



DEFENSE INFORMATION SYSTEMS AGENCY

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

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

24 Mar 09

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of the Cisco Unified Contact Center Express (CUCCX) with Software Release 6.0 Service Release (SR)1

References: (a) DOD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008
(c) through (f), 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 CUCCX with Software Release 6.0 SR1 is hereinafter referred to as the System Under Test (SUT). The SUT met the critical interoperability requirements for a Customer Premise Equipment device and is certified for joint use within the Defense Switched Network (DSN) as an Automated Call Distributor (ACD). The SUT was tested with Cisco Unified CallManager (CUCM) Version 4.3(2) Service Release 1a (SR1a) with Internetwork Operating System (IOS) Software Release 12.4(15)T7. JITC analysis determined that the SUT is also certified with any CUCM Version 4.3(x) with its associated gateway IOS that is on the Unified Capabilities (UC) Approved Product List (APL). The SUT was tested on a Media Convergence Server (MCS)7835-H2. JITC analysis determined that the SUT is also certified on any MCS server that is on the UC APL. The SUT was tested and is certified in two configurations: In a standalone server or co-resident with the Cisco CallManager server. The SUT meets the critical interoperability requirements set forth in reference (c) and 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, or authorized by the Program Management Office for use within the DSN. This certification expires upon changes that affect interoperability, but no later than four years from the date of this memorandum.
3. This certification is based on interoperability testing of the SUT, review of the vendor's Letters of Compliance (LoC), and Defense Information Assurance (IA)/Security Accreditation Working Group (DSAWG) accreditation. Interoperability testing of the SUT was conducted by JITC at the Global Information Grid Network Test Facility, Fort Huachuca, Arizona, from 17 through 21 November 2008. Review of the vendors LoC was completed on 17 October 2008.

JITC, Memo, JTE, Special Interoperability Test Certification of the Cisco Unified Contact Center Express (UCCX) with Software Release 6.0 SR1

Interoperability testing of the CUCM Version 4.3(2) IOS Rel. 12.4(15)T7 was conducted from 17 November through 19 December 2008, and is documented in reference (e). DSAWG grants accreditation based on the security testing completed by DISA-led Information Assurance test teams and published in a separate report (reference (f)). DSAWG accreditation was granted on 10 March 2009. The Certification Testing Summary (Enclosure 2) documents the test results and describes the test configuration.

4. The Functional Requirements used to evaluate the interoperability of the SUT and the interoperability statuses are indicated in Table 1.

Table 1. SUT Functional Requirements and Interoperability Status

Interfaces	Critical	Certified	Functional Requirements	Status	UCR Paragraph
Ethernet 100 Base T IEEE 802.3	Yes	Yes	MLPP in accordance with UCR, Section 3.3 (R)	Met	A7.5
			FCC Part 15/Part 68 and ACTA (R)	Met	A7.5
			VoIP (R)	Met	A.3.2.9.1
Security	Yes	Yes	Security (R)	See note.	A7.6

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

LEGEND:

100BaseT	100 Mbps (Baseband Operation, Twisted Pair) Ethernet	IEEE	Institute of Electrical and Electronics Engineers
802.3	Local Area Network/metropolitan Area Network Carrier Sense Multiple Access/Collision Detection Access Method	Mbps	Megabits per second
A	Appendix	MLPP	Multi-Level Precedence and Preemption
ACTA	Administrative Council for Terminal Attachments	R	Required
DISA	Defense Information Systems Agency	SUT	System Under Test
FCC	Federal Communications Commission	UCR	Unified Capabilities Requirements
		VoIP	Voice over Internet Protocol

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>.

JITC, Memo, JTE, Special Interoperability Test Certification of the Cisco Unified Contact Center Express (UCCX) with Software Release 6.0 SR1

6. The JITC point of contact is Mr. Edward Mellon, DSN 879-5159, commercial (520) 538-5159, or FAX DSN 879-4347. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The e-mail address is edward.mellon@disa.mil. The tracking number for the SUT is 0816801.

