



DEFENSE INFORMATION SYSTEMS AGENCY

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

27 September 2022

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Joint Interoperability Certification of the Dell EMC Networking PowerSwitch S4100, S4200, and S5200 Series and N3248TE-ON with Software Release SmartFabric Operating System (OS) 10.5

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, Change 2," September 2017
(c) through (g), see Enclosure

1. Certification Authority. Reference (a) establishes the Joint Interoperability Test Command (JITC) as the Joint Interoperability Certification Authority for the Department of Defense Information Network (DoDIN) products, Reference (b).

2. Conditions of Certification. The Dell EMC Networking PowerSwitch S4100, S4200, and S5200 Series and N3248TE-ON with Software Release SmartFabric Operating System (OS) 10.5 is hereinafter referred to as the System Under Test (SUT). The SUT meets the critical requirements of the Unified Capabilities Requirements, Reference (b), as an Assured Services Local Area Network (ASLAN) Core, Distribution, and Access switch and is certified for joint use with the conditions described in Table 1. This certification expires upon changes that affect interoperability, but no later than the expiration date specified in the DoDIN Approved Products List (APL) memorandum.

This extension of the certification is for Desktop Review (DTR) 3. DTR 3 requested the following updates:

- Update the SUT Software Release version from SmartFabric OS 10.5 to SmartFabric OS 10.5.4.0.
- Extend the DoDIN APL expiration date for an additional three (3) years.
- Remove Dell Switch S4248FBL-ON as End-of-Sale (EOS), effective April 2021. Removal of this switch closes interoperability (IO) Test Discrepancy Report (TDR) DEL-0730-007.
- Partially resolve IO TDR DEL-0730-005 based on re-adjudication.

See Table 1 for updated Conditions, Table 4 for an updated list of certified components, and Paragraph 4 for additional details.

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Table 1. Conditions

Description		Operational Impact	Remarks
UCR Waivers			
None.			
TDR#	Conditions of Fielding		
DEL-0730-002	EDG-000080: Per ASLAN testing and vendor documentation, the SUT does not support PoE IAW either 802.3af-2003 or 802.3at-2009. CoF: The SUT is certified for only data and VVoIP endpoints that do not require PoE, such as CCA, UCCS, and Soft Clients.	Minor with CoF	On 29 October 2019, DISA adjudicated this discrepancy as minor with CoF.
DEL-0730-004	IP6-000490: Per Dell Letter of Compliance, Stateless Address Autoconfiguration and Manual Address Assignment, IAW IP6-000490: Non-Comply - User must select desired flag values when enabling router advertisements. CoF: Managed Address Configuration flags must be set to desired value when implemented by the user. Vendor to include configuration in deployment guide.	Minor with CoF	On 29 October 2019, DISA adjudicated this discrepancy as minor with CoF.
DEL-0730-005	EDG-000210 (Part A): Per IO-3 ASLAN testing, SUT generates VRRPv3 checksums for IPv4 traffic in a different manner than other heterogeneous vendors. CoF: SUT must be configured with VRRPv2 to support Distribution switch failover in less than 5 seconds within an IPv4 infrastructure.	CLOSED (See note 1.)	On 29 October 2019, DISA adjudicated this discrepancy as minor with vendor POA&M. Updated per DTR 2 testing via TN 1907701 for the Dell Z-Series ASLAN.
	EDG-000210 (Part B): Per IO-3 ASLAN testing, SUT recovery time exceeds 5 seconds. CoF: For failback recovery, site required to schedule ASI.	Minor with CoF	On 29 October 2019, DISA adjudicated this discrepancy as minor with CoF.
DEL-0730-006	EDG-000010: Per IO-17 ASLAN testing, S4148U has multiple port profiles, which enable/disable and configure the speed of the 40/100G uplink ports. CoF: S4148U-ON certified as Access Only with port profile 1; other port profiles are not certified.	Minor with CoF	On 29 October 2019, DISA adjudicated this discrepancy as minor with CoF.
DEL-0730-009	EDG-000200: With DTR 1 testing of the N3248TE switch with auto-negotiate test procedure IO-14, the SUT did not support half duplex. CoF: Both sides must be set to auto-negotiate	Minor with CoF	On 6 July 2021, DISA adjudicated this discrepancy as minor with CoF.
DEL-0730-010	EDG-000200: With DTR 1 testing of the N3248TE switch with Force Mode test procedure IO-15, the SUT did not support hard setting to 10/100M or half duplex. CoF: Both sides must be set to auto-negotiate	Minor with CoF	On 6 July 2021, DISA adjudicated this discrepancy as minor with CoF.
TDR#	Open Test Discrepancies		
DEL-0730-003	IP6-000390: Per Dell LoC, Router Advertisement inconsistencies are not logged.	CLOSED (See note 2.)	On 29 October 2019, DISA adjudicated this discrepancy as minor with vendor POA&M. Updated per DTR 1.
DEL-0730-007	EDG-000090: Per IO-13 ASLAN testing and only applying to S4248FBL-ON: SUT re-marks IPv4 DSCP values but does not remark IPv6 DSCP values.	CLOSED (See note 3.)	On 5 November 2019, DISA adjudicated this discrepancy as minor with vendor POA&M. Updated per DTR 3.
DEL-0730-008	Cybersecurity Requirements 4.2: Per Dell LoC, the SUT is partially compliant with CYB-045000 and non-compliant with CYB-056000, CYB-056010, CYB-056020, CYB-059030, CYB-060000, CYB-060010, and CYB-073060.	None UCR Change Requirement	On 15 October 2019, DISA adjudicated this discrepancy as UCR Change Requirement as the CS requirements (Section 4) are designated to be removed in the next official version release of the DCR. Until then, prior adjudications have noted these requirements as change requirements.

