



DEFENSE INFORMATION SYSTEMS AGENCY

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

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Joint Interoperability Certification of the Dell EMC PowerMax Array and Management User Interface with Software Release 10.0

- 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 (f), 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 PowerMax Array and Management User Interface with Software Release 10.0, hereinafter referred to as the System Under Test (SUT), meets the critical requirements of the Unified Capabilities Requirements, Reference (b), as a Data Storage Controller (DSC) and is certified for joint use with the conditions listed in Table 1. This certification expires upon changes that affect interoperability, but no later than the expiration date listed in the DoDIN Approved Products List (APL) memorandum.

This extension of the certification is for Desktop Review (DTR) 2. DTR 2 was requested to update the SUT Software Release version from 9.2.1 to 10.0 and add the PowerMax 2500 and 8500 hardware platforms to the list of certified SUT components.

See Table 4 for an updated list of certified SUT components and Paragraph 4 for additional details.

Table 1. Conditions

Description		Operational Impact	Remarks
UCR Waivers			
None.			
TDR#	Conditions of Fielding		
	None.		

(Table continues next page.)

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Table 1. Conditions (continued)

Description		Operational Impact	Remarks
TDR#	Open Test Discrepancies		
DMC-0746-014	DAT-000420: Per the LoC, the SUT relies on the underlying OS of the host server and the site RAE infrastructure to meet the NIS Client directory service requirement; therefore, the SUT does not comply with this requirement.	None UCR Change Requirement	DISA adjudicated this discrepancy as a UCR Change Requirement.
DMC-0746-015	DAT-000430: Per the LoC, the SUT relies on the underlying OS of the host server and the site RAE infrastructure to meet the NIS Netgroups Client directory service requirement; therefore, the SUT does not comply with this requirement.	None UCR Change Requirement	DISA adjudicated this discrepancy as a UCR Change Requirement.
DMC-0746-017	DAT-000550: Per Vendor LoC, the site provided Windows Server hosting the Unisphere for PowerMax provides the necessary functionality to address this requirement. However, the SUT does not comply with L3 CoS and QoS requirements because the Windows Server is not part of the SUT.	None UCR Change Requirement	DISA adjudicated this discrepancy as a UCR Change Requirement.
LEGEND:			
CoS	Class of Service	OS	Operating System
DAT	Data Storage Requirement	QoS	Quality of Service
DISA	Defense Information Systems Agency	RAE	Required Ancillary Equipment
DMC	Dell EMC	SUT	System Under Test
L3	Layer 3	TDR	Test Discrepancy Report
LoC	Letter of Compliance	UCR	Unified Capabilities Requirements
NIS	Network Information Service		

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
Network Attached Storage (NAS) Interfaces			
GbE IAW IEEE 802.3ae	C	Not Tested	See note 2.
10 GbE IAW IEEE 802.3ab	C	Not Tested	See note 2.
Storage Array Net (SAN) Interface			
8 Gbps Fibre Channel (FC)	C	Met	See note 3.
FC physical interfaces and FCP interfaces IAW ANSI X3.230, X3.297, and X3.303	C	Not Tested	See note 4.
Out-of-band Management Interfaces			
10 Mbps Ethernet	C	Not Tested	See note 4.
100 Mbps Ethernet	C	Not Tested	See note 4.
1 GbE Ethernet	C	Not Tested	See note 4.
Converged Network Adapter (CNA) Interfaces			
FCoE services over a 10 GbE physical interface IAW ANSI T11 FC-BB-5 standard for FCoE with a CNA	O	Not Tested	See note 4.
Data Center Bridging also known as Converged Enhanced Ethernet features IAW IEEE 802.1Qbb for Priority-Based Flow Control	O	Not Tested	See note 4.
Data Center Bridging also known as Converged Enhanced Ethernet features IAW IEEE for Enhanced Transmission Selection	O	Not Tested	See note 4.
Data Center Bridging also known as Converged Enhanced Ethernet features IAW IEEE 802.1Qaz Data Center Bridging Exchange Protocol	O	Not Tested	See note 4.
Data Center Bridging also known as Converged Enhanced Ethernet features IAW IEEE 802.1Qau for Congestion Notification	O	Not Tested	See note 4.

(Table continues next page.)

