



DEFENSE INFORMATION SYSTEMS AGENCY

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

MEMORANDUM FOR DISTRIBUTION

7 Mar 11

SUBJECT: Extension of the Special Interoperability Test Certification of REDCOM High Density Exchange (HDX) with Software Release 3.0A Revision 3, with Specified Patch Group 0 (3.0A R3P0), certified as a Small End Office (SMEO)

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 (g), see Enclosure

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 REDCOM HDX with Software Release 3.0A R3P0 is hereinafter referred to as the System Under Test (SUT). The SUT met all of its critical interoperability requirements and is certified as interoperable for joint use within the DSN. The SUT is certified for Voice over Internet Protocol (VoIP) with certified Assured Services Local Area Networks (ASLANs) on the Unified Capabilities (UC) Approved Products List (APL). The listed test discrepancies shown in the SUT Interoperability Test Summary have an overall minor operational impact. The SUT was tested and met the critical interoperability requirements for the following DSN switch types: SMEO, Private Branch Exchange (PBX) 1, and PBX 2. No other configurations, features, or functions, except those cited within this report, are certified by the JITC. This certification expires upon changes that could affect interoperability, but no later than three years from the date of the original memorandum (30 January 2009).

3. The extension of this certification is based upon Desktop Review (DTR) 1. The original certification is based on interoperability testing conducted by JITC, review of the vendor's Letters of Compliance (LoC), and Defense Information Assurance (IA)/Security Accreditation Working Group (DSAWG) accreditation. Testing was conducted at JITC's Global Information Grid Network Test Facility at Fort Huachuca, Arizona, from 26 November 2007 through 18 January 2008. Regression testing was conducted from 28 July through 5 September 2008 to test patches developed to fix test discrepancies discovered during initial testing and document in Reference (c). Review of the vendor's LoC was completed on 14 October 2008. DSAWG granted accreditation on 13 January 2009 based on the security testing completed by DISA-led Information Assurance test teams and published in a separate report, Reference (d). This DTR

JITC Memo, JTE, Extension of the Special Interoperability Test Certification of REDCOM High Density Exchange (HDX) with Software Release 3.0A, Revision 3, with Specified Patch Group 0 (3.0A R3P0), certified as a Small End Office (SMEO)

was requested to include shared access with the Cisco 7960 Internet Protocol (IP) phone. The Cisco 7960 IP phone will have to be configured for auto negotiation 100 Megabits per second (Mbps) Fast Ethernet (FE) in lieu of hard set 100 Mbps FE to meet the shared access requirements. The JITC determined there was minor risk in approving this DTR based on JITC analysis of the vendor's test results of shared access with the Cisco 7960 IP phone. Therefore, JITC approves this DTR. DISA Network Systems Directorate has approved the Information Assurance posture of SUT in this DTR on 4 February 2011.

4. The interoperability test summary of the SUT is contained in Table 1. The SMEO required and conditional Capability Requirements (CRs) and Feature Requirements (FRs) are listed in Table 2. This interoperability test status is based on the SUT's ability to meet:

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

Table 1. SUT Interoperability Test Summary

DSN Trunk Interfaces			
Interface & Signaling	Critical	Status	Remarks
T1 CAS (DTMF, DP)	Yes	Certified	Met all critical CRs and FRs.
T1 CAS (MFR1)	No	Certified	Met all critical CRs and FRs.
E1 CAS (DTMF, DP)	Yes (Europe only)	Certified	Met all critical CRs and FRs.
E1 CAS (MFR1)	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 PRI (ITU-T Q.955.3)	No (Europe only)	Certified	Met all critical CRs and FRs.
T1 SS7 (ANSI T1.619a)	No	Certified	Met all critical CRs and FRs.
E1 SS7 (ANSI T1.619a)	No	Not Tested	E1 SS7 is not supported by the SUT. This is not a required interface for a SMEO. There is no risk associated with the SUT not supporting this interface.
2-wire/4-wire E&M	No	Certified	Met all critical CRs and FRs.