(Table continues next page.)

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Table 1. Conditions (continued)

NOTE(S):			
1. TDR DEL-0730-005: On 13 September 2022, DISA re-adjudicated and closed Part A of this TDR based on DTR 2 testing for the Dell Z-Series ASLAN TN 1907701, Reference (c), which demonstrated full support for the VRRPv3 checksums for IPv4 traffic requirement with the SmartFabric OS 10.5.4.0 software certified via DTR 3 with this TN. Part B of this TDR (failback recovery) remains Minor with CoF.			
2. TDR DEL-0730-003: Closed with DTR 1 based on the Vendor's updated LoC showing compliance to IP6-000390 requirements.			
3. TDR DEL-0730-007: Closed with DTR 3 based on removal of the Dell Switch S4248FBL-ON due to EOS, effective April 2021.			
LEGEND:			
802.3af-2003	Power over Ethernet up to 15.4 Watts	IAW	In Accordance With
802.3at-2009	Power over Ethernet up to 25.5 Watts	IO	Interoperability
ASI	Authorized Service Interruption	IP	Internet Protocol
ASLAN	Assured Services Local Area Network	IPv4	Internet Protocol version 4
CCA	Call Connection Agent	IP6/IPv6	Internet Protocol version 6
CoF	Condition of Fielding	LoC	Letter of Compliance
CS	Cybersecurity	POA&M	Plan of Action and Milestones
CYB	Cybersecurity	PoE	Power Over Ethernet
DCR	DoDIN Capabilities Requirements	SUT	System Under Test
DEL	Dell	TDR	Test Discrepancy Report
DISA	Defense Information Systems Agency	TN	Tracking Number
DoDIN	Department of Defense Information Network	UCCS	Unified Capabilities Conference System
DSCP	Differentiated Services Code Point	UCR	Unified Capabilities Requirements
DTR	Desktop Review	VRRP	Virtual Router Redundancy Protocol
EDG	Edge	VRRPv2	VRRP version2
EOS	End-Of-Sale	VRRPv3	VRRP version 3
G	Gigabit	VVoIP	Voice and Video over Internet Protocol

3. Interoperability Status. Table 2 provides the SUT interface interoperability status, Table 3 provides the Capability Requirements and Functional Requirements status, and Table 4 provides a DoDIN APL Product Summary, to include subsequent DTR updates.

