



DEFENSE INFORMATION SYSTEMS AGENCY

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

4 Mar 15

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Joint Interoperability Certification of the Cisco 29XX and 39XX Series Integrated Services Router (ISR) Generation 2 (G2) with Internetwork Operating System (IOS) 15.2(4)M5

- References: (a) Department of Defense Instruction 8100.04, "DoD Unified Capabilities (UC)," 9 December 2010
(b) Office of the Department of Defense Chief Information Officer, "Department of Defense Unified Capabilities Requirements 2013, Errata 1," 1 July 2013
(c) through (e), see Enclosure

1. Certification Authority. Reference (a) establishes the Joint Interoperability Test Command (JITC) as the Joint Interoperability Certification Authority for the UC products.

2. Conditions of Certification. The Cisco 3945 ISR G2 with IOS 15.2(4)M5; hereinafter referred to as the System Under Test (SUT), is certified for joint use as a Session Border Controller (SBC). The SUT meets the critical requirements of the Unified Capabilities Requirements (UCR), Reference (b), and is certified for joint use as a SBC with the conditions described in Table 1. The Cisco 3945 ISR G2 was the system tested; however, the components listed in Table 4 utilize the same software and similar hardware and JITC analysis determined them to be functionally identical for interoperability certification purposes and they are also covered under this certification. The SUT is certified only to front a Cisco Session Controller (SC), which does not rely on SIP OPTION pings for failover. This certification expires upon changes that could affect interoperability, but no later than 3 years from 01 July 2014 (date of original UC Approved Products List (APL) memorandum). Desktop Review (DTR) 2 was requested to update the SUT from IOS 15.2(4)M7 to IOS 15.4(3)M2. See paragraph 4 test details.

Table 1. Conditions

Table with 3 columns: Condition, Operational Impact, Remarks. Rows include UCR Waivers and Conditions of Fielding, both with 'None.' entries.

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Table 1. Conditions (continued)

