DEFENSE INFORMATION SYSTEMS AGENCY
P. O. BOX 549
FORT MEADE, MARYLAND 20755-0549

IN REPLY REFER TO: Joint Interoperability Test Command (JTE) **3 Jul 13**

SUBJECT: Extension of the Joint Interoperability Certification of the Juniper Networks MX80-48T From Software Release JUNOS 12.1 to 12.2

References: (a) Department of Defense Directive 4630.05, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) Chairman, Joint Chiefs of Staff Instruction 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008
(c) through (f), 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 Juniper Networks MX80-48T switch with Software Release Junos 12.1 is hereinafter referred to as the system under test (SUT). The SUT meets all of its critical interoperability requirements and is certified for joint use within the Defense Information System Network (DISN) as an Assured Services Local Area Network (ASLAN) Core, Distribution, and Layer 2/Layer 3 Access switch. The SUT was also tested and certified for Multiprotocol Label Switching (MPLS) and MPLS Layer 2/Layer 3 Virtual Private Networks (VPNs). The SUT is certified as interoperable for joint use with other ASLAN components listed on the Unified Capabilities (UC) Approved Products List (APL) with the following interfaces: 10/100/1000BaseT for access, 1000BaseT and 10000BaseX for uplink. All of these interfaces were tested with the exception of the 10BaseT interface. JITC analysis determined that the 10BaseT interface is a low risk for certification based on the vendor's Letter of Compliance (LoC) to comply with the Institute of Electrical and Electronics Engineers (IEEE) 802.3i standard and the testing data collected at all other data rates. The SUT meets the critical interoperability requirements set forth in Reference (c), using test procedures derived from Reference (d).

The SUT is certified to support Assured Services within an ASLAN. If a component meets the minimum requirements for deployment in an ASLAN, it also meets the lesser requirements for deployment in a non-ASLAN. Non-ASLANs are "commercial grade" and provide support to Command and Control (C2) (ROUTINE only calls) (C2(R)) or non-C2 voice subscribers. When deployed in a non-ASLAN, the SUT may also be used to receive all levels of precedence, but is limited to supporting calls that are originated at ROUTINE precedence only. Non-ASLANs do not meet the availability or redundancy requirements for C2 or Special C2 users and therefore are not authorized to support precedence calls originated above ROUTINE.

Testing of the SUT did not include video services or data applications; however, simulated video traffic, preferred data, and best effort data were generated during testing to determine the SUT's ability to prioritize and properly queue voice media and signaling traffic. No other configurations, features, or functions, except those cited within this document, are certified by JITC. This certification expires upon changes that affect interoperability but no later than three years from the date of the original memorandum (28 March 2013).

3. The extension of this certification is based upon Desktop Review (DTR) 1. The original certification, documented in Reference (e), is based on interoperability testing conducted by the United States Army Information Systems Engineering Command, Technology Integration Center (USAISEC TIC), review of the vendor's LoC, DISA adjudication of open test discrepancy reports (TDRs), and the DISA Certifying Authority (CA) Recommendation. The interoperability testing was conducted by the USAISEC TIC, Fort Huachuca, Arizona, from 30 July through 13 November 2012. Review of the vendor's LoC was completed on 4 December 2012. The DISA adjudication of outstanding TDRs was completed on 18 December 2013. The DISA CA provided a positive recommendation on 20 November 2012, based on the security testing completed by USAISEC TIC-led information assurance (IA) test teams. The IA test results are published in a separate report, Reference (f). This DTR was requested to update the software release from Junos 12.1 to 12.2. JITC determined through analysis that all of the minor changes between the certified versions and the updated version will have no impact on the certified interoperability features and functions. Additionally, the DISA CA has approved this DTR to include Junos 12.2 without testing. Therefore, the original IA approval applies to these DTRs and JITC approves these DTRs.

4. Table 1 provides a UC APL product summary. Table 2 provides the SUT interface interoperability status and Table 3 provides the Capability Requirements (CRs) and Functional Requirements (FRs) status. The threshold CRs/FRs for ASLAN components are established by Section 5.3.a of Reference (c) and were used to evaluate the interoperability of the SUT. Enclosure 3 provides a detailed list of the interface, capability, and functional requirements.

