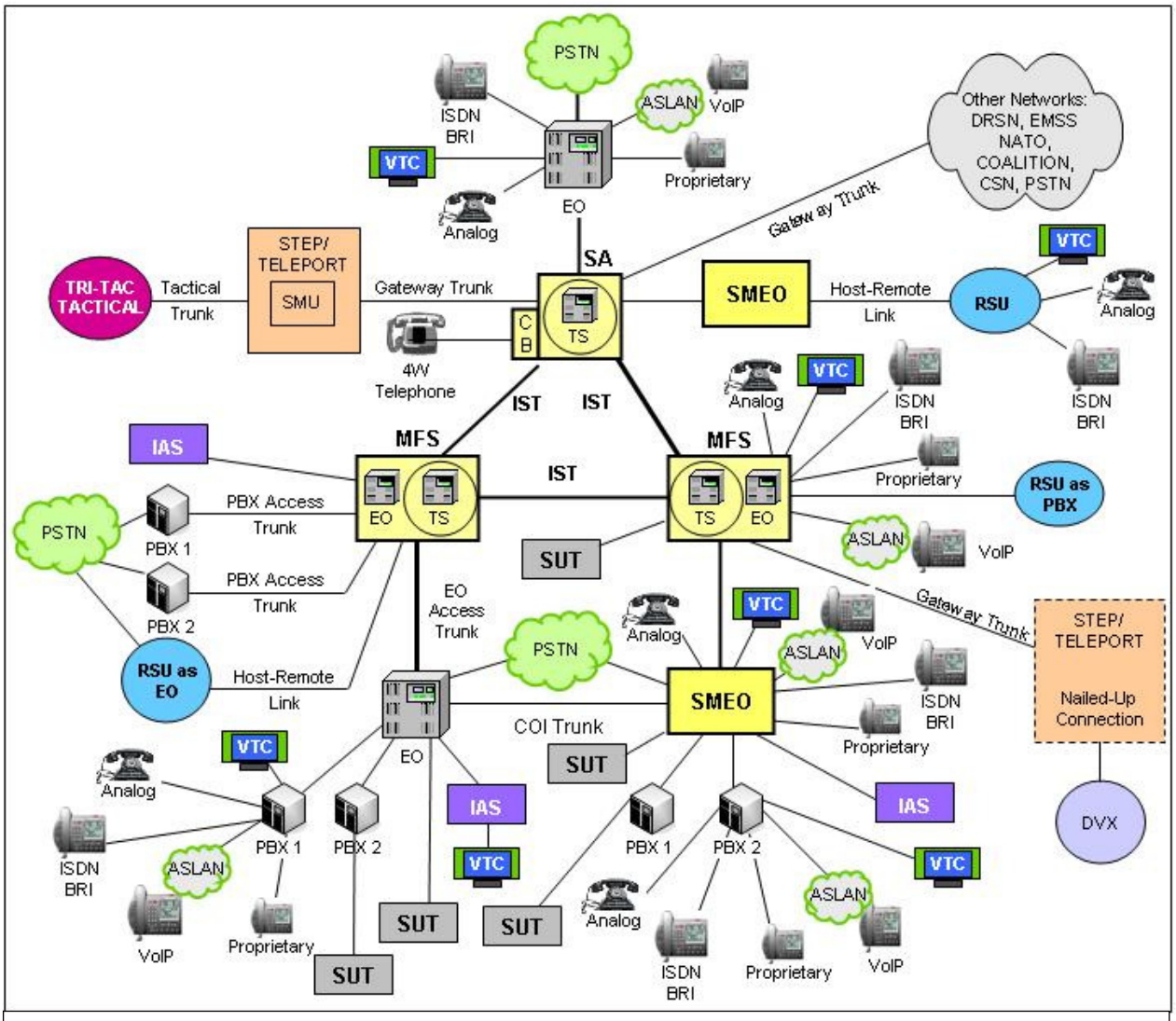
2. PROPONENT. Naval Undersea Warfare Center, Division Newport (NUWCDIVNPT).

3. SPONSOR. Mr. Melvin Spence, 1176 Howell Street, Newport, Rhode Island, 02841, e-mail: melvin.spence@navy.mil.

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

5. SYSTEM UNDER TEST DESCRIPTION. The SUT is a telecommunications management application providing call monitoring, invoice processing, cost allocation, inventory tracking, help desk ticketing and process workflow. The SUT connects to a digital switching system to collect Call Detail Records (CDR) via an Internet Protocol (IP) or serial interface. The SUT stores, processes, and generates reports on inventory data, call records, and invoice data to provide visibility into telecommunications usage and costs.

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.



LEGEND:

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

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 Reference (c) and verified through the test procedures listed in Reference (d).