Condition	Operational Impact	Remarks																																				
Open Test Discrepancies																																						
During the original test, the SUT did not support ITU-T V.150.1 protocol properly. The SUT did not allow the V.150 SPRT media packets to pass though without manipulating the UDP payload causing the V.150 protocol, and thus secure calls, to fail. This discrepancy was fixed and successfully tested with DTR 2, which included IOS 15.4(3)M2.	None	CLOSED																																				
The SUT does not support a VVoIP IDS/IPS capability that can monitor all VVoIP signaling and media traffic in decrypted form, or support the capability to present all signaling and bearer traffic to an external VVoIP IDS/IPS in a secure manner.	None	See note.																																				
The SUT does not support the capability to generate and transmit an alarm to the NMS when the VVoIP IDS/IPS identifies a threat. The SUT does use SSHv2, but HMAC-SHA1-96 with 160-bit key length isn't the default.	None	See note.																																				
The SUT does not default to HMAC-SHA1-96 with 160-bit key length for data integrity with SSHv2. While HMAC-SHA1-96 is not default, the client can configure HMAC-SHA1-96 with 160-bit key length.	None	See note.																																				
The SUT is not capable of setting Diffie-Hellman-Group14-SHA1 as the preferred key exchange mechanism for SSH. The SUT supports Diffie-Hellman-Group14-SHA1, but does not prefer it.	None	See note.																																				
The SUT uses AES128 as an encryption cipher as an encryption cipher for SNMPv3 instead of the required Data Encryption Standard-Cipher Block Chaining (DES-CBC) (usmDESPrivProtocol), as specified in RFC 3414.	None	See note.																																				
The SUT does not support the encryption algorithm AES128-CBC for SSH sessions.	None	See note.																																				
The SUT does not provide the same or equivalent functions in IPv6 as in IPv4.	Minor	See note.																																				
<p>NOTE: DISA has adjudicated this discrepancy as having a minor operational impact and stated the intent to change this requirement from required to not for interoperability testing in the next version of the UCR. Therefore, there is no operational impact.</p> <p>LEGEND:</p> <table border="0"> <tr> <td>AES</td> <td>Advanced Encryption Standard</td> <td>RFC</td> <td>Request for Comments</td> </tr> <tr> <td>DISA</td> <td>Defense Information Systems Agency</td> <td>SHA</td> <td>Secure Hashing Algorithm</td> </tr> <tr> <td>HMAC</td> <td>Hash-Based Message Authentication Code</td> <td>SSH</td> <td>Secure Shell</td> </tr> <tr> <td>IDS</td> <td>Intrusion Detection System</td> <td>SNMPv3</td> <td>Simple Network Management Protocol version 3</td> </tr> <tr> <td>IPS</td> <td>Intrusion Prevention System</td> <td>SPRT</td> <td>Simple Packet Relay Transport</td> </tr> <tr> <td>IPv4</td> <td>Internet Protocol version 4</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>IPv6</td> <td>Internet Protocol version 6</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> <tr> <td>ITU-T</td> <td>International Telecommunication Union - Telecommunication Standardization Sector</td> <td>UDP</td> <td>User Datagram Protocol</td> </tr> <tr> <td>NMS</td> <td>Network Management System</td> <td>VVoIP</td> <td>Voice and Video over Internet Protocol</td> </tr> </table>			AES	Advanced Encryption Standard	RFC	Request for Comments	DISA	Defense Information Systems Agency	SHA	Secure Hashing Algorithm	HMAC	Hash-Based Message Authentication Code	SSH	Secure Shell	IDS	Intrusion Detection System	SNMPv3	Simple Network Management Protocol version 3	IPS	Intrusion Prevention System	SPRT	Simple Packet Relay Transport	IPv4	Internet Protocol version 4	SUT	System Under Test	IPv6	Internet Protocol version 6	UCR	Unified Capabilities Requirements	ITU-T	International Telecommunication Union - Telecommunication Standardization Sector	UDP	User Datagram Protocol	NMS	Network Management System	VVoIP	Voice and Video over Internet Protocol
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3. **Interoperability Status.** Table 2 provides the SUT interface interoperability status and Table 3 provides the Capability Requirements (CR) and Functional Requirements (FR) status. Table 4 provides the UC APL product summary.

Table 2. Interface Status

Interface (See note 1.)	Threshold CR/FR Requirements (See note 2.)	Status	Remarks
ASLAN/WAN Interfaces			
10BaseT (R)	1, 2, 3, 4, 5, 6, 8, and 9	Met	The SUT met the critical CRs and FRs for the IEEE 802.3i interface.
100BaseT (O)	1, 2, 3, 4, 5, 6, 8, and 9	Met	The SUT met the critical CRs and FRs for the IEEE 802.3u interface.
1000BaseT (O)	1, 2, 3, 4, 5, 6, 8, and 9	Met	The SUT met the critical CRs and FRs for the IEEE 802.3ab interface.
10GBaseT (O)	1, 2, 3, 4, 5, 6, 8, and 9	Not Tested	The SUT does not support this optional interface.

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Table 2. Interface Status (continued)

Interface (See note 1.)	Threshold CR/FR Requirements (See note 2.)	Status	Remarks
Network Management Interfaces			
10BaseT (C)	2, 7, 8	Met	The SUT met the critical CRs and FRs for the IEEE 802.3i interface.
100BaseT (C)	2, 7, 8	Met	The SUT met the critical CRs and FRs for the IEEE 802.3u interface.
1000BaseT (C)	2, 7, 8	Met	The SUT met the critical CRs and FRs for the IEEE 802.3ab interface.
NOTES:			
1. The SUT must provide a minimum of one 10BaseT interface for the ASLAN and WAN side interfaces.			
2. The SUT's high-level capability and functional requirement ID numbers depicted in the CRs/FRs column can be cross-referenced in Table 3.			
LEGEND:			
802.3ab	1000BaseT Gbps Ethernet over twisted pair at 1 Gbps (125 Mbps)	Gbps ID	Gigabits per second Identification
802.3i	10BaseT Mbps over twisted pair	IEEE	Institute of Electrical and Electronics Engineers
802.3u	Standard for carrier sense multiple access with collision detection at 100 Mbps	Mbps	Megabits per second
ASLAN	Assured Services Local Area Network	O	Optional
C	Conditional	R	Required
CR	Capability Requirement	SUT	System Under Test
FR	Functional Requirement	WAN	Wide Area Network

