



DEFENSE INFORMATION SYSTEMS AGENCY

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

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

3 Nov 10

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of the Polycom RMX[®] 2000 and RMX[®] 4000 with Software Release 5.1.0.G

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 (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 Polycom RMX[®] Family with Software Release. 5.1.0.G is hereinafter referred to as the system under test (SUT). The SUT met all of the critical interface and functional interoperability requirements and is certified for use within the Defense Switched Network (DSN) as a Multipoint Control Unit (MCU). The SUT was tested and is certified with or without the optional Polycom RMX[®] Serial Gateway S4GW Version 5.7.2.0.G. The SUT and RMX[®] Serial Gateway S4GW both met the conditional requirements for an Internet Protocol (IP) interface with the International Telecommunication Union – Telecommunication Standardization Sector (ITU-T) H.323 protocol; however, Assured Service is not yet defined for an IP interface with ITU-T H.323 protocol. Therefore, Command and Control (C2) VTC users and Special C2 VTC users are not authorized to be served by ITU-T H.323 video codecs registered to the SUT, nor connected via the RMX[®] Serial Gateway S4GW. The SUT meets the critical interoperability requirements set forth in Reference (c) and (d) using test procedures derived from Reference (e). 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, review of the vendor's Letters of Compliance, and DSAWG accreditation. Interoperability testing was conducted by the Telecommunication Systems Security Assessment Program (TSSAP), 346th Test Squadron, 318th Information Operations Group (IOG), San Antonio, Texas, from 7 through 25 June 2010. Review of the LoC was completed on 25 June 2010. The DSAWG granted accreditation for SUT on 03 November 2010 and the RMX[®] Serial Gateway S4GW on 5 October 2010 based on

JITC Memo, JTE, Special Interoperability Test Certification of the Polycom RMX[®] 2000 and RMX[®] 4000 with Software Release 5.1.0.G

the security testing completed by Department of Defense Component lab IA test teams and published in a separate report, Reference (f). 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

Interface	Critical	Certified	Functional Requirements	Status	UCR Reference
IP (10/100 Mbps) ITU-T H.323	No ¹	Yes ²	The VTC system/endpoints shall meet the requirements of FTR1080B-2002. (R)	Met	5.2.4.2
			ITU-T H.323 in accordance with FTR 1080B-2002. (C)	Met	5.2.4.2
			Layer 3 Differential Service Code Point tagging as specified in UCR, 5.3.1. (C)	Met	5.2.4.2
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference. (R)	Met	5.2.4.2
			Physical, electrical, and software characteristics shall not degrade or impair switch and associated network operations. (R)	Met	5.2.4.2
			VTU IP interface must be IPv6 capable. (R)	Waiver ³	5.3.5.4
ISDN PRI T1 ISDN PRI E1	No ¹	Yes	The VTC system/endpoints shall meet the requirements of FTR1080B-2002. (R)	Met	5.2.4.2
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference. (R)	Met	5.2.4.2
			A VTC system and/or end point that uses an integrated PRI interface to connect to the DSN shall be in conformance with the requirements associated with an IAS as described in Section 5.2.6, IAS Requirements. (C)	Met	5.2.4.2
			Physical, electrical, and software characteristics of VTU system(s)/ endpoint(s) that are used in the DSN network shall not degrade or impair the serving DSN switch and its associated network operations.(R)	Met	5.2.4.2
Serial EIA-366A EIA-449 EIA-530 EIA-530A ITU-T V.35 ⁴	No ¹	Yes ⁵	The VTC system/endpoints shall meet the requirements of FTR1080B-2002. (R)	Met	5.2.4.2
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference. (R)	Met	5.2.4.2
			A VTC system and/or end point that use a serial interface to another device, such as a cryptographic device, IAS, or TA, for eventual connection to the DSN, shall be in conformance with the requirements for that serial interface as described in FTR 1080B-2002. (C)	Met	5.2.4.2
			Physical, electrical, and software characteristics of VTU system(s)/ endpoint(s) that are used in the DSN network shall not degrade or impair the serving DSN switch and its associated network operations. (R)	Met	5.2.4.2
Security	Yes	Certified	GR-815, STIGs and DoDI 8510.bb (DIACAP) (R)	Met ⁶	3, 5.4.6

