



DEFENSE INFORMATION SYSTEMS AGENCY

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FORT MEADE, MARYLAND 20755-0549

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

16 Oct 12

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Special Interoperability Test Certification of the Cisco 7600 Series from Internetwork Operating System (IOS) 15.1(3)S2 to IOS 15.1(3)S3

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

2. The Cisco 7609-S with IOS 15.1(3)S2 is hereinafter referred to as the System Under Test (SUT). The SUT meets all of its critical interoperability requirements for joint use within the Defense Information System Network (DISN) as a High Availability Customer Edge Router (CER). When a CER meets the High Availability CER requirements, it is also certified as a Medium Availability with System Quality Factors (SQF), Medium Availability without SQF, and Low Availability CER. The SUT met the High Availability and Medium Availability with SQF with a single chassis and redundant Route Switch Processors (RSPs). The SUT met the critical interoperability requirements set forth in Reference (c), using test procedures derived from Reference (d). The SUT met the critical interoperability requirements for the following Wide Area Network (WAN) interfaces: Institute of Electrical and Electronics Engineers (IEEE) 802.3i (10BaseT), IEEE 802.3u (100BaseT), IEEE 802.3ab (1000BaseT), IEEE 802.3AN-2006 (10GBaseT), Optical Carrier (OC)-3 Packet over Synchronous Optical Network (SONET) (POS), OC-12 POS, OC-48 POS, European Multiplex Rate 3 (E3), Digital Signal Level (DS)1, DS3, and Electronic Industries Alliance (EIA)-530. The SUT also met the critical interoperability requirements for the following Assured Services Local Area Network (ASLAN) interfaces: IEEE 802.3i (10BaseT), IEEE 802.3u (100BaseT), IEEE 802.3ab (1000BaseT), and IEEE 802.3an (10GBaseT). The Cisco 7606-S, 7604, and 7613 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. Additionally, JITC evaluated the 7603-S for interoperability via analysis. The Cisco 7603-S only has three slots and if two of those slots are populated with RSPs, the chassis is limited to one line card creating a single point of failure. Therefore, JITC analysis determined the Cisco 7603-S is only certified as a Medium Availability without SQF and Low Availability. No other configurations, features, or functions, except those cited within this memorandum, 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 Products List (APL) memorandum (13 August 2012).

3. The extension of this certification is based upon Desktop Review (DTR) 1. The original certification 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 of the Information Assurance (IA) configuration, and documented in Reference (e). Interoperability testing was conducted by JITC, Fort Huachuca, Arizona, from 20 February through 30 March 2012. Review of the vendor's LoC was completed on 12 June 2012. DISA adjudication of outstanding TDRs was completed on 10 July 2012. The DISA CA provided a positive Recommendation on 1 June 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 update the SUT from IOS 15.1(3)S2 to IOS 15.1(3)S3. This release includes minor software changes related to commercial functionality and doesn't affect Assured Services. Therefore, JITC approves this DTR. The IA posture has not changed. Therefore, the original IA approval applies to this DTR.

4. The interface, Capability Requirement (CR) and Functional Requirement (FR), and component status of the SUT are listed in Tables 1 and 2. The threshold CR/FRs for CERs are established by Section 5.3.2.14 of Reference (c) and were used to evaluate the interoperability of the SUT.

Table 1. SUT Interface Interoperability Status

Interface	Critical	UCR Reference	Threshold CR/FR (See note.)	Status	Remarks
ASLAN Interfaces					
10Base-X	Yes	5.3.2.4.2 5.3.2.14.9	1-3	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3i (10BaseT) interface.
100Base-X	Yes	5.3.2.4.2 5.3.2.14.9	1-3	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3u (100BaseT) interface.
1000Base-X	No	5.3.2.4.2 5.3.2.14.9	1-3	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3ab (1000BaseT) interface.
10GBase-X	No	5.3.2.4.2 5.3.2.14.9	1-3	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3AN-2006 (10GBaseT) interface.
WAN Interfaces					
10Base-X	Yes	5.3.2.4.2 5.3.2.14.9	1-3	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3i (10BaseT) interface.
100Base-X	Yes	5.3.2.4.2 5.3.2.14.9	1-3	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3u (100BaseT) interface.
1000Base-X	No	5.3.2.4.2 5.3.2.14.9	1-3	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3ab (1000BaseT) interface.
10GBase-X	No	5.3.2.4.2 5.3.2.14.9	1-3	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3AN-2006 (10GBaseT) interface.
DS1	No	5.3.2.14.9	1-2	Certified	The SUT met all critical CRs and FRs for this interface.
DS3	No	5.3.2.14.9	1-2	Certified	The SUT met all critical CRs and FRs for this interface.
E1	No	5.3.2.14.9	1-2	Not Tested	This interface is supported; however, it was not tested and is not required.
E3	No	5.3.2.14.9	1-2	Certified	The SUT met all critical CRs and FRs for this interface.
EIA-530	No	5.3.2.14.9	1-2	Certified	The SUT met all critical CRs and FRs for this interface.

