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

19 Aug 10

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Special Interoperability Test Certification of PacStar 6800 Enterprise Unified Capabilities (UC) Exchange with software version IQ-Core 3.0

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 PacStar 6800 Enterprise UC Exchange with software version IQ-Core 3.0 is hereinafter referred to as the System Under Test (SUT). The SUT, which includes a Cisco enclave and a REDCOM enclave, met all of its critical interoperability requirements and is certified as interoperable for joint use within the DSN. The SUT was tested and met the critical interoperability requirements for the following DSN switch types: Small End Office (SMEO), Private Branch Exchange (PBX) 1, and PBX 2. The SUT is certified for Voice over Internet Protocol (VoIP) with certified Assured Services Local Area Networks (ASLANs) on the UC Approved Products List (APL). The listed test discrepancies shown in the Certification Testing Summary (Enclosure 2) have an overall minor operational impact. 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 (13 August 2009).

3. The extension of this certification is based upon Desktop Review (DTR) 15. 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 2 June through 25 July 2008. Regression testing was conducted from 9 January through 13 February 2009 and documented in Reference (c) to test configuration changes and patches developed to fix test discrepancies discovered during initial testing. Review of the vendor's LoC was completed on 8 April 2009. DSAWG grants accreditation based on the security testing completed by DISA-led Information Assurance test teams and published in a separate report, Reference (d). The DSAWG

JITC Memo, JTE, Extension of the Special Interoperability Test Certification of PacStar 6800 Enterprise Unified Capabilities (UC) Exchange with software version IQ-Core 3.0

accreditation was granted on 11 August 2009. This DTR was requested to include the new Cisco interface card model EM3-HDA-8FXS/DID for use in the Cisco 3825 Integrated Service Router, which is a subcomponent of the SUT. The Cisco interface card model EM-HDA-8FXS that is certified for use in the SUT is end-of-sale. The JITC determined there was minor risk in approving this DTR because the Cisco EM3-HDA-8FXS/DID card was tested with the Cisco Unified Communication Manager Release 7.1(2). The JITC approved this DTR on 30 June 2010. The DSAWG accreditation for this DTR was granted on 19 August 2010.

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 with the REDCOM enclave. Although Cisco offers this interface, it is not certified.
T1 CAS (MFR1)	No	Certified	Met all critical CRs and FRs with the REDCOM enclave. Although Cisco offers this interface, it is not certified.
E1 CAS (DTMF, DP)	Yes (Europe only)	Certified	Met all critical CRs and FRs with the REDCOM enclave. Although Cisco offers this interface, it is not certified.
E1 CAS (MFR1)	No (Europe only)	Certified	Met all critical CRs and FRs with the REDCOM enclave. Although Cisco offers this interface, it is not certified.
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes	Certified	Met all critical CRs and FRs with the REDCOM enclave. The Cisco enclave does not support NFAS. ¹ The Cisco enclave monitoring tool occasionally provides inaccurate reports when a remote trunk is busy. ²
E1 PRI (ITU-T Q.955.3)	No (Europe only)	Certified	Met all critical CRs and FRs with the REDCOM enclave. The E1 ISDN PRI interface is supported by the Cisco enclave; however, it does not support ITU-T Q.955.3 MLPP.
T1 SS7 (ANSI T1.619a)	No	Certified	This interface was certified specifically with the REDCOM HDX with Desktop Review 13. This interface was previously certified for the REDCOM HDX.
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	Not Tested	2-wire/4-wire E&M is supported by the SUT; however it was not tested. The SUT 2-wire/4-wire E&M interface is therefore not certified by JITC. This is not a required interface for a SMEO.