FOR THE COMMANDER:



for RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

2 Enclosures a/s

Distribution (electronic mail):

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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

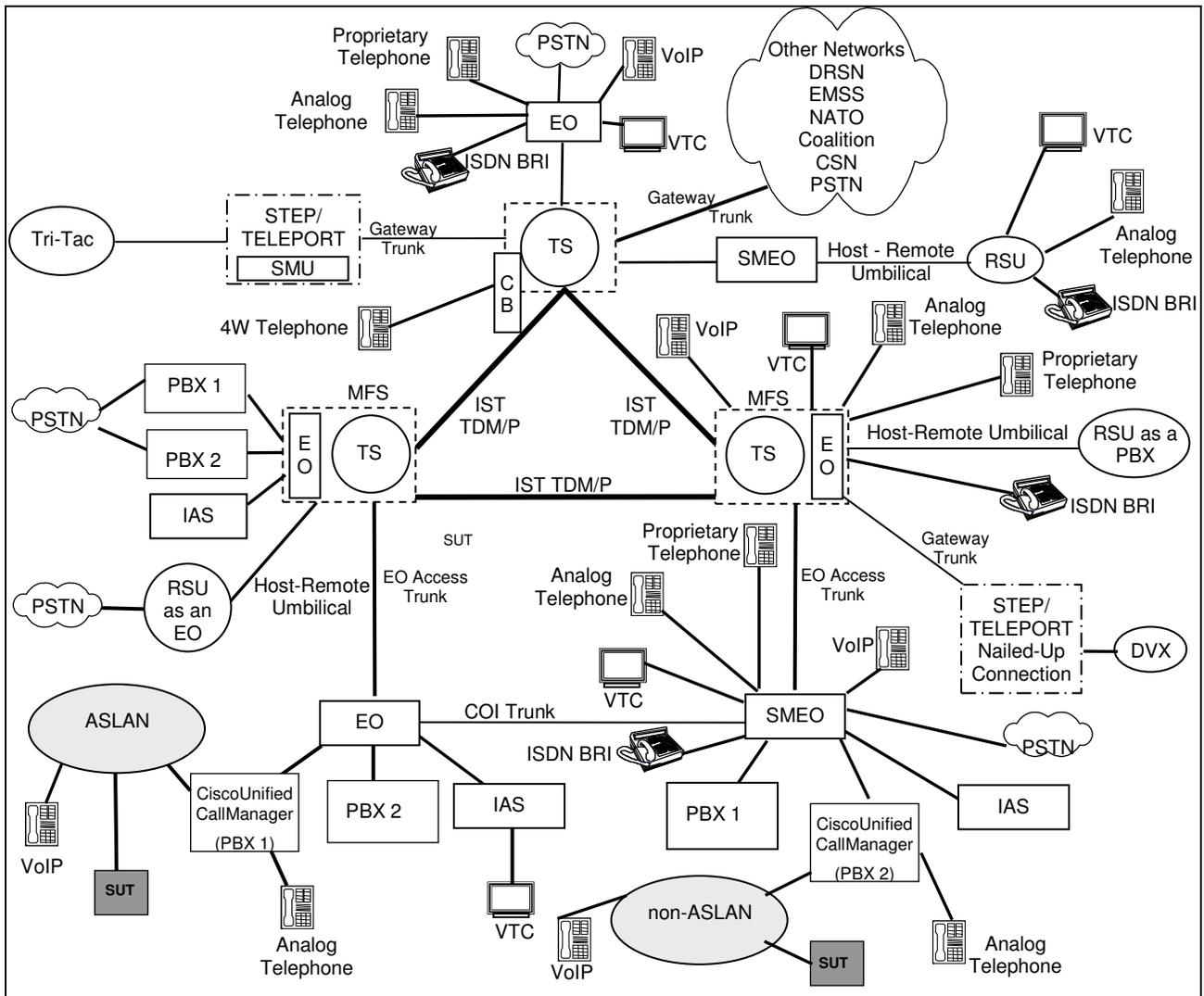
Defense Information Systems Agency, GS23

ADDITIONAL REFERENCES

- (c) Defense Information Systems Agency, "Department of Defense Networks Unified Capabilities Requirements," 21 December 2007
- (d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006
- (e) Joint Interoperability Test Command, Memo, JTE, "Special Interoperability Test Certification of Cisco Unified CallManager (CUCM) Version 4.3(2) IOS Rel. 12.4(15)T7," 28 April 2009
- (f) Joint Interoperability test Command, "Information Assurance (IA) Assessment of Cisco Unified Contact Center Express (UCCX) Release 6.0 Service Release (SR) 1 (Tracking Number 0816801)," 10 March 2009

