



DEFENSE INFORMATION SYSTEMS AGENCY

P. O. BOX 549
FORT MEADE, MARYLAND 20755-0549

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

9 December 2022

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Joint Interoperability Certification of the Nutanix Acropolis with Software Release AOS 6.5

- 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 (UCR 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 Nutanix Acropolis with Software Release AOS 6.5, 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 described 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) 4. DTR 4 was requested to update the SUT Software Release version from 6.0.2.6 to 6.5. See Paragraph 4 for additional details.

Table 1. Conditions

Table with 3 columns: Description, Operational Impact, Remarks. Rows include UCR Waivers and Conditions of Fielding.

(Table continues next page.)

Table 1. Conditions (continued)

Description		Operational Impact	Remarks
TDR #	Open Test Discrepancies		
NA-0760-001	The SUT does not support Redundant Array of Independent Disks (RAID). The SUT supports Redundancy Factor 2 and Redundancy Factor 3 in lieu of RAID-5 and RAID-6. DISA adjudicated this discrepancy as a Change Requirement with the intent to change this requirement to state RAID-5 or RAID-6 or equivalency.	None UCR Change Requirement	See note.
NA-0760-002	The SUT does not support Common Internet File System (CIFS) version 1.0. DISA adjudicated this discrepancy as a Change Requirement with the intent to update this requirement to CIFS version 2.0/SMB 2.0 at a minimum.	None UCR Change Requirement	See note.
NA-0760-005	The SUT does not support Network Information Services (NIS). DISA adjudicated this discrepancy as a Change Requirement with the intent to change this requirement to conditional.	None UCR Change Requirement	See note.
NA-0760-006	The SUT does not support internet Storage Name Service (iSNS). DISA adjudicated this discrepancy as a Change Requirement with the intent to change this requirement to conditional.	None UCR Change Requirement	See note.
NOTE(S): DISA adjudicated this discrepancy as a UCR Change Requirement.			
LEGEND:			
CIFS	Common Internet File System	SMB	Server Message Block
DISA	Defense Information Systems Agency	SUT	System Under Test
iSNS	internet Storage Name Service	TDR	Test Discrepancy Report
NIS	Network Information Services	UCR	Unified Capabilities Requirement
RAID	Redundant Array of Independent Disks		

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 the DoDIN APL Product Summary, to include subsequent DTR updates.

Table 2. SUT Interface Status

Interface (See note 1.)	Applicability R/O/C	Status	Remarks
Network Attached Storage Interface			
GbE IAW IEEE 802.3ae	C	Met	
10 GbE IAW IEEE 802.3ab	C	Met	See note 2.
Storage Array Network Interface			
FC physical interfaces and FCP interfaces IAW ANSI X3.230, X3.297, and X3.303	C	Not Tested	See note 3.
Out-of-band Management Interfaces			
10 Mbps Ethernet	C	Met	
100 Mbps Ethernet	C	Met	
1 GbE Ethernet	C	Met	See note 4.
Converged Network Adapter 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 5.
Data Center Bridging also known as Converged Enhanced Ethernet features IAW IEEE 802.1Qbb for Priority-Based Flow Control	O	Not Tested	See note 5.
Data Center Bridging also known as Converged Enhanced Ethernet features IAW IEEE 802.1Qaz for Enhanced Transmission Selection	O	Not Tested	See note 5.

(Table continues next page.)

Table 2. SUT Interface Status (continued)

