DEFENSE INFORMATION SYSTEMS AGENCY
P. O. BOX 549
FORT MEADE, MARYLAND 20755-0549

IN REPLY
REFER TO: Joint Interoperability Test Command (JTE) **1 Jun 12**

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of the Cisco Unity Connection with Software Release 8.6(1)

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

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

2. The Cisco Unity Connection with Software Release 8.6(1) is hereinafter referred to as the System Under Test (SUT). The SUT meets all of its critical interoperability requirements and is certified as interoperable for joint use within the Defense Information Systems Network (DISN) as a Customer Premise Equipment (CPE) voicemail system with the Cisco Unified Communication Manager (CUCM) Release 8.0(2) and 8.6(1). The SUT met the critical interoperability requirements set forth in References (c) using test procedures derived from Reference (d). Additionally, JITC analysis determined other versions (7.1(2) or later) of the CUCM switching systems listed on the Unified Capabilities (UC) Approved Product List (APL) function identically to the CUCM 8.0(2) and 8.6(1) and are also certified for use within the DISN. Although the SUT offers IPv6 it was not tested, therefore, it is certified for IPv4 only. IPv6 is a conditional requirement for a CPE device in accordance with Reference (c). No other configurations, features, or functions, except those cited within this report, are certified by the JITC. This certification expires upon changes that could affect interoperability, but no later than three years from the date of the UC APL memorandum.

3. This finding is based on interoperability testing, review of the vendor's Letters of Compliance (LoC), DISA adjudication of open test discrepancy reports, and DISA CA Recommendation. Interoperability testing was conducted at JITC's Global Information Grid Network Test Facility, Fort Huachuca, Arizona from 5 through 15 July 2011. Review of the vendor's LoC was completed on 13 February 2012. The DISA CA provided a positive Recommendation on 30 May 2012 based on the security testing completed by DISA-led IA test teams and published in a separate report, Reference (e). Enclosure 2 documents the test results and describes the tested network and system configurations.

4. The Capability Requirements (CR) and Functional Requirements (FR) used to evaluate the interoperability of the SUT and the interoperability statuses are indicated in Table 1. This interoperability test status is based on the SUT's ability to meet CPE voicemail system requirements specified in Section 5 of Reference (c) verified through JITC testing and/or vendor submission of LoC.

Table 1. SUT CR and FRs and Interoperability Status

Interface	Critical	Certified	CRs/FRs	Met	UCR Paragraph
IP 1000BaseT (IEEE 802.3-2005)	Yes	Yes	Differentiated Service Code Point (R)	Met	5.3.3.3.2
			IEEE 802.3 (C)	Met	5.2.1.2
			FCC Part15/Part 68 (R)	Met	5.2.1.2
			ROUTINE precedence only IAW UCR, paragraph 5.3.2.31.3 (R)	Met	5.2.1.2
Security	Yes	Yes	Security (R)	Met See note.	5.4

NOTE: Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).

LEGEND:

1000BaseT	1000 Mbps (Baseband Operation, Twisted Pair) Ethernet	IAW	In accordance with
802.3-2005	Local Area Network/metropolitan Area Network Carrier Sense Multiple Access/Collision Detection Access Method	IEEE	Institute of Electrical and Electronics Engineers
		IP	Internet Protocol
		R	Required
C	Conditional	SUT	System Under Test
DISA	Defense Information Systems Agency	UCR	Unified Capabilities Requirements
FCC	Federal Communications Commission		

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

6. The JITC point of contact is Mr. Edward Mellon, DSN 879-5159, commercial (520) 538-5159, FAX DSN 879-4347, or e-mail to edward.mellon@disa.mil. JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 1109701.

FOR THE COMMANDER:

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
Headquarters U.S. Air Force, Office of Warfighting Integration & CIO, AF/XCIN (A6N)
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, Change 2," December 2010
(d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006
(e) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Cisco Unity Connection Release (Rel.) 8.6 (Tracking Number 1109701)," Draft

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. Cisco Unity Connection with Software Release 8.6(1) is hereinafter referred to as the System Under Test (SUT).