Table 1. UC APL Product Summary

Component (See note 1.)	Release	Sub-Component (See note 1.)	Certification Applicability		
			Core	Distribution	Access
Juniper MX80-48T-AC MX80-48T-DC	JUNOS OS 12.2 (See note 2.)	N/A	Yes	Yes	Yes

NOTES:
1. The component bolded and underlined was tested by the USAISEC TIC. There are no sub-components for this component. All interfaces are built-in. The other component in the family series was not tested; however, it utilizes the same OS software and similar hardware. JITC analysis determined it to be functionally identical for interoperability certification purposes and it is also certified for joint use.
2. This DTR updated the software from JUNOS 12.1 to 12.2.

LEGEND:

APL	Approved Products List	TIC	Technology Integration Center
JITC	Joint Interoperability Test Command	UC	Unified Capabilities
JUNOS	Juniper Operating System	UCR	Unified Capabilities Requirements
OS	Operating System	USAISEC	U.S. Army Information Systems Engineering Command

Table 2. SUT Interface Interoperability Status

Interface	Applicability			UCR 2008, Change 3 Reference	Threshold CR/FR (See note 1.)	Status	Remarks
	Co	D	A				
Serial	C	C	C	5.3.1.3.9	1-4	Not Certified	See note 3.
10Base-X	C	C	C (See note 2.)	5.3.1.3.1	1-6	Certified (See note 4.)	The SUT met CRs and FRs with the following IEEE standard: 802.3i (10BaseT).
100Base-X	R	R	C (See note 2.)	5.3.1.3.1	1-6	Certified	The SUT met CRs and FRs with the following IEEE standard: 802.3u (100BaseT).
1000Base-X	R	R	C (See note 2.)	5.3.1.3.1	1-6	Certified	The SUT met CRs and FRs with the following IEEE standard: 802.3ab (1000BaseT).
10000Base-X	C	C	C	5.3.1.3.1	1-6	Certified	The SUT met CRs and FRs with the following IEEE standard: 802.3ae (10GBase-SR, 10GBase-LR).
802.11a	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Tested	(See note 5.)
802.11b	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Tested	(See note 5.)
802.11g	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Tested	(See note 5.)
802.11n	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Tested	(See note 5.)
802.16	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Tested	(See note 5.)

NOTES:
1. The SUT high-level CR and FR ID numbers depicted in the Threshold CRs/FRs column can be cross-referenced in Table 3. These high-level CR/FR requirements refer to a detailed list of requirements provided in Reference (e), Enclosure 3.
2. Core and Distribution products must minimally support 802.3u (100Base-X) and 802.3z (1000Base-X). Access products must minimally support one of the following standards: 802.3i (10BaseT), 802.3j (10BaseF), 802.3u (100BaseT/F), 802.3z (1000BaseF), or 802.3ab (1000BaseT). Other rates and standards may be provided as conditional interfaces.
3. The SUT does support this interface for Command Line Interface (CLI) connectivity during initial setup only. This interface was not tested and is not certified for UC connectivity use.
4. The USAISEC TIC tested all these interfaces with the exception of the 10BaseT interface. JITC analysis determined that the 10BaseT interface is a low risk for certification based on the vendor's LoC to the IEEE 802.3i and the testing data collected at all other data rates.
5. The SUT does not support this interface. The interface was not tested, therefore, is not certified for use.