Table 1. SUT Functional Requirements and Interoperability Status (continued)

NOTES:			
1	The UCR does not state a minimum required interface for a VTC. A VTC can offer any one of the following interfaces: ISDN BRI, Serial, T1 ISDN PRI, E1 ISDN PRI, and IP. The SUT consists of both an IP and an ISDN PRI T1/E1 interface.		
2	The SUT met the conditional requirements for an IP interface with the ITU-T H.323 protocol; however, Assured Service is not yet defined for an IP interface with ITU-T H.323 protocol. Therefore, C2 VTC users and Special C2 VTC users are not authorized to be served by an IP interface with the ITU-T H.323 protocol.		
3	The SUT does not support IPv6. The ASD/NII granted a waiver for IPv6 until 1 May 2011. As part of the waiver stipulations in accordance with Department of Defense rules of engagement for waivers, the vendor must submit a request by 31 December 2010 to have IPv6 tested before 1 May 2011 or this certification is subject to being removed from the UC APL.		
4	The electrical physical interface tested was ITU-T V.35 in accordance with ITU-T V.36/V.37.		
5	The SUT does not support serial interfaces. However, these interfaces are supported with the optional Polycom RMX [®] Serial Gateway S4GW.		
6	Security is tested by Department of Defense Component lab Information Assurance test teams and published in a separate report, Reference (f).		
LEGEND:			
APL	Approved Products List	IAS	Integrated Access Switch
ASD/NII	Assistant Secretary of Defense for Networks and Information Integration	IP	Internet Protocol
BRI	Basic Rate Interface	IPv6	Internet Protocol version 6
C	Conditional	ISDN	Integrated Services Digital Network
C2	Command and Control	ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
DCE	Data Circuit-Terminating Equipment	kbps	kilobits per second
DIACAP	Department of Defense Information Assurance Certification and Accreditation Process	kHz	kiloHertz
DISA	Defense Information Systems Agency	Mbps	Megabits per second
DoDI	Department of Defense Instruction	PRI	Primary Rate Interface
DSN	Defense Switched Network	R	Required
DTE	Data Terminal Equipment	STIGs	Security Technical Implementation Guides
E1	European Basic Multiplex Rate (2.048 Mbps)	SUT	System Under Test
EIA	Electronic Industries Alliance	T1	Digital Transmission Link Level 1 (1.544 Mbps)
EIA-366A	Standard for interface between DTE and automatic calling equipment for data communication	TA	Terminal Adapter
EIA-499	Standard for 37-position and 9-position interface for DTE and DCE employing serial binary data interchange	UC	Unified Capabilities
EIA-530	Standard for 25-position interface for DTE and DCE employing serial binary data interchange	UCR	Unified Capabilities Requirements
FTR	Federal Telecommunications Recommendation Video Teleconferencing Services	V.35	Standard for data transmission at 48 kbps using 60-108 kHz group band circuits
GR 815	General Requirements for Network Element/ System Security	V.36	Modems for synchronous data transmission using 60-108 kHz group band circuits
H.323	Standard for multi-media communications on packet-based networks	V.37	Synchronous data transmission at a data signaling rate higher than 72 kbps using 60-108 kHz group band circuits
		VTC	Video Teleconferencing
		VTU	Video Teleconferencing Unit

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.

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6. The JITC point of contact is Mr. Brad Friedman, DSN 879-5057, commercial (520) 538-5057, FAX DSN 879-4347, or e-mail to brad.friedman@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 1008301. The tracking number for the Polycom RMX[®] Serial Gateway S4GW Version 5.7.2.0.G is 1008302.

FOR THE COMMANDER:



for RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

2 Enclosures a/s

Distribution (electronic mail):

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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) Defense Information Systems Agency, "Department of Defense Networks Unified Capabilities Requirements 2008," 22 January 2009
- (d) Office of the Secretary of Defense, "Interim Unified Capabilities (UC) IPv6 Rules of Engagement (ROE)," 31 July 2009
- (e) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006
- (f) Air Force Test Facility, "Information Assurance (IA) Assessment of Polycom RMX Family version 5.1.0.G (TN 1008301)," 03 November 10
- (g) Air Force Test Facility, "Information Assurance (IA) Assessment of Polycom Serial Gateway version 5.7.2.0.G (Tracking Number 1008302)," 5 October 2010

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. Polycom RMX[®] 2000 and RMX[®] 4000 with Software Release 5.1.0.G, hereinafter referred to as the System Under Test (SUT).