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Table 1. SUT Interoperability Test Summary (continued)

DSN Line Interfaces				
Interface & Signaling	Critical	Status	Remarks	
2-Wire Analog (GR-506-CORE)	Yes	Certified	Met all critical CRs and FRs with the following minor exception: The conference disconnect tone does not meet the specifications. ¹	
ISDN BRI NI 1/2	Yes	Certified	Met all critical CRs and FRs with the following minor exceptions: The precedence above ROUTINE ringing cadence that the SUT applies to BRI phones does not meet the specifications. ² The conference disconnect tone does not meet the specifications. ¹	
2-Wire Proprietary Digital	No	Not Tested	This interface is not supported by the SUT. This is not a required feature for a SMEO. There is no risk associated with the SUT not supporting this interface.	
VoIP (Session Initiation Protocol)	No	Certified	Met all critical CRs and FRs with the following minor exception: The conference disconnect tone does not meet the specifications. ¹	
DSN Features and Capabilities				
Features and Capabilities	Critical	Status	Remarks	
Common Features	Yes	Certified	Met all critical CRs and FRs with the following minor exception: The SUT does not correctly support the call forwarding variable "ping" ring feature. ³	
Attendant	No	Certified	Met all critical CRs and FRs.	
Public Safety	Yes	Certified	Met all critical CRs and FRs with the following minor exception: The SUT does not support tandem call trace. ⁴	
Conferencing	Preset	No	Certified	Met all critical CRs and FRs.
	Meet-me	Yes	Certified	Met all critical CRs and FRs.
	Progressive	No	Certified	Met all critical CRs and FRs.
Nailed-up Connections	No	Not Tested	This feature is not supported by the SUT. This is not a required feature for a SMEO. There is no risk associated with the SUT not supporting this feature.	
DSN Hotline Services	Yes	Certified	Met all critical CRs and FRs with the following minor exceptions: The SUT will not allow the protection of a hotline call originator through the use of a hotline list as required by the UCR. The operational impact is minor. ⁵ The SUT does not support interswitch protected hotline calling. ⁶	
MLPP	Yes	Certified	Met all critical CRs and FRs with the following minor exception: The SUT does not support the loss of Command and Control announcement. ⁷	
Call Processing	Yes	Certified	Met all critical CRs and FRs with the following minor exceptions: The SUT does not support the full complement of CoS tables. ⁸ The SUT does not support calling number delivery. ⁷	
Network Management	Yes	Certified	Met all critical CRs and FRs with both serial EIA-232 and Internet Protocol (IP) interfaces.	
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. ⁹	
Security	Yes	Certified	See note 10.	
VoIP System	No	Certified	The SUT is certified for VoIP with any certified ASLAN posted on the UC APL. See note 11.	
Network Gateways				
Gateway	Interface & Signaling	Critical	Status	Remarks
PSTN	T1 CAS (DTMF, DP, MFR1)	Yes	Certified	Met all critical CRs and FRs.
	E1 CAS (DTMF, DP, MFR1)	Yes (Europe only)	Certified	Met all critical CRs and FRs.
	T1 ISDN PRI NI 1/2 (ANSI T1.607)	Yes	Certified	Met all critical CRs and FRs.
	E1 PRI (ITU-T Q.931)	No (Europe only)	Certified	Met all critical CRs and FRs.
	Ground Start Line	Yes	Certified	Met all critical CRs and FRs.
Tactical	T1 CAS (DTMF, DP, MFR1)	No	Certified	Met all critical CRs and FRs.

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Table 1. SUT Interoperability Test Summary (continued)

