



DEFENSE INFORMATION SYSTEMS AGENCY

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

4 Dec 12

SUBJECT: Extension of the Special Interoperability Test Certification of the Cisco Catalyst 3560X Series Switch Release Update from IOS 15.0(1)SE to 15.0(1)SE2

- 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 (e), see Enclosure 1.

1. References (a) and (b) establish the Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability (IO) test certification.

2. The Cisco WS-C3560X-48P switch with release 15.0(1)SE is hereinafter referred to as the system under test (SUT). The SUT meets all of its critical IO requirements and is certified for joint use within the Defense Information System Network (DISN) as an Assured Services Local Area Network (ASLAN) Layer 2/Layer 3 Access switch. The SUT can support up to 48 users. 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 1000/10000BaseX 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 IO requirements set forth in Reference (c), using test procedures derived from Reference (d). The Cisco WS-C3560X-24P, WS-C3560X-48PF, WS-C3560X-48T, and WS-C3560X-24T switches employ the same software and similar hardware as the SUT. JITC analysis determined these systems to be functionally identical to the SUT for IO certification purposes, and they are also certified for joint use.

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.

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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 IO but no later than three years from the date of the UC APL memorandum, 17 August 2012.

3. The extension of this certification is based upon Desktop Review (DTR) 1. The original certification is based on IO 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 IO testing was conducted by the USAISEC TIC, Fort Huachuca, Arizona, from 13 February through 16 March 2012. Review of the vendor's LoC was completed on 8 May 2012. The DISA adjudication of outstanding TDRs was completed on 10 July 2012. The DISA CA provided a positive recommendation on 8 June 2012, based on the security testing completed by USAISEC TIC-led Information Assurance (IA) test teams. Those test results are published in a separate report, Reference (e). This DTR was requested to update Cisco IOS Release 15.0(1)SE1 to 15.0(1)SE2, which fixes a version mismatch error when network module C3KX-SM-10G is installed and booted with Cisco IOS release 15.0(1)SE1. JITC determined there was minor risk in approving this DTR without interoperability testing because the IOS update does not change the interoperability results. DTR 1 has no impact on the approved IA posture, so the original CA approval date still applies. Therefore, JITC approves this DTR.

4. Table 1 provides a UC APL product summary. Table 2 provides the SUT interface IO 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 IO 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.)	Release	Sub-Component (See note.)	Certification Applicability		
			Core	Distribution	Access
<u>WS-C3560X-48P</u>	IOS 15.0(1)SE2	<u>C3KX-NM-10G</u> , <u>C3KX-SM-10G</u> , C3KX-NM-10GT	N/A	N/A	L2/L3
WS-C3560X-24P					
WS-C3560X-48PF					
WS-C3560X-48T					
WS-C3560X-24T					
		The following module was certified during previous ASLAN certifications and recertified based on technology maturity per UCR 2008, Change 3, Section 4.4.2: C3KX-NM-1G			

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Table 1. UC APL Product Summary (continued)

NOTE: Components bolded and underlined> were tested by the USAISEC TIC. The other components in the family series were not tested; however, they utilize the same software and similar hardware. JITC analysis determined them to be functionally identical for IO certification purposes and they are also certified for joint use.			
LEGEND:			
APL	Approved Products List	N/A	Not Applicable
ASLAN	Assured Services Local Area Network	TIC	Technology Integration Center
IO	Interoperability	UC	Unified Capabilities
IOS	Internetworking Operating System	UCR	Unified Capabilities Requirements
JITC	Joint Interoperability Test Command	USAISEC	U.S. Army Information Systems Engineering Command
L2/L3	Layer 2/Layer 3		

Table 2. SUT Interface Interoperability Status

Interface	Applicability			UCR 2008, Change 3 Reference	Threshold CR/FR ¹	Status	Remarks
	Co	D	A				
Serial	C	C	C	5.3.1.3.9	1-4	Certified	The SUT met the CRs and FRs with the following standard: EIA-232.
10Base-X	C	C	C ²	5.3.1.3.1	1-6	Certified ³	The SUT met CRs and FRs with the following IEEE standard: 802.3i (10BaseT).
100Base-X	R	R	C 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 ²	5.3.1.3.1	1-6	Certified	The SUT met CR and FRs with the following IEEE standards: 802.3ab (1000BaseT), 802.3z (1000Base-SX, 1000Base-LX).
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 Supported ⁴	N/A
802.11b	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Supported ⁴	N/A
802.11g	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Supported ⁴	N/A
802.11n	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Supported ⁴	N/A
802.16	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Supported ⁴	N/A

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 Enclosure 3.
2. Core and Distribution products must minimally support 100Base-X (802.3u) and 1000Base-X (802.3z). 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 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.
4. The SUT does not support this interface. This interface is not required for a Core, Distribution, or Access switch.