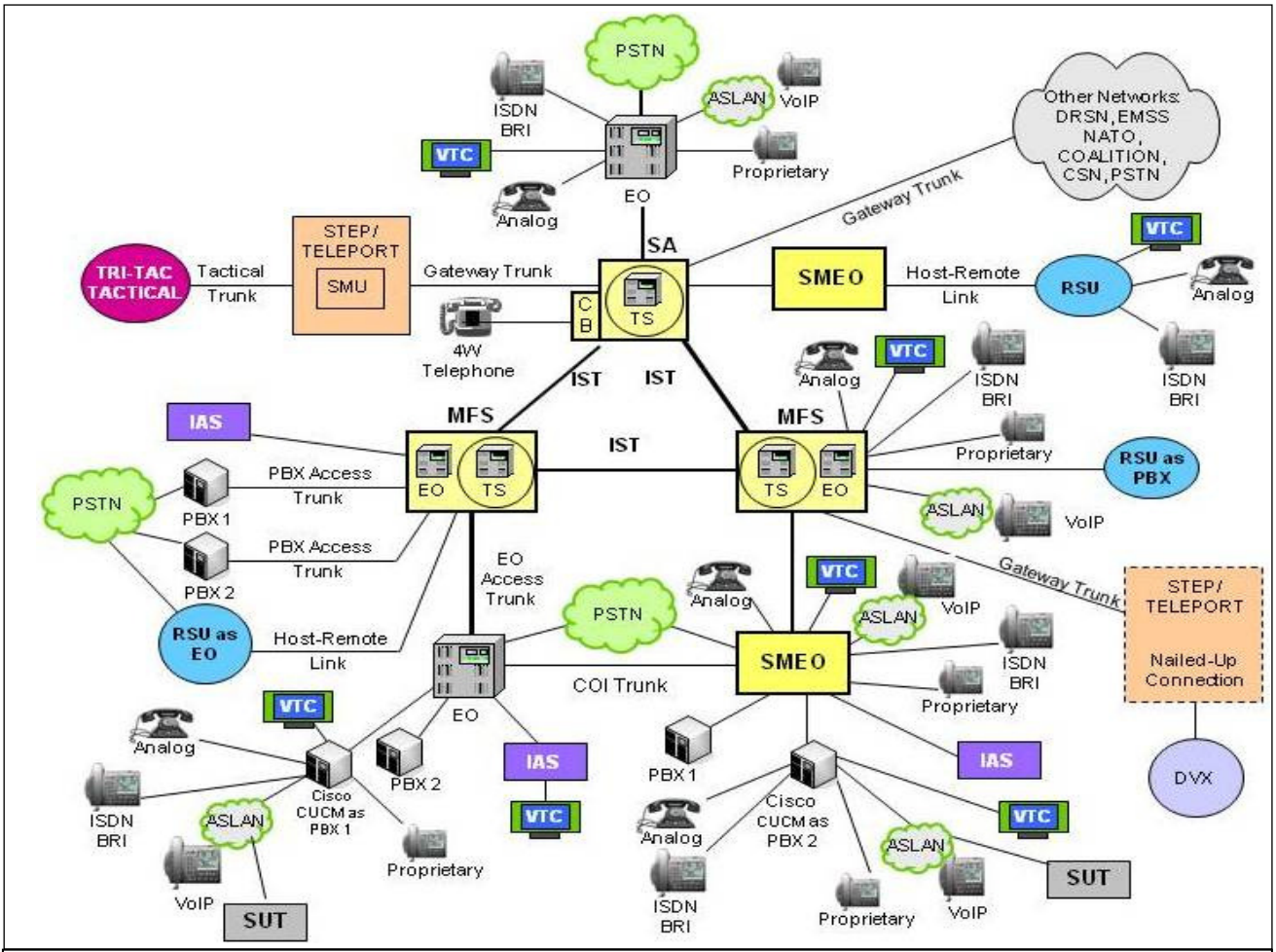
2. SPONSOR. Missile Defense Agency (MDA).