Table 2. SUT Interface Status (continued)

NOTE(S):		
1. Table 3 depicts the SUT high-level requirements. Table 3-2 of Enclosure 3 in Reference (c) provides a detailed list of requirements.		
2. This SUT interface was not interoperability tested but met this interface requirement based on the Vendor's LoC.		
3. This interface was validated when the SUT was functionally tested during CS testing.		
4. This optional/conditional interface was not tested.		
LEGEND:		
802.1Qau	Congestion notification	FCP Fibre Channel Protocol
802.1Qaz	Enhanced transmission selection	GbE Gigabit Ethernet
802.1Qbb	Priority based flow control	Gbps Gigabit per second
802.3ab	1000BaseT Gbps Ethernet over Twisted Pair	IAW In Accordance With
802.3ae	10 Gbps Ethernet over Fiber	IEEE Institute of Electrical and Electronics Engineers
ANSI	American National Standards Institute	LoC Letter of Compliance
BB	Backbone	Mbps Megabits per second
C	Conditional	NAS Network Attached Storage
CNA	Converged Network Adapter	O Optional
FC	Fibre channel	SAN Storage Array Net
FCoE	Fibre Channel over Ethernet	SUT System Under Test

Table 3. SUT Capability Requirements and Functional Requirements Status

CR/FR ID	UCR Requirement (High-Level) (See note 1.)	UCR 2013 Reference	Status
1	Cybersecurity (R)	Section 4	Met (See note 2.)
2	Data Storage Controller (DSC) (R)	Section 14	Partially Met (See note 3.)
3	IPv6 (R)	Section 5	Met (See note 3.)

NOTE(S):			
1. The annotation of 'required' refers to a high-level requirement category. Refer to Enclosure 3 of Reference (c) for the applicability of each sub-requirement.			
2. A USAISEC-TIC-led CS test team conducted CS testing and published the results in a separate report, Reference (d).			
3. JITC accepted the Vendor's LoC in lieu of IO testing; therefore, the SUT CR/FR status is based on USAISEC-TIC and JITC analysis of the Vendor's LoC. See Table 1 for SUT limitations and conditions.			
LEGEND:			
CR	Capability Requirement	JITC	Joint Interoperability Test Command
CS	Cybersecurity	LoC	Letter of Compliance
DSC	Data Storage Controller	R	Required
FR	Functional Requirement	SUT	System Under Test
ID	Identification	TIC	Technology Integration Center
IO	Interoperability	UCR	Unified Capabilities Requirements
IPv6	Internet Protocol version 6	USAISEC	U.S. Army Information Systems Engineering Command

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Table 4. DoDIN APL Product Summary

Product Identification			
Product Name	Dell EMC PowerMax Array and Management UI		
Software Release	10.0 (See note 1.)		
UCR Product Type(s)	Data Storage Controller		
Product Description	Dell PowerMax array is an external flash storage array accessible for I/O and management over SAN.		
Product Components	Component Name (See notes 2 and 3.)	Tested Version (See note 1.)	Remarks
Dell EMC PowerMAX Array with Management UI	<u>PowerMax 2000 Array</u> PowerMax 8000 Array PowerMax 2500 Array (See note 4.) PowerMax 8500 Array (See note 4.)	10.0.0	
	<u>Unisphere for PowerMax</u>	10.0.0	
	<u>Solutions Enabler</u>	10.0.0	
	<u>Host Server</u> (Site provided)	Windows Server 2016	
	FC Supported Server	See note 5.	
	Client Workstation (GFE/site-provided)	Windows 10	
		Axway Desktop Validator 4.12.0.134 ActivClient 7.0.2.448	
NOTE(S):			
1. The SUT was initially certified with Software Release version 9.1. Subsequent DTRs updated the SUT Software Release version as follows: DTR 1 - from 9.1 to 9.2.1. DTR 2 - from 9.2.1 to 10.0.			
2. Table 3-3 in Enclosure 3 of Reference (c) provides the detailed descriptions on the initially tested components and sub-components.			
3. Components bolded and underlined were functionally 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.			
4. With DTR 2, the PowerMax 2500 and 8500 hardware platforms were added with Release 10.0 by analysis (no testing) and similarity to the currently certified PowerMax 2000 Array.			
5. The FC Supported Server is a Generic Linux or Windows OS Server supporting CIFS, NFS, Load-Balancing, LDAP, GNS, and other required OS functions for Dell PowerMax as a Data Storage Controller. The "FC Supported Server" was added to the SUT in June 2021, approximately a year after the initial and only Cybersecurity testing was completed on SUT in 2020. The "FC Supported Server" was not Cybersecurity tested because it did not include any vendor software and only requires a STIG'ed Windows or Linux OS that can be configured to support LDAP, DNS, GNS, NIS, CIFS, and NFS and other protocols for IP traffic.			
LEGEND:			
APL	Approved Products List	NA	Not Applicable
CIFS	Common Internet File System	NFS	Network File System
DoDIN	Department of Defense Information Network	NIS	Network Information Service
DNS	Domain Name Server	OS	Operating System
DTR	Desktop Review	SAN	Storage Area Network
FC	Fibre Channel	STIG	Security Technical Implementation Guide
GFE	Government Furnished Equipment	SUT	System Under Test
GNS	Global Name Service	TIC	Technology Integration Center
I/O	Input / Output	UCR	Unified Capabilities Requirements
IP	Internet Protocol	UI	User Interface
JITC	Joint Interoperability Test Command	USAISEC	U.S. Army Information Systems Engineering Command
LDAP	Lightweight Directory Access Protocol		

