



## DEFENSE INFORMATION SYSTEMS AGENCY

P. O. BOX 549  
FORT MEADE, MARYLAND 20755-0549

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

20 Sep 12

### MEMORANDUM FOR DISTRIBUTION

**SUBJECT:** Extension of the Special Interoperability Test Certification of the Juniper Circuit to Packet (CTP)150, 2008, 2024, and 2056 from Software Release CTPOS 6.2r1 to Release CTPOS 6.2r4

**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

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).

JITC, Memo, JTE, Extension of the Special Interoperability Test Certification of the Juniper Circuit to Packet (CTP)150, 2008, 2024, and 2056 from Software Release CTPOS 6.2r1 to Release CTPOS 6.2r4

3. The extension of this certification is based upon Desktop Review (DTR) 1. 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 software release update from CTPOS 6.2r1 to CTPOS 6.2r4. This maintenance release contains bug fixes that are required by many Department of Defense customers who are operating CTP systems in the field and addresses the previous VCOMP compression discrepancies. This DTR was also requested to include the CTPView Management Platform update from CTPViewOS3.R2-P3 to CTPViewOS4.2r2.

JITC determined that Verification and Validation (V&V) testing was required for this DTR. JITC conducted V&V testing from 27 August through 10 September 2012. V&V testing was conducted over the following interfaces: Digital Transmission Link Level 1 (T1) Primary Rate Interface (PRI), T1 Channel Associated Signaling (CAS), T1 Signaling System 7 (SS7), European Basic Multiplex Rate (E1) PRI, E1 CAS, and Foreign Exchange Office (FXO)/Foreign Exchange Station (FXS) interfaces with the following Defense Switched Network (DSN) switches: Siemens EWSD, Avaya CS2100, and Alcatel-Lucent 5ESS. All V&V testing was successful with the following exceptions: E1 CAS non-secure and secure voice calls fail when configured with ITU-T G.729A/B codec. The FXO/ FXS interface failed both secure voice and secure data communications calls with both the ITU-T G.729A/B and ITU-T G.711 codecs. The E1CAS interface with the ITU-T G.729 A/B codec is not certified for joint use. The FXO/FXS interface is not certified for joint use. These interfaces are not required for the SUT. 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. Therefore, JITC approves these DTRs. 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**

<b>DISN Access Interfaces</b>			
<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
T1 CAS (AMI/SF) DTMF, MFR1	No <sup>1</sup>	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. <sup>2</sup>
T1 CAS (B8ZS/ESF) DTMF, MFR1	No <sup>1</sup>	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. <sup>2</sup>
T1 PRI (ANSI T1.607/T1.619a)	No <sup>1</sup>	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. <sup>2</sup>
T1 SS7 (ANSI T1.619a)	No <sup>1</sup>	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. <sup>2</sup>
E1 CAS (HDB3) DTMF, MFR1, DP	No <sup>1</sup> (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. <sup>3</sup> Secure Voice Calls Failed with E1 CAS G.729A/B. <sup>4</sup>
E1 ISDN PRI (ITU-T Q.955.3)	No <sup>1</sup> (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. <sup>2</sup>
E1 SS7 (ANSI T1.619a)	No <sup>1</sup> (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. <sup>2</sup>
FXS/FXO	No <sup>1</sup>	Not Certified	Secure Calls placed using the FXS/FXO configuration failed. <sup>5</sup> All Secure Data Communications calls failed with the FXO/FXS Interface. <sup>6</sup>
4-Wire E&M	No <sup>1</sup>	Certified	Met all CRs and FRs with this interface when configured for ITU-T G.711.
Serial (EIA-232, EIA-530)	No <sup>1</sup>	Certified	Met all CRs and FRs.
<b>DISN Transport Interfaces</b>			
<b>Transport Level</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
Ethernet (IEEE 802.3ab) 10/100/1000BaseT	No <sup>1</sup>	Certified	Met all CRs and FRs. <sup>7</sup>
Ethernet (IEEE 802.3u) 10/100BaseT	No <sup>1</sup>	Certified	Met all CRs and FRs.
<b>Features And Capabilities</b>			
<b>Features And Capabilities</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
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. <sup>8</sup>
<b>NOTES:</b>			
<p>1. The UCR does not stipulate a minimum Access interface requirement for a F-NE.</p> <p>2. This interface is certified with the VCOMP encapsulation when using software release CTPOS 6.2r4, which was included in this DTR. 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.</p> <p>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.</p> <p>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.</p> <p>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.</p>			

