STIG Hardening Overview for vSphere with Tanzu: Supervisor Cluster

vSphere with Tanzu 8.0.1

April 2023

vmware

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Revision History

Date	Description of Change
April 2023	Initial Release

Overview

VMware is a trusted partner in highly secure, mission critical systems around the world, including the United States Department of Defense (DoD). In the DoD, all IT systems must adhere to the rigorous Risk Management Framework (RMF) as defined in DoDI 8510.01. A critical component of RMF is the mandatory implementation of Security Technical Implementation Guides (STIGs) and Security Requirements Guidelines (SRGs) as maintained by the Defense Information Systems Agency (DISA).

To support our customers, vSphere with Tanzu is evaluated and hardened against the following standards:

- DISA Kubernetes STIG Version 1 Release 8
- Photon OS 3.0 STIG Readiness Guide Version 1 Release 8

This report will document the product's compliance with this guidance, including any deviations.

Applicability

The contents of this document are applicable to the following product versions:

- vCenter 8.0.1 Build 21560480 Supervisor Nodes

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Supervisor Compliance

vSphere with Tanzu allows organizations to support modern, cloud-native applications using their existing VMware vSphere and VMware Cloud Foundation platforms. When enabled on a vSphere cluster, vSphere with Tanzu provides two methods for operating Kubernetes-based applications: running workloads directly on ESXi hosts using the Supervisor Cluster, and/or creation of standalone, resource-controlled Tanzu Kubernetes clusters.

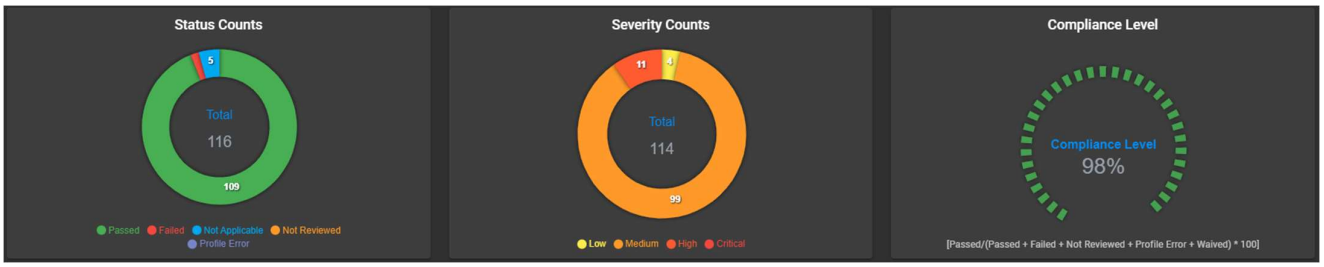
For more information about the architecture of the Supervisor please see the VMware vSphere Product Documentation.

The Supervisor Cluster is enabled through the Workload Management functions inside vSphere. When enabled, three supervisor virtual machines are deployed from an image that resides on vCenter and act as the Kubernetes Control Plane. Supervisor Cluster components are delivered as part of VMware vSphere itself and updated with vSphere Lifecycle Manager as part of regular patching and updates.

The images used to deploy these services have been hardened by default. The Supervisor Cluster component images are not user-serviceable; updates to hardening are released as part of the product update and upgrade processes.

Photon OS 3.0 Compliance - Overall

The Supervisor Cluster virtual machine images are based on Photon OS 3.0. The results for the Photon OS 3.0 STIG Readiness Guide as it applies to each appliance are as follows:



A full list of controls and their statuses is available in the Appendix sections of this document.

Photon OS 3.0 Compliance - Exceptions

Controls listed in the exceptions table are either unmet or require post deployment configuration.

Control ID	NIST 800-53	Title	Justification
PHTN-30-000058	AU-8 (1) (a) AU-8 (1) (b)	The Photon operating system must be configured to synchronize with an approved DoD time source.	By default, the supervisor nodes will sync time with the ESXi host it is running on. Alternatively, NTP servers can be specified in the UI in the network settings for the Supervisor.
PHTN-30-000104	CM-6 b	The Photon operating system must use a reverse-path filter for IPv4 network traffic.	Must be set to “loose” instead of “strict” mode due to the multi-NIC configuration of the supervisor appliances.

Photon OS 3.0 Compliance - N/A Controls

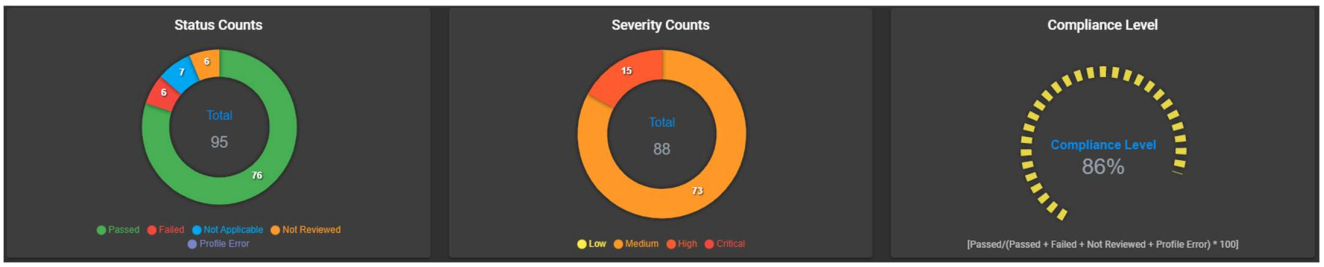
Controls listed in the not applicable table are not applicable in this scenario or require manual review post deployment.

