



DEFENSE INFORMATION SYSTEMS AGENCY

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

2 Jan 13

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Special Interoperability Test Certification of Avaya S8300D with Gateway 450 (G450) Release Communications Manager (CM) 6.0 (R16x.00.1.510.1) with Service Pack 19211

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 (h), see Enclosure

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

2. The Avaya S8300D with G450 Release CM 6.0 (R16x.00.1.510.1) with Service Pack 19211 is hereinafter referred to as the System Under Test (SUT). The SUT meets all of its critical interoperability requirements and is certified for joint use within the Defense Information System Network (DISN) for the following switch types: Private Branch Exchange (PBX) 1 and PBX 2. The SUT meets the Voice over Internet Protocol (VoIP) critical interoperability requirements with any certified Assured Services Local Area Network (ASLAN) or ASLAN components on the Unified Capabilities (UC) Approved Products List (APL). The identified test discrepancies shown in the SUT Interoperability Test Summary have an overall minor operational impact. No other configurations, features, or functions, except those cited within this report, are certified by JITC. The SUT meets the critical interoperability requirements for a PBX 1 set forth in References (c) through (e), using test procedures derived from Reference (f). This certification expires upon changes that could affect interoperability, but no later than two years from the date of the original UC APL memorandum (10 May 2012).

3. The extension of this certification is based on Desktop Review (DTR) 1. The original certification is based on interoperability testing conducted by JITC, DISA adjudication of open test discrepancy reports (TDR), review of the vendor's Letters of Compliance (LoC), and a DISA Certifying Authority (CA) positive recommendation and documented in Reference (g). Interoperability testing of the SUT was conducted at JITC's Global Information Grid Network Test Facility at Fort Huachuca, Arizona, from 25 July through 26 August 2011. DISA adjudication of outstanding TDRs was completed on 14 February 2012. Review of the vendor's LoC was completed on 7 September 2011. The DISA CA provided a positive recommendation on 10 April 2012 based on the security testing completed by DISA-led Information Assurance

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(IA) test teams and published in a separate report, Reference (h). This DTR was requested to include Avaya Aura® Application Enablement (AE) Services (Small System) Release 6.2. This DTR request required interoperability and IA verification and validation (V&V) testing. JITC conducted V&V testing for this DTR from 13 through 24 August 2012. The AE Services (Small System) platform provides third party call control through the Telephony Services Application Programming Interface (TSAPI) to complete the following actions: adjunct routing of incoming calls, report various events to an adjunct, provide notification/control for a specific station/call, perform adjunct invocation of switch features, and respond to adjunct queries for information. The AE Services (Large System) was tested on the Avaya Aura® S8800 CM 6.0.1 in conjunction with the Amcom Personal Computer/Public Safety Answering Point (PC/PSAP™) version 11.9.0.301 and no interoperability findings were discovered. The only difference between the AE Services (Small System) and AE Services (Large System) is licensing. JITC analysis determined that because the SUT has the same software and similar hardware as the Avaya Aura® S8800, the results of the S8800 V&V testing with the AE Services (Large System) Release 6.2 and Amcom PC/PSAP apply to the SUT. Therefore, the SUT is certified with AE Services (Small System) Release 6.2. It is also certified with any product on the UC APL that is certified with AE Services (Small System) Release 6.2 through the TSAPI. Table 1 lists the SUT test configuration that includes the AE Services (Small System) server and Figure 1 depicts the SUT diagram including the AE Services (Small System) server and the Amcom PC/PSAP™. The DISA CA provided a positive recommendation for this DTR on 11 December 2012, based on the security testing completed DISA-led IA test teams and published in a separate report, Reference (h). Therefore, JITC approves this DTR.