Table 2. SUT Interface Status

Interface (See note 1.)	Applicability			Status	Remarks
	Co	D	A		
Network Management Interfaces					
IEEE 802.3i (10BaseT UTP)	C	C	C	Met	
IEEE 802.3u (100BaseT UTP)	C	C	C	Met	
IEEE 802.3ab (1000BaseT UTP)	C	C	C	Met	
Access (User) Interfaces (See note 2.)					
IEEE 802.3i (10BaseT UTP)	C	C	C	Not Tested	See note 3.
IEEE 802.3u (100BaseT UTP)	C	C	C	Not Tested	See note 3.
IEEE 802.3u (100BaseFX)	C	C	C	Not Tested	See note 3.
IEEE 802.3ab (1000BaseT UTP)	C	C	C	Met	See note 4.
IEEE 802.3z (1000BaseX Fiber)	C	C	C	Met	See note 4.
IEEE 802.3bz (2.5/5GBaseX)	O	O	O	Not Tested	See note 3.
IEEE 802.3ae (10GBaseX)	C	C	C	Met	
IEEE 802.3by (25GBaseX)	O	O	O	Met	
IEEE 802.3ba (40GBaseX)	O	O	O	Met	
IEEE 802.3cd (50GBaseX)	O	O	O	Met	
IEEE 802.3ba (100GBaseX)	O	O	O	Met	

(Table continues next page.)

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Table 2. SUT Interface Status (continued)

Interface (See note 1.)	Applicability			Status	Remarks
	Co	D	A		
Uplink (Trunk) Interfaces (See note 2.)					
IEEE 802.3ab (1000BaseT UTP)	C	C	C	Met	See note 4.
IEEE 802.3z (1000BaseX Fiber)	C	C	C	Met	See note 4.
IEEE 802.3bz (2.5/5GBaseX)	O	O	O	Not Tested	See note 3.
IEEE 802.3ae (10GBaseX)	C	C	C	Met	
IEEE 802.3by (25GBaseX)	O	O	O	Met	
IEEE 802.3ba (40GBaseX)	O	O	O	Met	
IEEE 802.3cd (50GBaseX)	O	O	O	Met	
IEEE 802.3ba (100GBaseX)	O	O	O	Met	
NOTE(S):					
1. Table 3 depicts the SUT high-level requirements. Table 3-2 of Enclosure 3 in Reference (d) provides a detailed list of requirements.					
2. Core, Distribution, and Access products must minimally support one of the interfaces listed in this table as conditional for the given role. Other rates and standards may be provided as optional interfaces.					
3. The SUT does not support this (conditional or optional) interface.					
4. USAISEC-TIC tested the 10/25/40/50/100GBaseX interfaces, but not the 1000BaseT and 1GBaseX interfaces. Analysis determined the 1000BaseT and 1GBaseX interfaces are low risk for certification based on the Vendor's Letters of Compliance to comply with the IEEE 802.3 standards and the testing data collected at all other data rates.					
LEGEND:					
A	Access		GBaseX	Gigabit Ethernet over Fiber or Copper	
BaseFX	Megabit Ethernet over Fiber		IEEE	Institute of Electrical and Electronics Engineers	
BaseT	Megabit (Baseband Operation, Twisted Pair) Ethernet		O	Optional	
BaseX	Megabit Ethernet over Fiber or Copper		SUT	System Under Test	
C	Conditional		TIC	Technology Integration Center	
Co	Core		USAISEC	U.S. Army Information Systems Engineering Command	
D	Distribution		UTP	Unshielded Twisted Pair	

Table 3. SUT Capability Requirements and Functional Requirements Status

CR/FR ID	UCR Requirement (High-Level) (See note 1.)	UCR 2013 Change 2 Reference	Status
1	General LAN Switch and Router Product Requirements (R)	7.2.1	Partially Met (See note 2.)
2	LAN Switch and Router Redundancy Requirements (R)	7.2.2	Partially Met (See note 2.)
3	LAN Product Requirements Summary (R)	7.2.3	Partially Met (See notes 2 and 3.)
4	Multiprotocol Label Switching (O)	7.2.4	Not Tested (See note 4.)
5	IPv6	5.2	Partially Met (See note 2.)
NOTE(S):			
1. The annotation of "required" refers to a high-level requirement category. Enclosure 3 of Reference (d) addresses the applicability of each sub-requirement.			
2. Reference Table 1 for conditions.			
3. A USAISEC-TIC-led Cybersecurity test team conducted Security testing and published the results in a separate report, Reference (e).			
4. The SUT does not support this optional requirement.			
LEGEND:			
CR	Capability Requirement	R	Required
FR	Functional Requirement	SUT	System Under Test
ID	Identification	TIC	Technology Integration Center
IPv6	Internet Protocol version 6	UCR	Unified Capabilities Requirements
LAN	Local Area Network	USAISEC	U.S. Army Information Systems Engineering Command
O	Optional		