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Table 2. SUT Interface Interoperability Status (continued)

LEGEND:			
802.3ab	1000BaseT Gbps Ethernet Over Twisted Pair at 1 Gbps (125 Mbps)	C	Conditional
		Co	Core
802.3ae	10 Gbps Ethernet	CR	Capability Requirement
802.3i	10BaseT Mbps Over Twisted Pair	D	Distribution
802.3j	10 Mbps Over Fiber	EIA	Electronic Industries Alliance
802.3u	Standard for Carrier Sense Multiple Access with Collision Detection at 100 Mbps	EIA-232	Standard for Defining the Mechanical and Electrical Characteristics for Connecting Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE)
802.3z	Gigabit Ethernet Standard		Data Communications Devices
802.11/16	IEEE Wireless Standards		Data Communications Devices
10BaseF	10 Mbps Ethernet Over Fiber	FR	Functional Requirement
10BaseT	10 Mbps (Baseband Operation, Twisted Pair) Ethernet	Gbps	Gigabits Per Second
		ID	Identification
10Base-X	10 Mbps Ethernet Over Fiber or Copper	IEEE	Institute of Electrical and Electronics Engineers
100BaseF	100 Mbps Ethernet Over Fiber	JITC	Joint Interoperability Test Command
100BaseT	100 Mbps (Baseband Operation, Twisted Pair) Ethernet	LoC	Letter of Compliance
		LR	Long Range Optics
100Base-X	100 Mbps Ethernet Over Fiber or Copper	LX	Single-Mode Fiber Optics
1000BaseF	1000 Mbps Ethernet Over Fiber	Mbps	Megabits Per Second
1000Base-LX	1000 Mbps Ethernet Over Fiber	N/A	Not Applicable
1000Base-SX	1000 Mbps Ethernet Over Fiber	R	Required
1000BaseT	1000 Mbps (Baseband Operation, Twisted Pair) Ethernet	SR	Short Range Optics
		SX	Multi-Mode Fiber Optics
1000Base-X	1000 Mbps Ethernet Over Fiber or Copper	SUT	System Under Test
10000Base-X	10000 Mbps Ethernet Over Fiber or Copper	TIC	Technology Integration Center
10GBase-LR	10000 Mbps Ethernet Over Fiber	UCR	Unified Capabilities Requirements
10GBase-SR	10000 Mbps Ethernet Over Fiber	USAISEC	U.S. Army Information Systems Engineering Command
A	Access		

Table 3. SUT CRs and FRs Status

CR/FR ID	Capability/Function	Applicability ¹	UCR 2008, Change 3 Reference	Status	Remarks
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	
	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 ²	
	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		
2	E2E Performance Requirements				
	Voice Services	Required	5.3.1.4.1	Met ³	
	Video Services	Required	5.3.1.4.2	Met ³	
	Data Services	Required	5.3.1.4.3	Met ³	
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	

Table 3. SUT CRs and FRs Status (continued)