3. SYSTEM POC. Mr. Steve Pursell USAISEC Technology Integration Center (TIC) US Army, Bldg 53302, e-mail: steve.pursell@us.army.mil.

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

5. SYSTEM UNDER TEST DESCRIPTION. The SUT is a Voice Messaging System that offers unified messaging capabilities through integration with Microsoft Exchange, integrated messaging using Cisco ViewMail for Microsoft Outlook running on Windows XP, Windows Vista, and Windows 7, and Voice Message services to Certified Defense Information Systems Network (DISN) equipment. The SUT is for use with the switching systems within this certification over the tested interfaces using the Cisco Unity Connection Software Version 8.6(1). With the Cisco Unified Computing System, applications run in a virtualized environment comprised of VMware software and Cisco Unified Computing System servers. JITC analysis determined that multiple hardware configurations should functional identically to the SUT and they are also certified for joint use. These hardware configurations can be found by selecting the "Cisco Unified Communications on the Cisco Unified Computing System" link at the following URL: www.cisco.com/go/swonly. The SUT utilizes a web-based interface to maintain the necessary information needed to provide messaging services to authorized mailbox owners as well as system maintenance which includes mailbox associations, system and messaging service settings, maintenance and diagnostics. Management of the SUT is though a site-provided, Secure Technical Implementation Guide-compliant workstation. Although redundancy is not tested or required for Customer Premise Equipment (CPE), the SUT supports a two-server active/active cluster within a site Local Area Network (LAN) to provide high availability and redundancy.

6. OPERATIONAL ARCHITECTURE. The Unified Capabilities Requirements (UCR) DISN architecture in Figure 2-1 depicts the relationship of the SUT to the DISN switches.



LEGEND:

ASLAN	Assured Services Local Area Network
4W	4-Wire
BRI	Basic Rate Interface
CB	Channel Bank
COI	Community of Interest
CSN	Canadian Switch Network
CUCM	Cisco Unified Communications Manager
DISN	Defense Information Systems Network
DRSN	Defense Red Switch 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
SMEO	Small End Office
SMU	Switched Multiplex Unit
STEP	Standardized Tactical Entry Point
TDM/P	Time Division Multiplex/Packetized
Tri-Tac	Tri-Service Tactical Communications Program
TS	Tandem Switch
VoIP	Voice over Internet Protocol
VTC	Video Teleconferencing

Figure 2-1. DISN 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 UCR Interface, Capability Requirements (CR) and Functional Requirements (FR) and were verified through JITC testing. The specific SUT applications certified on each interface are depicted in Table 2-1.