Table 3. SUT Capability Requirements and Functional Requirements Status

CR/FR ID	UCR Requirement (High-Level) (See note 1.)	UCR 2013 Reference	Status
1	SC and SS Failover and Recovery (R)	2.6	Met
2	Product Interface (R)	2.7	Met
3	AS-SIP Gateway Media Interworking (R)	2.11.2/3	Met
4	Enclave Fronting SBC Functionality (R)	2.12.4	Not Tested
5	Remote Media Gateway (C)	2.16.13	Not Tested
6	Session Border Controller (R)	2.17	Partially Met (See note 2.)
7	Management of Network Appliances (R)	2.19	Partially Met (See note 3.)
8	Interoperability Related Information Assurance (R)	4.2	Partially Met (See note 2.)
9	Internet Protocol version 6 (R)	Table 5.2.1	Partially Met (See note 4.)
NOTES:			
1. The annotation of 'required' refers to a high-level requirement category. The applicability of each sub-requirement is provided in Reference (c), Enclosure 3.			
2. The SUT met the requirements with the exceptions noted in Table 1. DISA adjudicated these exceptions as minor.			
3. The SUT met the interoperability related Information Assurance requirements with the minor exceptions noted in Table 1. In addition, security is tested by DISA-led IA test teams and the results published in a separate report, Reference (e).			
4. The SUT partially met this requirement with the vendor's LoC with the exceptions noted in Table 1. In addition, JITC does not currently have an end-to-end IPv6 architecture because the LSCs do not yet support IPv6 end-to-end. Therefore, the IPv6 requirements were not tested and the SUT is not certified for use with end-to-end IPv6.			
LEGEND:			
AS-SIP	Assured Services Session Initiation Protocol	JITC	Joint Interoperability Test Command
C	Conditional	LoC	Letter of Compliance
CR	Capability Requirement	R	Required
DISA	Defense Information Systems Agency	SBC	Session Border Controller
FR	Functional Requirement	SC	Session Controller
IA	Information Assurance	SS	Softswitch
ID	Identification	SUT	System Under Test
IPv6	Internet Protocol version 6	UCR	Unified Capabilities Requirements

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Table 4. UC APL Product Summary

Product Identification			
Product Name	Cisco 29XX and 39XX Series ISR G2		
Software Release	IOS 15.4(3)M2 (See note 1.)		
UC Product Type(s)	Session Border Controller		
Product Description	The SUT performs voice firewall and back-to-back user agent functions.		
Product Components (See note 2.)	Component Name (See note 3.)	Version	Remarks
Session Border Controller	<u>3945 ISR G2</u> , 2911 ISR G2, 2921 ISR G2, 2951 ISR G2, 3925 ISR G2, 3925E ISR G2, 3945E ISR G2	IOS 15.4(3)M2	See notes 1 and 4.
Combined Session Border Controller with Interworking Gateway	<u>3945 ISR G2</u> , 2911 ISR G2, 2921 ISR G2, 2951 ISR G2, 3925 ISR G2, 3925E ISR G2, 3945E ISR G2	IOS 15.4(3)M2	See notes 1 and 4.
NOTES:			
1. The SUT was updated from IOS 15.2(4)M5 to IOS 15.2(4)M7 with DTR 1. The SUT was updated from IOS 15.2(4)M7 to IOS 15.4(3)M2 with DTR 2.			
2. The detailed component and subcomponent list is provided in Reference (e), Enclosure 3.			
3. Components bolded and underlined were tested by JITC. The other components in the family series were not tested, but are also certified for joint use. JITC certifies those additional components because they utilize the same software and similar hardware and JITC analysis determined them to be functionally identical for interoperability certification purposes.			
4. The combined SBC and IWG is an integrated configuration within Cisco IOS software that runs on the Cisco 2900/3900 Integrated Service Routers Generation 2 series. Both SBCs utilize the same IOS and software applications. However, the combined SBC and IWG IOS is configured differently than the non-combined version.			
LEGEND:			
APL	Approved Products List	IWG	Interworking Gateway
DTR	Desktop Review	JITC	Joint Interoperability Test Command
G2	Generation 2	SBC	Session Border Controller
IOS	Internetwork Operating System	SUT	System Under Test
ISR	Integrated Services Router	UC	Unified Capabilities