Table 1. SUT Tested System Configurations

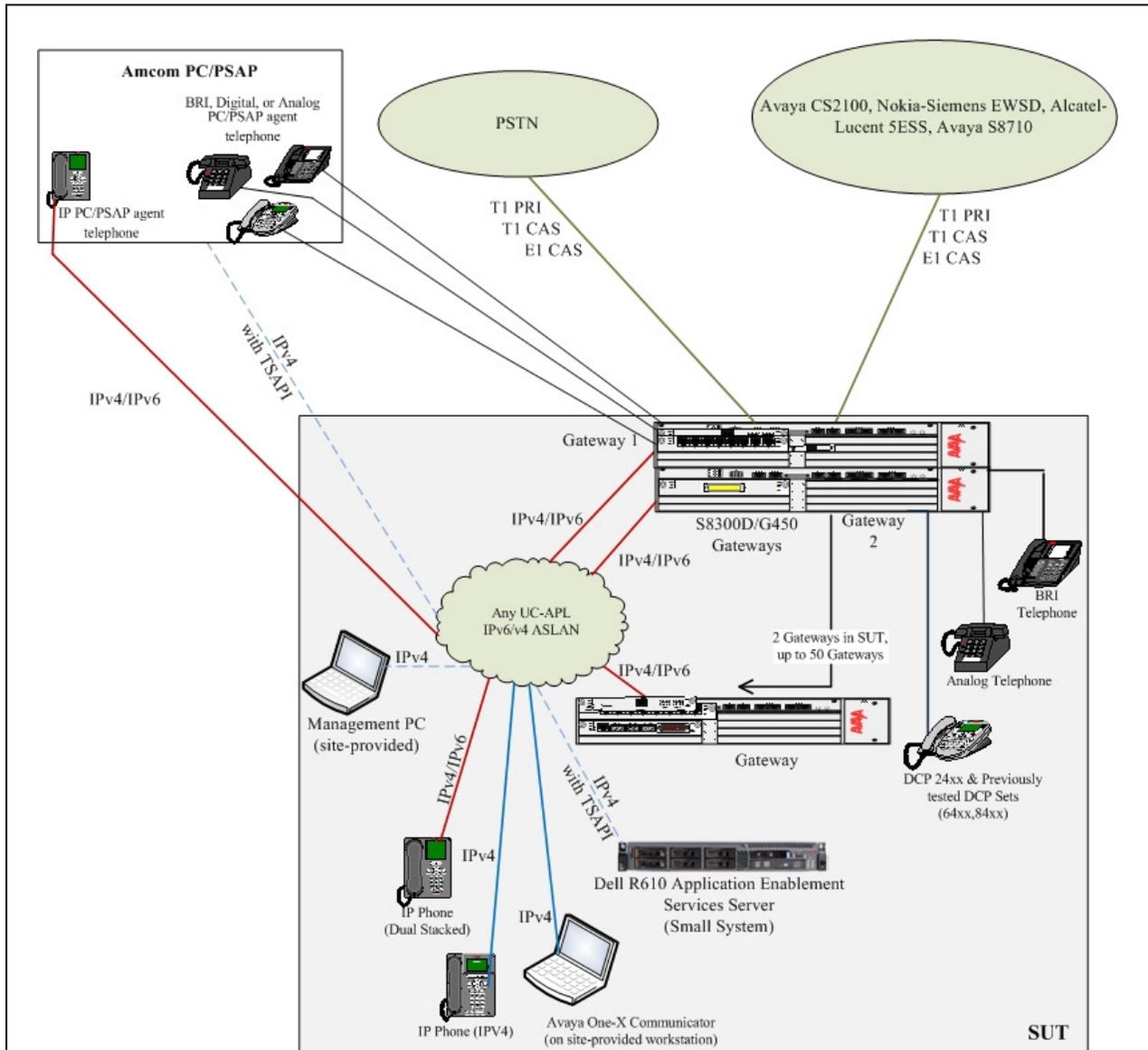
SUT Release	Hardware	Card Name	Software/Firmware		
		Part Number/ Name			
CM6.0(R16x.00.1.510.1) with Service Pack 19211	Management Workstation	Windows XP SP3	ASA 6.0	6.0.07	
	Primary (S8300D) w/G450 VxWorks 6.8 FW31.17.2	S8300D ICC/LSP Processor		Firmware C V2	
				Communications Manager 6.0 (R16x.00.1.510.1)	
				Red Hat Linux Enterprise Server 5.5 (4-2.6.11)	
				Apache Web Server 2.2.3	
			MM711 Analog Media Module	VH 27	
			MM710/ E1/T1 Media Module	VH 11	
			MM710B E1/T1 Media Module	VH 11	
			MM720 BRI Media Module	VH 7	
			MM721 BRI Media Module ¹	VH 7	
			MM717 DCP Media Module	VH 27	
	MM716 Analog Media Module	VH 27			
	MM712 DCP Media Module	VH 27			
	Secondary (S8300D) w/G450 VxWorks 6.8 FW31.17.2	S8300D ICC/LSP Processor		Firmware C V2	
				Communications Manager 6.0 (R16x.00.1.510.1)	
				Red Hat Linux Enterprise Server 5.5 (4-2.6.11)	
				Apache Web Server 2.2.3	
MM710B/ E1/T1 Media Module			V 11		
	MM712 DCP Media Module	V 27			

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Table 1. Tested System Configurations (continued)

SUT Release	Hardware	Card Name	Software/Firmware
		Part Number/ Name	
CM6.0(R16x.00.1.510.1) with Service Pack 19211 (continued)	Secondary (S8300D) w/G450 VxWorks 6.8 FW31.17.2 (continued)	MM716 Analog Media Module	V 27
		MM717 DCP Media Module	V 27
	AE Services (Small System) Server ²	Dell R610	Red Hat Enterprise Linux 5.7, AE Services 6.2.0.0.18
SUT Telephone Instruments			
Telephone type	Model (s)	Software/Firmware	
ISDN BRI	Avaya 8510T	NA	
ISDN BRI	8810U and 8810T	Release 02.07.22	
Digital Proprietary	6402D, 2420, 6408D, 6416D+M, 6402	NA	
IP	9608	S9608_11HALBR6_0_20Sr03_V452	
IP	9611	S9608_11HALBR6_0_20Sr03_V452	
IP	9620 (IPv4 only)	Ha 96XXr3_171bs.bin	
IP	9621	S9621_41HALBR6_0_20Sr03_V452	
IP	9641	S9621_41HALBR6_0_20Sr03_V452	
Softphone	Avaya One-X Communicator	site-provided workstation with Microsoft Windows XP SP3 or Microsoft Windows Vista SP2; Avaya One-X Communicator: R5.2300-SP3-22584 Product Version: 5.2.0.18	
Secure Devices			
DSCD	L3 STE	2.7	
DSCD	GD Viper PSTN	2.12	
DSCD	GD Sectera Wire Line Terminal	12.05	
NOTES:			
1. The MM720 was tested; however, it is an End of Life Product. The MM721, which has been designated by Avaya as the replacement, has similar hardware and the same firmware. JITC analysis determined it to be functionally identical for interoperability certification purposes.			
2. The AE Services (Small System) server was added in Desktop Review 1. The AE Services (Large System) was tested on the Avaya Aura® S8800 CM 6.0.1. The only difference between the AE Services (Small System) and AE Services (Large System) is licensing. JITC analysis determined that the AE Services (Small System) with the TSAPI on the SUT is functionally identical to the Aura® S8800 CM 6.0.1 for certification purposes.			
LEGEND:			
SESS	Class 5 Electronic Switching System	IPv6	Internet Protocol version 6
AE	Application Enablement	ISDN	Integrated Services Digital Network
BRI	Basic Rate Interface	JITC	Joint Interoperability Test Command
BWM	Broadcast Warning Message	Mbps	Megabits per second
CM	Communication Manager	PSTN	Public Switched Telephone Network
DSCD	DoD Secure Communications Devices	SE	Succession Enterprise
DSS1	Digital Subscriber Signaling 1	SP	Service Pack
E1	European Basic Multiplex Rate (2.048 Mbps)	STE	Secure Terminal Equipment
EWSD	Elektronisches Wählsystem Digital	SUT	System Under Test
Fax	facsimile	T1	Digital Transmission Link Level 1 (1.544 Mbps)
IP	Internet Protocol	TSAPI	Telephony Services Application Programming Interface
IPv4	Internet Protocol version 4		

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NOTE: The SUT is certified with any ASLAN or combination of certified ASLAN components listed on the Unified Capabilities Approved Products List.