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 a minor configuration change ³ and the following minor exceptions: The REDCOM enclave conference disconnect tone on phones connected to the HDX switch do not meet the specifications. ⁴	
ISDN BRI NI 1/2	Yes	Certified	Met all critical CRs and FRs with the REDCOM enclave with the following minor exceptions: The conference disconnect tone does not meet the specifications. ⁴ The precedence above ROUTINE ringing cadence that the SUT applies to BRI phones does not meet the specifications. ⁵ This interface is not supported on the Cisco enclave.	
2-Wire Proprietary Digital	No	Not Tested	2-Wire Proprietary Digital 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.	
VoIP (Session Initiation Protocol)	No	Certified	Met all critical CRs and FRs with the Cisco enclave.	
DSN Features and Capabilities				
Interface & Signaling	Critical	Status	Remarks	
Common Features	Yes	Certified	Met all critical CRs and FRs for the with the following minor exception: The SUT does not support Call Pickup between the two enclaves. ⁶ The REDCOM enclave does not correctly support the call forwarding variable "ping" ring feature. ⁷ Met all critical CRs and FRs for the Cisco enclave with the following minor exceptions: Full compliance of DSN Common Call Features was not met. ^{8, 9, 10, 11, 12, 13}	
Attendant	No	Not Tested	The SUT does not support this feature. This is not a required feature for a SMEO. There is no risk associated with the SUT not supporting this feature.	
Public Safety	Yes	Certified	Met all critical CRs and FRs.	
Conferencing	Preset	No	Certified	Met all critical CRs and FRs with the REDCOM enclave.
	Meet-me	Yes	Certified	Met all critical CRs and FRs with the REDCOM enclave.
	Progressive	No	Certified	Met all critical CRs and FRs with the REDCOM enclave.
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 exception: The SUT does not support the ISDN PRI code set 5 off hook indicator elements for hotline services. ¹⁴	
MLPP	Yes	Certified	Met all critical CRs and FRs with the following minor exceptions: The SUT does not support the loss of Command and Control announcement. ¹⁵ The SUT does not support Method 1 preemption search algorithm if the trunks are a combination of Cisco and REDCOM enclaves. ¹⁶ The SUT does not maintain the precedence level when transferring a call from the Cisco enclave to the REDCOM enclave. ¹⁷ The SUT does not support Call Pickup between the Cisco enclave and the REDCOM enclave. ⁶ When the initiator of a three-way call is preempted, the remaining parties do not receive a conference disconnect tone. ¹⁸	
Call Processing	Yes	Certified	Met all critical CRs and FRs with the following minor exceptions: The REDCOM enclave does not support the full complement of CoS tables. ¹⁹ The SUT does not support calling number delivery. ²⁰	
Network Management	Yes	Certified	Met all critical CRs and FRs with Internet Protocol (IP) interfaces.	
ISDN Services	Yes	Certified	Met all critical CRs and FRs. The Cisco enclave does not support NFAS. NFAS is supported on the REDCOM enclave. ¹ The operational impact is minor.	
Synchronization	Yes	Certified	Met all critical CRs and FRs.	
Reliability	Yes	Certified	Met all critical CRs and FRs. ²¹	
Security	Yes	Certified	See note 22.	
VoIP System	No	Certified	The SUT is certified for VoIP with any certified ASLAN posted on the UC APL. See notes 23 and 24.	

Table 1. SUT Interoperability Test Summary (continued)

Network Gateways				
Gateway	Interface & Signaling	Critical	Status	Remarks
PSTN	T1 CAS (DTMF, DP, MFR1)	Yes	Certified	Met all critical CRs and FRs with the REDCOM enclave. Although Cisco offers this interface, it is not certified.
	E1 CAS (DTMF, DP, MFR1)	Yes (Europe only)	Certified	Met all critical CRs and FRs with the REDCOM enclave. Although Cisco offers this interface, it is not certified.
	T1 ISDN PRI NI 1/2 (ANSI T1.607)	Yes	Certified	Met all critical CRs and FRs with the REDCOM enclave. The Cisco enclave does not support NFAS. ¹ The operational impact is minor.
	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.

NOTES:

- 1 The SUT does not support NFAS on the Cisco enclave ISDN PRI National ISDN Standard 2 (NI2) interface. NFAS is supported on the REDCOM HDX. Therefore, the REDCOM enclave must include at least one HDX shelf equipped with multiple ISDN PRI T1s. Both enclaves do support FAS.
- 2 A discrepancy exists that is associated with the monitoring tool that Cisco enclave uses to check the status of the ISDN PRI trunks on the gateway. The monitoring tool occasionally provides an inaccurate representation of the status of the channels on the trunks when they are busied by the remote switching system. The SUT will occasionally provide an indication that the channel that was busied out by the far-end switch remains in an idle condition. This anomaly can be eliminated by insuring the trunks are busied at both the remote end and at the SUT. Furthermore, when this anomaly does occur, the correct busy state of the trunks is reflected in layer 3 protocol of the ISDN PRI interface, therefore, the operational impact is minor.
- 3 A configuration change was required on the Cisco enclave analog gateways to meet the requirement for interoperability with secure devices, specifically the L3 Omni Secure Wireline Terminal. On the individual voice ports, the minimum and maximum settings for "timing hookflash in" had to be changed to a maximum value of 500 ms and a minimum value of 150 ms. Otherwise, a call that is placed between two Omni devices on the SUT will not disconnect when placed on hook.
- 4 The conference disconnect tone that is provided by the REDCOM enclave 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.
- 5 The precedence above ROUTINE ringing cadence that the REDCOM enclave 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.
- 6 The SUT does not support Call Pickup between the Cisco enclave and the REDCOM enclave. This solution is unique in that it offers SMEO functionality with two switches (Cisco and REDCOM) and each switch offers call pickup. This action is mitigated by not mixing call pickup groups between the two switch enclaves. DISA's adjudication of this discrepancy was ruled to have a minor operational impact.
- 7 When CFV is assigned to any station on the REDCOM enclave 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.
- 8 Call Forward No Answer, Call Forward Busy, and Multi-Line Hunt Service are supported on both VoIP and analog stations of the Cisco enclave. Call Forward Variable, Three-way Calling, Call Hold, and Call Transfer are supported on VoIP stations only. These features are required for a SMEO for all instruments; however, this is a new UCR requirement and the vendor has 18 months (until July 2009) to develop this capability. Denied Originating Service is not supported by the SUT and is therefore not covered in this certification. This feature is not required for a SMEO.
- 9 The Cisco enclave does not support Call Waiting. However, there is no operational impact because the requirement is satisfied with multiple line appearances having a busy trigger. Also, this is a new UCR requirement and the vendor has 18 months (until July 2009) to develop this capability.
- 10 All of the features on the VoIP phones were tested using multiple line appearances. A minimum of two line appearances is required to meet the MLPP interoperability requirements for Call Features with the exception of call hold, call pickup, and call forwarding functions.
- 11 Although the Cisco enclave does not support Precedence Call Waiting, they do support multiple call appearances on their VoIP stations. This provides the ability for a user to receive additional calls while active with another call. Also, this is a new UCR requirement and the vendor has 18 months (until July 2009) to develop this capability. There is no operational impact.
- 12 A short "ping" ring is not provided when calls are forwarded on the Cisco enclave; however, the phone does visually display that call forward variable is enabled. There is a minor operational impact.
- 13 When a ROUTINE call is placed to a hunt group, and a ring-no-answer condition occurs, the calling party is diverted to the MLPP alternate directory number. This configuration must be done to allow correct treatment to be provided to precedence calls above ROUTINE that are placed to the hunt group. The UCR requires this only for precedence above ROUTINE calls. There is no operational impact.
- 14 The SUT does not support the ISDN PRI code set 5 off hook indicator elements for hotline services as required by the UCR. The vendor began testing prior to 14 June 2008 and, therefore, was not required to provide this feature. This anomaly has minor operational impact.

Table 1. SUT Interoperability Test Summary (continued)

NOTES (continued):					
15 The SUT does not support the Loss of C2 announcement. This announcement is invoked only when a DSN subscriber is automatically routed to a non-MLPP network. This requirement is currently under review by DISA and the Joint Staff. In addition, the specific conditions that invoke this announcement have not yet been defined. As a result, the vendors are not required to be in compliance until 18 months from the date the requirement is fully defined.					
16 The SUT does not support Method 1 preemption search algorithm if the trunks are a combination of the Cisco and REDCOM enclaves. In order to use the Method 1 search preemption search algorithm, all trunk groups must be member of the Cisco Gateway or the HDX switch. DISA's adjudication of this discrepancy was ruled to have a minor operational impact.					
17 The SUT does not maintain the precedence level when transferring a call between the Cisco enclave and the REDCOM enclave. This discrepancy is due to the functionality between the Cisco and REDCOM enclaves. DISA's adjudication of this discrepancy was ruled to have a minor operational impact.					
18 When the initiator of a three-way call is preempted, the remaining parties do not receive a conference disconnect tone. However, the remaining members of the three-way call do stay connected. DISA's adjudication of this discrepancy was ruled to have a minor operational impact.					
19 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.					
20 This is a new UCR requirement and the vendor has 18 months (until July 2009) to develop this capability.					
21 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.					
22 Security is tested by DISA-led Information Assurance test teams and published in a separate report, reference (c).					
23 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 LoC 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.					
24 The SUT was tested with IPv4 only. In accordance with the Office of Secretary IPv6 Rules of engagement a solution can be tested and certified for IPv4 only, however the vendor is required to stipulate in an IPv6 LoC their way ahead to be IPv6 capable by end of CY 2008. In addition the vendor is required to return for retest with this IPv6 solution prior to the end of CY 2008. The vendor stated in their IPv6 LoC submission that they will not be able to deliver an IPv6 capable solution until 31 May of 2010. The vendor received a waiver for this requirement from OSD on 9 March 2009.					
LEGEND:					
ANSI	American National Standards Institute	GR-506-CORE	LSSGR: Signaling for Analog Interfaces	OSD	Office of the Secretary of Defense
APL	Approved Products List	HDX	High Density Exchange	PRI	Primary Rate Interface
ASLAN	Assured Services Local Area Network	IPv4	Internet Protocol version 4	PSTN	Public Switched Telephone Network
BRI	Basic Rate Interface	IPv6	Internet Protocol version 6	Q.931	Signaling Standard for ISDN
C2	Command and Control	ISDN	Integrated Services Digital Network	Q.955.3	ISDN signaling standard for E1
CAS	Channel Associated Signaling	ITU-T	International Telecommunication Union - Telecommunication Standardization Sector	SMEO	Small End Office
CFV	Call Forwarding Variable			SS7	Signaling System 7
CoS	Class of Service	JITC	Joint Interoperability Test	SUT	System Under Test
CRs	Capability Requirements	Command	Command	T1	Digital Transmission Link Level 1 (1.544 Mbps)
CY	Calendar Year	LoC	Letters of Compliance	T1.607	ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1
DISA	Defense Information Systems Agency	LSSGR	Local Access and Transport Area (LATA) Switching Systems Generic Requirements	T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
DP	Dial Pulse	Mbps	Megabits per second	UC	Unified Capabilities Requirements
DSN	Defense Switched Network	MFR1	Multi-Frequency Recommendation 1	UCR	Unified Capabilities Requirements
DSS1	Digital Subscriber Signaling 1	MLPP	Multi-Level Precedence and Preemption	UPS	Uninterruptible Power Supply
DTMF	Dual Tone Multi-Frequency		milliseconds	VoIP	Voice over Internet Protocol
E&M	Ear and Mouth				
E1	European Basic Multiplex Rate (2.048 Mbps)				
FAS	Facility Associated Signaling	ms	milliseconds		
FRs	Feature Requirements	NFAS	Non-Facility Associated Signaling		
GR	Generic Requirement	NI 1/2	National ISDN Standard 1 or 2		