2. PROPONENT. Oklahoma Army National Guard.

3. PROGRAM MANAGER. Welly Gibson, DCSIM-VOC, 3501 Military Circle, Oklahoma City, Oklahoma, 73111, Email: welly.gibson@us.army.mil.

4. TESTER. Telecommunication Systems Security Assessment Program (TSSAP) testing facility, 346th Test Squadron, 318th Information Operations Group (IOG), United States Air Force, San Antonio, Texas.

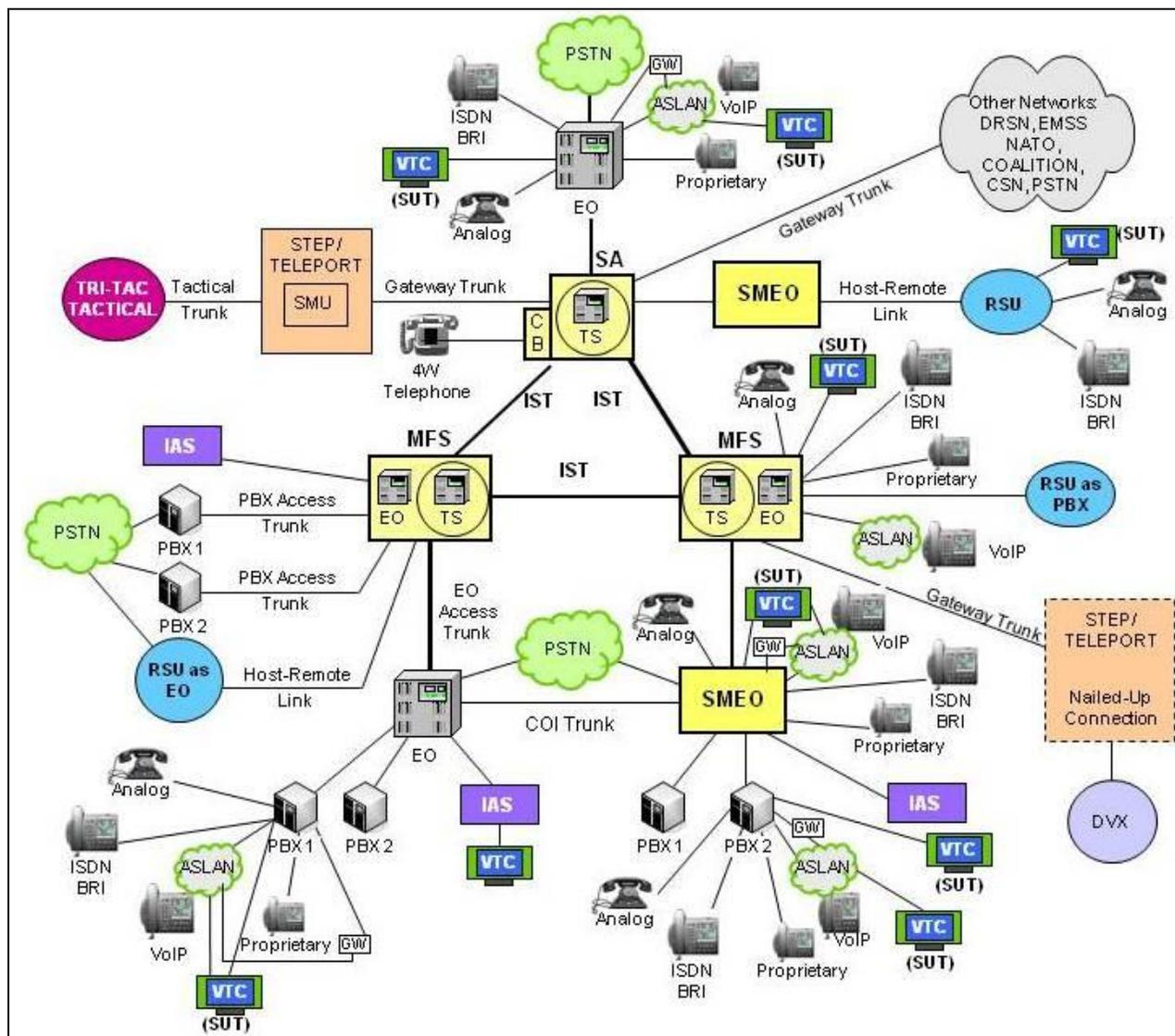
5. SYSTEM UNDER TEST (SUT) DESCRIPTION. The SUT is a Multipoint Conference Unit (MCU). The Family consists of the Polycom RMX 2000 or Polycom RMX 4000. The SUT connects multi-party videoconferencing with on demand meeting rooms. The SUT supports endpoints using International Telecommunication Union-Telecommunication Standardization Sector (ITU-T) H.323 or ITU-T H.320. The SUT architecture consists of a single rack mountable chassis which can be populated with multiple function cards. These cards provide conference room resources and interfaces with the Public Switched Telephone Network and Defense Switched Network (DSN) voice and video networks. The SUT is managed via a Hypertext Transfer Protocol Secure session. This allows for configuration changes, teleconference scheduling, Video Teleconferencing (VTC) bridge status monitoring, and maintenance of the system. The SUT supports the following features which were met through testing or vendor submission of Letters of Compliance (LoC) unless otherwise noted:

- Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI), Digital Transmission Link Level 1 (T1), or European Basic Multiplex Rate (E1), and ITU-T H.320. The SUT supports only 1 mode at a time, either T1 or E1.
- Network Interfaces: ISDN PRI T1 or E1, 10/100/1000 Megabits per second (Mbps) auto network interface card
- Standards: ITU-T H.320 up to 2 Mbps
- ITU-T H.323
- Audio standards: ITU-T G.711, ITU-T G.722, ITU-T G.722.1, ITU-T G.729A, ITU-T G.723.1, Siren 14
- Video standards: ITU-T H.261, ITU-T H.263, ITU-T H.264,
- Multi-Control Point compatibility ITU-T H.243, ITU-T H.231, ITU-T H.221, ITU-T H.224/H.281
- Inverse Multiplexing ITU-T H.244

The SUT is certified with or without the Polycom RMX[®] Serial Gateway S4GW Version 5.7.2.0.G. The Polycom RMX[®] Serial Gateway S4GW supports multimedia conferencing over Internet Protocol (IP) by translating between International Telecommunication Union-Telecommunication Standardization Sector (ITU-T) H.323

and serial protocols. The Polycom RMX[®] Serial Gateway S4GW can support four simultaneous calls up to 1920 kilobits per second (kbps) each. The Polycom RMX[®] Serial Gateway S4GW offers a serial leg for multimedia conferencing over IP by providing an interface for legacy endpoints with serial interfaces, encryption/decryption devices, satellite networks or leased line services. The Polycom RMX[®] Serial Gateway S4GW must be used in conjunction with an Integrated Access Switch (IAS) or Terminal Adapter (TA).

6. OPERATIONAL ARCHITECTURE. The Unified Capabilities Requirements (UCR) 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	SA	Standalone
DSN	Defense Switched Network	SMEO	Small End Office
DVX	Deployable Voice Exchange	SMU	Switched Multiplex Unit
EMSS	Enhanced Mobile Satellite System	STEP	Standardized Tactical Entry Point
EO	End Office	SUT	System Under Test
Gw	Gateway	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		

Figure 2-1. Relationship of the SUT to the 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 Interfaces and Functional Requirements and verified through TSSAP testing and review of the vendor-provided LoC.