**Table 1. SUT Interoperability Test Summary (continued)**

<b>NOTES (continued):</b>			
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).			
<b>LEGEND:</b>			
802.3u	Standard for carrier sense multiple access with collision detection at 100 Mbps	FR FXS/FXO	Functional Requirements Foreign Exchange Station/ Foreign Exchange Office
802.3ab	1000BaseT Gbps Ethernet over twisted pair at 1 Gbps (125 Mbps)	G.711 G.729	Pulse Code Modulation (PCM) of voice frequencies 9.6 kbps Conjugate-Structure Algebraic-Code-Excited Linear-Prediction (CS-A CELP)
AMI	Alternate Mark Inversion	Gbps	Gigabits per second
ANSI	American National Standards Institute	HDB3	High Density Bipolar 3
B8ZS	Bipolar Eight Zero Substitution	IEEE	Institute of Electrical and Electronics Engineers
CAS	Channel Associated Signaling	ISDN	Integrated Services Digital Network
CR	Capability Requirements	ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
CTP	Circuit to Packet		
DCE	Data Circuit-Terminating Equipment		
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 T1.607	Digital Transmission Link Level 1 (1.544 Mbps) 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
ESF	Extended Super Frame	UCR	Unified Capabilities Requirements
F-NE	Fixed Network Element	VCOMP	Voice Compression