Interface (See note 1.)	Applicability R/O/C	Status	Remarks																																								
Converged Network Adapter Interfaces (continued)																																											
Data Center Bridging also known as Converged Enhanced Ethernet features IAW IEEE 802.1Qaz Data Center Bridging Exchange Protocol	O	Not Tested	See note 5.																																								
Data Center Bridging also known as Converged Enhanced Ethernet features IAW IEEE 802.1Qau for Congestion Notification	O	Not Tested	See note 5.																																								
<p>NOTE(S):</p> <ol style="list-style-type: none"> Table 3 depicts the SUT high-level requirements. Refer to Enclosure 3 of Reference (c) for a detailed list of requirements. The SUT supports 1000BaseT and 10 GbE for data traffic; however, 10 GbE was the only interface tested. Based on JITC analysis of the interoperability test results of the 10 GbE interface, and the Vendor's LoC, the 1000BaseT interface is also certified for joint use. The SUT is a DSC and is not required to support optional Storage Array Network interfaces. The SUT supports 10/100/1000BaseT interfaces for out of band management; however, 1000BaseT was the only interface tested. Based on JITC analysis of the interoperability test results of the 1000BaseT interface, and the Vendor's LoC, the 10BaseT and 100BaseT interfaces are also certified for joint use. The Vendor's LoC states they do not comply with this optional requirement and therefore, it is not included in this certification. <p>LEGEND:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">802.3ab</td> <td style="width: 33%;">1000BaseT Gbps Ethernet over Twisted Pair</td> <td style="width: 33%;">GbE</td> <td style="width: 33%;">Gigabit Ethernet</td> </tr> <tr> <td>802.3ae</td> <td>10 Gbps Ethernet over Fiber</td> <td>Gbps</td> <td>Gigabits per second</td> </tr> <tr> <td>ANSI</td> <td>American National Standards Institute</td> <td>IAW</td> <td>In Accordance With</td> </tr> <tr> <td>BaseT</td> <td>Megabit (Baseband Operation, Twisted Pair) Ethernet</td> <td>IEEE</td> <td>Institute of Electrical and Electronics Engineers</td> </tr> <tr> <td>BB</td> <td>Backbone</td> <td>JITC</td> <td>Joint Interoperability Test Command</td> </tr> <tr> <td>C</td> <td>Conditional</td> <td>LoC</td> <td>Letter of Compliance</td> </tr> <tr> <td>DSC</td> <td>Data Storage Controller</td> <td>Mbps</td> <td>Megabits per second</td> </tr> <tr> <td>FC</td> <td>Fibre Channel</td> <td>O</td> <td>Optional</td> </tr> <tr> <td>FCoE</td> <td>Fibre Channel over Ethernet</td> <td>R</td> <td>Required</td> </tr> <tr> <td>FCP</td> <td>FC Protocol</td> <td>SUT</td> <td>System Under Test</td> </tr> </table>				802.3ab	1000BaseT Gbps Ethernet over Twisted Pair	GbE	Gigabit Ethernet	802.3ae	10 Gbps Ethernet over Fiber	Gbps	Gigabits per second	ANSI	American National Standards Institute	IAW	In Accordance With	BaseT	Megabit (Baseband Operation, Twisted Pair) Ethernet	IEEE	Institute of Electrical and Electronics Engineers	BB	Backbone	JITC	Joint Interoperability Test Command	C	Conditional	LoC	Letter of Compliance	DSC	Data Storage Controller	Mbps	Megabits per second	FC	Fibre Channel	O	Optional	FCoE	Fibre Channel over Ethernet	R	Required	FCP	FC Protocol	SUT	System Under Test
802.3ab	1000BaseT Gbps Ethernet over Twisted Pair	GbE	Gigabit Ethernet																																								
802.3ae	10 Gbps Ethernet over Fiber	Gbps	Gigabits per second																																								
ANSI	American National Standards Institute	IAW	In Accordance With																																								
BaseT	Megabit (Baseband Operation, Twisted Pair) Ethernet	IEEE	Institute of Electrical and Electronics Engineers																																								
BB	Backbone	JITC	Joint Interoperability Test Command																																								
C	Conditional	LoC	Letter of Compliance																																								
DSC	Data Storage Controller	Mbps	Megabits per second																																								
FC	Fibre Channel	O	Optional																																								
FCoE	Fibre Channel over Ethernet	R	Required																																								
FCP	FC Protocol	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	Data Storage Controller (DSC) (R)	Section 14	Partially Met (See note 2.)																
2	IPv6 (R)	Section 5	Met																
<p>NOTE(S):</p> <ol style="list-style-type: none"> The annotation of 'required' refers to a high-level requirement category. Table 3-2 in Enclosure 3 of Reference (c) provides the applicability of each sub-requirement. The SUT met the requirements with the exceptions noted in Table 1. <p>LEGEND:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">CR</td> <td style="width: 33%;">Capability Requirement</td> <td style="width: 33%;">IPv6</td> <td style="width: 33%;">Internet Protocol version 6</td> </tr> <tr> <td>DSC</td> <td>Data Storage Controller</td> <td>R</td> <td>Required</td> </tr> <tr> <td>FR</td> <td>Functional Requirement</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>ID</td> <td>Identification</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> </table>				CR	Capability Requirement	IPv6	Internet Protocol version 6	DSC	Data Storage Controller	R	Required	FR	Functional Requirement	SUT	System Under Test	ID	Identification	UCR	Unified Capabilities Requirements
CR	Capability Requirement	IPv6	Internet Protocol version 6																
DSC	Data Storage Controller	R	Required																
FR	Functional Requirement	SUT	System Under Test																
ID	Identification	UCR	Unified Capabilities Requirements																