Table 2-1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Functional Requirements	Status	UCR Reference
IP (10/100 Mbps) ITU-T H.323	No ¹	Yes ²	The VTC system/endpoints shall meet the requirements of FTR1080B-2002. (R)	Met	5.2.4.2
			ITU-T H.323 in accordance with FTR 1080B-2002. (C)	Met	5.2.4.2
			Layer 3 Differential Service Code Point tagging as specified in UCR, 5.3.1. (C)	Met	5.2.4.2
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference. (R)	Met	5.2.4.2
			Physical, electrical, and software characteristics shall not degrade or impair switch and associated network operations. (R)	Met	5.2.4.2
			VTU IP interface must be IPv6 capable. (R)	Waiver ³	5.3.5.4
ISDN PRI T1 ISDN PRI E1	No ¹	Yes	The VTC system/endpoints shall meet the requirements of FTR1080B-2002. (R)	Met	5.2.4.2
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference. (R)	Met	5.2.4.2
			A VTC system and/or end point that uses an integrated PRI interface to connect to the DSN shall be in conformance with the requirements associated with an IAS as described in Section 5.2.6, IAS Requirements. (C)	Met	5.2.4.2
			Physical, electrical, and software characteristics of VTU system(s)/ endpoint(s) that are used in the DSN network shall not degrade or impair the serving DSN switch and its associated network operations.(R)	Met	5.2.4.2
			The VTC system/endpoints shall meet the requirements of FTR1080B-2002. (R)	Met	5.2.4.2
Serial EIA-366A EIA-449 EIA-530 EIA-530A ITU-T V.35 ⁴	No ¹	Yes ⁵	A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference. (R)	Met	5.2.4.2
			A VTC system and/or end point that use a serial interface to another device, such as a cryptographic device, IAS, or TA, for eventual connection to the DSN, shall be in conformance with the requirements for that serial interface as described in FTR 1080B-20002. (C)	Met	5.2.4.2
			Physical, electrical, and software characteristics of VTU system(s)/ endpoint(s) that are used in the DSN network shall not degrade or impair the serving DSN switch and its associated network operations. (R)	Met	5.2.4.2
			The VTC system/endpoints shall meet the requirements of FTR1080B-2002. (R)	Met	5.2.4.2
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference. (R)	Met	5.2.4.2
Security	Yes	Certified	GR-815, STIGs and DoDI 8510.bb (DIACAP) (R)	Met ⁶	3, 5.4.6

Table 2-1. SUT Functional Requirements and Interoperability Status (continued)

NOTES:			
1	The UCR does not state a minimum required interface for a VTC. A VTC can offer any one of the following interfaces: ISDN BRI, Serial, T1 ISDN PRI, E1 ISDN PRI, and IP. The SUT consists of both an IP and an ISDN PRI T1/E1 interface.		
2	The SUT met the conditional requirements for an IP interface with the ITU-T H.323 protocol; however, Assured Service is not yet defined for an IP interface with ITU-T H.323 protocol. Therefore, C2 VTC users and Special C2 VTC users are not authorized to be served by an IP interface with the ITU-T H.323 protocol.		
3	The SUT does not support IPv6. The ASD/NII granted a waiver for IPv6 until 1 May 2011. As part of the waiver stipulations in accordance with Department of Defense rules of engagement for waivers, the vendor must submit a request by 31 December 2010 to have IPv6 tested before 1 May 2011 or this certification is subject to being removed from the UC APL.		
4	The electrical physical interface tested was ITU-T V.35 in accordance with ITU-T V.36/V.37.		
5	The SUT does not support serial interfaces. However, these interfaces are supported with the optional Polycom RMX [®] Serial Gateway S4GW.		
6	Security is tested by Department of Defense Component lab Information Assurance test teams and published in a separate report, Reference (f).		
LEGEND:			
APL	Approved Products List	IAS	Integrated Access Switch
ASD/NII	Assistant Secretary of Defense for Networks and Information Integration	IP	Internet Protocol
BRI	Basic Rate Interface	IPv6	Internet Protocol version 6
C	Conditional	ISDN	Integrated Services Digital Network
C2	Command and Control	ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
DCE	Data Circuit-Terminating Equipment	kbps	kilobits per second
DIACAP	Department of Defense Information Assurance Certification and Accreditation Process	kHz	kiloHertz
DISA	Defense Information Systems Agency	Mbps	Megabits per second
DoDI	Department of Defense Instruction	PRI	Primary Rate Interface
DSN	Defense Switched Network	R	Required
DTE	Data Terminal Equipment	STIGs	Security Technical Implementation Guides
E1	European Basic Multiplex Rate (2.048 Mbps)	SUT	System Under Test
EIA	Electronic Industries Alliance	T1	Digital Transmission Link Level 1 (1.544 Mbps)
EIA-366A	Standard for interface between DTE and automatic calling equipment for data communication	TA	Terminal Adapter
EIA-499	Standard for 37-position and 9-position interface for DTE and DCE employing serial binary data interchange	UC	Unified Capabilities
EIA-530	Standard for 25-position interface for DTE and DCE employing serial binary data interchange	UCR	Unified Capabilities Requirements
FTR	Federal Telecommunications Recommendation Video Teleconferencing Services	V.35	Standard for data transmission at 48 kbps using 60-108 kHz group band circuits
GR 815	General Requirements for Network Element/ System Security	V.36	Modems for synchronous data transmission using 60-108 kHz group band circuits
H.323	Standard for multi-media communications on packet-based networks	V.37	Synchronous data transmission at a data signaling rate higher than 72 kbps using 60-108 kHz group band circuits
		VTC	Video Teleconferencing
		VTU	Video Teleconferencing Unit