CERTIFICATION TESTING SUMMARY

- 1. SYSTEM TITLE.** The Cisco Unified Contact Center Express (CUCCX) with Software Release 6.0 SR1, hereinafter referred to as the system under test (SUT).
- 2. PROPONENT.** United States Air Force (USAF) 60th Communications Squadron (AMC).
- 3. PROGRAM MANAGER.** James Lucius, 60CS/SCXL, 631 E Street, Building 54, Travis Air Force Base, California, 94535-5007, e-mail: james.lucius@travis.af.mil.
- 4. TESTER.** Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.
- 5. SYSTEM UNDER TEST DESCRIPTION.** The SUT fully integrates with the Cisco Unified CallManager (CUCM) versions 4.3(x) and associated gateway Internetwork Operating System (IOS) on the Unified Capabilities (UC) Approved Products List (APL). The SUT is capable of providing up to 300 agents to provide automated call distribution (ACD); interactive voice response (IVR) which provides prompting, collecting, and queuing capability for the SUT; computer telephony integration (CTI) which provides the interaction between the agent, client, and CallManager, with agent and desktop services in a single-server, through IP connectivity. The Cisco Agent Desktop, which runs on a Windows XP workstation, provides detailed call information on the incoming call such as the information selected prior to reaching the agent. The SUT will also hunt for free agents and place calls in a queue based on agent availability. The SUT is capable of being integrated into the CUCM Cluster 4.3(x), or in a standalone configuration connected through an Assured Services Local Area Network (ASLAN).
- 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	NATO	North Atlantic Treaty Organization
ASLAN	Assured Services Local Area Network	PBX	Private Branch Exchange
BRI	Basic Rate Interface	PBX 1	Private Branch Exchange 1
CB	Channel Bank	PBX 2	Private Branch Exchange 2
COI	Community of Interest	PSTN	Public Switched Telephone Network
CSN	Canadian Switch Network	RSU	Remote Switching Unit
DRSN	Defense Red Switch Network	SMEO	Small End Office
DSN	Defense Switched Network	SMU	Switched Multiplex Unit
DVX	Deployable Voice Exchange	STEP	Standardized Tactical Entry Point
EMSS	Enhanced Mobile Satellite System	TDM/P	Time Division Multiplex/Packetized
EO	End Office	Tri-Tac	Tri-Service Tactical Communications Program
IAS	Integrated Access Switch	TS	Tandem Switch
ISDN	Integrated Services Digital Network	VoIP	Voice over Internet Protocol
IST	Interswitch Trunk	VTC	Video Teleconferencing
MFS	Multifunction Switch	SUT	System Under Test

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 UCR Interface and Functional Requirements and verified through JITC testing and review of the vendor’s Letters of Compliance (LoC).

Table 2-1. SUT Functional Requirements and Interoperability Status

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<p>NOTE: Security is tested by DISA-led Information Assurance test teams and published in a separate report, reference (f).</p> <p>LEGEND:</p> <table> <tr> <td>100BaseT</td> <td>100 Mbps (Baseband Operation, Twisted Pair) Ethernet</td> <td>FCC</td> <td>Federal Communications Commission</td> </tr> <tr> <td>802.3</td> <td>Local Area Network/metropolitan Area Network Carrier Sense Multiple Access/Collision Detection Access Method</td> <td>IEEE</td> <td>Institute of Electrical and Electronics Engineers</td> </tr> <tr> <td>A</td> <td>Appendix</td> <td>Mbps</td> <td>Megabits per second</td> </tr> <tr> <td>ACTA</td> <td>Administrative Council for Terminal Attachments</td> <td>MLPP</td> <td>Multi-Level Precedence and Preemption</td> </tr> <tr> <td>DISA</td> <td>Defense Information Systems Agency</td> <td>R</td> <td>Required</td> </tr> <tr> <td></td> <td></td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td></td> <td></td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> <tr> <td></td> <td></td> <td>VoIP</td> <td>Voice over Internet Protocol</td> </tr> </table>						100BaseT	100 Mbps (Baseband Operation, Twisted Pair) Ethernet	FCC	Federal Communications Commission	802.3	Local Area Network/metropolitan Area Network Carrier Sense Multiple Access/Collision Detection Access Method	IEEE	Institute of Electrical and Electronics Engineers	A	Appendix	Mbps	Megabits per second	ACTA	Administrative Council for Terminal Attachments	MLPP	Multi-Level Precedence and Preemption	DISA	Defense Information Systems Agency	R	Required			SUT	System Under Test			UCR	Unified Capabilities Requirements			VoIP	Voice over Internet Protocol
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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 depicts the SUT in a standalone configuration and Figure 2-3 denotes the SUT co-resident with a Cisco Unified CallManager.