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"> • 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) 	<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 • 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
E1 SS7 (ITU-T Q.735.3)	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 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) 	<ul style="list-style-type: none"> • 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
T1 CAS (MFR1)	No		<ul style="list-style-type: none"> • 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 5.7.1.4.4 • UCR Section 5.7.1.4.5 • UCR Section 5.7.1.4.6 • 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)			

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 • UCR Section 3.10 • CJCSI 6215.01C
T1 CAS (DTMF, DP)	Yes			
E1 CAS (MFR1)	No (Europe only)			
E1 CAS (DTMF, DP)	Yes (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
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

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) (C) • 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

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

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

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 	
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 Standard for Narrowband VTC	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			
CJCSI	Chairman of the Joint Chiefs of Staff Instruction	IP	Internet Protocol	R	Required
DIACAP	DoD Information Assurance Certification and Accreditation Process	IPv6 ISDN	Internet Protocol version 6 Integrated Services Digital Network	SMEO	Small End Office
DISR	DoD IT Standards Registry	IT	Information Technology	SS7	Signaling System 7
DoD	Department of Defense	ITU-T	International	STE	Secure Terminal Equipment
DoDI	Department of Defense Instruction		Telecommunication Union - Telecommunication Standardization Sector	STIGS	Security Technical Implementation Guides
DP	Dial Pulse			STU-III	Secure Telephone Unit – 3 rd Generation
DN	Directory Number	kbps	kilobits per second	S/T	ISDN BRI 4-wire interface
DS0	Digital Signal Level 0 (64 kbps)	Mbps MFR1	Megabits per second Multi-Frequency	T1	Digital Transmission Link Level 1 (1.544 Mbps)
DS1	Digital Signal Level 1 (1.544 Mbps) (2.048 Mbps European)	min MLPP	Recommendation 1 Multi-Level Precedence and Preemption	T.4	Standardization of Group 3 facsimile terminals for document transmission
DSN	Defense Switched Network			T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
DTMF	Dual Tone Multi-Frequency	MOS	Mean Opinion Score	TIA	Telecommunications Industry Association
E&M	Ear and Mouth	NI 1/2	National ISDN Standard 1 or 2	UCR	Unified Capabilities Requirements
E1	European Basic Multiplex Rate (2.048 Mbps)	NX56	Data format restricted to multiples of 56 kbps	UPS	Uninterruptible Power Supply
EKTS	Electronic Key Telephone System	NX64	Data format restricted to multiples of 64 kbps	VBD	Variable bit data
FTR	Federal Telecommunications Recommendation	para PBX	paragraph Private Branch Exchange	VoIP	Voice over Internet Protocol
				VTC	Video Teleconferencing
				yr	year

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

JITC Memo, JTE, Extension of the Special Interoperability Test Certification of PacStar 6800 Enterprise Unified Capabilities (UC) Exchange with software version IQ-Core 3.0

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.

6. The JITC point of contact is Mr. Edward Mellon, DSN 879-5269, commercial (520) 538-5159, FAX DSN 879-4347, or e-mail to edward.mellon@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 0819002.

FOR THE COMMANDER:

Enclosure a/s


for RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

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U.S. Marine Corps MARCORSSYSCOM, 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 PacStar 6800 Enterprise Unified Capabilities (UC) Exchange with software version IQ-Core 3.0," 13 August 2009
- (d) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of PacStar 6800 Small End Office (SMEO) IQ-Core version (v)3.0 (Tracking Number 0819002)," 11 August 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