8. TEST NETWORK DESCRIPTION. The SUT was tested at TSSAP 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.

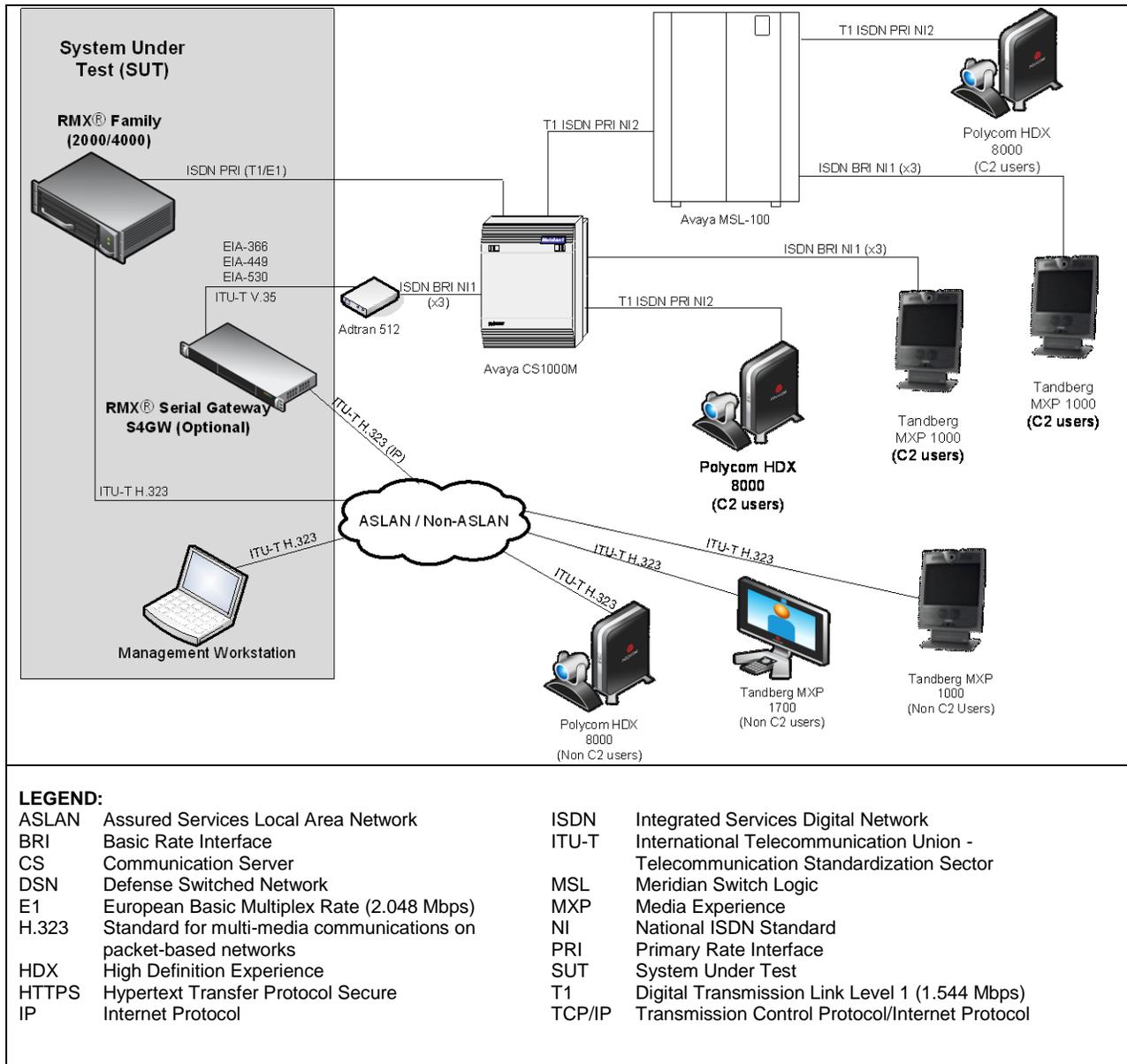


Figure 2-2. SUT Test Configuration

9. SYSTEMS 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 and VTC endpoints 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 on the Unified Capabilities (UC) Approved Products List (APL) that offer the same certified interfaces.

Table 2-2. SUT Test Configuration

System Name	Software Release
Avaya MSL-100	MSL-17
Avaya CS1000M	4.5
Tandberg MXP 1000	F7.3.1 NTSC, Security
Tandberg MXP 1700	F7.0 NTSC, Security
Polycom HDX 8000	2.0.5_J-2854
System Under Test	Hardware
Polycom RMX [®] 2000 Polycom RMX [®] 4000	5.1.0.G
Polycom RMX [®] Serial Gateway S4GW (Optional)	5.7.2.0.G
LEGEND:	
CS Communication Server	MXP Media Experience
HDX High Definition Experience	NTSC National Television System Committee
MSL Meridian Switch Logic	SUT System Under Test

10. TEST LIMITATIONS. None.

a. Discussion. The VTC system interface requirements can be met with an ISDN BRI, T1 or E1 ISDN PRI, Serial, or ITU-T H.323 interface. Although each interface is conditional, if the SUT offers an interface, it must meet the critical requirements for that interface. If the SUT is an IP only VTC codec, the SUT must use an IP to TDM gateway for connection to the DSN. The SUT minimum critical interoperability interface and functional requirements were met through both interoperability certification testing conducted at the TSSAP and review of the vendor’s LoC. Bonding mode 1 was tested to