LEGEND:

ASLAN	Assured Services Local Area Network	IPv4	Internet Protocol version 4
CAS	Channel Associated Signaling	IPv6	Internet Protocol version 6
DCP	Digital Communications Protocol	PRI	Primary Rate Interface
DISN	Defense Information System Network	PSTN	Public Switched Telephone Network
E1	European Basic Multiplex Rate (2.048 Mbps)	SUT	System Under Test
G450	Gateway 450	T1	Digital Transmission Link Level 1 (1.544 Mbps)
IP	Internet Protocol	TSAPI	Telephony Services Application Programming Interface

Figure 1. SUT Test Configuration with ASLAN

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4. Table 2 provides the SUT interoperability test summary. Table 3 provides the PBX 1 Capability Requirements (CRs) and Feature Requirements (FRs). This interoperability test status is based on the SUT's ability to meet:

- a. DISN services for Network and Applications specified in Reference (e).
- b. PBX 1 interface and signaling requirements for trunks/lines specified in References (c) and (d) verified through JITC testing and/or vendor submission of LoC.
- c. PBX 1 CRs/FRs specified in References (c) and (d) verified through JITC testing and/or vendor submission of LoC.
- d. The overall system interoperability performance derived from test procedures listed in Reference (f).

Table 2. SUT Interoperability Test Summary

DISN Trunk Interfaces				
Interface & Signaling	Critical	Status	Remarks	
T1 CAS (DTMF, MFR1, DP)	No	Certified	Met all critical CRs and FRs.	
E1 CAS (DTMF, MFR1, DP)	No (Europe only)	Certified	Met all critical CRs and FRs.	
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes	Certified	Met all critical CRs and FRs.	
E1 ISDN PRI (ITU-T Q.955.3)	No (Europe only)	Not Tested	This interface is not supported by the SUT and is not required for a PBX 1.	
DISN Line Interfaces				
Interface & Signaling	Critical	Status	Remarks	
2-Wire Analog Loop Start (GR-506-CORE)	Yes	Certified	Met all critical CRs and FRs.	
ISDN BRI NI 1/2 (ANSI T1.619a)	No	Certified	Met all critical CRs and FRs.	
2-Wire Proprietary Digital	No	Certified	Met all critical CRs and FRs.	
VoIP (Ethernet IEEE 802.3u)	No	Certified	Met all critical CRs and FRs.	
Ethernet IEEE 802.3u (with TSAPI)	No	Certified	Met all critical CRs and FRs. ¹	
DISN Features and Capabilities				
Features and Capabilities	Critical	Status	Remarks	
Common Features	Yes	Certified	Met all critical CRs and FRs with the following minor exception: A short "ping" ring is not provided on the VoIP phone 9641 when all calls are forwarded. ²	
Attendant	No	Certified	Met all critical CRs and FRs.	
Public Safety	Yes	Certified	The SUT met all critical CRs and FRs for Basic 911.	
Conferencing	Preset Conferencing	No	Not Tested	This feature is not supported by the SUT and is not required for a PBX 1.
	Meet-Me Conferencing	No	Not Tested	This feature is not supported by the SUT and is not required for a PBX 1.
	Progressive Conferencing	No	Certified	Met all critical CRs and FRs
Nailed-up Connections	No	Not Tested	This feature is not supported by the SUT and is not required for a PBX 1.	
DISN Hotline Services	No	Certified	Met all critical CRs and FRs.	
MLPP	Yes	Certified	Met all critical CRs and FRs with the following minor exceptions: The SUT does not support the Loss of C2 announcement. ³	
Call Processing	Yes	Certified	Met all critical CRs and FRs.	
ISDN Services	Yes	Certified	Met all critical CRs and FRs.	
Synchronization	Yes	Certified	Met all critical CRs and FRs.	
Reliability	Yes	Certified	Met all critical CRs and FRs.	
Security	Yes	Certified	Met all critical CRs and FRs. ⁴	
VoIP System	No	Certified	Met all critical CRs and FRs with following minor exception: All Dual Stack IP End Instruments fail to meet VoIP System Latency requirements when IPv6 is Preferred. ⁵	

Table 2. SUT Interoperability Test Summary (continued)