Table 1. SUT Interface Interoperability Status (continued)

Interface	Critical	UCR Reference	Threshold CR/FR (See note.)	Status	Remarks																																																												
WAN Interfaces (continued)																																																																	
OC-X	No	5.3.2.14.9	1-2	Certified	The SUT met all critical CRs and FRs for the OC-3 POS, OC-12 POS, and OC-48 POS interfaces.																																																												
Network Management Interfaces																																																																	
10Base-X	Yes	5.3.2.4.4	4	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3i (10BaseT) interface.																																																												
100Base-X	Yes	5.3.2.4.4	4	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3u (100BaseT) interface.																																																												
1000Base-X	No	5.3.2.4.4 5.3.2.14.9	4	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3ab (1000BaseT) interface.																																																												
<p>NOTE: 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.</p> <p>LEGEND:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">802.3ab</td> <td style="width: 45%;">1000BaseT Gbps Ethernet over twisted pair at 1 Gbps (125 Mbps)</td> <td style="width: 15%;">EIA-530</td> <td style="width: 25%;">Standard for 25-position interface for DTE and DCE employing serial binary data interchange</td> </tr> <tr> <td>802.3AN</td> <td>10GBaseT</td> <td>FR</td> <td>Functional Requirement</td> </tr> <tr> <td>802.3i</td> <td>10BaseT Mbps over twisted pair</td> <td>Gbps</td> <td>Gigabits per second</td> </tr> <tr> <td>802.3u</td> <td>Standard For Carrier Sense Multiple Access With Collision Detection At 100 Mbps</td> <td>IEEE</td> <td>Institute of Electrical and Electronics Engineers</td> </tr> <tr> <td>ASLAN</td> <td>Assured Services Local Area Network</td> <td>LoC</td> <td>Letter of Compliance</td> </tr> <tr> <td>ASLAN</td> <td>Assured Services Local Area Network</td> <td>Mbps</td> <td>Megabits per second</td> </tr> <tr> <td>CR</td> <td>Capability Requirement</td> <td>OC</td> <td>Optical Carrier</td> </tr> <tr> <td>DCE</td> <td>Data Circuit-Terminating Equipment</td> <td>OC-3</td> <td>Optical Carrier Level 3 (155 Mbps)</td> </tr> <tr> <td>DS1</td> <td>Digital Signal Level 1 (1.544 Mbps)</td> <td>OC-12</td> <td>Optical Carrier Level 12 (622 Mbps)</td> </tr> <tr> <td>DS3</td> <td>Digital Signal Level 3 (44.736 Mbps)</td> <td>OC-48</td> <td>Optical Carrier Level 48 (2.448 Gbps)</td> </tr> <tr> <td>DTE</td> <td>Data Terminal Equipment</td> <td>POS</td> <td>Packet over SONET</td> </tr> <tr> <td>E1</td> <td>European Digital Multiplex Rate (2.048 Mbps)</td> <td>SONET</td> <td>Synchronous Optical Network</td> </tr> <tr> <td>E3</td> <td>European Multiplex Rate (34.368 Mbps)</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>EIA</td> <td>Electronic Industries Alliance</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> <tr> <td></td> <td></td> <td>WAN</td> <td>Wide Area Network</td> </tr> </table>						802.3ab	1000BaseT Gbps Ethernet over twisted pair at 1 Gbps (125 Mbps)	EIA-530	Standard for 25-position interface for DTE and DCE employing serial binary data interchange	802.3AN	10GBaseT	FR	Functional Requirement	802.3i	10BaseT Mbps over twisted pair	Gbps	Gigabits per second	802.3u	Standard For Carrier Sense Multiple Access With Collision Detection At 100 Mbps	IEEE	Institute of Electrical and Electronics Engineers	ASLAN	Assured Services Local Area Network	LoC	Letter of Compliance	ASLAN	Assured Services Local Area Network	Mbps	Megabits per second	CR	Capability Requirement	OC	Optical Carrier	DCE	Data Circuit-Terminating Equipment	OC-3	Optical Carrier Level 3 (155 Mbps)	DS1	Digital Signal Level 1 (1.544 Mbps)	OC-12	Optical Carrier Level 12 (622 Mbps)	DS3	Digital Signal Level 3 (44.736 Mbps)	OC-48	Optical Carrier Level 48 (2.448 Gbps)	DTE	Data Terminal Equipment	POS	Packet over SONET	E1	European Digital Multiplex Rate (2.048 Mbps)	SONET	Synchronous Optical Network	E3	European Multiplex Rate (34.368 Mbps)	SUT	System Under Test	EIA	Electronic Industries Alliance	UCR	Unified Capabilities Requirements			WAN	Wide Area Network
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Table 2. SUT CRs and FRs Status