requirements defined in UCR 2008, Change 1, Section 5.2.4.2 and Federal Telecommunications Recommendation (FTR) 1080B-2002. Bonding, often referred to as channel aggregation, takes place through inverse multiplexing. Inverse multiplexing takes a high-bandwidth signal and splits it for transport through the network over multiple lower-bandwidth channels. At the receiving end, the multiple, lower-bandwidth signals are recombined into the original high-bandwidth signal. Bonding for the SUT is accomplished through the gateway. Test calls completed in accordance with requirements defined in UCR 2008, Change 1, Section 5.2.4.2 and FTR 1080B-2002. The SUT received inbound calls and placed outbound calls to various VTC codecs. The successful tests demonstrated the SUT’s ability to participate in high-speed VTC conferences.

Seven- and ten-digit calls were placed to verify that the SUT met the capability to support both the North American Numbering Plan and the DSN World Wide Numbering and Dialing Plan (WWNDP) defined in UCR 2008, Change 1, Section 5.2.6.2 (UCR 2008, Section 5.2.3.5.1). Multilevel precedence video calls were placed from the SUT and established within the DSN at the respective precedence level dialing the DSN WWNDP access code (e.g. 93: Priority, 92: Immediate, 91: Flash, etc.). The SUT has the ability to prefix any DSN 7 or 10 digit number with a 9X access code which meets this requirement. A passed test result was based on 100 percent of the calls receiving a score of four or better on the subjective quality scale as defined in Table 2-3.