4. Test Details. The extension of this certification is based upon DTR 2. The original certification, documented in Reference (c), is based on interoperability testing, review of the vendor's Letters of Compliance (LoC), DISA adjudication of open test discrepancy reports (TDRs), and DISA Certifying Authority (CA) Recommendation for inclusion on the UC Approved Products List (APL). The Cisco SBC was previously tested and certified with IOS 15.2(4)M3 under UC Tracking Number 0922204. Additionally, the SUT 3945 with IOS 15.2(4)M5 has been installed in the test network architecture since October 2013 fronting the Cisco UCM 8.6 with no interoperability issues. The SUT has been tested rigorously throughout this time. The SUT test window included open TDRs from previous testing and the requirements that were not previously tested. Testing was conducted at JITC's Global Information Grid Network Test Facility at Fort Huachuca, Arizona, from 26 February through 5 March 2014 using test procedures derived from Reference (d). Review of the vendor's LoC was completed on 19 February 2014. DISA adjudication of outstanding TDRs was completed on 9 April 2014. Information Assurance (IA) testing was conducted by DISA-led IA test teams and the results are published in a separate report, Reference (e). This DTR was requested to update the SUT from IOS 15.2(4)M7 to IOS 15.4(3)M2. This release corrects an International Telecommunication Union – Telecommunication Standardization Sector (ITU-T) V.150.1 interoperability issue. JITC determined this DTR required Verification and Validation (V&V) testing. JITC successfully conducted V&V testing on 23 and 24 February 2015. There were no new TDRs opened as a result of this test. There was one TDR closed as a result of this test. During the original test, the SUT did not support the ITU-T V.150.1 protocol properly. This discrepancy

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was fixed and successfully tested with DTR 2. Additionally, DISA has approved this DTR to include IOS 15.4(3)M2 without IA testing. Therefore, the original IA approval applies to this DTR and JITC approves this DTR.

5. Additional Information. 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. Point of Contact (POC). The JITC point of contact is Mr. Joseph Schulte, commercial telephone (520) 538-5100, DSN telephone 879-5100, FAX DSN 879-4347; e-mail address joseph.t.schulte.civ@mail.mil; mailing address Joint Interoperability Test Command, ATTN: JTE (Mr. Joseph Schulte) P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The UCCO tracking number for the SUT is 1326803.

FOR THE COMMANDER:



for RIC HARRISON
Chief
Networks/Communications and UC Portfolio

Enclosure a/s

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UCCO

ADDITIONAL REFERENCES

- (c) Joint Interoperability Test Command, Memo, JTE, "Joint Interoperability Certification of the Cisco 29XX and 39XX Series Integrated Services Router (ISR) Generation 2 (G2) with Internetwork Operating System (IOS) 15.2(4)M5," 25 April 2014
- (d) Joint Interoperability Test Command, "Session Border Controller (SBC) Test Procedures for Unified Capabilities Requirements (UCR) 2013," Draft
- (e) Joint Interoperability Test Command, "Information Assurance Findings Summary For Cisco 29xx/39xx Integrated Services Router (ISR) Generation (G)2 Release (Rel.) 15.2(4)Maintenance (M)5, Tracking Number 1326803," Draft