Table 2. SUT Interface Interoperability Status (continued)

LEGEND:

802.3ab	1000BaseT Gbps Ethernet Over Twisted Pair at 1Gbps (125 Mbps)
802.3ae	10 Gbps Ethernet
802.3i	10BaseT Mbps Over Twisted Pair
802.3j	10 Mbps Over Fiber
802.3u	Standard for Carrier Sense Multiple Access with Collision Detection at 100 Mbps
802.3z	Gigabit Ethernet Standard
802.11/16	IEEE Wireless Standards
10BaseF	10 Mbps Ethernet Over Fiber
10BaseT	10 Mbps (Baseband Operation, Twisted Pair) Ethernet
10Base-X	10 Mbps Ethernet Over Fiber or Copper
100BaseF	100 Mbps Ethernet Over Fiber
100BaseT	100 Mbps (Baseband Operation, Twisted Pair) Ethernet
100Base-X	100 Mbps Ethernet Over Fiber or Copper
1000BaseF	1000 Mbps Ethernet Over Fiber
1000Base-LX	1000 Mbps Ethernet Over Fiber
1000Base-SX	1000 Mbps Ethernet Over Fiber
1000BaseT	1000 Mbps (Baseband Operation, Twisted Pair) Ethernet
1000Base-X	1000 Mbps Ethernet Over Fiber or Copper
10000Base-X	10000 Mbps Ethernet Over Fiber or Copper
10GBase-LR	10000 Mbps Ethernet Over Fiber
10GBase-SR	10000 Mbps Ethernet Over Fiber
A	Access
C	Conditional
Co	Core
CR	Capability Requirement
D	Distribution
EIA	Electronic Industries Alliance
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
FR	Functional Requirement
Gbps	Gigabits Per Second
ID	Identification
IEEE	Institute of Electrical and Electronics Engineers
JITC	Joint Interoperability Test Command
LoC	Letter of Compliance
LR	Long Range Optics
LX	Single-Mode Fiber Optics
Mbps	Megabits Per Second
N/A	Not Applicable
R	Required
SR	Short Range Optics
SX	Multi-Mode Fiber Optics
SUT	System Under Test
TIC	Technology Integration Center
UCR	Unified Capabilities Requirements
USAISEC	U.S. Army Information Systems Engineering Command

Table 3. SUT CRs and FRs Status

CR/FR ID	Capability/Function	Applicability (See note 1.)	UCR 2008, Change 3 Reference	Status
1	**General Performance Parameters**			
	Performance Parameters	Required	5.3.1.3	Met
	Port Interface Rates	Required	5.3.1.3.1	Met
	Port Parameter Requirements	Required	5.3.1.3.2	Met (See note 2.)
	Class of Service Markings	Required	5.3.1.3.3	Met
	VLAN Capabilities	Required	5.3.1.3.4	Met
	Protocols	Required	5.3.1.3.5	Partially Met (See note 3.)
	QoS Features	Required	5.3.1.3.6	Met
	Network Monitoring	Required	5.3.1.3.7	Met
	Security	Required	5.3.1.3.8	Met (See note 7.)
2	**E2E Performance Requirements**			
	Voice Services	Required	5.3.1.4.1	Met (See note 4.)
	Video Services	Required	5.3.1.4.2	Met (See note 4.)
	Data Services	Required	5.3.1.4.3	Met (See note 4.)
3	**NM Requirements**			
	Configuration Control	Required	5.3.1.6.1	Met
	Operational Changes	Required	5.3.1.6.2	Met
	Performance Monitoring	Required	5.3.1.6.3	Met
	Alarms	Required	5.3.1.6.4	Met
	Reporting	Required	5.3.1.6.5	Met
4	**Engineering Requirements**			
	Physical Media	Required	5.3.1.7.1	Met (See note 5.)
	Wireless	Conditional	5.3.1.7.2	Not Tested (See note 6.)
	Traffic Engineering	Required	5.3.1.7.3	Met (See note 5.)
	Availability	Required	5.3.1.7.6	Met (See note 5.)
	Redundancy	Required	5.3.1.7.7	Met (See note 5.)
5	**MPLS**			
	MPLS Requirements	Conditional	5.3.1.8.4.1	Partially Met (See note 3.)
	MPLS VPN Augmentation to VLANs	Conditional	5.3.1.8.4.2	Met
6	**IPv6 Requirements**			
	Product Requirements	Required	5.3.5.4	Partially Met (See note 3.)