Table 4. DoDIN APL Product Summary

Product Identification																																							
Product Name	Nutanix Acropolis																																						
Software Release	AOS 6.5 (See note 1.)																																						
UCR Product Type(s)	DSC (Data Storage Controller)																																						
Product Description	The SUT includes AHV, a native virtualization solution, and additionally supports the virtualization solutions of VMware ESXi, and Microsoft Hyper-V. The SUT provides a set of software-defined platform services to allow IT organizations to consolidate their workloads on the Nutanix platform and manage them centrally. The SUT employs MapReduce technology which provides distributed Enterprise grade storage with no single points of failure and negligible impact to the real-time performance. The SUT provides a set of services to visualize the network, automate common network operations, and secure the network through native services and partner integration. All nodes in the SUT cluster converge to provide a unified pool of tiered storage and present resources to VMs for access.																																						
Product Components (See note 2.)	Component Name (See notes 3, 4, and 5.)	Tested Version (See note 1.)	Remarks																																				
Nutanix Acropolis	<u>NX-3060-G7 (x2)</u> NX-1065-G7 NX-1065-G8 NX-1175S-G7 NX-1175S-G8 NX-3060-G8 NX-3155G-G7 NX-3155G-G8 NX-3170-G7 NX-3170-G8 NX-8035-G7 NX-8035-G8 NX-8150-G7 NX-8150-G8 NX-8155-G7 NX-8155-G8 NX-8170-G7 NX-8170-G8	AOS 6.5 AHV 20201105.30281 CentOS 7.9.2009 Envoy Reverse Proxy 1.12.2 FSVM 4.1 OpenJDK 1.8.0_322	N/A																																				
NOTE(S): 1. The SUT was initially certified with Software Release version AOS 5.2. Subsequent DTRs updated the AOS Software Release version as follows: DTR 1 - from 5.2 to 6.0.2.6; DTR 4 - 6.0.2.6 to 6.5. 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 tested by JITC. 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 2, the following models were added without testing based on analysis and similarity to the previously tested and certified NX-3060-G7: NX-1065-G8, NX-3060-G8, NX-3155G-G8, NX-3170-G8, NX-8150-G8, NX-8155-G8 and NX-8170-G8. 5. With DTR 3, the NX-1175S-G8 and NX-8035-G8 models were added without testing based analysis and similarity to the previously certified NX 3060-G7 model.																																							
LEGEND: <table style="width: 100%; border: none;"> <tr> <td>AHV</td> <td>Acropolis Hyper Visor</td> <td>IT</td> <td>Information Technology</td> </tr> <tr> <td>AOS</td> <td>Acropolis Operating System</td> <td>JITC</td> <td>Joint Interoperability Test Command</td> </tr> <tr> <td>APL</td> <td>Approved Products List</td> <td>N/A</td> <td>Not Applicable</td> </tr> <tr> <td>CentOS</td> <td>Community ENTerprise Operating System</td> <td>NX</td> <td>Nutanix</td> </tr> <tr> <td>DoDIN</td> <td>Department of Defense Information Network</td> <td>OpenJDK</td> <td>Open Java Development Kit</td> </tr> <tr> <td>DSC</td> <td>Data Storage Controller</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>DTR</td> <td>Desktop Review</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> <tr> <td>ESXi</td> <td>Elastic Sky X integrated</td> <td>VM</td> <td>Virtual Machine</td> </tr> <tr> <td>FSVM</td> <td>File Server Virtual Machine</td> <td></td> <td></td> </tr> </table>				AHV	Acropolis Hyper Visor	IT	Information Technology	AOS	Acropolis Operating System	JITC	Joint Interoperability Test Command	APL	Approved Products List	N/A	Not Applicable	CentOS	Community ENTerprise Operating System	NX	Nutanix	DoDIN	Department of Defense Information Network	OpenJDK	Open Java Development Kit	DSC	Data Storage Controller	SUT	System Under Test	DTR	Desktop Review	UCR	Unified Capabilities Requirements	ESXi	Elastic Sky X integrated	VM	Virtual Machine	FSVM	File Server Virtual Machine		
AHV	Acropolis Hyper Visor	IT	Information Technology																																				
AOS	Acropolis Operating System	JITC	Joint Interoperability Test Command																																				
APL	Approved Products List	N/A	Not Applicable																																				
CentOS	Community ENTerprise Operating System	NX	Nutanix																																				
DoDIN	Department of Defense Information Network	OpenJDK	Open Java Development Kit																																				
DSC	Data Storage Controller	SUT	System Under Test																																				
DTR	Desktop Review	UCR	Unified Capabilities Requirements																																				
ESXi	Elastic Sky X integrated	VM	Virtual Machine																																				
FSVM	File Server Virtual Machine																																						