CR/FR ID	Capability/Function	Applicability ¹	UCR Reference	Status	Remarks
Product Interface Requirements					
1	Internal Interface Requirements	Required	5.3.2.4.1	Met	The SUT met all critical CRs and FRs.
	External Physical Interfaces between Network Components	Required	5.3.2.4.2	Met	The SUT met all critical CRs and FRs.
	IP Queue Control Capabilities	Required	5.3.2.17.3.4.2.12 para 1	Met	The SUT met all critical CRs and FRs.
	DSCP	Required	5.3.3.3.2	Met	The SUT met all critical CRs and FRs.
	VVoIP Per-Hop Behavior Requirements	Required	5.3.3.3.3	Met	The SUT met all critical CRs and FRs.
	Traffic Conditioning Requirements	Required	5.3.3.3.4	Met	The SUT met all critical CRs and FRs.
CER Requirements					
2	Traffic Conditioning	Required	5.3.2.14.1	Met	The SUT met all critical CRs and FRs.
	Differentiated Services Support	Required	5.3.2.14.2	Met	The SUT met all critical CRs and FRs.
	Per Hop Behavior Support	Required	5.3.2.14.3	Met	The SUT met all critical CRs and FRs.
	Interface to the LSC/MFSS for Traffic Conditioning	Conditional	5.3.2.14.4	Not Tested	The SUT does not support this feature and it is not required.

Table 2. SUT CRs and FRs Status (continued)

CR/FR ID	Capability/Function	Applicability ¹	UCR Reference	Status	Remarks
CER Requirements (continued)					
2	Interface to the LSC/MFSS for Bandwidth Allocation	Conditional	5.3.2.14.5	Not Tested	The SUT does not support this feature and it is not required.
	Availability	Required	5.3.2.14.7	Met	The SUT met all critical CRs and FRs. The SUT met High Availability CER requirements. ²
	Packet Transit Time	Required	5.3.2.14.8	Met	The SUT met all critical CRs and FRs.
	CER Interfaces and Throughput Support	Required	5.3.2.14.9	Met	The SUT met all critical CRs and FRs.
	Assured VVoIP Latency	Required	5.3.3.4.1	Met	The SUT met all critical CRs and FRs. ³
	Assured VVoIP CE Latency	Required	5.3.3.4.3	Met	The SUT met all critical CRs and FRs. ³
	Assured VVoIP CER-to-CER Latency	Required	5.3.3.4.5	Met	The SUT met all critical CRs and FRs. ³
	Assured VVoIP CER-to-CER Jitter	Required	5.3.3.5.3	Met	The SUT met all critical CRs and FRs. ³
	Assured VVoIP CE Jitter	Required	5.3.3.5.4	Met	The SUT met all critical CRs and FRs. ³
	Assured VVoIP CER-to-CER Packet Loss	Required	5.3.3.6.3	Met	The SUT met all critical CRs and FRs. ³
	Assured VVoIP CE Packet Loss	Required	5.3.3.6.4	Met	The SUT met all critical CRs and FRs. ³
	End-to-End Availability	Required	5.3.3.12.1	Met	The SUT met all critical CRs and FRs. ³
	Availability Design Factors	Required	5.3.3.12.2	Met	The SUT met all critical CRs and FRs. ³
	Product Quality Factors	Required	5.3.3.12.3	Met	The SUT met all critical CRs and FRs. ³
	Layer 1 – Physical Layer	Required	5.3.3.12.4.1	Met	The SUT met all critical CRs and FRs. ³
	Layer 2 – Data Link Layer	Required	5.3.3.12.4.2	Met	The SUT met all critical CRs and FRs. ³
	Provisioning	Required	5.3.3.13	Met	The SUT met all critical CRs and FRs. ³
	IP Routing Protocols	Required	5.3.3.14	Met	The SUT met this requirement with Static Routing, BGP-4, IS-IS, OSPFv2, OSPFv3, and VRRP.
Voice Grade of Service	Required	5.3.3.15	Met	The SUT met all critical CRs and FRs. ³	
Survivability	Required	5.3.3.16	Met	This is an E2E engineering requirement and is not testable in a lab environment. ³	
IPv6 Requirements					
3	IPv6	Required	5.3.3.10	Met	The SUT met all critical CRs and FRs.
	Product Requirements	Required	5.3.5.4	Met	The SUT met all critical CRs and FRs with the following minor exception: The SUT does not support the following RFCs 4301, 4303, and 4552. ^{4,5}
NM Requirements					
4	VVoIP NMS Interface Requirements	Required	5.3.2.4.4	Met	The SUT met all critical CRs and FRs for the 10/100/1000BaseT interfaces. This was met by the vendor's LoC.
	NM Requirements for CERs	Required	5.3.2.18.1	Met	The SUT met all critical CRs and FRs for the 10/100/1000BaseT interfaces. This was met by the vendor's LoC.
	NM	Required	5.3.2.14.6	Met	The SUT met all critical CRs and FRs for the 10/100/1000BaseT interfaces. This was met by testing and the vendor's LoC.

