DEFENSE INFORMATION SYSTEMS AGENCY
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IN REPLY REFER TO: Joint Interoperability Test Command (JTE) **17 Mar 14**

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Special Interoperability Test Certification of the Brocade ICX6000 Series with Release 7.3.0c

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 (f), 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 Brocade ICX6610-24 and ICX6610-48P Release 7.3.0c are 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 and Distribution switch in a stacked configuration and as a Layer 2/Layer 3 Access switch in either a stacked or single component configuration. The SUT is certified as interoperable for joint use with other ASLAN components listed on the UC APL with the following interfaces: 100/1000Base SX/LX, 10GbaseX, and 10/100/1000BaseT. The other products, listed in Table 1 below, employ the same software and similar hardware as the SUT. JITC analysis determined these systems to be functionally identical to the SUT for interoperability certification purposes and therefore, they are also certified for joint use. 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.

No other configurations, features, or functions, except those cited within this document, are certified by JITC. This certification expires upon changes that could affect interoperability, but

no later than three years from the date of the original Unified Capabilities (UC) Approved Product List (APL) memorandum (24 July 2012).

3. The extension of this certification is based upon Desktop Review (DTR) 5. The original certification, documented in Reference (e), is based on interoperability testing conducted by JITC, review of the vendor's Letters of Compliance (LoC), DISA adjudication of open test discrepancy reports (TDRs), and DISA Certifying Authority (CA) Recommendation. Interoperability testing was conducted by JITC, Fort Huachuca, Arizona, from 12 March through 5 April 2012. Review of the vendor's LoC was completed on 9 April 2012. DISA adjudication of outstanding TDRs was completed on 24 April 2012. The DISA CA provided a positive Recommendation on 13 July 2012 based on the security testing completed by DISA-led IA test teams and published in a separate report, Reference (f). This DTR was requested to include the ICX6450-C12-PD ICX6650-32-ADV ICX6650-32-E-ADV ICX6650-48-E-ADV ICX6650-56-E-ADV components. The ICX6450-C12-PD is the 12 port version of the ICX6450 already in certification. JITC determined Verification & Validation (V&V) testing was required. JITC successfully conducted interoperability V&V testing from 27 January through 7 February 2014 using test procedures derived from Reference (e). The ICX6650-56-E-ADV was tested with the 40G interface. There were no new TDRs opened. The IA posture has not changed. The original IA approval applies to DTR. Therefore, JITC approves this DTR.

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

Table 1. UC APL Product Summary

SUT (See notes 1 and 2.)	Release	Function	Sub-component	Description
Brocade ICX6430-24, ICX6430-24P, ICX6430-48, ICX6430-48P, ICX6450-24 (ICX6450-24-A), ICX6450-24P (ICX6450-24P-A), ICX6450-48 (ICX6450-48-A), ICX6450-48P (ICX6450-48P-A), ICX6610-24-E, ICX6610-24-PE, ICX6610-24-I, ICX6610-24-PI, ICX6610-24P-E, **ICX6610-24P-PE,** ICX6610-24P-I, ICX6610-24P-PI, ICX6610-24F-E, ICX6610-24F-PE, ICX6610-24F-I, ICX6610-24F-PI, ICX6610-48-E, ICX6610-48-PE, ICX6610-48-I, ICX6610-48-PI, ICX6610-48P-E, **ICX6610-48P-PE,** ICX6610-48P-I, ICX6610-48P-PI, ICX6450-C12-PD (See note 3.), ICX6650-32-ADV (See note 3.), ICX6650-32-E-ADV (See note 3.), ICX6650-48-E-ADV (See note 3.), **ICX6650-56-E-ADV** (See note 3.)	8.0.01A (See note 4.)	Core, Distribution, Access	Not Applicable	One rack-unit high stackable switch

NOTES:
1. Components bolded and underlined were tested by JITC. The other components in the family series were not tested; however, they utilize the same software and similar hardware and JITC analysis determined them to be functionally identical for interoperability certification purposes and they are also certified for joint use.
2. DTR2 was requested to update the part numbers for the ICX6450 family products to include "-A". These products are identical to the ones tested; however, they have "-A" for internal tracking purposes.
3. This component was included with DTR 5. The ICX6650-56-E-ADV was tested with the 40G interface.
4. The SUT was updated from Release 7.3.0d to Release 7.3.0f with DTR 3. The SUT was updated from Release 7.3.0f to Release 8.0.01A with DTR 4.

Table 1. UC APL Product Summary (continued)

LEGEND:

APL	Approved Products List	JITC	Joint Interoperability Test Command
DTR	Desktop Review	UC	Unified Capabilities
HPOE	High Power over Ethernet		

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	Certified	The SUT met the CRs and FRs with the following standard: EIA-232.
10Base-X	C	C	C (See note 2.)	5.3.1.3.1	1-6	Certified	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 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).
40000BASE-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). (See note 3.)
Wireless	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Tested	See note 4.