4. Test Details. This extension of the certification is based on DTR 2. The original certification, documented in Reference (c), was based on interoperability (IO) testing, review of the Vendor's Letter of Compliance (LoC), and the DISA Certifying Authority Recommendation for inclusion on the DoDIN APL. JITC accepted the Vendor LoC, Reference (e), in lieu of IO testing; however, the SUT was functionally tested during Cybersecurity (CS) testing. The United States Army Information Systems Engineering Command, Mission Engineering Directorate, Technology Integration Center (USAISEC-MED TIC), hereafter referred to as USAISEC-TIC), Fort Huachuca, Arizona, completed review of the Vendor's LoC on

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30 July 2020. A USAISEC-TIC-led CS test team conducted CS testing and published the results in a separate report, Reference (d). Enclosure 2 of Reference (c) documents the test results and describes the tested network and system configurations. Enclosure 3 of Reference (c) provides a detailed list of the interface, capability, and functional requirements.

DTR 2 was requested to update the SUT Software Release version from 9.2.1 to 10.0 and add the PowerMax 2500 and 8500 hardware platforms to the list of certified SUT components.

JITC analysis determined no additional CS or IO testing was required because the 10.0 software version were mostly user enhancements, regular security updates, and bug fixes, and the new PowerMax 2500 and 8500 models were low risk for certification without additional testing because they had similar hardware and operated on the same 10.0 software as the previously certified PowerMax 2000 Array; therefore, these updates did not change the certified IO features and functions or approved CS posture of the SUT. See Table 4 for an updated list of certified SUT components. In addition, the DTR 2 request was performed based on current UCR 2013 Change 2 test procedures, References (f). Furthermore, there were no past due CS or IO Vendor Plan of Action and Milestones (POA&Ms).

Based on analysis, no change to the certified SUT IO features and functions, and no past due Vendor POA&Ms, JITC approves DTR 2.

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

5. Additional Information. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-but-Sensitive Internet Protocol 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 that contains the approved configuration and deployment guide must be requested directly from the 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://aplots.disa.mil/>.

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6. Point of Contact (POC). JITC certification POC: Ms. Lorraine Gardner; commercial telephone 520-538-5221; email address: lorraine.gardner.civ@mail.mil; mailing address: Joint Interoperability Test Command, ATTN: JTE (Ms. Lorraine Gardner), P.O. Box 12798, Fort Huachuca, Arizona 85670-2798. The APCO tracking number for the SUT is 1923901.

FOR THE COMMANDER:

Enclosure a/s

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Chief
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ADDITIONAL REFERENCES

- (c) Joint Interoperability Test Command (JITC) Memo, JTE, “Joint Interoperability Certification of the Dell EMC PowerMax Array with Management User Interface Software Release 9.1 and Specified Servers,” 24 June 2021
- (d) JITC, “Cybersecurity Assessment Report for Dell EMC PowerMAX Array and Management User Interface (UI), Software Release 10.0, Tracking Number (TN) 1923901,” October 2022
- (e) Dell EMC, “Letter of Compliance (LoC) for Dell EMC PowerMax Array and Management UI Software Release 9.1 TN 1923901,” July 2020
- (f) JITC, Data Storage Controller (DSC) Test Procedures Version 1.2 For Unified Capabilities Requirements (UCR) 2013 Change 2,” April 2022 (Draft)