Table 2-1. SUT CRs, FRs, and Interoperability Status

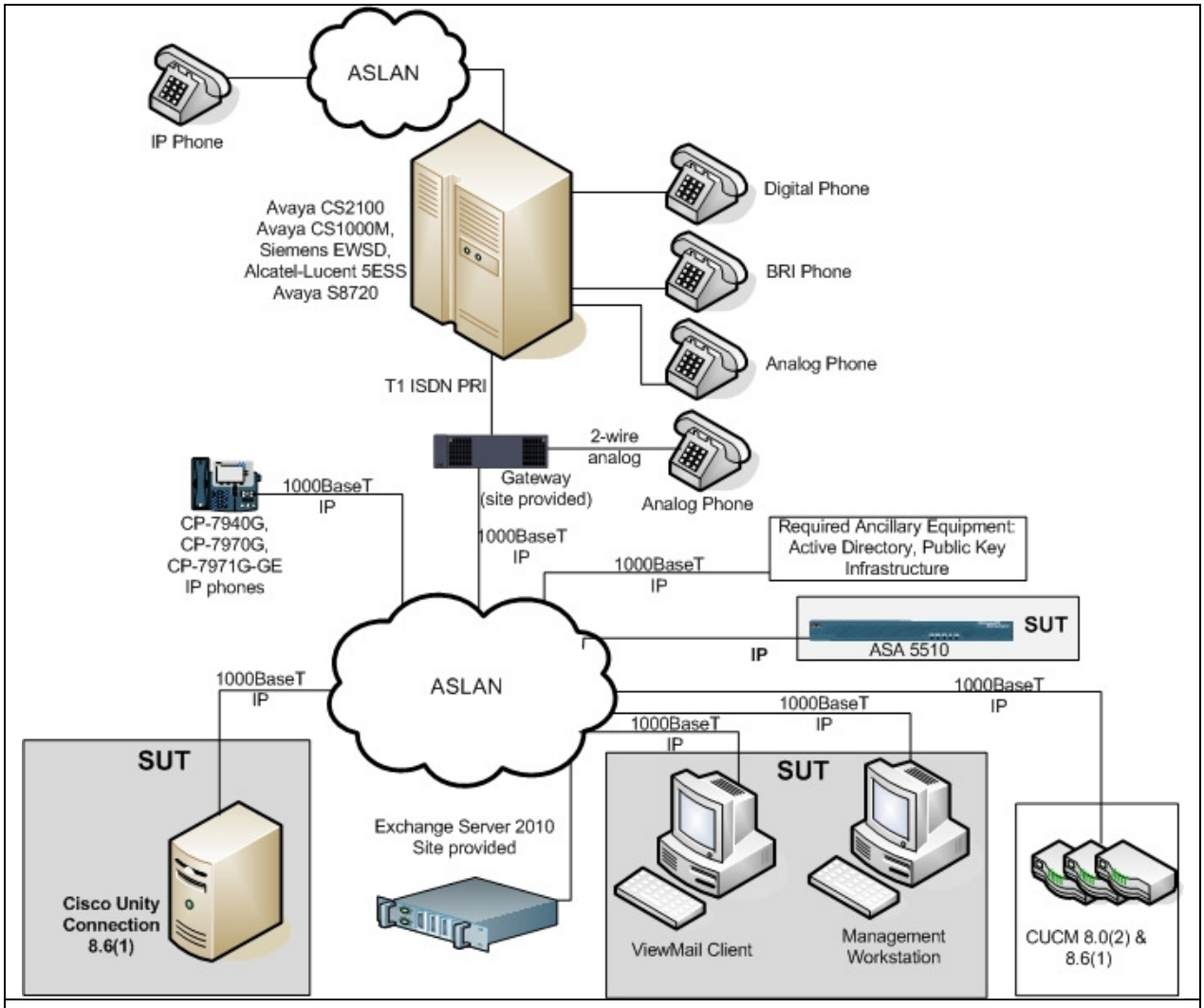
Interface	Critical	Certified	CRs/FRs	Met	UCR Paragraph
IP 1000BaseT (IEEE 802.3-2005)	Yes	Yes	Differentiated Service Code Point (R)	Met	5.3.3.3.2
			IEEE 802.3 (C)	Met	5.2.1.2
			FCC Part15/Part 68 (R)	Met	5.2.1.2
			ROUTINE precedence only IAW UCR, paragraph 5.3.2.31.3 (R)	Met	5.2.1.2
Security	Yes	Yes	Security (R) (see note)	Met	5.4

NOTE: Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).

LEGEND:

1000BaseT	1000 Mbps (Baseband Operation, Twisted Pair) Ethernet	FCC	Federal Communications Commission
802.3-2005	Local Area Network/metropolitan Area Network Carrier Sense Multiple Access/Collision Detection Access Method	IAW	In accordance with
		IEEE	Institute of Electrical and Electronics Engineers
		IP	Internet Protocol
		R	Required
C	Conditional	SUT	System Under Test
DISA	Defense Information Systems Agency	UCR	Unified Capabilities Requirements

8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC's Global Information Grid Network Test Facility, Fort Huachuca, Arizona in a manner and configuration similar to that of the DISN operational environment. Testing the system's required functions and features was conducted using the test configurations depicted in Figure 2-2.