NOTES:					
1	The conference disconnect tone that is provided by the SUT does not meet the specifications designated in UCR, section 5.5.2. The SUT conference disconnect tone is distinguishable from other DSN tones and cadences; therefore, this anomaly has a minor operational impact.				
2	The precedence above ROUTINE ringing cadence that the SUT applies to BRI phones does not meet the specifications as detailed in the UCR, section 5.5.1. The precedence above ROUTINE cadence is distinct from the ROUTINE cadence when it is configured properly; therefore this anomaly has no operational impact.				
3	When CFV is assigned to any station on the SUT and CFV is invoked by the user, any station with CFV invoked does not receive a “ping” ring when calls are being forwarded. The operational impact is minor.				
4	The SUT cannot perform a tandem call trace of a specified distant office directory number as specified in the UCR. This anomaly was adjudicated by DISA, and determined to have a minor operational impact.				
5	The SUT will not allow the protection of a hotline call originator through the use of a hotline list as required by the UCR. However, this capability can be accomplished with the SUT by classmarking authorized hotline users for receiving only calls from other hotline callers. The operational impact is minor.				
6	This requirement was modified in the UCR 2007 to add clarification regarding interswitch hotline protection. Prior to the UCR 2007 only intraswitch hotline protection was required. The SUT meets the intraswitch hotline protection requirement. The SUT does not support interswitch hotline protection per the UCR 2007, however the vendor has 18 months (till June 2009) to develop this new requirement.				
7	The SUT does not support the full complement of CoS tables as specified in the UCR. The SUT supports 255 CoS tables for analog lines and does not support CoS tables on access lines, number codes, trunks, or groups of trunks. This limitation has posed a minor operational impact within the DSN when assigning lines and trunks on the SUT.				
8	This is a new UCR requirement and the vendor has 18 months (until July 2009) to develop this capability.				
9	Backup power, power components, UPS requirements, UPS load capacity and alarms are non-testable requirements. It is the responsibility of the respective base/post/camp/station communication agency to provide this with the SUT when installed.				
10	Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (d).				
11	An IPv6 capable system or product, as defined in the UCR, paragraph 1.7, shall be capable of receiving, processing, and forwarding IPv6 packets and/or interfacing with other systems and protocols in manner similar to that of IPv4. IPv6 capability is currently satisfied by a vendor Letter of Compliance signed by the Vice President of their respective company. The vendor stated in writing, their intent to return to JITC for testing of their solution with IPv6 enabled earliest date available. In addition they stated in writing, compliance to the following criteria:				
	a.	Conformant with IPv6 standards profile contained in the Department of Defense Information Technology Standards Registry (DISR). These standards are delineated in the UCR appendix 11.			
	b.	Maintaining interoperability in heterogeneous environments and with IPv4.			
	c.	Commitment to upgrade as the IPv6 standard evolves.			
	d.	Availability of contractor/vendor IPv6 technical support.			
LEGEND:					
ANSI	American National Standards Institute	GR	Generic Requirement	PBX 1	Private Branch Exchange 1
APL	Approved Products List	GR-506-CORE	LSSGR: Signaling for Analog Interfaces	PBX 2	Private Branch Exchange 2
ASLAN	Assured Services Local Area Network			PRI	Primary Rate Interface
BRI	Basic Rate Interface	IPv4	Internet Protocol version 4	PMO	Program Management Office
CAS	Channel Associated Signaling	IPv6	Internet Protocol version 6	PSTN	Public Switched Telephone Network
CFV	Call Forwarding Variable	ISDN	Integrated Services Digital Network	Q.931	Signaling Standard for ISDN
CoS	Class of Service			Q.955.3	ISDN signaling standard for E1 MLPP
CRs	Capability Requirements	ITU-T	International Telecommunication Union - Telecommunication Standardization Sector	SMEO	Small End Office
DISA	Defense Information Systems Agency			SS7	Signaling System 7
DP	Dial Pulse			SUT	System Under Test
DSN	Defense Switched Network			T1	Digital Transmission Link Level 1 (1.544 Mbps)
DSS1	Digital Subscriber Signaling 1	JITC	Joint Interoperability Test Command	T1.607	ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1
DTMF	Dual Tone Multi-Frequency			T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
E&M	Ear and Mouth	LSSGR	Local Access and Transport Area (LATA) Switching Systems Generic Requirements	UC	Unified Capabilities
E1	European Basic Multiplex Rate (2.048 Mbps)			UCR	Unified Capabilities Requirements
EIA	Electronic Industries Alliance			UPS	Uninterruptible Power Supply
EIA-232	Standard for defining the mechanical and electrical characteristics for connecting Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) data communications devices	Mbps	Megabits per second	VoIP	Voice over Internet Protocol
		MFR1	Multi-Frequency Recommendation 1		
		MLPP	Multi-Level Precedence and Preemption		
		NI 1/2	National ISDN Standard 1 or 2		
FRs	Feature Requirements				