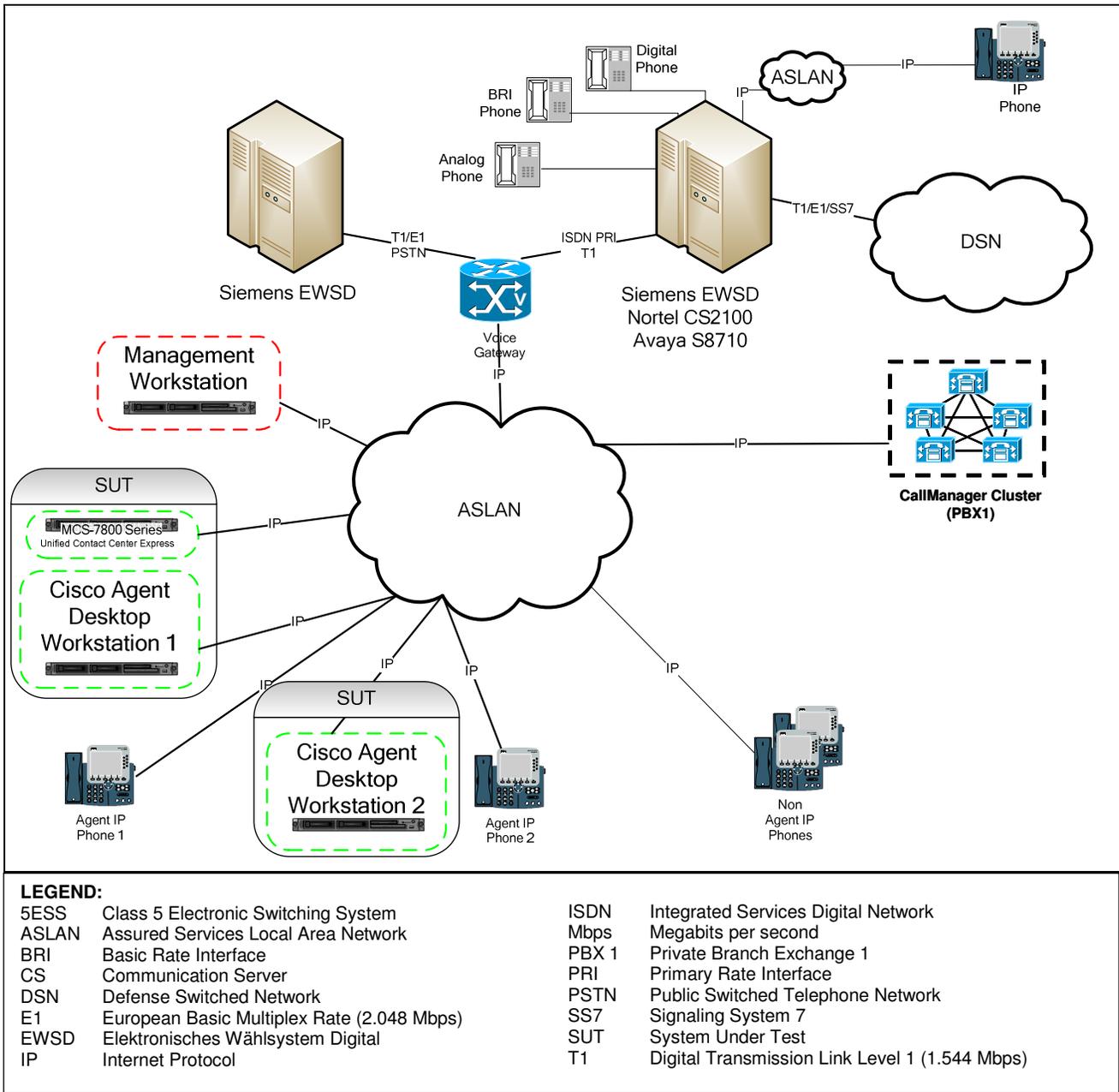


Figure 2-2. SUT Standalone Test Configuration

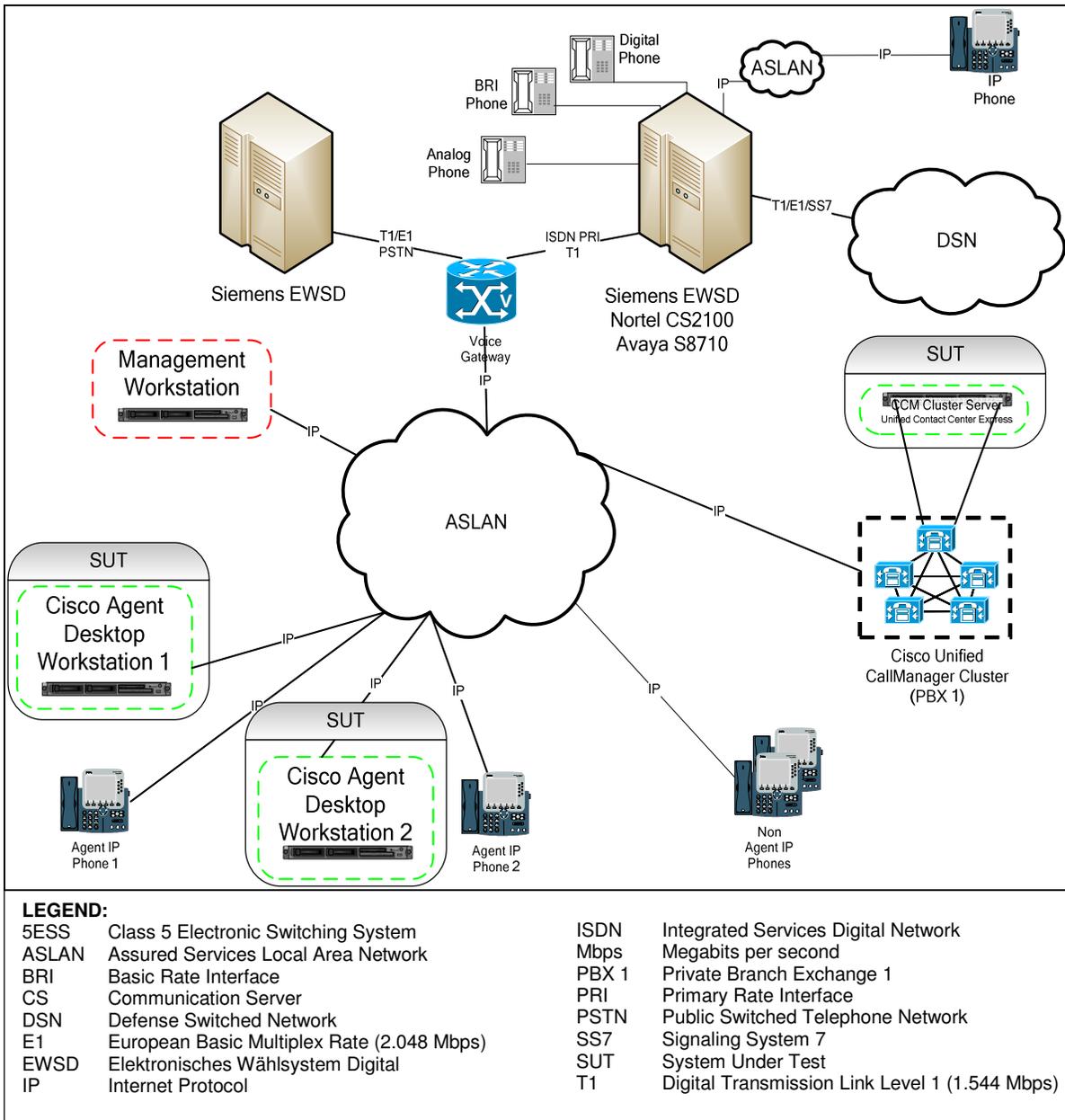


Figure 2-3. SUT Co-Resident Test Configuration

9. TESTED SYSTEM CONFIGURATION. 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 was tested with CUCM Version 4.3(2) Service Release 1a (SR1a) with IOS Software Release 12.4(15)T7. JITC analysis determined that the SUT is also certified with any CUCM Version 4.3(x) with its associated gateway IOS that is on the UC APL. The SUT was tested on a Media Convergence Server (MCS)7835-H2. JITC analysis determined that the SUT is also certified on any MCS server that is on the UC APL.