LEGEND:

5ESS	Class 5 Electronic Switching System
ASLAN	Assured Services Local Area Network
BRI	Basic Rate Interface
CS	Communication Server
EWSD	Elektronisches Wählsystem Digital
IP	Internet Protocol
ISDN	Integrated Services Digital Network
Mbps	Megabits per second
PC	Personal Computer
PRI	Primary Rate Interface
SUT	System Under Test
T1	Digital Transmission Link Level 1 (1.544 Mbps)

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 DISN switches noted in Table 2-2. The DISN switches listed in Table 2-2 only depict the tested configuration. Table 2-2 is not intended to identify the only switch software releases that are certified with the SUT. The SUT is certified specifically with CUCM switching systems listed on the Unified Capabilities (UC) Approved Products List (APL).

Table 2-2. Tested System Configurations

System Name	Software Release	
Avaya S8720	CM 4.0 (R014x.00.2.731.7: Super Patch 14419)	
Siemens EWSD	19d with Patch Set 46	
Avaya CS2100	SE 09.1	
Alcatel-Lucent 5ESS	5E16.2 BWM 09-0002	
Avaya CS1000M	5.0	
Required Ancillary Equipment - Exchange Server (Site-provided)	Active Directory	
	Public Key Infrastructure	
	SysLog	
Site-provided	Exchange Server 2010 version 14.01.0289.001	
CUCM with 2851, 2951, 3845 and 3945 Gateways[1]	CUCM 8.0(2) with IOS Version 15.1(1)T CUCM 8.6(1) with IOS Version 15.1(4)M2	
SUT	**Hardware**	**Software/Firmware**
Cisco Unity Connection with Software Release 8.6(1)	Unified Computing System C210-M2[2]	Cisco Unity Connection 8.6.1.20004-1
	Cisco ASA 5510[3]	ASA 8.4.3
	Management Workstation (Site-provided) STIG-compliant, CAC-enabled	Windows XP SP3 Windows Vista SP2 Windows 7 SP1
	Client Workstation (Site-provided)	Windows XP SP3 Windows Vista SP2 Windows 7 SP1
		MS Outlook 2010
		View Mail 8.5
Telephones Types Tested with the SUT	**Hardware**	**Software/Firmware**
Cisco IP Phones[4]	CP7940G	P00308010200
	CP7970G	SCCP9.2.1
	CP7971G GE	SCCP9.2.1
Analog	Panasonic KX-TS15-W	Not Applicable
	Panasonic KX-T2355	Not Applicable
ISDN BRI	Siemens Optiset ISDN BRI	Not Applicable
	Avaya M5317T	5.0 1999
	Alcatel-Lucent BRI	
Digital	M3902	N/A

Table 2-2. Tested System Configurations (continued)

NOTES:
1. The SUT was tested with the CUCM Release 8.0(2) and 8.6(1). JITC analysis determined other versions (7.1(2) or later) of the CUCM switching systems listed on the UC APL function identically to the CUCM 8.0(2) and 8.6(1) and are therefore also certified for joint use within the DISN.
2. Supported hardware configurations can be found by selecting the Cisco Unified Communications on the Cisco Unified Computing System link at the following URL: www.cisco.com/go/swonly.
3. The ASA 5510 was tested; however, the following ASA products employ the same software and similar hardware as the ASA 5510. JITC analysis determined these systems to be functionally identical to the ASA 5510for interoperability certification purposes and therefore, they are also certified for joint use with the SUT: 5505, 5520, 5540, 5550, 5585-SSP10, 5585-SSP20, 5585-SSP30, and 5585-SSP40.
4. These were the IP phones and their respective firmware were tested with the SUT; however, the SUT is also certified with all Cisco IP instruments included in their respective CUCM switching systems listed on the UC APL.