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Table 2. SMEO Requirements

DSN Trunk Interfaces				
Interface	Critical	Requirements Required or Conditional	References	
T1 SS7 (ANSI T1.619a)	No	Trunking	<ul style="list-style-type: none"> • UCR Section 2.3.2 • UCR Section 2.3.4.1 • UCR Section 2.3.4.1.1 • UCR Section 2.3.4.2 • UCR Section 2.3.4.2.1 	
E1 SS7 (ITU-T Q.735.3)	No (Europe only)		<ul style="list-style-type: none"> • 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 Digital Subscriber Signaling System Number 1 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) • Common Channel Signaling 7 (C) • DSN ISDN User-to-Network Signaling (R) • Application (R) • Physical Layer (R) • Data Link Layer (R) • Data Link Connection (R) • Peer-to-Peer Procedures of Data-Link Layer (R) • Layer 3 DSN User-to-Network Signaling (R) • DSN User-to-Network Signaling for Circuit-Switched Bearer Services (R) • Sequence of Messages for DSN Circuit-Switched Calls (R) • Message Functional Definition and Content (R) • General Message Format and Information Elements Coding (R) • Supplementary Services (C) • PCM-24 Digital Trunk Interface (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) • Local Office Test Line (C) • Outside Plant Test Lines (C) • Test Incoming Trunks Tandem or Local State (C) • Manual Test of Trunks (R) • Trunk Group-Remove from Service (R) • Trunk Group-Restore to Service (R) • Carrier Group Alarm (R) • Software Carrier Group Alarm (C) 	<ul style="list-style-type: none"> • UCR Section 5.3.3.1.1 • UCR Section 5.3.3.1.2 • UCR Section 5.3.3.2.1 • UCR Section 5.3.3.2.2 • UCR Section 5.3.5 • UCR Section 5.3.6 • UCR Section 5.3.7 • UCR Section 5.3.8 • UCR Section 5.3.9 • UCR Section 5.3.10 • UCR Section 5.4.1 • UCR Section 5.4.2 • UCR Section 5.4.2.1 • UCR Section 5.4.3 • UCR Section 5.5 • UCR Section 5.6 • UCR Section 5.7.1 • UCR Section 5.7.1.1 • UCR Section 5.7.1.2 • UCR Section 5.7.1.3 • UCR Section 5.7.1.3.1 • UCR Section 5.7.1.3.2 • UCR Section 5.7.1.4 • UCR Section 5.7.1.4.2 • UCR Section 5.7.1.4.3 • UCR Section 5.7.1.4.4 • UCR Section 5.7.1.4.5 • UCR Section 5.7.1.4.6
T1 CAS (MFR1)	No			<ul style="list-style-type: none"> • UCR Section 7.1 • UCR Section 7.2 • UCR Section 7.3 • UCR Section 7.4 • UCR Section 7.5 • UCR Section 2.5.1 • UCR Section 2.5.2 • UCR Section 2.5.3 • UCR Section 2.5.4.2 • UCR Section 2.5.5 • UCR Section 2.5.6 • UCR Section 2.5.7 • UCR Section 2.5.7.1
T1 CAS (DTMF, DP)	Yes			
E1 CAS (DTMF, DP)	Yes (Europe only)			
E1 CAS (MFR1)	No (Europe only)			
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes			
E1 ISDN PRI (ITU-T Q.955.3)	No (Europe Only)			

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Table 2. SMEO Requirements (continued)

DSN Trunk Interfaces				
Interface	Critical	Requirements Required or Conditional		References
T1 SS7 (ANSI T1.619a)	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
E1 SS7 (ITU-T Q.735.3)	No (Europe only)	Facsimile	<ul style="list-style-type: none"> • Analog: ITU-T T.4 (R) 	<ul style="list-style-type: none"> • DISR
T1 CAS (MFR1)	No	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 3.10 • UCR Section 3.10 • UCR Section 3.10 • CJCSI 6215.01C
T1 CAS (DTMF, DP)	Yes			
E1 CAS (MFR1)	No (Europe only)	VTC	<ul style="list-style-type: none"> • ITU-T H.320 (R: PRI only) 	<ul style="list-style-type: none"> • FTR 1080B-2002
E1 CAS (DTMF, DP)	Yes (Europe only)			
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes			
E1 ISDN PRI (ITU-T Q.955.3)	No (Europe Only)			
DSN Line Interfaces				
2-Wire Analog	Yes	Access	<ul style="list-style-type: none"> • Directory Number Identification (R) • PBX Line (C) • National ISDN 1/2 Basic Access (R) • Analog Line (R) • Basic Line Test Capabilities (R) • Advanced Line Test Capabilities (C) • Network Power Systems for External Interfaces (R) • Loop Start Line (R: 2-Wire Analog only) • Reverse Battery (R) • Alerting Signals and Tones (R) • S/T Reference Point (R) 	<ul style="list-style-type: none"> • UCR Section 2.1.1 • UCR Section 2.3.1 • UCR Section 2.3.3 • UCR Section 2.3.5 • UCR Section 2.5.4.1.1 • UCR Section 2.5.4.1.2 • UCR Section 5.1 • UCR Section 5.2.1 • UCR Section 5.3.1 • UCR Section 5.5 • UCR Section 5.7.1.2.1
ISDN BRI NI 1/2 (ANSI T1.619a)	Yes			
2W Digital Proprietary	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
VoIP	No	Data	<ul style="list-style-type: none"> • Modem (VBD) (R) • 56 kbps switched data (R) • 64 kbps switched data (R: BRI only) • NX56 synchronous BER (R: BRI only) • NX64 synchronous BER (R: BRI only) • Secure data (STE/STU-III) (R) 	<ul style="list-style-type: none"> • CJCSI 6215.01C • UCR Section 3.10 • UCR Section 3.10 • UCR Section 3.10 • UCR Section 3.10 • 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

