DEFENSE INFORMATION SYSTEMS AGENCY
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IN REPLY REFER TO: Joint Interoperability Test Command (JTE) **10 Sep 13**

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Special Interoperability Test Certification of the Juniper Circuit to Packet (CTP)150, 2008, 2024, and 2056 with Software Release CTPOS 6.2r1

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 Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification.

2. The Juniper CTP150, 2024, and 2056 with Software Release CTPOS 6.2r1 are hereinafter referred to as the System Under Test (SUT). The SUT met all of the critical interoperability requirements and is certified as interoperable for joint use within the Defense Information System Network (DISN) as a Fixed Network Element (F-NE). The SUT is deployed as a mated pair, and both SUTs must be loaded with the same certified Software Release in order to interoperate correctly. The SUT has three certified types of encapsulation which are CTP, Structured-Agnostic Time Division Multiplexing (TDM) over Internet Protocol (IP) (SAToP), and Circuit Emulation Services over a Packet Switched Network (CESoPSN). There is a fourth encapsulation only on the CTP 2000 series Network Elements called Voice Compression (VCOMP); however, this encapsulation type failed to meet the critical interoperability requirements with Software Release CTPOS 6.2r1 and is therefore, not certified for joint use within the DISN. The CTP2008 employs the same software and hardware as the CTP2024 with the exception of the number of available slots and scalability. JITC analysis determined that the CTP2008 is functionally identical to the CTP2024 for interoperability certification purposes and therefore, it is also certified for joint use within the DISN. The SUT met all the critical interoperability requirements as set forth in Reference (c), using test procedures derived from Reference (d). No other configurations, features, or functions, except those cited within this report, are certified by the JITC. This certification expires upon changes that affect interoperability, but no later than three years from the date of the original Unified Capabilities (UC) Approved Products List (APL) memorandum (30 April 2012).

3. The extension of this certification is based upon Desktop Review (DTR) 2. The original certification is based on interoperability testing, DISA adjudication of open test discrepancy reports, review of the vendor's Letters of Compliance (LoC), and DISA CA accreditation and documented in Reference (e). Interoperability testing was conducted by JITC at the Global Information Grid Network Test Facility, Fort Huachuca, Arizona, from 3 through 28 October 2011. DISA adjudication of outstanding test discrepancy reports was completed on 10 January 2012. Review of the vendor's LoC was completed on 10 January 2012. The DISA CA provided a positive recommendation on 11 April 2012 based on the security testing completed by DISA-led IA test teams and published in separate reports, References (f) and (g). This DTR was requested to include the SUT as a Deployed Network Element. JITC determined that Verification and Validation (V&V) testing was required for this DTR. JITC conducted V&V testing from 5 through 9 August 2013. V&V testing was conducted over the following interfaces: Digital Transmission Link Level 1 (T1) Primary Rate Interface (PRI), Channel Associated Signaling (CAS), European Basic Multiplex Rate (E1) PRI, and E1 CAS with the following Defense Switched Network (DSN) switches: Siemens EWSD and Avaya CS2100. There were no TDRs closed and no new TDRs opened. Therefore, JITC approves this DTR. The IA posture has not changed. The original IA approval applies to this DTR.

4. The overall interoperability status of the SUT is indicated in Table 1. The interfaces and associated Capability Requirements (CRs) and Feature Requirements (FRs) critical used to evaluate the interoperability status are listed in Table 2. The interoperability test status is based on the SUT's ability to meet:

a. DISN services for Network and Applications specified in Reference (c).

b. The overall system interoperability performance derived from test procedures listed in Reference (d).

Table 1. SUT Interoperability Test Summary

DISN Access Interfaces			
Interface & Signaling	**Critical**	**Status**	**Remarks**
T1 CAS (AMI/SF) DTMF, MFR1	No (See note 1.)	Certified	Met all CRs and FRs with this interface when configured for ITU-T G.729A/B or ITU-T G.711 codec. VCOMP is now certified with this interface. (See note 2.)
T1 CAS (B8ZS/ESF) DTMF, MFR1	No (See note 1.)	Certified	Met all CRs and FRs with this interface when configured for ITU-T G.729A/B or ITU-T G.711 codec. VCOMP is now certified with this interface. (See note 2.)
T1 PRI (ANSI T1.607/T1.619a)	No (See note 1.)	Certified	Met all CRs and FRs with this interface when configured for ITU-T G.729A/B or ITU-T G.711 codec. VCOMP is now certified with this interface. (See note 2.)
T1 SS7 (ANSI T1.619a)	No (See note 1.)	Certified	Met all CRs and FRs with this interface when configured for ITU-T G.729A/B or ITU-T G.711 codec. VCOMP is now certified with this interface. (See note 2.)
E1 CAS (HDB3) DTMF, MFR1, DP	No (See note 1.) (Europe only)	Certified	Met all CRs and FRs with this interface when configured for ITU-T G.711 codec. Routine calls fail to connect on E1CAS configured with G.729A/B codec. (See note 3.) Secure Voice Calls Failed with E1 CAS G.729A/B. (See note 4.)
E1 ISDN PRI (ITU-T Q.955.3)	No (See note 1.) (Europe only)	Certified	Met all CRs and FRs with this interface when configured for ITU-T G.729A/B or ITU-T G.711 codec. VCOMP is now certified with this interface. (See note 2.)