LEGEND:

5ESS	Class 5 Electronic Switching System	EWSD	Elektronisches Wählsystem Digital
APL	Approved Products List	IOS	Internetwork Operating System
App	Application	IP	Internet Protocol
APS	Asynchronous Packet Switching	ISDN	Integrated Services Digital Network
ASA	Adaptive Security Appliance	JITC	Joint Interoperability Test Command
BRI	Basic Rate Interface	SCCP	Skinny Call Control Protocol
BWM	Broadcast Warning Message	SE	Succession Engineering
CAC	Common Access Card	SG	Single Group
CM	Communication Manager	SP	Service Pack
CP	Cisco Phone	SR	Service Release
CS	Communication Server	SUT	System Under Test
CUCM	Cisco Unified Communications Manager	UC	Unified Capabilities
DISN	Defense Information Systems Network	ver	Version

10. TEST LIMITATIONS. None.

11. TEST RESULTS

a. Discussion

(1) Voice mail interaction with Multi-Level Precedence and Preemption (MLPP). The UCR 2008, Change 2, paragraph 5.2.1.2 states that a CPE must meet MLPP requirements which states that precedence levels above ROUTINE shall not be forwarded to voice mail. Intra-switch and inter-switch calls were placed over the test network to subscribers configured on the Cisco Unity Connection and assigned voice mail at different precedence levels with the following results: MLPP interaction with voice mail was successfully tested with the following Internet Protocol (IP) instruments: CP-7940G, CP-7970G and CP-7971G-GE. These were the IP phones tested with the SUT; however, the SUT is also certified with all Cisco IP instruments included in their respective CUCM switching systems listed on the UC APL. Intra-switch and inter-switch calls at different precedence levels were placed over the test network to subscribers on the CUCM configured with voice mail with the following results:

(a) All ROUTINE calls placed to a voice mail subscriber that was busy or did not answer, were properly routed to voice mail as required by the UCR, Section 5.2.1.2.

(b) All calls above ROUTINE placed to a voice mail subscriber that was busy or did not answer were not routed to voice mail, but instead were diverted to an

alternate directory number if not answered before the precedence call diversion timer expired, as required by UCR 2008, Change 2, paragraph 5.2.1.2.

(2) Differentiated Services Code Point (DSCP). The UCR 2008, Change 2, paragraph 5.3.3.3.2, states that the product shall support the plain text DSCP plan, as shown in Table 5.3.3-1, DSCP Assignments, and the DSCP assignment shall be software configurable for the full range (0-63) to support Deployable deployments that may use a different DSCP plan.

(a) DSCP Tagging. Captures were taken between the SUT and the CUCM. Voice media was sent as International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) G.711 packets. All ITU-T G.711 packets were 20 milliseconds in size and were correctly tagged with a DSCP value of 46 and can be configured by the SUT to assign any value, 0 to 63. Voice signaling packets from the CUCM were properly tagged with a DSCP value of 40. The voice signaling packets from the Unity Connection server were properly tagged with a DSCP value of 40. The DSCP value on the Unity Connection server has the ability to assign any value 0-63.

(b) Tagging between the SUT and the MS Windows XP Pro and MS Windows Vista Personal Computer (PC) MS Outlook 2010 Client (e-mail). The SUT provides the ability to deliver voicemail messages via a .wav attachment using the Internet Message Access Protocol (IMAP) protocol to a user running Microsoft Outlook. The user can then play, delete, and otherwise manipulate the voicemail directly using the Cisco ViewMail Outlook Plugin. The SUT is also capable of synchronizing messages with a user's Microsoft Exchange mailbox so that messages stored on Unity Connection will appear in the user's inbox. This functionality was tested and the IMAP packets transmitted by the SUT to the PC client were correctly tagged with a DSCP value of 0. The Management Workstation has the ability to tag any value 0-63 and correctly tagged DSCP at 16 for operational network management traffic.

b. Test Summary. The SUT meets the critical interoperability requirements for a Customer Premise Equipment voice mail system in accordance with the Reference (c). The SUT was tested with the CUCM 8.0(2) and 8.6(1). Additionally, JITC analysis determined other versions (7.1(2) or later) of the CUCM switching systems listed on the UC APL function identically to the CUCM 8.0(2) and 8.6(1) and are also certified for use within the DISN. The SUT offers facsimile (fax) and e-mail capabilities; however, these capabilities were not tested and are not covered under this certification. No other configurations, features, or functions, except those cited within this report, are certified by the JITC.

12. TEST AND ANALYSIS REPORT. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at

https://stp.fhu.disa.mil. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at http://jit.fhu.disa.mil (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at http://jitc.fhu.disa.mil/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.