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Table 2. SMEO Requirements (continued)

DSN Features & Capabilities			
Feature/ Capability	Critical	Requirements Required or Conditional	References
Common Features	Yes	<ul style="list-style-type: none"> • Individual Lines (R) • Selective call rejection (C) • 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 2.1 • UCR Section 2.1.2 • UCR Section 2.1.3 • UCR Section 2.1.4 • UCR Section 2.1.5 • UCR Section 2.1.6 • UCR Section 2.1.7 • UCR Section 2.1.7.1 • UCR Section 2.1.7.2 • UCR Section 2.1.7.3 • UCR Section 2.1.7.4 • UCR Section 2.1.7.5 • UCR Section 2.1.7.6 • UCR Section 2.1.7.7 • UCR Section 2.1.7.8 • UCR Section 2.1.8.1 • UCR Section 2.1.8.2 • UCR Section 2.1.8.3 • UCR Section 2.1.8.4 • UCR Section 2.1.9 • UCR Section 2.7 • UCR Section 2.9
Attendant	No	<ul style="list-style-type: none"> • Attendant Features (C) 	<ul style="list-style-type: none"> • UCR Section 2.2
Public Safety	Yes	<ul style="list-style-type: none"> • Basic Emergency Service (911) Caller (R) • Emergency Service (911) Public Safety Answering Point (C) • Enhanced Emergency Service (E911) (R) • Trace of terminating calls (R) • Outgoing call trace (R) • Tandem call trace (R) • Trace of a call in progress (R) 	<ul style="list-style-type: none"> • UCR Section 2.4.1.1 • UCR Section 2.4.1.2 • UCR Section 2.4.1.3 • UCR Section 2.4.2 • UCR Section 2.4.3 • UCR Section 2.4.4 • UCR Section 2.4.5
Conferencing	Yes	<ul style="list-style-type: none"> • Preset Conferencing (C) • Meet-Me Conferencing (R) • Progressive Conferencing (C) 	<ul style="list-style-type: none"> • UCR Section 2.6. • UCR Section 2.6.2 • UCR Section 2.6.3
Nailed-up Connections	No	<ul style="list-style-type: none"> • Nailed-Up Connection (C) 	<ul style="list-style-type: none"> • UCR Section 2.8
DSN Hotline Services	Yes	<ul style="list-style-type: none"> • DSN Analog Hotline Service (R) 	<ul style="list-style-type: none"> • UCR Section 2.12

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Table 2. SMEO Requirements (continued)