4. Test Details. This extension of the certification is based on DTR 4. The original certification, documented in Reference (c), was based on interoperability (IO) testing, review of the Vendor’s Letter of Compliance (LoC), Defense Information Systems Agency (DISA) adjudication of open Test Discrepancy Reports (TDRs), and the DISA Certifying Authority Recommendation for inclusion on the DoDIN APL. JITC completed review of the Vendor’s LoC on 4 August 2020 and conducted testing at JITC’s Global Network Test Facility located at

JITC Memo, JTE, Extension of the Joint Interoperability Certification of the Nutanix Acropolis with Software Release AOS 6.5

Fort Huachuca, Arizona, 6 August to 7 August 2020, using test procedures derived from Reference (d). DISA adjudicated outstanding TDRs on 25 August 2020. A follow-on Verification and Validation (V&V) was conducted on 24 May through 28 May to resolve open Cybersecurity (CS) findings and close three IO TDRs. A JITC-led CS test team conducted CS testing and published the results in a separate report, Reference (e). Enclosure 2 of Reference (c) documents the test results and describes the tested network and system configurations. Enclosure 3 of Reference (c) provides the detailed interface, capability, and functional requirements and test results.

DTR 4 was requested to update the SUT Software Release version from 6.0.2.6 to 6.5.

JITC analysis determined no IO or CS testing was required because this update included minor bug fixes, Common Vulnerabilities and Exposures closures with regular security cycles, and Cryptographic Module Validation Program (CMVP) updates that did not change the certified IO features and function or approved CS posture of the SUT. Analysis of the DTR 4 request was performed using current UCR 2013 Change 2 test procedures derived from Reference (f). Furthermore, there are no past due IO or CS Vendor Plan of Action and Milestones (POA&Ms).

Based on analysis, no change to the certified SUT IO features and function, and no past due Vendor POA&Ms, JITC approves DTR 4.

In addition, the current CS posture of the SUT and CMVP updates are documented in a separate report, Reference (e).

5. Additional Information. JITC distributes interoperability information via the JITC Electronic Report Distribution system, which uses Sensitive but Unclassified 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.jitc.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 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/>.

JITC Memo, JTE, Extension of the Joint Interoperability Certification of the Nutanix Acropolis with Software Release AOS 6.5

6. Point of Contact (POC). JITC POC: Ms. Lorraine Gardner, commercial telephone 520-538-5221, DSN telephone number 312-879-5221, FAX DSN 312-879-4347; e-mail address: Lorraine.gardner.civ@mail.mil; mailing address: Joint Interoperability Test Command, ATTN: JTE2 (Ms. Lorraine Gardner), P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The APCO tracking number for the SUT is 1833801.

FOR THE COMMANDER:

Enclosure a/s

LAWRENCE T. DORN
Chief
Specialized Test Division

Distribution (electronic mail):

Joint Staff J-6, JCS
ISG Secretariat, DISA, JT
U.S. Strategic Command, J66
USSOCOM J65
USTRANSCOM J6
US Navy, OPNAV N2/N6FP12
US Army, DA-OSA, CIO/G-6, SAIS-CBC
US Air Force, SAF/A6SA
US Marine Corps, MARCORSSYSCOM, SEAL, CERT Division
US Coast Guard, CG-64
DISA/ISG REP
OUSD Intel, IS&A/Enterprise Programs of Record
DLA, Test Directorate, J621C
NSA/DT
NGA, Compliance and Assessment Team
DOT&E
Medical Health Systems, JMIS PEO T&IVV
HQUSAISEC, AMSEL-IE-ME
APCO

ADDITIONAL REFERENCES

- (c) Joint Interoperability Test Command (JITC) Memo, JTE, “Joint Interoperability Certification of the Nutanix Acropolis with Software Release 5.20,” 19 July 2021
- (d) JITC, “Data Storage Controller (DSC) Test Procedures Version 1.0 for Unified Capabilities Requirements (UCR) 2013 Change 2,” October 2019
- (e) JITC, “Cybersecurity Assessment Report for Nutanix Acropolis, Software Release 6.5, Tracking Number (TN) 1833801,” November 2022
- (f) JITC, “Data Storage Controller (DSC) Test Procedures Version 1.2 for Unified Capabilities Requirements (UCR) 2013 Change 2,” April 2022 (Draft)