Table 2-1. SUT Functional Requirements and Interoperability Status

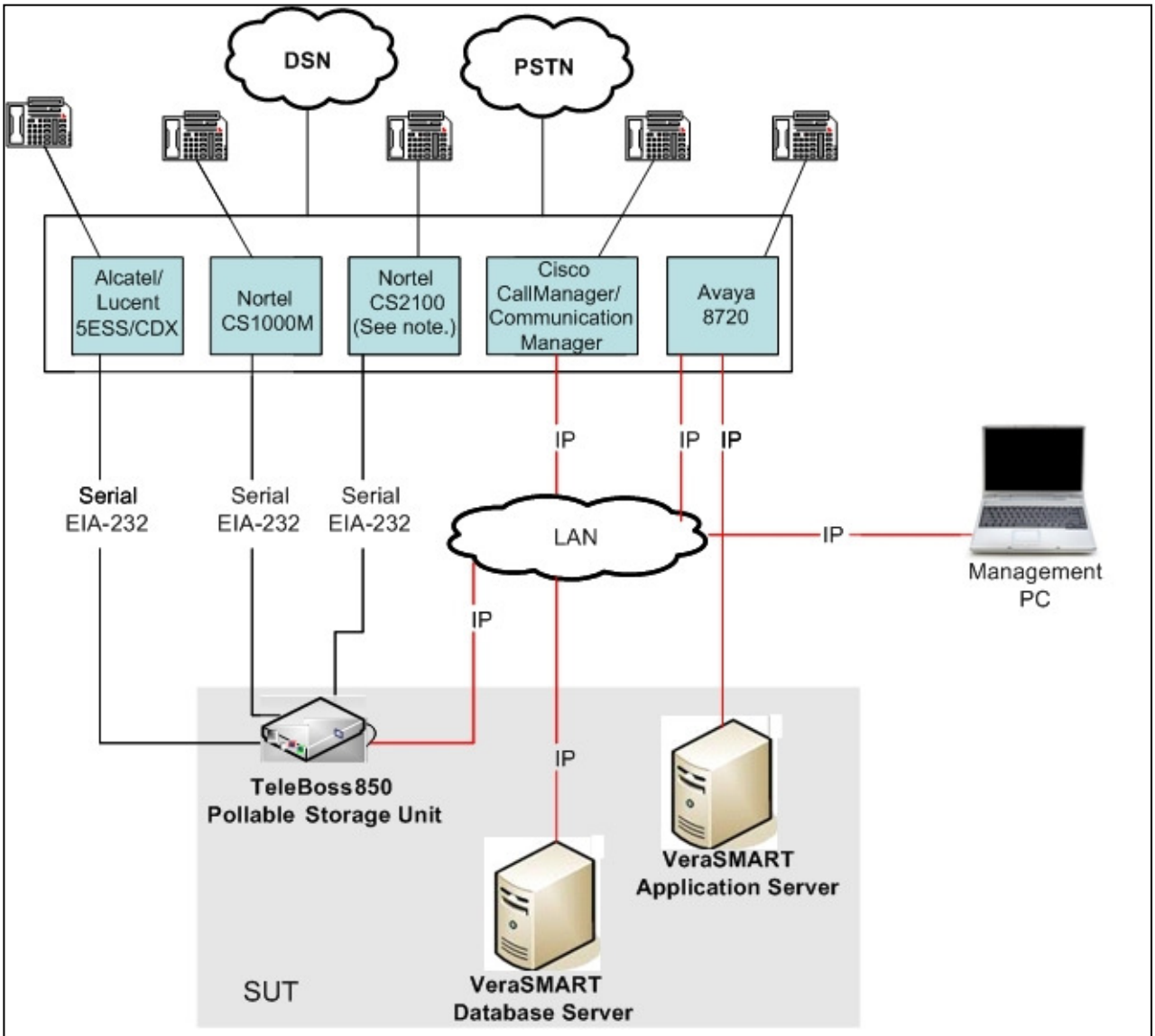
Interface	Critical	Certified	Functional Requirements	Status	UCR Reference
Serial EIA-232	No[1]	Yes	In accordance with EIA-232 (C)	Met	5.2.8.1
			Automated Message Accounting (C)	Met	5.2.8.5
IEEE 802.3u Ethernet	No[1]	Yes	In Accordance with IEEE 802.3u (C)	Met[2]	5.2.8.1
			Automated Message Accounting (C)	Met	5.2.8.5
			IPv6 (C)	Not Met[3]	5.3.5
	Yes	Yes	Security (R)	See note 4.	Section 3

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. The functional requirements are based on the UCR, section 5.2.8.
2 In accordance with the UCR, Table 5.4.1-3, OAM IP packets shall be tagged with a DSCP value of 16 to 23. The SUT tagged the OAM packets at 0 which does not meet this requirement. However, this discrepancy was reviewed by DISA and was adjudicated as having a minor operational impact.
3 IPv6 is not supported by the SUT. In accordance with the Interim Unified Capabilities (UC) IPv6 Rules of Engagement (ROE) signed by the Office of the Secretary of Defense on 31 July 2009, IPv6 is not required for a Customer Premises Equipment Telecommunications Management System. There is no risk associated with the SUT not supporting this requirement.
4 Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).