Network Gateways																																																																																								
Gateway	Interface & Signaling	Critical	Status	Remarks																																																																																				
PSTN	T1 CAS (DTMF, MFR1, DP)	No	Certified	Met all critical CRs and FRs.																																																																																				
	E1 CAS (DTMF, MFR1, DP)	No (Europe only)	Certified	Met all critical CRs and FRs.																																																																																				
	T1 ISDN PRI NI 1/2 (ANSI T1.607)	No	Certified	Met all critical CRs and FRs.																																																																																				
	E1 ISDN PRI (ITU-T Q.931)	No (Europe only)	Not Tested	This interface is supported by the SUT, but was not tested and is not covered under this certification.																																																																																				
	2-Wire Analog Ground Start (GR-506-CORE)	No	Certified	Met all critical CRs and FRs. ⁶																																																																																				
<p>NOTES:</p> <p>1. The AE Services (Small System) platform provides third party call control through the TSAPI to complete the following actions: adjunct routing of incoming calls, report various events to an adjunct, provide notification/control for a specific station/call, perform adjunct invocation of switch features, and respond to adjunct queries for information. The AE Services (Large System) was tested in conjunction with the Amcom PC/PSAP™ version 11.9.0.301 and no interoperability findings were discovered. The only difference between the AE Services (Small System) and AE Services (Large System) is licensing. JITC analysis determined that because the SUT has the same software and similar hardware as the Avaya Aura® S8800, the results of the S8800 V&V testing with the AE Services (Large System) Release 6.2 and Amcom PC/PSAP apply to the SUT. Therefore, the SUT is certified with AE Services (Small System) Release 6.2. It is also certified with any product on the UC APL that is certified with AE Services (Large System) Release 6.2 through the TSAPI. This interface and functionality was included with Desktop Review 1.</p> <p>2. A short "ping" ring is not provided on the VoIP phone 9641 when all calls are forwarded and the phone does not visually display that call forward variable is enabled. This was adjudicated by DISA on 14 February 2012 as having a minor operational impact with the intent to change this requirement in the next UCR version from required to conditional for a VoIP end instrument.</p> <p>3. The SUT does not support the Loss of C2 announcement. This announcement is invoked only when a DISN subscriber is automatically routed to a non-MLPP network. DISA previously adjudicated this anomaly as having a minor operational impact with the intent to change this requirement to conditional for a PBX 1 because this announcement would rarely be invoked on a PBX 1.</p> <p>4. Security is tested by DISA-led Information Assurance test teams and the results published in a separate report, Reference (h).</p> <p>5. During the original interoperability test, the Dual Stack IP End Instruments failed to meet VoIP System Latency requirements when IPv6 is Preferred. This was adjudicated by DISA as minor with the vendor's POAM to fix this anomaly by 9 August 2012. Subsequent testing of other Avaya switches using these phones with updated firmware successfully demonstrated that the ability to meet the latency requirements. The original firmware for the 9608/9611 was S9608_11HALBR6_0_20Sr03_V452. The original firmware for the 9621/9641 was S9621_41HALBR6_0_20Sr03_V452. JITC analysis determined that the IP phones with the new firmware, which are certified on other Avaya switches, are also certified with the SUT. The new firmware for the 9608/9611 is S9608_11HALBR6_0_16T_V452.var. The new firmware for the 9641/9641 is S9621_41HALBR6_0_16T_V452.var.</p> <p>6. This interface requirement was met by the vendor's LoC.</p> <p>LEGEND:</p> <table border="0"> <tr> <td>AE</td> <td>Application Enablement</td> <td>LSSGR</td> <td>Local Access and Transport Area (LATA) Switching Systems</td> </tr> <tr> <td>ANSI</td> <td>American National Standards Institute</td> <td></td> <td>Generic Requirements</td> </tr> <tr> <td>BRI</td> <td>Basic Rate Interface</td> <td>MFR1</td> <td>Multi-Frequency Recommendation 1</td> </tr> <tr> <td>C2</td> <td>Command and Control</td> <td>MLPP</td> <td>Multi-Level Precedence and Preemption</td> </tr> <tr> <td>CAS</td> <td>Channel Associated Signaling</td> <td>NI 1/2</td> <td>National ISDN Standard 1 or 2</td> </tr> <tr> <td>CR</td> <td>Capability Requirements</td> <td>PBX 1</td> <td>Private Branch Exchange 1</td> </tr> <tr> <td>DISA</td> <td>Defense Information Systems Agency</td> <td>PC/PSAP</td> <td>Personal Computer/Public Safety Answering Point</td> </tr> <tr> <td>DISN</td> <td>Defense Information System Network</td> <td>POAM</td> <td>Plan of Actions and Milestones</td> </tr> <tr> <td>DP</td> <td>Dial Pulse</td> <td>PRI</td> <td>Primary Rate Interface</td> </tr> <tr> <td>DTMF</td> <td>Dual Tone Multi-Frequency</td> <td>Q.931</td> <td>Signaling Standard for ISDN</td> </tr> <tr> <td>E1</td> <td>European Basic Multiplex Rate (2.048 Mbps)</td> <td>Q.955.3</td> <td>ISDN Signaling standard for E1 MLPP</td> </tr> <tr> <td>FR</td> <td>Feature Requirements</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>GR</td> <td>Generic Requirement</td> <td>T1</td> <td>Digital Transmission Link Level 1 (1.544 Mbps)</td> </tr> <tr> <td>GR-506-CORE</td> <td>LSSGR: Signaling for Analog Interfaces</td> <td>T1.607</td> <td>ISDN Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1</td> </tr> <tr> <td>IEEE</td> <td>Institute of Electrical and Electronics Engineers</td> <td></td> <td></td> </tr> <tr> <td>IP</td> <td>Internet Protocol</td> <td>T1.619a</td> <td>SS7 and ISDN MLPP Signaling Standard for T1</td> </tr> <tr> <td>IPv6</td> <td>Internet Protocol version 6</td> <td>TSAPI</td> <td>Telephony Services Application Programming Interface</td> </tr> <tr> <td>ISDN</td> <td>Integrated Services Digital Network</td> <td>UC</td> <td>Unified Capabilities</td> </tr> <tr> <td>ITU-T</td> <td>International Telecommunication Union - Telecommunication Standardization Sector</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> <tr> <td>LoC</td> <td>Letters of Compliance</td> <td>VoIP</td> <td>Voice over Internet Protocol</td> </tr> <tr> <td></td> <td></td> <td>V&V</td> <td>Verification & Validation</td> </tr> </table>					AE	Application Enablement	LSSGR	Local Access and Transport Area (LATA) Switching Systems	ANSI	American National Standards Institute		Generic Requirements	BRI	Basic Rate Interface	MFR1	Multi-Frequency Recommendation 1	C2	Command and Control	MLPP	Multi-Level Precedence and Preemption	CAS	Channel Associated Signaling	NI 1/2	National ISDN Standard 1 or 2	CR	Capability Requirements	PBX 1	Private Branch Exchange 1	DISA	Defense Information Systems Agency	PC/PSAP	Personal Computer/Public Safety Answering Point	DISN	Defense Information System Network	POAM	Plan of Actions and Milestones	DP	Dial Pulse	PRI	Primary Rate Interface	DTMF	Dual Tone Multi-Frequency	Q.931	Signaling Standard for ISDN	E1	European Basic Multiplex Rate (2.048 Mbps)	Q.955.3	ISDN Signaling standard for E1 MLPP	FR	Feature Requirements	SUT	System Under Test	GR	Generic Requirement	T1	Digital Transmission Link Level 1 (1.544 Mbps)	GR-506-CORE	LSSGR: Signaling for Analog Interfaces	T1.607	ISDN Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1	IEEE	Institute of Electrical and Electronics Engineers			IP	Internet Protocol	T1.619a	SS7 and ISDN MLPP Signaling Standard for T1	IPv6	Internet Protocol version 6	TSAPI	Telephony Services Application Programming Interface	ISDN	Integrated Services Digital Network	UC	Unified Capabilities	ITU-T	International Telecommunication Union - Telecommunication Standardization Sector	UCR	Unified Capabilities Requirements	LoC	Letters of Compliance	VoIP	Voice over Internet Protocol			V&V	Verification & Validation
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ITU-T	International Telecommunication Union - Telecommunication Standardization Sector	UCR	Unified Capabilities Requirements																																																																																					
LoC	Letters of Compliance	VoIP	Voice over Internet Protocol																																																																																					
		V&V	Verification & Validation																																																																																					