**Table 2. SUT Capability and Feature Interoperability Requirements**

<b>DISN Access Interfaces</b>			
<b>Interface</b>	<b>Critical</b>	<b>Requirements Required or Conditional</b>	<b>References</b>
T1 CAS (AMI/SF) DTMF, MFR1	No <sup>1</sup>	<ul style="list-style-type: none"> <li>• DS1 Interface Characteristics (C)</li> <li>• DS1 Supervisory Channel Associated Signaling (C)</li> <li>• DS1 Clear Channel Capability (C)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.3.4</li> <li>• UCR Section 5.9.2.3.4</li> <li>• UCR Section 5.9.2.3.4</li> </ul>
T1 CAS (B8ZS/ESF) DTMF, MFR1	No <sup>1</sup>	<ul style="list-style-type: none"> <li>• DS1 Alarm and Restoral Requirements (C)</li> <li>• E1 Interface Characteristics (C)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.3.4</li> <li>• UCR Section 5.9.2.3.5</li> </ul>
T1 PRI (ANSI T1.607/T1.619a)	No <sup>1</sup>	<ul style="list-style-type: none"> <li>• E1 Supervisory Channel Associated Signaling (C)</li> <li>• E1 Clear Channel Capability (C)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.3.5</li> <li>• UCR Section 5.9.2.3.5</li> </ul>
T1 SS7 (ANSI T1.619a)	No <sup>1</sup>	<ul style="list-style-type: none"> <li>• E1 Alarm and Restoral Requirements (C)</li> <li>• MOS (R)</li> <li>• BERT (R)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.3.5</li> <li>• UCR Section 5.9.2.1</li> <li>• UCR Section 5.9.2.1</li> </ul>
E1 CAS (HDB3) DTMF, MFR1, DP	No <sup>1</sup>	<ul style="list-style-type: none"> <li>• Secure Transmission (Voice and Data) (R)</li> <li>• Modem (R)</li> <li>• Facsimile (R)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.1</li> <li>• UCR Section 5.9.2.1</li> <li>• UCR Section 5.9.2.1</li> </ul>
E1 ISDN PRI (ITU-T Q.955.3)	No <sup>1</sup>	<ul style="list-style-type: none"> <li>• Call Control Signals (R)</li> <li>• Alarms (R)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.1</li> <li>• UCR Section 5.9.2.1.1</li> </ul>
E1 SS7 (ANSI T1.619a)	No <sup>1</sup>	<ul style="list-style-type: none"> <li>• Call Congestion Control (R)</li> <li>• Call Congestion for TDM Transport (C)</li> <li>• Voice Compression (C)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.1.2</li> <li>• UCR Section 5.9.2.1.2.1</li> <li>• UCR Section 5.9.2.2</li> </ul>
Serial (EIA-232, EIA-530)	No <sup>1</sup>	<ul style="list-style-type: none"> <li>• MOS TIA/EIA-232, TIA-EIA-530 (R)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.3.2</li> </ul>
<b>DISN Transport Interfaces</b>			
<b>Interface</b>	<b>Critical</b>	<b>Requirements Required or Conditional</b>	<b>References</b>
IP	No <sup>2</sup>	<ul style="list-style-type: none"> <li>• MOS (R)</li> <li>• BERT (R)</li> <li>• Secure Transmission (Voice and Data) (R)</li> <li>• Modem (R)</li> <li>• Facsimile (R)</li> <li>• Call Control Signals (includes MLPP) (R)</li> <li>• Congestion Control (C) (IP interface only)</li> <li>• Voice Compression (C)</li> <li>• Alarms</li> <li>• Delay (R)</li> <li>• Jitter (R)</li> <li>• Packet Loss (R)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.1</li> <li>• UCR Section 5.9.2.1.2</li> <li>• UCR Section 5.9.2.2</li> <li>• UCR Section 5.9.3.5</li> <li>• UCR Section 5.9.2.3.9</li> <li>• UCR Section 5.9.2.3.9</li> <li>• UCR Section 5.9.2.3.9</li> </ul>
<b>SUT Features And Capabilities</b>			
<b>Feature/Capability</b>	<b>Critical</b>	<b>Requirements Required or Conditional</b>	<b>References</b>
Synchronization	Yes	<ul style="list-style-type: none"> <li>• Timing (R)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.3.7</li> </ul>
Network Management	Yes	<ul style="list-style-type: none"> <li>• Management Option (R)</li> <li>• Local Management (Front Panel and/or External Console) (C)</li> <li>• ADIMSS (C)</li> <li>• Fault Management (C)</li> <li>• Loop Back Capability (C)</li> <li>• Operational Configuration Restoral (R)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.4.1</li> <li>• UCR Section 5.9.2.4.2</li> <li>• UCR Section 5.9.2.4.3</li> <li>• UCR Section 5.9.2.4.4</li> </ul>
Security	Yes	<ul style="list-style-type: none"> <li>• STIGs and DoDI 8510.01 (DIACAP) (R)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 5.9.2.6</li> </ul>
<b>NOTES:</b>			
1. The UCR does not stipulate a minimum required DISN access interface.			
2. The UCR does not stipulate a minimum required DISN transport interface.			

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

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

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

JITC, Memo, JTE, Extension of the Special Interoperability Test Certification of the Juniper Circuit to Packet (CTP)150, 2008, 2024, and 2056 from Software Release CTPOS 6.2r1 to Release CTPOS 6.2r4

6. The JITC point of contact is CPT Trevor Sayer, DSN 879-5013, commercial (520) 538-5013, FAX DSN 879-4347, or e-mail to trevor.l.sayer.mil@mail.mil. JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking numbers for the SUT are 1112202 (CTP150) and 1112203 (CTP2008, CTP2024, CTP2056).

FOR THE COMMANDER:



for RICHARD A. MEADOR  
Chief  
Battlespace Communications Portfolio

1 Enclosure a/s

Distribution (electronic mail):

DoD CIO

Joint Staff J-6, JCS

USD(AT&L)

ISG Secretariat, DISA, JTA

U.S. Strategic Command, J665

US Navy, OPNAV N2/N6FP12

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

US Air Force, A3CNN/A6CNN

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

US Coast Guard, CG-64

DISA/TEMC

DIA, Office of the Acquisition Executive

NSG Interoperability Assessment Team

DOT&E, Netcentric Systems and Naval Warfare

Medical Health Systems, JMIS IV&V

HQUSAISEC, AMSEL-IE-IS

UCCO

## ADDITIONAL REFERENCES

- (c) 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