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 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. This interface was included with DTR 5. The ICX6650-56-E-ADV was tested with the 40G interface. This interface meets the minimum requirement of 2:1 blocking for a core and distribution switch.
4. The SUT does not support this interface. This interface is not required for a core, distribution, or access switch.

LEGEND:

802.3ab	1000BaseT Gbps Ethernet over twisted pair at 1 Gbps (125 Mbps)	EIA	Electronic Industries Alliance
802.3ae	10 Gbps Ethernet	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
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	FR	Functional Requirement
		Gbps	Gigabits per second
802.3z	Gigabit Ethernet Standard	ID	Identification
A	Access	IEEE	Institute of Electrical and Electronics Engineers
C	Conditional	Mbps	Megabits per second
Co	Core	R	Required
CR	Capability Requirement	SUT	System Under Test
D	Distribution	UCR	Unified Capabilities Requirements
DTR	Desktop Review		

Table 3. SUT CRs and FR Status

CR/FR ID	Capability/Function	Applicability (See note 1.)	UCR 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
	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	Met
	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 (See note 2.)
	Video services	Required	5.3.1.4.2	Met (See note 2.)
	Data services	Required	5.3.1.4.3	Met (See note 2.)
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 3.)
	Wireless	Conditional	5.3.1.7.2	Not Tested
	Traffic Engineering	Required	5.3.1.7.3	Met (See note 3.)
	Availability	Required	5.3.1.7.6	Met (See note 3.)
	Redundancy	Required	5.3.1.7.7	Met (See notes 3, 4.)
5	**MPLS**			
	MPLS Requirements	Conditional	5.3.1.8.4.1	Not Tested
	MPLS VPN Augmentation to VLANs	Conditional	5.3.1.8.4.2	Not Tested
6	**IPv6 Requirements**			
	Product Requirements	Required	5.3.5.4	Met (See notes 5, 6, 7.)

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 system under test does not need to provide conditional requirements. However, if a capability is provided, it must function according to the specified requirements in order to be certified for that capability.
2. 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 in accordance with deployment guide and engineering guidelines provided in UCR Change 3, paragraph 5.3.1.4.
3. 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 does not create a single point of failure which could impact more than 96 C2 users.
4. The SUT operates in a stack configuration. In the stack, there is an element which is the Master and another which is the Standby. Remaining elements will be Members and may assume the role of standby upon failure of the Master. Upon failure of the Master element, the standby element becomes Master. However, IPv6 streams required up to 25 seconds before they were resumed. If a Member or Standby element of the stack failed, then IPv6 streams resumed within the required 5 seconds. This discrepancy was fixed and successfully tested with DTR 3, which included Release 8.0.01A.
5. The SUT did not support the following IPv6 RFC: RFC 2711. During the original test, IPv6 Multicast routing was not supported. This discrepancy was fixed and verified with the vendor's LoC with DTR 3, which included Release 8.0.01A.

Table 3. SUT CRs and FR Status (continued)

NOTES (continued):
6. The SUT did not support the following IPv6 RFC: RFC 4302. DISA adjudicated this deficiency as minor because this RFC addresses requirements for IPSec, which is not implemented in the fielded configuration. During the original test, IPSec was not supported. This discrepancy was fixed and verified with the vendor's LoC with DTR 3, which included Release 8.0.01A.
7. The SUT did not support the following IPv6 RFC: RFC 5340. During the original test, Open Shortest Path First was not supported. This discrepancy was fixed and verified with the vendor's LoC with DTR 3, which included Release 8.0.01A.

LEGEND:

C2	Command and Control	MPLS	Multiprotocol Label Switching
CR	Capability Requirement	NM	Network Management
DISA	Defense Information Systems Agency	QoS	Quality of Service
DTR	Desktop Review	RFC	Request For Comment
E2E	End-to-End	SUT	System Under Test
FR	Functional Requirement	UCR	Unified Capabilities Requirements
IPSec	Internet Protocol Security	VLAN	Virtual Local Area Network
IPv6	Internet Protocol version 6	VPN	Virtual Private Network
LoC	Letter of Compliance		

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, commercial telephone (520) 538-5159, DSN telephone 879-5159, FAX DSN 879-4347; e-mail address edward.a.mellon.civ@mail.mil; mailing address Joint Interoperability Test Command, ATTN: JTE (Mr. Edward Mellon) P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The UCCO tracking number for the SUT is 1132702.

FOR THE COMMANDER:

Enclosure a/s

for RIC HARRISON
Chief
Networks/Communications and UC Portfolio

JITC Memo, JTE, Extension of the Special Interoperability Test Certification of the Brocade ICX6000 Series with Release 7.3.0c

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ADDITIONAL REFERENCES

(c) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008, Change 3," September 2011
(d) Joint Interoperability Test Command, "ASLAN Component Test Plan (UCTP)," November 2010
(e) Joint Interoperability Test Command, Memo, JTE, "Special Interoperability Test Certification of the Brocade ICX6000 Series with Release 7.3.0c," 20 July 2012
(f) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Brocade ICX Series Release (Rel.) 7.3.0c (Tracking Number 1132702)," 20 July 2012