Table 3. PBX 1 CR and FR Requirements

DISN Trunk Interfaces				
Interface	Critical	Requirements Required or Conditional		References
T1 CAS (MFR1, DTMF, DP)	No	Trunking	<ul style="list-style-type: none"> • PBX Line (C) • Direct Inward Dialing (C) • National ISDN 1/2 Primary Access (R) • ISDN ANSI MLPP Service Capability (R) • ITU-T ISDN Primary Access (Europe only) (C) • ITU-T ISDN Primary Access DSS1 MLPP (Europe only) (C) • Normal Wink Start Operations (R) • Glare Operation (R) • Abnormal Wink Start (R) • Glare Resolution (R) • Call for Service Timing (R) • Guard Timing (R) • Satellite Timing (R) • Disconnect Control (R) • Reselect and Retrial (R) • Off-Hook Supervision Transition (R) • Dial-Pulse Signals (R) • DTMF Signaling (R) • Standard Digit Format for Precedence (C) • MFR1 2/6 Signaling (C) • Alerting Signals and Tones (R) • DISN ISDN User-to-Network Signaling (R) 	<ul style="list-style-type: none"> • UCR Section 5.2.1.3.1 • UCR Section 5.2.1.3.2 • UCR Section 5.2.1.3.4.1 • UCR Section 5.2.1.3.4.1.1 • UCR Section 5.2.1.3.4.2 • UCR Section 5.2.1.3.4.2.1 • UCR Section 5.2.4.3.3.1.1 • UCR Section 5.2.4.3.3.1.2 • UCR Section 5.2.4.3.3.2.1 • UCR Section 5.2.4.3.3.2.2 • UCR Section 5.2.4.3.5 • UCR Section 5.2.4.3.6 • UCR Section 5.2.3.4.7 • UCR Section 5.2.3.4.8 • UCR Section 5.2.3.4.9 • UCR Section 5.2.3.4.10 • UCR Section 5.2.4.4.1 • UCR Section 5.2.4.4.2 • UCR Section 5.2.4.4.2.1 • UCR Section 5.2.4.4.3 • UCR Section 5.2.4.5.1 • UCR Section 5.2.4.7.1.4.2
E1 CAS (MFR1, DTMF, DP)	No (Europe only)		<ul style="list-style-type: none"> • Application (R) • Physical Layer (R) • Data Link Layer (R) • Data Link Connection (R) • Peer-to-Peer Procedures of Data-Link Layer (R) • Layer 3 DISN User-to-Network Signaling (R) • DISN User-to-Network Signaling for Circuit-Switched Bearer Services (R) 	<ul style="list-style-type: none"> • UCR Section 5.2.4.7.1.1 • UCR Section 5.2.4.7.1.2 • UCR Section 5.2.4.7.1.3 • UCR Section 5.2.4.7.1.3.1 • UCR Section 5.2.4.7.1.3.2 • UCR Section 5.2.4.7.1.4 • UCR Section 5.2.4.7.1.4.2
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes		<ul style="list-style-type: none"> • Sequence of Messages for DISN Circuit-Switched Calls (R) • Message Functional Definition and Content (R) • General Message Format and Information Elements Coding (R) 	<ul style="list-style-type: none"> • UCR Section 5.2.4.7.1.4.3 • UCR Section 5.2.4.7.1.4.4 • UCR Section 5.2.4.7.1.4.5
E1 ISDN PRI (ITU-T Q.955.3)	No (Europe only)		<ul style="list-style-type: none"> • Supplementary Services (C) • PCM-24 Digital Trunk Interface (R) • Interface Characteristics (R) • Supervisory Channel Associated Signaling (R) • Clear Channel Capability (R) • Alarm and Restoral Requirements (R) • PCM-30 Digital Trunk Interface (Europe only) (R) • Interoperation of PCM-24 and PCM-30 (R) • Analog Trunk Interface (C) • Integrated Digital Loop Carrier (C) • Trunk Group-Remove from Service (R) • Trunk Group-Restore to Service (R) 	<ul style="list-style-type: none"> • UCR Section 5.2.4.7.1.4.6 • UCR Section 5.2.6.1 • UCR Section 5.2.6.1.1 • UCR Section 5.2.6.1.2 • UCR Section 5.2.6.1.3 • UCR Section 5.2.6.1.4 • UCR Section 5.2.6.2 • UCR Section 5.2.6.3 • UCR Section 5.2.6.4 • UCR Section 5.2.6.5 • UCR Section 5.2.1.5.5 • UCR Section 5.2.1.5.5
		Voice	<ul style="list-style-type: none"> • MOS (R) • Secure calls (R) 	<ul style="list-style-type: none"> • CJCSI 6215.01C • CJCSI 6215.01C
		Facsimile	<ul style="list-style-type: none"> • Analog: ITU-T T.4 (R) 	<ul style="list-style-type: none"> • DISR
		Data	<ul style="list-style-type: none"> • Modem (VBD) (R) • 56 kbps switched data (R: PRI only) • 64 kbps switched data (R: PRI only) • NX56 synchronous BER (R: PRI only) • NX64 synchronous BER (R: PRI only) • Secure data (STE/STU-III) (R) 	<ul style="list-style-type: none"> • CJCSI 6215.01C • UCR Section 5.2.2.9.6 • UCR Section 5.2.2.9.6 • UCR Section 5.2.2.9.6 • UCR Section 5.2.2.9.6 • CJCSI 6215.01C
		VTC	<ul style="list-style-type: none"> • ITU-T H.320 (R: PRI only) 	<ul style="list-style-type: none"> • FTR 1080B-2002

Table 3. PBX 1 CR and FR Requirements (continued)