DSN 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) • Cancel to / Cancel from (C) • Network Facility with Equal or Higher Precedence Calls (R) • MLPP Trunk Selection (R) • Hunt Sequence for Trunks (R) • ROUTINE Precedence Calls (R) • Precedence Calls Above ROUTINE Precedence (R) • Method 1 (R) • Method 2 (C) • MLPP Internetworking with other Networks (R) • Precedence Call Diversion (R) • Channel Associated Signaling (R) • Primary Rate Interface (R) • Common Channel Signaling Number 7 (C) • Analog Line MLPP (R) • ISDN MLPP Basic Rate Interface General Description (R) • Single B Channel, Single Appearance, Single DN (R) • Line Active with a Lower Precedence Call (R) • Line Active with a Equal or Higher Precedence Call (R) • Single B Channel, Multiple Appearances, Single DN (C) • Two B Channels, Multiple Appearances, Single DN (C) • Two B Channel, Two DN (Data Mode Only) (R) • ISDN Primary Rate Interface (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 (R) • MLPP Common Channel Signaling Number 7 (C) • CAS to CCS Trunk Network in a Mixed Media Network (C) • MLPP Interaction with EKTS features (C) 	<ul style="list-style-type: none"> • UCR Section 3.1 • UCR Section 3.2 • UCR Section 3.2.1 • UCR Section 3.2.1.1 • UCR Section 3.2.2 • UCR Section 3.2.3 • UCR Section 3.2.3.1 • UCR Section 3.2.3.1.1 • UCR Section 3.2.3.1.2 • UCR Section 3.2.3.1.2.1 • UCR Section 3.2.3.1.2.2 • UCR Section 3.2.4 • UCR Section 3.3 • UCR Section 3.4.1 • UCR Section 3.4.2 • UCR Section 3.4.3 • UCR Section 3.5 • UCR Section 3.6.1 • UCR Section 3.6.2 • UCR Section 3.6.2.1 • UCR Section 3.6.2.2 • UCR Section 3.6.3 • UCR Section 3.6.4 • UCR Section 3.6.5 • UCR Section 3.7 • UCR Section 3.8.1 • UCR Section 3.8.2 • UCR Section 3.8.3 • UCR Section 3.8.4 • UCR Section 3.8.5 • UCR Section 3.8.6 • UCR Section 3.8.7 • UCR Section 3.8.8 • UCR Section 3.8.9 • UCR Section 3.9 • UCR Section 3.10 • UCR Section 3.11

JITC Memo, JTE, Extension of the Special Interoperability Test Certification of REDCOM High Density Exchange (HDX) with Software Release 3.0A, Revision 3, with Specified Patch Group 0 (3.0A R3P0), certified as a Small End Office (SMEO)

Table 2. SMEO Requirements (continued)

DSN Features & Capabilities			
Feature/ Capability	Critical	Requirements Required or Conditional	References
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) • DSN Interswitch Trunk Call Processing (non-CCS/ISDN) (R) • DSN 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) • DSN Switch Outpulsing Digit Formats (C) • Standard Directory Number (R) • Standard Test Numbers (C) • Base Services – Abbreviated Numbers (R) • Digit Reception Requirements (R) • Digit Registration Capacity (R) • Screening (R) 	<ul style="list-style-type: none"> • UCR Section 4.1 • UCR Section 4.2 • UCR Section 4.3.1 • UCR Section 4.3.2 • UCR Section 4.3.3 • UCR Section 4.3.4 • UCR Section 4.4 • UCR Section 4.5.1.1 • UCR Section 4.5.1.2 • UCR Section 4.5.1.2.1 • UCR Section 4.5.1.2.2 • UCR Section 4.5.1.3 • UCR Section 4.5.1.3.1 • UCR Section 4.5.1.3.2 • UCR Section 4.5.1.3.3 • UCR Section 4.5.1.4 • UCR Section 4.5.1.5 • UCR Section 4.5.1.6 • UCR Section 4.5.1.7 • UCR Section 4.5.1.8.1 • UCR Section 4.5.1.8.2 • UCR Section 4.5.1.9 • UCR Section 4.5.2 • UCR Section 4.5.3 • UCR Section 4.5.4 • UCR Section 4.5.5 • UCR Section 4.5.6 • UCR Section 4.5.7 • UCR Section 4.5.8
Network Management	Yes	<ul style="list-style-type: none"> • Interfaces (R) • Data Quality (R) • Traffic Measurements (R) • Reference Data (C) • Line Servicing (C) • Trunk Groups (C) • Call Processors (C) • Switch Services (C) • Special Studies (C) • Remote Switching Studies (C) • Features (C) • Common Channel Signaling Network Measurements (C) • ISDN Measurements (C) • Traffic Capacity (R) • Fault management (R) • Configuration management (R) • Call Detail Recording Data Retention (C) • Performance management (R) • Network Management controls (C) • Remote access (R) 	<ul style="list-style-type: none"> • UCR Section 9.1 • UCR Section 9.2.1 • UCR Section 9.2.2.1.1 • UCR Section 9.2.2.1.2 • UCR Section 9.2.2.2 • UCR Section 9.2.2.3 • UCR Section 9.2.2.4 • UCR Section 9.2.2.5 • UCR Section 9.2.2.6 • UCR Section 9.2.2.7 • UCR Section 9.2.2.8 • UCR Section 9.2.3 • UCR Section 9.2.4 • UCR Section 9.2.5 • UCR Section 9.3 • UCR Section 9.4 • UCR Section 9.5.2 • UCR Section 9.6 • UCR Section 9.7 • UCR Section 9.8