Table 2-3. Video and Voice Subjective Quality Scale

Rating	Reference	Definition
1	Unusable	<u>Quality is unusable.</u> Voice and video may be heard and seen but is unrecognizable.
2	Poor	<u>Quality is unusable.</u> Words and phrases are not fully understandable or video cannot be properly identified.
3	Fair	<u>Quality is seriously affected by distortion.</u> Repeating words and phrases are required to convey speech or video is seriously impacted and barely recognizable.
4	Good	Quality is usable. Audio or video is not impaired but some distortion is noticeable
5	Excellent	<u>Quality is unaffected.</u> No discernable problems with either audio or video.

NOTE: Audio and video quality during a conference will receive a subjective rating on the Data Collection Form. A rating of lower than 4 on this reference scale is considered a failure.

b. Test Conduct. Multiple two-way 64 kbps – 1.920 Mbps test calls at different durations (5-minute, 30-minute, 1-hour, 24-hours) and different precedence levels were placed over the test network shown in Figure 2-2 via all the combinations depicted in Table 2-1. The UCR, 5.2.12.4.5 requirements state:

(1) The VTC system/endpoints shall meet the requirements of FTR 1080B-2002. The SUT met these requirements through testing and review of the vendor's LoC.

(2) The VTC features and functions used in conjunction with IP network services shall meet the requirements of ITU-T H.323 in accordance with FTR 1080B-2002. Additionally, ITU-T H.323 video end instruments must meet the tagging requirements as specified in UCR 2008, Section 5.2.12.8.2.9, Voice over IP System Service Class Tagging Requirements. This requirement was met by the SUT. The SUT has the ability to apply a Service Class Tag for signaling and video media at any value 0 to 63 for IP version 4. This was verified through testing by capturing traffic from and to the SUT with a packet capture utility. These captures were analyzed to verify proper tagging requirements were met. The SUT does not support IPv6. The ASD/NIJ granted a waiver for IPv6 until 1 May 2011. As part of the waiver stipulations in accordance with Department of Defense rules of engagement for waivers, the vendor must submit a request by 31 December 2010 to have IPv6 tested before 1 May 2011 or this certification is subject to being removed from the UC APL.

(3) A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference. This was tested during each session established with the SUT by disconnecting single and multiple conferees. This was done by hanging up and simulating a failure by disconnecting the physical interface or by preempting both participating conferees and other precedent users. During these tests, the remaining conferees were not affected and remained in the conference.

(4) A VTC system and/or end point that uses an integrated PRI interface to connect to the DSN shall be in conformance with the requirements associated with an IAS as described in Section 5.2.6, IAS Requirements.

(5) The physical, electrical, and software characteristics of Video Teleconferencing Unit system(s)/endpoint(s) that are used in the DSN network shall not

degrade or impair the serving DSN switch and its associated network operations. This was tested by conducting other tests on the serving DSN switch while point-to-point and multipoint video sessions were established. During these tests, the SUT physical, electrical, and software characteristics did not impair the serving DSN switch and its associated operations.

(6) The UCR 2008, Change 1, Sections 3 and 5.4.6 state the Information Assurance requirements for the SUT. These requirements are tested by Department of Defense Component lab Information Assurance test teams and results are published under a separate report, Reference (f). The DSAWG granted accreditation of the Polycom RMX[®] Serial Gateway S4GW Version 5.7.2.0.G on 5 October 2010 based on the security testing completed by Department of Defense Component lab IA test teams and published in a separate report, Reference (g).

b. Test Summary. The SUT met the critical interface and functional requirements for a VTC system for the interfaces depicted in Table 2-1, as set forth in Reference (c), and is certified for joint use within the DSN. The SUT met the requirements for an IP interface with the ITU-T H.323 protocol; however, Assured Service is not yet defined for an IP interface with the ITU-T H.323 with the protocol. Since the IP interface with the ITU-T H.323 protocol does not provide Assured Services during a crisis or contingency, users' access to the DSN will be on a best effort basis. Therefore, Command and Control (C2) VTC users and Special C2 VTC users are not authorized to be served by an IP interface with the ITU-T H.323 protocol. The SUT is certified with or without the Polycom RMX[®] Serial Gateway S4GW Version 5.7.2.0.G.

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.