DISN Line Interfaces					
Interface	Critical	Requirements Required or Conditional		References	
2-Wire Analog	Yes	Access	<ul style="list-style-type: none"> • Directory Number Identification (R) • Analog Line (R) • National ISDN 1/2 Basic Access (R: BRI Only) • Basic Line Test Capabilities (R) • Advanced Line Test Capabilities (C) • Loop Start Line (R: 2-Wire Analog only) • Reverse Battery (R: 2-Wire Analog only) • Alerting Signals and Tones (R) • S/T Reference Point (R: ISDN BRI only) • VoIP System Requirements (R: VoIP Phones only) 	<ul style="list-style-type: none"> • UCR Section 5.2.1.1.1 • UCR Section 5.2.1.3.5 • UCR Section 5.2.1.3.3 • UCR Section 5.2.1.5.4.1.1 • UCR Section 5.2.1.5.4.1.1 • UCR Section 5.2.4.2.1 • UCR Section 5.2.4.3.1 • UCR Section 5.2.4.5.1 • UCR Section 5.2.4.7.1.2.1 • UCR Section 5.2.12.8 	
ISDN BRI NI 1/2 (ANSI T1.619a)	No				
2-Wire Proprietary Digital	No				
VoIP (Ethernet IEEE 802.3u)	No		Voice	<ul style="list-style-type: none"> • MOS (R) • Secure Calls (R) 	<ul style="list-style-type: none"> • CJCSI 6215.01C • CJCSI 6215.01C
			Facsimile	<ul style="list-style-type: none"> • Analog: ITU-T T.4 (R) 	<ul style="list-style-type: none"> • DISR
			Data	<ul style="list-style-type: none"> • Modem (VBD) (R: 2-Wire Analog only) • Secure data (STE/STU-III) (R: 2-Wire Analog only) 	<ul style="list-style-type: none"> • CJCSI 6215.01C • CJCSI 6215.01C
		VTC	<ul style="list-style-type: none"> • ITU-T H.320 (R: BRI only) 	<ul style="list-style-type: none"> • FTR 1080B-2002 	
DISN Features & Capabilities					
Feature/Capability	Critical	Requirements Required or Conditional		References	
Common Features	Yes	<ul style="list-style-type: none"> • Individual Lines (R) • Denied originating service (C) • Code restriction and diversion (R) • Call waiting (R) • Three-way calling (R) • Add-on transfer, conference calling, and call hold (C) • Call Transfer Individual – All calls (R) • Call Transfer - Internal Only (R) • Call Transfer – Individual – Incoming Only/Add-On Consultation Hold – Incoming Call (R) • Call Transfer – Outside (R) • Call Transfer – Add-On Restricted Station (C) • Call Transfer – Attendant (C) • Call Hold (R) • Conference Calling – Six Way Station Controlled (C) • Call Forwarding Variable (R) • Call Forward Busy Line (R) • Call Forwarding – Don't Answer – All Calls (R) • Selective Call Forwarding (C) • Call pick-up (C) • Address Translation (C) • Assured Dial Tone (R) 		<ul style="list-style-type: none"> • UCR Section 5.2.1.1.1 • UCR Section 5.2.1.1.3 • UCR Section 5.2.1.1.4 • UCR Section 5.2.1.1.5.1 • UCR Section 5.2.1.1.6 • UCR Section 5.2.1.1.7 • UCR Section 5.2.1.1.7.1 • UCR Section 5.2.1.1.7.2 • UCR Section 5.2.1.1.7.3 • UCR Section 5.2.1.1.7.4 • UCR Section 5.2.1.1.7.5 • UCR Section 5.2.1.1.7.6 • UCR Section 5.2.1.1.7.7 • UCR Section 5.2.1.1.7.8 • UCR Section 5.2.1.1.8.1 • UCR Section 5.2.1.1.8.2 • UCR Section 5.2.1.1.8.3 • UCR Section 5.2.1.1.8.4 • UCR Section 5.2.1.1.9.1 • UCR Section 5.2.1.7 • UCR Section 5.2.1.9 	
Attendant	No	<ul style="list-style-type: none"> • Attendant Features (C) 		<ul style="list-style-type: none"> • UCR Section 5.2.1.2.2 	
Public Safety	Yes	<ul style="list-style-type: none"> • Emergency Service Basic (911) Caller (R) • Emergency Service (911) Public Safety Answering Service (C) • Enhanced Emergency Service (E911) (C) • Trace of terminating calls (R) • Outgoing call trace (R) 		<ul style="list-style-type: none"> • UCR Section 5.2.1.4.1.1 • UCR Section 5.2.1.4.1.2 • UCR Section 5.2.1.4.1.3 • UCR Section 5.2.1.4.2 • UCR Section 5.2.1.4.3 	
Conferencing	No	<ul style="list-style-type: none"> • Preset Conferencing (C) • Meet-Me Conferencing (C) • Progressive Conferencing (C) 		<ul style="list-style-type: none"> • UCR Section 5.2.1.6.1 • UCR Section 5.2.1.6.2 • UCR Section 5.2.1.6.3 	
Nailed-up Connections	No	<ul style="list-style-type: none"> • Nailed-Up Connections (C) 		<ul style="list-style-type: none"> • UCR Section 5.2.1.8 	
DISN Hotline Services	No	<ul style="list-style-type: none"> • DISN Analog Hotline Service (C) 		<ul style="list-style-type: none"> • UCR Section 5.2.1.12 	

Table 3. PBX 1 CR and FR Requirements (continued)