LEGEND:

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
CPE	Customer Premises Equipment	IPv6	Internet Protocol version 6
DCE	Data Circuit-terminating Equipment	Mbps	Megabits per second
DISA	Defense Information Systems Agency	OAM	Operational Administration and Maintenance
DSCP	Differentiated Services Code Point	R	Required
DTE	Data Terminal Equipment	SUT	System Under Test
EIA	Electronic Industries Alliance	UCR	Unified Capabilities Requirements
EIA-232	Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices		

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 Figure 2-2.



NOTE: The SUT is certified with the Nortel CS2100 TDM only.

LEGEND:

5ESS	Class 5 Electronic Switching System
CDX	Compact Digital Exchange
CS	Communication Server
DSN	Defense Switched Network
EIA	Electronic Industries Alliance
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
IP	Internet Protocol
LAN	Local Area Network
PC	Personal Computer
PSTN	Public Switched Telepone Network
SUT	System Under Test
TDM	Time Division Multiplexing

Figure 2-2. SUT Test Configuration

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
Alcatel-Lucent 5ESS/CDX	5E16.2 Broadcast Warning Message (BWM) 07-0003
Nortel CS2100	Succession Enterprise (SE) 09
Nortel CS1000M	5.0
Avaya S8710	Communication Manager (CM) 4.0 (R014x.00.2.731.7: Super Patch 14419)
Cisco Call Manager	Version 4.3(2) Service Release (SR) 1b, with IOS Software Release 12.4(15) T7
Cisco Unified Communication Manager	Version 7.1(2) with IOS Software Release 12.4(22)T2

SUT	Component Hardware	Software
Veramark VeraSMART™ Software Release 8.1	TeleBoss 850 Pollable Storage Unit	120.6.1.23
	VeraSMART Application Server	OS: Microsoft Windows Server 2003 R2, Standard Edition SP2, Application 8.1.152.04a
	VeraSMART Database Server	OS: Microsoft Windows Server 2003 R2, Standard Edition SP2

LEGEND:

5ESS	Class 5 Electronic Switching System	OS	Operating System
CDX	Compact Digital Exchange	R2	Release 2
CS	Communication Server	SP2	Service Pack 2
IOS	Internetwork Operating System	SUT	System Under Test

Table 2-3. SUT Certified Switching System Configurations

Switch Name (See note.)	Network Management Functions	Interface
Nortel CS2100	Automated Message Accounting	EIA-232 Serial Asynchronous
Nortel CS1000M, CS1000M-SG, Succession DSN M1 Option 61C, and Succession DSN M1 Option 81C	Automated Message Accounting	EIA-232 Serial Asynchronous
CS-1000E, CS1000M-Cabinet, CS1000M-Chassis, Succession DSN M1 Option 11C Cabinet, and Succession DSN M1 Option 11C chassis	Automated Message Accounting	EIA-232 Serial Asynchronous
Alcatel-Lucent 5ESS, CDX	Automated Message Accounting	EIA-232 Serial Asynchronous
Cisco CallManager/Communication Manager	Automated Message Accounting	IEEE 802.3u Ethernet
Avaya S8720, S8710, S8700	Automated Message Accounting	IEEE 802.3u Ethernet

NOTE:
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 Nortel CS2100 TDM only.

Table 2-3. SUT Certified Switching System Configurations (continued)

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
APL	Approved Products List	M1	Meridian 1
CS	Communication Server	Mbps	Megabits per second
CDX	Compact Digital Exchange	SG	Single Group
DCE	Data Circuit-terminating Equipment	SUT	System Under Test
DSN	Defense Switched Network	TDM	Time Division Multiplexing
DTE	Data Terminal Equipment	UC	Unified Capabilities
EIA	Electronic Industries Alliance		

10. TEST LIMITATIONS. None.

11. TEST RESULTS

a. Test Results. The VeraSMART solution connects to a digital switching system to collect CDR records. The connection can be serial or IP based. For serial connections, a TeleBoss 850 Pollable Storage Unit (PSU) was directly connected to the digital switching system via a serial cable. All CDR records collected from the TeleBoss 850 PSU were delivered to the VeraSMART Application Server via a Secure File Transfer Protocol (FTP) file transfer. For IP connections, the digital switching system can was configured to deliver CDR directly to the VeraSMART Application Server or the TeleBoss 850 PSU using a protocol supported by the digital switching system make and model. Once calls were completed to the SUT, they were preempted within the simulated DSN to insure that the proper preemption action occurred as required by the UCR, section 5.2.2. All preempted calls received the proper preemption notification tone and were released and returned to an idle state ready for the subsequent caller. 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.

(2) 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 and storing CDR data on the database server.

(3) In accordance with the UCR, Table 5.4.1-3, 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 Teleboss 850, Application Server, and Database Server, it was determined that the SUT tagged the OAM packets at 0 which does not meet this requirement. However, this discrepancy was 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 Premises 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 2-3.

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. 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.