Table 1. SUT Interoperability Test Summary (continued)

DISN Access Interfaces (continued)			
Interface & Signaling	**Critical**	**Status**	**Remarks**
E1 SS7 (ANSI T1.619a)	No (See note 1.) (Europe only)	Certified	Met all CRs and FRs with this interface when configured for ITU-T G.729A/B or ITU-T G.711 codec. VCOMP is now certified with this interface. (See note 2.)
FXS/FXO	No (See note 1.)	Not Certified	Secure Calls placed using the FXS/FXO configuration failed. (See note 5.) All Secure Data Communications calls failed with the FXO/FXS Interface. (See note 6.)
4-Wire E&M	No (See note 1.)	Certified	Met all CRs and FRs with this interface when configured for ITU-T G.711.
Serial (EIA-232, EIA-530)	No (See note 1.)	Certified	Met all CRs and FRs.
DISN Transport Interfaces			
Transport Level	**Critical**	**Status**	**Remarks**
Ethernet (IEEE 802.3ab) 10/100/1000BaseT	No (See note 1.)	Certified	Met all CRs and FRs. (See note 7.)
Ethernet (IEEE 802.3u) 10/100BaseT	No (See note 1.)	Certified	Met all CRs and FRs.
Features And Capabilities			
Features And Capabilities	**Critical**	**Status**	**Remarks**
Synchronization	Yes	Certified	Met all CRs and FRs.
Network Management	Yes	Certified	Met all CRs and FRs.
Security	Yes	Certified	Met all CRs and FRs. (See note 8.)

NOTES:
1. The UCR does not stipulate a minimum Access interface requirement for a F-NE.
2. This interface is certified with the VCOMP encapsulation when using software release CTPOS 6.2r4, which was included in DTR 1. The SUT CTP 2056 and 2024 met all critical requirements for VCOMP encapsulation when configured for the ITU-T G.711 codec. The CTP150 and 2008 do not contain the minimum number of card interfaces to support VCOMP and, therefore, are not certified to support VCOMP. The SUT is deployed as a mated pair, and both SUTs must be loaded with the same certified software release in order to interoperate correctly.
3. Routine, non-secure calls fail to connect on the E1 CAS interface with the ITU-T G.729A/B codec because the SUT is not transparently propagating the ABCD signaling bits generated by the two switches. The E1 CAS interface with the ITU-T G.729A/B codec is not certified by JITC. This interface is not required. The SUT is certified for use with the E1 CAS interface with the ITU-T G.711 codec.
4. Secure voice calls fail within 17 minutes on E1 CAS configured with the ITU-T G.729 A/B codec. The E1 CAS interface with the ITU-T G.729A/B codec is not certified by JITC. This interface is not required. The SUT is certified for use with the E1 CAS interface with the ITU-T G.711 codec.
5. Secure voice calls on the FXO/FXS interface with both the ITU-T G.729A/B and ITU-T G.711 fail within a 5-minute period. The FXO/FXS interface is not certified for joint use. This interface is not required.
6. The SUT does not allow secure data communications on the FXO/FXS interface. The FXO/FXS interface is not certified for joint use. This interface is not required.
7. This interface is only certified on the CTP2008 and CTP2056.
8. Information assurance testing is accomplished via DISA-led Information Assurance test teams and published in separate reports, References (f) and (g).

Table 1. SUT Interoperability Test Summary (continued)

LEGEND:

802.3u	Standard for carrier sense multiple access with collision detection at 100 Mbps	FR	Functional Requirements
802.3ab	1000BaseT Gbps Ethernet over twisted pair at 1 Gbps (125 Mbps)	FXS/FXO	Foreign Exchange Station/ Foreign Exchange Office
AMI	Alternate Mark Inversion	G.711	Pulse Code Modulation (PCM) of voice frequencies
ANSI	American National Standards Institute	G.729	9.6 kbps Conjugate-Structure Algebraic-Code-Excited Linear-Prediction (CS-A CELP)
B8ZS	Bipolar Eight Zero Substitution	Gbps	Gigabits per second
CAS	Channel Associated Signaling	HDB3	High Density Bipolar 3
CR	Capability Requirements	IEEE	Institute of Electrical and Electronics Engineers
CTP	Circuit to Packet	ISDN	Integrated Services Digital Network
DCE	Data Circuit-Terminating Equipment	ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
DISN	Defense Information Systems Network	kbps	kilobits per second
DP	Dial Pulse	Mbps	Megabits per second
DSS1	Digital Subscriber Signaling 1	MFR1	Multi-Frequency Recommendation 1
DTE	Data Terminal Equipment	MLPP	Multi-Level Precedence and Preemption
DTMF	Dual Tone Multi-Frequency	PRI	Primary Rate Interface
DTR	Desktop Review	Q.955.3	ISDN Signaling Standard for E1 MLPP
E1	European Basic Multiplex Rate (2.048 Mbps)	SF	Super Frame
E&M	Ear and Mouth	SS7	Signaling System 7
EIA	Electronic Industries Alliance	SUT	System Under Test
EIA-232	Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices	T1	Digital Transmission Link Level 1 (1.544 Mbps)
		T1.607	ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1
EIA-530	Standard for 25-position interface for DTE and DCE employing serial binary data interchange	T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
		UCR	Unified Capabilities Requirements
ESF	Extended Super Frame	VCOMP	Voice Compression
F-NE	Fixed Network Element		

Table 2. SUT Capability and Feature Interoperability Requirements

DISN Access Interfaces			
Interface	**Critical**	**Requirements Required or Conditional**	**References**
T1 CAS (AMI/SF) DTMF, MFR1 T1 CAS (B8ZS/ESF) DTMF, MFR1 T1 PRI (ANSI T1.607/T1.619a) T1 SS7 (ANSI T1.619a) E1 CAS (HDB3) DTMF, MFR1, DP E1 ISDN PRI (ITU-T Q.955.3) E1 SS7 (ANSI T1.619a)	No (See note 1.)	• DS1 Interface Characteristics (C) • DS1 Supervisory Channel Associated Signaling (C) • DS1 Clear Channel Capability (C) • DS1 Alarm and Restoral Requirements (C) • E1 Interface Characteristics (C) • E1 Supervisory Channel Associated Signaling (C) • E1 Clear Channel Capability (C) • E1 Alarm and Restoral Requirements (C) • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) • Modem (R) • Facsimile (R) • Call Control Signals (R) • Alarms (R) • Call Congestion Control (R) • Call Congestion for TDM Transport (C) • Voice Compression (C)	• UCR Section 5.9.2.3.4 • UCR Section 5.9.2.3.4 • UCR Section 5.9.2.3.4 • UCR Section 5.9.2.3.4 • UCR Section 5.9.2.3.5 • UCR Section 5.9.2.3.5 • UCR Section 5.9.2.3.5 • UCR Section 5.9.2.3.5 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1.1 • UCR Section 5.9.2.1.2 • UCR Section 5.9.2.1.2.1 • UCR Section 5.9.2.2

Table 2. SUT Capability and Feature Interoperability Requirements (continued)

DISN Access Interfaces (continued)			
Interface	**Critical**	**Requirements Required or Conditional**	**References**
T1 CAS (AMI/SF) DTMF, MFR1 T1 CAS (B8ZS/ESF) DTMF, MFR1 T1 PRI (ANSI T1.607/T1.619a) T1 SS7 (ANSI T1.619a) E1 CAS (HDB3) DTMF, MFR1, DP E1 ISDN PRI (ITU-T Q.955.3) E1 SS7 (ANSI T1.619a)	No (See notes 1 and 2.)	• D-NEs shall meet all of the NE requirements specified in UCR Section 5.9.2, except as modified in this section (R) • The D-NE measured error burst density shal be $1x10^{-6}$ (R) • The measured D-NE error burst gap shall be 600 ms (R) • The measured D-NE error burst length shall be 500 ms (R) • Voice compression (C) • Latency (C) • Minimum MOS of 3.6 (R) • The D-NE shall not cause the E2E digital BER below 1x10-5 by more than 0.03% before FEC is applied (R) • Error correction (R) • Congestion (R) • D-NE TDM Requirements (C)	• UCR Section 5.9.3 • UCR Section 5.9.3 • UCR Section 5.9.3 • UCR Section 5.9.3 • UCR Section 5.9.3.1 • UCR Section 5.9.3.1 • UCR Section 5.9.3.1 • UCR Section 5.9.3.1 • UCR Section 5.9.3.1 • UCR Section 5.9.3.1 • UCR Section 5.9.3.2
Serial (EIA-232, EIA-530)	No (See note 1.)	• MOS TIA/EIA-232, TIA-EIA-530 (R)	• UCR Section 5.9.2.3.2
DISN Transport Interfaces			
Interface	**Critical**	**Requirements Required or Conditional**	**References**
IP	No (See note 3.)	• MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) • Modem (R) • Facsimile (R) • Call Control Signals (includes MLPP) (R) • Congestion Control (C) (IP interface only) • Voice Compression (C) • Alarms • Delay (R) • Jitter (R) • Packet Loss (R)	• UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1 • UCR Section 5.9.2.1.2 • UCR Section 5.9.2.2 • UCR Section 5.9.3.5 • UCR Section 5.9.2.3.9 • UCR Section 5.9.2.3.9 • UCR Section 5.9.2.3.9
SUT Features And Capabilities			
Feature/Capability	**Critical**	**Requirements Required or Conditional**	**References**
Synchronization	Yes	• Timing (R)	• UCR Section 5.9.2.3.7
Network Management	Yes	• Management Option (R) Local Management (Front Panel and/or External Console) (C) ADIMSS (C) • Fault Management (C) • Loop Back Capability (C) • Operational Configuration Restoral (R)	• UCR Section 5.9.2.4.1 • UCR Section 5.9.2.4.2 • UCR Section 5.9.2.4.3 • UCR Section 5.9.2.4.4
Security	Yes	• STIGs and DoDI 8510.01 (DIACAP) (R)	• UCR Section 5.9.2.6