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Table 4. DoDIN APL Product Summary

Product Identification			
Product Name	Dell EMC Networking PowerSwitch S4100, S4200, and S5200 Series, and N3248TE-ON		
Software Release	SmartFabric OS 10.5 (See note 1.)		
UCR Product Type(s)	ASLAN Core/Distribution/Access Switch		
Product Description	The SUT delivers voice-class availability, 1/10/25/40/50/100 GbE RJ-45/SFP+/QSFP+/QSFP28 for switching VoIP, video, and data traffic.		
DoDIN Certified Function	Component/Sub-component Name (See notes 2, 3, and 4.)	Tested Version (See note 1.)	Remarks
ASLAN Core/Distribution/Access	S4112F-ON S4112T-ON S4128F-ON S4128T-ON S4148F-ON S4148T-ON S4148FE-ON <u>S4148U-ON</u> S4248FB-ON S5212F-ON S5224F-ON <u>S5232F-ON</u> S5248F-ON <u>S5296F-ON</u>	<u>SmartFabric OS 10.5.4.0</u>	Redundant power modules
ASLAN Access	<u>N3248TE-ON</u> (See note 5.)	<u>SmartFabric OS 10.5.4.0</u>	Redundant power modules
NOTE(S):			
1. The SUT was initially certified with Software Release version SmartFabric OS 10.5.1.6. With DTR 3, the SmartFabric OS Software Release version was updated from 10.5.1.6 to 10.5.4.0.			
2. Table 3-3 of Enclosure 3 of Reference (d) provides the detailed component and subcomponent descriptions included in the initial certification.			
3. Components bolded and underlined were tested by USAISEC-TIC. The other components in the family series were not tested; however, JITC certified the other components for joint use because they utilize the same software and similar hardware as tested and certified components and JITC analysis determined they were functionally identical for interoperability certification purposes.			
4. With DTR 3, the S4248FBL-ON model was removed due to End-of-Sale in April 2021.			
5. With DTR 1, the N3245TE-ON model was added to this certification as a Layer2/Layer3 Access only switch based on testing conducted at USAISEC-TIC from 24 May through 11 June 2021 with software patch 10.5.1.6 to the SmartFabric OS 10.5 Software Release version. Furthermore, the N3248TE-ON was submitted as standalone only and is therefore not certified for the stacking configuration.			
LEGEND:			
A	Access	N/A	Not Applicable
APL	Approved Products List	OS	Operating System
ASLAN	Assured Services Local Area Network	QSFP+	Quad Small Form-factor Pluggable Plus
BASE-T	Megabit (Baseband Operation, Twisted Pair) Ethernet	QSFP28	28Mbps Signaled Quad Small Form-factor Pluggable
C	Core	RJ-45	Registered Jack 45
D	Distribution	SFP+	Small Form-factor Pluggable Plus
DoDIN	Department of Defense Information Network	SUT	System Under Test
DTR	Desktop Review	TIC	Technology Integration Center
EMC	Egan, Marino & Curly	UCR	Unified Capabilities Requirements
GbE	Gigabit Ethernet	USAISEC	U.S. Army Information Systems Engineering Command
JITC	Joint Interoperability Test Command	VoIP	Voice over Internet Protocol

4. Test Details. This extension of the certification is based on DTR 3. The original certification, documented in Reference (d), was based on IO testing, review of the Vendor's Letters of Compliance (LoC), DISA adjudication of open TDRs, and the DISA Certifying Authority Recommendation for inclusion on the DoDIN APL. The United States Army Information Systems Engineering Command (USAISEC), Mission Engineering Directorate (MED), Technology Integration Center (TIC), hereafter referred to as USAISEC-TIC, conducted testing at Fort Huachuca, Arizona, from 19 August through 20 September 2019, using test procedures derived from Reference (f) and completed review of the Vendor's LoC on

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1 October 2019. DISA completed adjudication of outstanding TDRs on 5 November 2019. A USAISEC-TIC-led Cybersecurity (CS) test team conducted CS testing and published the results in a separate report, Reference (e). Enclosure 2 of Reference (d) documents the test results and describes the tested network and system configurations. Enclosure 3 of Reference (d) provides the detailed interface, capability, and functional requirements and test results.