DISN Features & Capabilities			
Feature/ Capability	Critical	Requirements Required or Conditional	References
MLPP	Yes	<ul style="list-style-type: none"> • MLPP Overview (R) • Preemption in the Network (R) • Network Facility with Lower Precedence Calls (R) • Network Facility with Equal or Higher Precedence Calls (R) • Precedence Call Diversion (R) • CAS (R) • PRI (R) • Analog Line MLPP (R) • ISDN MLPP Basic Rate Interface (R) • ISDN PRI (R) • Precedence Call Waiting (R) • Call Forwarding (R) • Call Transfer (R) • Call Hold (R) • Three-Way Calling (R) • Call Pickup (C) • Conferencing (C) • Multiline Hunt Group (C) • Community of Interest (C) • MLPP Interaction with EKTS features (C) 	<ul style="list-style-type: none"> • UCR Section 5.2.2.1.1 • UCR Section 5.2.2.2 • UCR Section 5.2.2.2.1 • UCR Section 5.2.2.2.2 • UCR Section 5.2.2.3 • UCR Section 5.2.2.4.1 • UCR Section 5.2.2.4.2 • UCR Section 5.2.2.5 • UCR Section 5.2.2.6 • UCR Section 5.2.2.7 • UCR Section 5.2.2.8.1 • UCR Section 5.2.2.8.2 • UCR Section 5.2.2.8.3 • UCR Section 5.2.2.8.4 • UCR Section 5.2.2.8.5 • UCR Section 5.2.2.8.6 • UCR Section 5.2.2.8.7.1 • UCR Section 5.2.2.8.8 • UCR Section 5.2.2.8.9 • UCR Section 5.2.2.10.1
Call Processing	Yes	<ul style="list-style-type: none"> • Call Treatments (R) • Primary and Alternate Routing (R) • E&M Lead Signaling States (C) • 4-Wire Analog User Access Lines (C) • 2-Wire User Access Lines (R) • Termination of Analog Lines (R) • DISN User Dialing (R) • Interswitch and Intraswitch Dialing (R) • Seven-Digit Dialing (R) • Ten-Digit Dialing (R) • Access Code (R) • Access Digit (R) • Precedence Digit (R) • Service Digit (R) • Route Code (R) • Area Code (R) • Switch Code (R) • Line Number (R) • Calling Name Delivery (C) • Calling Number Delivery (R) • Emergency Service 911 Conflict Resolution (R) • DISN Switch Outpulsing Digit Formats (C) • Standard Directory Number (R) • Standard Test Numbers (C) • Base Services – Abbreviated Numbers (R) • Digit Reception Requirements (R) • Screening (R) 	<ul style="list-style-type: none"> • UCR Section 5.2.3.1 • UCR Section 5.2.3.2 • UCR Section 5.2.3.3.1 • UCR Section 5.2.3.3.2 • UCR Section 5.2.3.3.3 • UCR Section 5.2.3.3.4 • UCR Section 5.2.3.5.1.1 • UCR Section 5.2.3.5.1.1 • UCR Section 5.2.3.5.2.1 • UCR Section 5.2.3.5.2.2 • UCR Section 5.2.3.5.1.3 • UCR Section 5.2.3.5.1.3.1 • UCR Section 5.2.3.5.1.3.2 • UCR Section 5.2.3.5.1.3.3 • UCR Section 5.2.3.5.1.4 • UCR Section 5.2.3.5.1.5 • UCR Section 5.2.3.5.1.6 • UCR Section 5.2.3.5.1.7 • UCR Section 5.2.3.5.1.8.1 • UCR Section 5.2.3.5.1.8.2 • UCR Section 5.2.3.5.1.9 • UCR Section 5.2.3.5.2 • UCR Section 5.2.3.5.3 • UCR Section 5.2.3.5.4 • UCR Section 5.2.3.5.5 • UCR Section 5.2.3.5.6 • UCR Section 5.2.3.5.8

Table 3. PBX 1 CR and FR Requirements (continued)

DISN Features & Capabilities (continued)				
Feature/ Capability	Critical	Requirements Required or Conditional		References
ISDN Services		<ul style="list-style-type: none"> • BRI Access, Call Control and Signaling (R) • Uniform Interface Configuration for BRIs (R) • EKTS (C) • PRI Access, Call Control and Signaling (R) • PRI Features (R) • Packet Data Features and Capabilities (C) 		<ul style="list-style-type: none"> • UCR Section 5.2.9.2, Table 5.2.9-1 • UCR Section 5.2.9.2, Table 5.2.9-2 • UCR Section 5.2.9.3, Table 5.2.9-3 • UCR Section 5.2.9.2, Table 5.2.9-4 • UCR Section 5.2.9.2, Table 5.2.9-5 • UCR Section 5.2.9.2, Table 5.2.9-6
Synchronization	Yes	<ul style="list-style-type: none"> • Line timing mode (R) • Internal Stratum 4 (R) • Synchronization Performance Monitoring Criteria (C) • DS1 Traffic Interfaces (C) • DS0 Traffic Interconnects (C) 		<ul style="list-style-type: none"> • UCR Section 5.2.10.1.1.2 • UCR Section 5.2.10.1.1.2.2 • UCR Section 5.2.10.2 • UCR Section 5.2.10.3 • UCR Section 5.2.10.4
Reliability	Yes	<ul style="list-style-type: none"> • System Availability (R) • Backup Power (R) • Power Components (R) • UPS Requirements (R) • UPS PBX 1 Load Capacity (R) • Backup Power (Environmental) (R) • Alarms (R) 		<ul style="list-style-type: none"> • UCR Section 5.2.11.2 • UCR Section 5.2.11.3 • UCR Section 5.2.11.3.1 • UCR Section 5.2.11.3.2 • UCR Section 5.2.11.3.2.1 • UCR Section 5.2.11.3.3 • UCR Section 5.2.11.3.4
Security	Yes	<ul style="list-style-type: none"> • GR-815, STIGs, and DoDI 8510.bb (DIACAP) (R) 		<ul style="list-style-type: none"> • UCR Section 3
VoIP				
Feature/ Capability	Critical	Requirements Required or Conditional		References
VoIP System ¹	No	<p>VoIP function is conditional. If VoIP is provided, all of the following requirements must be met:</p> <ul style="list-style-type: none"> • Voice Quality with MOS of 4.0 or better (R) • ITU-T G.711 PCM CODEC (R) • MLPP (R) • Security (R) • Network management (C) • System timing (R) • Latency ≤ 60 milliseconds (R) • IPv6 capable (R) • Service Class Tagging (R) • Softphone Requirements (C) 		<ul style="list-style-type: none"> • UCR section 5.2.12.8.2.1 • UCR section 5.2.12.8.2.2 • UCR section 5.2.12.8.2.3 • UCR section 5.2.12.8.2.4 • UCR section 5.2.12.8.2.5 • UCR section 5.2.12.8.2.6 • UCR section 5.2.12.8.2.7 • UCR 2008, Change 2, section 5.3.5.4 • UCR section 5.2.12.8.2.9 • UCR 2008, section 5.3.12.8.3.1
Network Gateways				
Gateway	Critical	Requirements Required or Conditional		References
PSTN ²	No	Trunking	<ul style="list-style-type: none"> • Positive Identification Control (C) • On-Netting (C) • Off-Netting (C) • Ground Start Line (R) • Immediate Start (C) • Delay Dial (C) 	<ul style="list-style-type: none"> • CJCSI 6215.01C • CJCSI 6215.01C • CJCSI 6215.01C • UCR Section 5.2.4.2.2 • UCR Section 5.2.4.3.2 • UCR Section 5.2.4.3.4
NOTES:				
<p>1. All requirements are derived from the UCR 2008, Reference (c) with the exception of the IPv6 requirements because UCR 2008 defines the Legacy PBX 1 requirements which are not found in subsequent UCR updates. However, the latest IPv6 DoD profile requirements for a NA/SS, which are applicable to the SUT, have been updated in UCR 2008 Change 2 Reference (d).</p> <p>2. Voice, facsimile, data, and VTC service requirements for PSTN are identical to DISN with the exception of MLPP.</p>				