Table 3. SUT CRs and FRs Status (continued)

NOTES:

1. The annotation of "required" refers to a high-level requirement category. The applicability of each sub-requirement is provided in Reference (e), Enclosure 3. The SUT does not need to provide conditional requirements. However, if a capability is provided, it must function according to the specified requirements.
2. When port duplex is manually set on 10/100/1000 speed interfaces, SUT does not indicate the state of the duplex through the command line. DISA adjudicated this as a minor impact with a Condition of Fielding outlined in the Juniper MX Series Deployment Guide.
3. The SUT does not comply with the following protocols:
   a. RFC5798: Partial Comply - Virtual Router Redundancy Protocol (VRRP) Version 3 for IPv4 and IPv6. JUNOS 12.2, the next new software release, does support VRRP which will be submitted for verification and validation testing through UCCO Desktop Review process. DISA has adjudicated this discrepancy as having a minor operational impact and accepted the vendor's POA&M.
   b. RFC 2737: Partial Comply - MIB (Entity). DISA adjudicated this as a minor impact with no POA&M required.
   c. RFC 4502: Partial Comply - RMON MIB. DISA adjudicated this as a minor impact with no POA&M required.
   d. RFC 3479 (MPLS): Non Comply – Fault Tolerance for the Label Distribution Protocol (LDP). JUNOS 12.1 does provide support for RFC 3478, Graceful Restart for LDP, which protects against LDP control plane failures. DISA has adjudicated this discrepancy as having minor operational impact with a Condition of Fielding that Juniper uses RFC3478 in lieu of RFC3479.
4. This requirement was verified and met using simulated voice, video, and data traffic in an operational emulated environment to meet E2E requirements. The SUT must be deployed IAW deployment guide and engineering guidelines in UCR 2008, Change 3, Section 5.3.1.4.
5. This requirement was met with the following stipulations: It is the site's responsibility to configure the SUT in a manner which meets the engineering requirements listed in Reference (e), Enclosure 2, Section 11.2 d, and that it does not create a single point of failure which could impact more than 96 C2 users.
6. Wireless requirements are conditional, were not tested, and, therefore, are not certified for use.
7. Security testing was accomplished via USAISEC TIC-led IA test teams and published in a separate report, Reference (f).

LEGEND:

ASLAN	Assured Services Local Area Network	MIB	Management Information Base
C2	Command and Control	MPLS	Multiprotocol Label Switching
CR	Capability Requirement	NM	Network Management
DISA	Defense Information Systems Agency	POA&M	Plan of Action and Milestones
E2E	End-to-End	QoS	Quality of Service
FR	Functional Requirement	RFC	Request For Comment
IAW	In Accordance With	RMON	Remote Monitoring
ID	Identification	SUT	System Under Test
IPv4	Internet Protocol Version 4	UCR	Unified Capabilities Requirements
IPv6	Internet Protocol Version 6	VLAN	Virtual Local Area Network
JUNOS	Juniper Operating System	VPN	Virtual Private Network

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). 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). Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: disa.meade.ns.list.unified-capabilities-certification-office@mail.mil. All associated data is available on the DISA UCCO website located at website located at http://www.disa.mil/Services/Network-Services/UCCO.

6. The testing point of contact Mr. James Hatch, DSN 821-2860, commercial (520) 533-2860, or email to james.d.hatch12.civ@mail.mil. 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 is 1124202.

FOR THE COMMANDER:

Enclosure a/s

for RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

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ADDITIONAL REFERENCES

(c) Office of the DoD Chief Information Officer, "Department of Defense Unified Capabilities Requirements 2008, Change 3," September 2011

(d) Joint Interoperability Test Command, "ASLAN Component Test Plan (UCTP)," February 2012

(e) Joint Interoperability Test Command, Memo, JTE, "Joint Interoperability Certification of the Juniper Networks MX80-48T with Software Release JUNOS 12.1," 28 March 2013

(f) U.S. Army Information Systems Engineering Command, Technology Integration Center (USAISEC TIC), "Information Assurance (IA) Assessment of Juniper MX80-48T Junos 12.1 (Tracking Number 1124202)," 23 October 2012