Table 2. SMEO Requirements (continued)

DSN Features & Capabilities (continued)			
Feature/ Capability	Critical	Requirements Required or Conditional	References
ISDN Services	Yes	<ul style="list-style-type: none"> • BRI Access, Call Control and Signaling (R) • Uniform Interface Configuration for BRIs (R) • Electronic Key Telephone Systems (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 10, Table 10-1 • UCR Section 10, Table 10-2 • UCR Section 10, Table 10-3 • UCR Section 10, Table 10-4 • UCR Section 10, Table 10-5 • UCR Section 10, Table 10-6
Synchronization	Yes	<ul style="list-style-type: none"> • External Timing Mode (C) • Line timing mode (R) • General (C) • 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 11.1.1.1 • UCR Section 11.1.1.2 • UCR Section 11.1.2.1 • UCR Section 11.1.2.2 • UCR Section 11.2 • UCR Section 11.3 • UCR Section 11.4
Reliability (See note 1.)	Yes	<ul style="list-style-type: none"> • Reliability Requirements (R) • Backup Power (R) • Power Components (R) • UPS Requirements (R) • UPS Load Capacity (R) • Backup Power (Environmental) (R) • Alarms (R) 	<ul style="list-style-type: none"> • UCR Section 12.1 • UCR Section 12.3 • UCR Section 12.3.1 • UCR Section 12.3.2 • UCR Section 12.3.2.1 • UCR Section 12.3.3 • UCR Section 12.3.4
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 13
VoIP			
VoIP System	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 • Security (R) • Network management (R) • System timing (R) • Latency ≤ 60 milliseconds (R) • IPv6 capable (R) • Service Class Tagging (R) • VoIP System Downtime (IP network 35 min/yr Subscriber 12 min/yr) (R) 	<ul style="list-style-type: none"> • UCR App. 3, para. A3.2.1 • UCR App. 3, para. A3.2.2 • UCR App. 3, para. A3.2.3 • UCR App. 3, para. A3.2.4 • UCR App. 3, para. A3.2.5 • UCR App. 3, para. A3.2.6 • UCR App. 3, para. A3.2.7 • UCR App. 3, para. A3.2.8 • UCR App. 3, para. A3.2.9 • UCR App. 3, para. A3.2.10

JITC Memo, JTE, Extension of the Special Interoperability Test Certification of REDCOM High Density Exchange (HDX) with Software Release 3.0A, Revision 3, with Specified Patch Group 0 (3.0A R3P0), certified as a Small End Office (SMEO)

Table 2. SMEO Requirements (continued)