Table 2. 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.			
2. If a CER meets the High Availability CER requirements, it meets all of the lesser requirements for Medium Availability with and without SQF and Low Availability. The Cisco 7609-S meets the High Availability with a single-chassis configuration. The Medium Availability without SQF and Low Availability are met with a single chassis configuration. The Cisco 7606-S, 7604, and 7613 CERs were not tested; however, they employ the same software and similar hardware as the Cisco 7609-S. JITC analysis determined these systems to be functionally identical to the 7609-S for interoperability certification purposes and therefore, they are also certified for joint use. Additionally, JITC evaluated the 7603-S for interoperability via analysis. The Cisco 7603-S only has three slots and if two of those slots are populated with RSPs, the chassis is limited to one line card creating a single point of failure. Therefore, JITC analysis determined the Cisco 7603-S is only certified as a Medium Availability without SQF and Low Availability.			
3. This requirement was verified in an emulated operational environment. To meet E2E requirements, the SUT must be deployed IAW its deployment guide and the engineering guidelines provided in UCR 2008, Change 3, section 5.3.3.			
4. The vendor submitted an IPv6 LoC with the following noted discrepancy: The SUT does not fully support RFCs 4301 and 4303. DISA adjudicated this deficiency as minor because this RFC addresses requirements for IPSec, which is an optional requirement and is not implemented in the certified configuration.			
5. The vendor submitted an IPv6 LoC with the following noted discrepancy: The SUT does not support RFC 4552. DISA NS has accepted and approved the vendor's POA&M and adjudicated this discrepancy as minor.			
LEGEND:			
BGP	Border Gateway Protocol	LoC	Letters of Compliance
CE	Customer Edge	LSC	Local Session Controller
CER	Customer Edge Router	MFSS	Multifunction Softswitch
CR	Capability Requirement	NM	Network Management
DSCP	Differentiated Services Code Point	NMS	Network Management System
E2E	End-to-End	POA&M	Plan of Actions and Milestones
FR	Functional Requirement	RFC	Request for Comments
IAW	in accordance with	OSPF	Open Shortest Path First
ID	Identification	SQF	System Quality Factors
IP	Internet Protocol	SUT	System Under Test
IPv6	Internet Protocol version 6	UCR	Unified Capabilities Requirements
IS-IS	Intermediate System-Intermediate System	RRRP	Virtual Router Redundancy Protocol
JITC	Joint Interoperability Test Command	VVoIP	Voice and Video over Internet Protocol

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). 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.

JITC Memo, JTE, Extension of the Special Interoperability Test Certification of the Cisco 7600 Series from Internetwork Operating System (IOS) 15.1(3)S2 to IOS 15.1(3)S3

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 Tracking Number for the SUT is 1116706.

FOR THE COMMANDER:

Enclosure a/s


for BRADLEY A. CLARK
Acting Chief
Battlespace Communications Portfolio

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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) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008, Change 3," September 2011
- (d) Joint Interoperability Test Command, "Unified Capabilities Test Plan (UCTP)," Draft
- (e) Joint Interoperability Test Command, Memo, JTE, "Special Interoperability Test Certification of the Cisco 7600 Series with Internetwork Operating System (IOS) 15.1(3)S2," 6 August 2012
- (f) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Cisco 7600 Release (Rel.) 15.1(3)S2 (Tracking Number 1116706)," Draft