DTR 3 requested the following updates:

- Update the SUT Software Release version from SmartFabric OS 10.5 to SmartFabric OS 10.5.4.0.
- Extend the DoDIN APL expiration date for an additional three (3) years.
- Remove Dell Switch S4248FBL-ON as EOS, effective April 2021. Removal of this switch closes IO TDR DEL-0730-007.
- Partially resolve IO TDR DEL-0730-005 based on re-adjudication.

JITC analysis determined no additional CS or IO testing was required because the software update to implement minor enhancements and bug fixes and the removal of the EOS component did not change the certified IO features and functions or approved CS posture of the SUT. Additionally, with removal of the S4248FBL-ON switch corresponding TDR DEL-0730-007 was closed, and on 13 September 2022 DISA re-adjudicated and closed Part A of TDR DEL-0730-005 based on DTR 2 testing for the Dell Z-Series ASLAN TN 1907701, Reference (c), which demonstrated full support for the VRRPv3 checksums for IPv4 traffic requirement with the SmartFabric OS 10.5.4.0 software. See Table 1 for updated conditions. Analysis of the DTR 3 request was performed based on current UCR 2013 Change 2 test procedures, Reference (g). Furthermore, there were no past due CS or IO Vendor POA&Ms.

Based on analysis, no change to the certified SUT IO features and functions, and no past due IO Vendor POA&Ms, JITC approves DTR 3 with the updated conditions noted in Table 1.

In addition, the current CS posture of the SUT is documented in a separate report, Reference (e).

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 Industry Toolkit (JIT) at <https://jit.fhu.disa.mil/>. Due to the sensitivity of the information, the CS Assessment Package containing the approved configuration and deployment guide must be requested directly from the Approved Products Certification Office (APCO) via e-mail: disa.meade.ie.list.approved-products-certification-office@mail.mil. All associated information is available on the DISA APCO website located at <https://aplits.disa.mil/>.

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6. Point of Contact (POC). JITC POC: Ms. Lorraine Gardner, commercial telephone (520) 538-5221, DSN telephone 312-879-5221, FAX DSN 312-879-4347; e-mail address: lorraine.gardner.civ@mail.mil; mailing address: Joint Interoperability Test Command, ATTN: JTE (Ms. Lorraine Gardner), P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The APCO TN for the SUT is 1905804.

FOR THE COMMANDER:

Enclosure a/s

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ADDITIONAL REFERENCES

- (c) JITC Memo, JTE, “Extension of the Joint Interoperability Certification of the Dell EMC Networking PowerSwitch Z9264F-ON, Z9332F-ON, and Z9432F-ON with Software Release SmartFabric Operating System (OS) 10.5,” 03 August 2021 (Tracking Number 1907701, DTR 2)
- (d) Joint Interoperability Test Command (JITC) Memo, JTE, “Joint Interoperability Certification of the Dell EMC Networking PowerSwitch S4100, S4200, and S5200 Series with Software Release SmartFabric OS 10.5, December 2019
- (e) JITC, “Cybersecurity Assessment Report for Dell EMC Networking PowerSwitch S-Series Switches, Software Release SmartFabric Operating System (OS) 10.5 (Tracking Number 1905804),” September 2022
- (f) JITC, “Assured Services Local Area Network (ASLAN) and Non-ASLAN Test Procedures Version 1.0 for Unified Capabilities Requirements (UCR) 2013 Change 2,” October 2017
- (g) JITC, “Assured Services Local Area Network (ASLAN) and Non-ASLAN Test Procedures Version 1.1 For Unified Capabilities Requirements (UCR) 2013 Change 2,” April 2022 (Draft)