Network Gateways				
Interface	Critical	Requirements Required or Conditional		References
PSTN (See note 2.)	Yes	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 5.2.2 • UCR Section 5.3.2 • UCR Section 5.3.4
Tactical (See note 3.)	No	Trunking	<ul style="list-style-type: none"> • Trunk Groups (C) • Call Processing (C) 	<ul style="list-style-type: none"> • UCR Section 2.5.5 & 2.5.6 • UCR Section 4
		Voice	<ul style="list-style-type: none"> • MLPP (C) • Secure calls (C) 	<ul style="list-style-type: none"> • UCR Section 3 • CJCSI 6215.01C
		Facsimile	<ul style="list-style-type: none"> • Analog: ITU-T T.4 (C) 	<ul style="list-style-type: none"> • DISR
NOTES:				
1 Backup power, power components, UPS requirements, UPS load capacity and alarms are non-testable requirements. It is the responsibility of the respective base/post/camp/station communication agency to provide this with the SUT when installed.				
2 Voice, facsimile, data, and VTC service requirements for PSTN are identical to DSN with the exception of MLPP.				
3 Data and VTC services are not provided via the DSN to tactical interface.				
LEGEND:				
2W	2-Wire	FTR 1080B-2002	Video Teleconferencing Services	PCM Pulse Code Modulation
ANSI	American National Standards Institute	G.711	Standard for PCM of Voice Frequencies	PCM-24 Pulse Code Modulation - 24 Channels
App	Appendix			PCM-30 Pulse Code Modulation - 30 Channels
BER	Bit Error Ratio	GR	Generic Requirement (Telcordia)	PRI Primary Rate Interface
BRI	Basic Rate Interface			PSTN Public Switched Telephone Network
C	Conditional	GR-815	Generic Requirements For Network Element/Network System (NE/NS) Security	Q.735.3 SS7 Signaling Standard for E1 MLPP
CAS	Channel Associated Signaling			Q.955.3 ISDN Signaling Standard for E1 MLPP
CCS	Common Channel Signaling	H.320	Standard for Narrowband VTC	
CJCSI	Chairman of the Joint Chiefs of Staff Instruction	IP	Internet Protocol	
DIACAP	DoD Information Assurance Certification and Accreditation Process	IPv6	Internet Protocol version 6	R Required
DISR	DoD IT Standards Registry	ISDN	Integrated Services Digital Network	SMEO Small End Office
DoD	Department of Defense	IT	Information Technology	SS7 Signaling System 7
DoDI	Department of Defense Instruction	ITU-T	International Telecommunication Union - Telecommunication Standardization Sector	STE Secure Terminal Equipment
DP	Dial Pulse			STIGs Security Technical Implementation Guides
DN	Directory Number	kbps	kilobits per second	STU-III Secure Telephone Unit – 3 rd Generation
DS0	Digital Signal Level 0 (64 kbps)	Mbps	Megabits per second	S/T ISDN BRI 4-wire interface
DS1	Digital Signal Level 1 (1.544 Mbps) (2.048 Mbps European)	MFR1	Multi-Frequency Recommendation 1	T1 Digital Transmission Link Level 1 (1.544 Mbps)
DSN	Defense Switched Network	min	minute	T.4 Standardization of Group 3 facsimile terminals for document transmission
DTMF	Dual Tone Multi-Frequency	MLPP	Multi-Level Precedence and Preemption	T1.619a SS7 and ISDN MLPP Signaling Standard for T1
E&M	Ear and Mouth	MOS	Mean Opinion Score	TIA Telecommunications Industry Association
E1	European Basic Multiplex Rate (2.048 Mbps)	NI 1/2	National ISDN Standard 1 or 2	UCR Unified Capabilities Requirements
EKTS	Electronic Key Telephone System	NX56	Data format restricted to multiples of 56 kbps	UPS Uninterruptible Power Supply
FTR	Federal Telecommunications Recommendation	NX64	Data format restricted to multiples of 64 kbps	VBD Variable bit data
		para	paragraph	VoIP Voice over Internet Protocol
		PBX	Private Branch Exchange	VTC Video Teleconferencing
				yr year

JITC Memo, JTE, Extension of the Special Interoperability Test Certification of REDCOM High Density Exchange (HDX) with Software Release 3.0A, Revision 3, with Specified Patch Group 0 (3.0A R3P0), certified as a Small End Office (SMEO)

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

6. The JITC point of contact is Ms. Anita Mananquil, DSN 879-5164, commercial (520) 538-5164, FAX DSN 879-4347, or e-mail to anita.mananquil@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 0807202.

FOR THE COMMANDER:

Enclosure a/s


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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) Joint Interoperability Test Command, Memo, JTE, "Special Interoperability Test Certification of REDCOM High Density Exchange (HDX) with Software Release 3.0A, Revision 3, with Specified Patch Group 0 (3.0A R3P0), certified as a Small End Office (SMEO)," 30 January 2009
- (d) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of REDCOM High Density Exchange (HDX) with Software Release 3.0A Revision 3, with Specified Patch Group 0 (3.0A R3P0) (Tracking Number 0807202)," 13 January 2009
- (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) Defense Information Systems Agency, "Department of Defense Networks Unified Capabilities Requirements," 21 December 2007
- (g) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006