4	Engineering Requirements																																								
	Physical Media	Required	5.3.1.7.1	Met ⁴																																					
	Wireless	Conditional	5.3.1.7.2	Not Tested ⁵																																					
	Traffic Engineering	Required	5.3.1.7.3	Met ⁴																																					
	Availability	Required	5.3.1.7.6	Met ⁴																																					
	Redundancy	Required	5.3.1.7.7	Met ⁴																																					
5	MPLS																																								
	MPLS Requirements	Conditional	5.3.1.8.4.1	Not Tested ⁵																																					
	MPLS VPN Augmentation to VLANs	Conditional	5.3.1.8.4.2	Not Tested ⁵																																					
6	IPv6 Requirements																																								
	Product Requirements	Required	5.3.5.4	Met																																					
<p>NOTES:</p> <ol style="list-style-type: none"> 1. The annotation of 'Required' refers to a high-level requirement category. The applicability of each sub-requirement is provided in 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. The SUT does not comply with the following Protocols RFC 3273. DISA adjudicated this discrepancy as minor because this RFC has been determined to have negligible operational impact in DOD networks and the RFC applicability will change to "optional" in future UCR documents (e.g. UCR 2013). 3. 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. 4. 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 Section 11.2 d. of Enclosure 2, and that it does not create a single point of failure which could impact more than 96 C2 users. 5. Wireless and MPLS were not tested and are not certified for joint use. Wireless and MPLS are conditional and; therefore, not required for a Core, Distribution, or Access switch. <p>LEGEND:</p> <table> <tbody> <tr> <td>C2</td> <td>Command and Control</td> <td>MPLS</td> <td>Multiprotocol Label Switching</td> </tr> <tr> <td>CR</td> <td>Capability Requirement</td> <td>NM</td> <td>Network Management</td> </tr> <tr> <td>DISA</td> <td>Defense Information Systems Agency</td> <td>POA&M</td> <td>Plan of Action and Milestones</td> </tr> <tr> <td>DoD</td> <td>Department of Defense</td> <td>QoS</td> <td>Quality of Service</td> </tr> <tr> <td>E2E</td> <td>End-to-End</td> <td>RFC</td> <td>Request For Comment</td> </tr> <tr> <td>FR</td> <td>Functional Requirement</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>IAW</td> <td>In Accordance With</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> <tr> <td>ID</td> <td>Identification</td> <td>VLAN</td> <td>Virtual Local Area Network</td> </tr> <tr> <td>IPv6</td> <td>Internet Protocol Version 6</td> <td>VPN</td> <td>Virtual Private Network</td> </tr> </tbody> </table>						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	DoD	Department of Defense	QoS	Quality of Service	E2E	End-to-End	RFC	Request For Comment	FR	Functional Requirement	SUT	System Under Test	IAW	In Accordance With	UCR	Unified Capabilities Requirements	ID	Identification	VLAN	Virtual Local Area Network	IPv6	Internet Protocol Version 6	VPN	Virtual Private Network
C2	Command and Control	MPLS	Multiprotocol Label Switching																																						
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DISA	Defense Information Systems Agency	POA&M	Plan of Action and Milestones																																						
DoD	Department of Defense	QoS	Quality of Service																																						
E2E	End-to-End	RFC	Request For Comment																																						
FR	Functional Requirement	SUT	System Under Test																																						
IAW	In Accordance With	UCR	Unified Capabilities Requirements																																						
ID	Identification	VLAN	Virtual Local Area Network																																						
IPv6	Internet Protocol Version 6	VPN	Virtual Private Network																																						

5. In accordance with the Program Manager's request, no detailed test report was developed. JITC distributes IO information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive IO status information is available via the JITC System Tracking Program (STP), which 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 DISN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>. All associated data is available on the DISA Unified Capability Coordination Office (UCCO) website located at <http://www.disa.mil/ucco/>. 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 U.S. Government civilian or uniformed military personnel at the UCCO; e-mail: disa.meade.ns.list.unified-capabilities-certificaion-office@mail.mil.

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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 Ms. Anita Mananquil, DSN 879-5164, commercial (520) 538-5165, FAX DSN 879-4347, commercial (520) 538-4347, or e-mail to anita.l.mananquil.civ@mail.mil. JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The Tracking Number for the SUT is 1126912.

FOR THE COMMANDER:



for BRADLEY A. CLARK
Acting Chief
Battlespace Communications Portfolio

Enclosure a/s

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NSG Interoperability Assessment Team
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Medical Health Systems, JMIS IV&V
Defense Information Systems Agency, GS23

ADDITIONAL REFERENCES

- (c) Office of the DoD Chief Information Officer, "Department of Defense Unified Capabilities Requirements 2008 (UCR 2008), Change 3," September 2011.
- (d) Joint Interoperability Test Command, "ASLAN Component Test Plan (UCTP)," February 2012.
- (e) U.S. Army Information Systems Engineering Command, Technology Integration Center (USAISEC TIC), "Information Assurance (IA) Assessment of Cisco 3560X (Tracking Number 1126912)," 8 June 2012.