Table 2-2. Tested System Configurations

System Name	Hardware/Software Release		
Siemens EWSD	19d with Patch Set 46		
Nortel Networks CS2100	Succession Enterprise (SE)09.1		
Avaya S8710	Communication Manager (CM) 4.0 (R014x.00.2.731.7: Super Patch 14419)		
Alcatel-Lucent 5ESS	5E16.2, Broadcast Warning Message (BWM) 07-0003		
Cisco Unified CallManager	4.3(2) Service Release 1a with Internetwork Operating System (IOS) Software Release 12.4(15)T3		
SUT	Application Software	Hardware	Software/Firmware
	Load 6.0(1) SR1 Build 028	MCS7835-H2 CUCCX Stand-Alone	Windows 2003 Server Standard Edition, SP2 SUT Component Release 6.0(1) SR1 Build 028
		MCS7835-H2 CUCCX Co-resident	
		Laptop for CUCCX Agent	Windows XP, Version 2002, SP3
LEGEND:			
5ESS	Class 5 Electronic Switching System	MCS	Media Convergence Server
CS	Communication Server	SP	Service Pack
CUCCX	Cisco Unified Contact Center Express	SR	Software Release
EWSD	Elektronisches Wählsystem Digital	SUT	System Under Test

10. TEST LIMITATIONS. None.

11. TEST RESULTS

a. Discussion. The SUT met all CRs and FRs with the Institute of Electrical and Electronics Engineers (IEEE) 802.3 100BaseT interface.

(1) ACD interaction with Multi-Level Precedence and Preemption (MLPP). The UCR, paragraph 3.3, states that precedence calls above ROUTINE precedence destined to numbers that are configured for an ACD system shall divert to the global diversion default (e.g. attendant console, alternate directory number (DN), night service)

after a specified time of 15-45 seconds. The SUT was tested to ensure that it properly interacted with MLPP as required in the UCR, section 3. MLPP interaction was successfully tested with the following IP instruments: CP7940, CP7960, CP7970. Although these IP instruments were the only ones tested, this certification also includes all IP instruments that are included in the CUCM Release 4.3(x) and its associated Gateway that are on the UC APL. Intra-switch calls and inter-switch call were placed to active SUT agents at different precedence levels using the Network Test Configuration depicted in Figures 2-2 and Figure 2-3 with the following results: Established lower precedence calls placed to the SUT agents were preempted within the DSN network, with higher precedence calls and the preempted parties received the proper preemption notification tone. All preempted resources were correctly released by the SUT and returned to an idle state awaiting subsequent calls.

(2) The UCR, appendix 7, paragraph A7.5, states that all DSN CPE, as a minimum, must meet the requirements of Part 15 and Part 68 of the Federal Communications Commission (FCC) Rules and Regulations and the Administrative Council for Terminal Attachments (ACTA). This requirement was met with a vendor's submission of an LoC.

(3) Voice over IP: The UCR, appendix 3, states that IP systems that transmit Real Time Traffic shall be capable of assigning any Differential Service Code Points (DSCP) (0-63) for any distinct service class for traffic that traverses that device. The SUT meets this requirement and during the test was able to assign both voice signaling and voice media service class traffic with a DSCP value of 48 and 46 respectively. These DSCP values were verified by capturing the packets at the egress of the SUT.

(4) Security is tested and met by DISA-led Information Assurance test teams and is published in a separate report, reference (f).

b. Test Summary. The SUT met the interface and functional interoperability requirements for an ACD as set forth in reference (c) and is certified for joint use within the DSN. The SUT is certified specifically with any CUCM Version 4.3(x) with its associated gateway IOS that is on the UC APL. The SUT was tested on an MCS7835-H2. JITC analysis determined that the SUT is also certified on any MCS server that is on the UC APL. The SUT was tested and is certified in two configurations: In a standalone server or co-resident with the Cisco CallManager server.

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>.