Table 3. PBX 1 CR and FR Requirements (continued)

LEGEND:					
802.3u	Standard for carrier sense multiple access with collision detection at 100 Mbps	FR	Functional Requirement	PCM	Pulse Code Modulation
		FTR	Federal Telecommunications Recommendation		PCM-24 Pulse Code Modulation - 24 Channels
ANSI	American National Standards Institute	FTR 1080B-2002	Video Teleconferencing Services	PCM-30	Pulse Code Modulation - 30 Channels
BER	Bit Error Ratio	G.711	PCM of voice frequencies		
BRI	Basic Rate Interface	GR	Generic Requirement	PRI	Primary Rate Interface
C	Conditional	GR-815	Generic Requirements For Network Element/Network System (NE/NS) Security Standard for Narrowband VTC	PSTN	Public Switched Telephone Network
CAS	Channel Associated Signaling			Q.955.3	ISDN Signaling Standard for E1 MLPP
CJCSI	Chairman of the Joint Chiefs of Staff Instruction	H.320	Institute of Electrical and Electronics Engineers	R	Required
CODEC	Coder/Decoder	IEEE		S/T	ISDN BRI four-wire interface
CR	Capability Requirement	IP	Internet Protocol		
DIACAP	DoD Information Assurance Certification and Accreditation Process	IPv6	Internet Protocol version 6	STE	Secure Terminal Equipment
		ISDN	Integrated Services Digital Network	STIG	Security Technical Implementation Guides
DISN	Defense Information Systems Network	IT	Information Technology International	STU-III	Secure Telephone Unit -3rd generation
DISR	DoD IT Standards Registry	ITU-T	Telecommunication Union-Telecommunication Standardization Sector	T.4	Standardization of Group 3 facsimile terminals for document transmission
DoD	Department of Defense				
DoDI	Department of Defense Instruction	MFR1	Multi-Frequency Recommendation 1	T1	Digital Transmission Link Level 1 (1.544 Mbps)
DP	Dial Pulse				
DS0	Digital Signal Level 0 (64 kbps)	MLPP	Multi-Level Precedence and Preemption	T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
DS1	Digital Signal Level 1 (1.544 Mbps) (2.048 Mbps European)	MOS	Mean Opinion Score	UCR	Unified Capabilities Requirements
DTMF	Dual Tone Multi-Frequency	NX56	Data format restricted to multiples of 56 kbps	UPS	Uninterruptible Power Supply
E&M	Ear and Mouth				
E1	European Basic Multiplex Rate (2.048 Mbps)	NX64	Data format restricted to multiples of 64 kbps	VBD	Variable bit data
EKTS	Electronic Key Telephone System	PBX	Private Branch Exchange	VoIP	Voice over Internet Protocol
		PBX 1	Private Branch Exchange 1	VTC	Video Teleconferencing

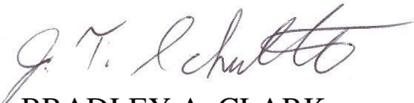
5. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive 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: disa.meade.ns.list.unified-capabilities-certification-office@mail.mil. All associated data is available on the DISA UCCO website located at <http://www.disa.mil/ucco/>.

JITC Memo, JTE, Extension of the Special Interoperability Test Certification of Avaya S8300D with Gateway 450 (G450) Release Communications Manager (CM) 6.0 (R16x.00.1.510.1) with Service Pack 19211

6. The JITC point of contact is Capt Stéphane Arsenault, DSN 879-5269, commercial (520) 538-5269, FAX DSN 879-4347, or e-mail to Stephane.P.Arsenault.fm@mail.mil. JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 1032101.

FOR THE COMMANDER:

Enclosure a/s


for BRADLEY A. CLARK
Acting Chief
Battlespace Communications Portfolio

Distribution (electronic mail):

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U.S. Strategic Command, J665

US Navy, OPNAV N2/N6FP12

US Army, DA-OSA, CIO/G-6 ASA(ALT), SAIS-IOQ

US Air Force, A3CNN/A6CNN

US Marine Corps, MARCORSYSCOM, SIAT, A&CE Division

US Coast Guard, CG-64

DISA/TEMC

DIA, Office of the Acquisition Executive

NSG Interoperability Assessment Team

DOT&E, Netcentric Systems and Naval Warfare

Medical Health Systems, JMIS IV&V

HQUSAISEC, AMSEL-IE-IS

UCCO

ADDITIONAL REFERENCES

- (c) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008," 22 January 2009
- (d) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008 Change 2," 31 December 2010
- (e) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01C, "Policy for Department of Defense Voice Services with Real Time Services (RTS)," 9 November 2007
- (f) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006
- (g) Joint Interoperability Test Command, Memo, JTE, "Special Interoperability Test Certification of Avaya S8300D with Gateway 450 (G450) Release Communications Manager (CM) 6.0 (R16x.00.1.510.1) with Service Pack 19211," 17 April 2012
- (h) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Avaya S8300D with Gateway 450 (G450) Release CM6.0 (R16x.00.1.510.1) with Service Pack 19211 (Tracking Number 1032101)," Draft