NOTES:
1. The UCR does not stipulate a minimum required DISN access interface.
2. The SUT was tested with the Deployed Network Element Requirements with DTR 2.
3. The UCR does not stipulate a minimum required DISN transport interface.

Table 2. SUT Capability and Feature Interoperability Requirements (continued)

LEGEND:

ADIMSS	Advanced DSN Integrated Management Support System
AMI	Alternate Mark Inversion
ANSI	American National Standards Institute
B8ZS	Bipolar Eight Zero Substitution
BERT	Bit Error Rate Test
C	Conditional
CAS	Channel Associated Signaling
DCE	Data Circuit-terminating Equipment
DIACAP	Department of Defense Information Assurance Certification and Accreditation Process
DISN	Defense Information System Network
DoDI	Department of Defense Instruction
DP	Dial Pulse
DS1	Digital Signal Level 1
DSS1	Digital Subscriber Signaling 1
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi-Frequency
E1	European Basic Multiplex Rate (2.048 Mbps)
EIA	Electronic Industries Alliance
EIA-232	Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices
EIA-530	Standard for 25-position interface for DTE and DCE employing serial binary data interchange
ESF	Extended Super Frame
FXS/FXO	Foreign Exchange Station/ Foreign Exchange Office
HDB3	High Density Bipolar Three
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
Mbps	Megabits per second
MFR1	Multi-Frequency Recommendation 1
MLPP	Multi-Level Precedence and Preemption
MOS	Mean Opinion Score
PRI	Primary Rate Interface
Q.955.3	ISDN Signaling Standard for E1 MLPP
R	Required
SF	Super Frame
SS7	Signaling System 7
STIGs	Security Technical Implementation Guides
SUT	System Under Test
T1	Digital Transmission Link Level 1 (1.544 Mbps)
T1.607	ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1
T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
TDM	Time Division Multiplexing
UCR	Unified Capabilities Requirements

5. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Sensitive but Unclassified IP Data (formerly known as NIPRNet) e-mail. Interoperability status information is available via the JITC System Tracking Program (STP). STP is accessible by .mil/.gov users 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 https://jit.fhu.disa.mil/. 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 from the Unified Capabilities Certification Office (UCCO), e-mail: disa.meade.ns.list.unified-capabilities-certification-office@mail.mil. All associated information is available on the DISA UCCO website located at http://www.disa.mil/Services/Network-Services/UCCO.

6. The JITC point of contact is Mr. Edward Mellon, DSN 879-5159, commercial (520) 538-5159, FAX DSN 879-4347, or e-mail to edward.a.mellon.civ@mail.mil. JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The UCCO tracking number for the SUT are 1112202 (CTP150) and 1112203 (CTP2008, CTP2024, CTP2056).

FOR THE COMMANDER:

Enclosure a/s

for RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

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ADDITIONAL REFERENCES

(c) Defense Information Systems Agency (DISA), "Department of Defense Unified Capabilities Requirements 2008, Change 2," 31 December 2010

(d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006

(e) Joint Interoperability Test Command, Memo, JTE, "Special Interoperability Test Certification of the Juniper Circuit to Packet (CTP)150, 2008, 2024, and 2056 with Software Release CTPOS 6.2r1," 17 April 2012

(f) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Juniper Circuit to Packet (CTP) 150 Release (Rel.) Circuit to Packet Operating System (CTPOS) 6.2 r1 (Tracking Number 1112202)," Draft

(g) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Juniper Circuit to Packet (CTP) 2000 Release (Rel.) Circuit to Packet Operating System (CTPOS) 6.2 r1 (Tracking Number 1112203)," Draft