Control ID	NIST 800-53	Title	Justification
PHTN-30-000003	AC-8 a AC-8 c 1	The Photon operating system must display the Standard Mandatory DoD Notice and Consent Banner before granting SSH access.	The DoD login banner is not configured out of the box as it is not appropriate for all customers.

PHTN-30-000031	AC-3	The Photon operating system must require authentication upon booting into single-user and maintenance modes.	A grub boot password is not configured out of the box and due to the immutable nature of these appliances not operationally feasible.
PHTN-30-000039	SI-11 a SI-6 d AC-2 (4) AU-4 (1)	The Photon operating system must configure rsyslog to offload system logs to a central server.	Syslog configuration is inherited from vCenter.
PHTN-30-000041	SI-11 b	The Photon operating system messages file have the correct ownership and file permissions.	The /var/log/messages file does not exist on these appliances.
PHTN-30-000062	IA-11	The Photon operating system must require users to reauthenticate for privilege escalation.	There are no users with sudo privileges and NOPASSWD defined to audit.

Kubernetes Compliance - Overall

The results for the Kubernetes STIG as it applies to each appliance are as follows:



A full list of controls and their statuses is available in the Appendix sections of this document.

Kubernetes Compliance - Exceptions

Controls listed in this Not Applicable table are not applicable in this scenario or require manual review post-deployment.

Control ID	NIST 800-53	Title	Justification
CNTR-K8-000440	AC-3	The Kubernetes Kubelet static PodPath must not enable static pods.	The Kubernetes components run as containers using static pods on the control plane nodes. Workloads are not allowed to run on these nodes.
CNTR-K8-001460	SC-23	Kubernetes Kubelet must enable tls-private-key-file for client authentication to secure service.	Uses self-signed certificates. Resolution included in product roadmap.
CNTR-K8-001470	SC-23	Kubernetes Kubelet must enable tls-cert-file for client authentication to secure service.	Uses self-signed certificates. Resolution included in product roadmap.
CNTR-K8-002001	AC-16 a	Kubernetes must have a Pod Security Admission feature gate set.	Migration from PSP to PSA is included in product roadmap.
CNTR-K8-002011	AC-16 a	Kubernetes must have a Pod Security Admission control file configured.	Migration from PSP to PSA is included in product roadmap.
CNTR-K8-002630	SC-12 (3)	Kubernetes API Server must disable token authentication to protect information in transit.	Pinniped is used to allow authentication to Kubernetes through external identity providers and uses token authentication. The tokens file in use is restricted to the root user only.

Kubernetes Compliance - N/A Controls

Controls listed in this Not Applicable table are not applicable in this scenario or require manual review post deployment.

Control ID	NIST 800-53	Title	Justification
CNTR-K8-000320	AC-3	The Kubernetes API server must have the insecure port flag disabled.	The Supervisor is running v1.24+ where this feature is deprecated and has no effect in versions 1.20 and above. See reference PR
CNTR-K8-000400	AC-3	Kubernetes Worker Nodes must not have sshd service running.	This control is applicable only to worker nodes and does not apply to the control plane nodes of the Supervisor cluster.

CNTR-K8-000410	AC-3	Kubernetes Worker Nodes must not have the sshd service enabled.	This control is applicable only to worker nodes and does not apply to the control plane nodes of the Supervisor cluster.
CNTR-K8-000460	AC-3	Kubernetes DynamicKubeletConfig must not be enabled.	The Supervisor is running v1.24+ where this feature is deprecated and has no effect in versions 1.24 and above. See reference PR
CNTR-K8-000920	CM-7 b	The Kubernetes API Server must enforce ports, protocols, and services (PPS) that adhere to the Ports, Protocols, and Services Management Category Assurance List (PPSM CAL).	Ports and protocols used in the product are available at https://ports.vmware.com/ and can be used by customers to document against the PPSM CAL.
CNTR-K8-000930	CM-7 b	The Kubernetes Scheduler must enforce ports, protocols, and services (PPS) that adhere to the Ports, Protocols, and Services Management Category Assurance List (PPSM CAL).	Ports and protocols used in the product are available at https://ports.vmware.com/ and can be used by customers to document against the PPSM CAL.
CNTR-K8-000940	CM-7 b	The Kubernetes Controllers must enforce ports, protocols, and services (PPS) that adhere to the Ports, Protocols, and Services Management Category Assurance List (PPSM CAL).	Ports and protocols used in the product are available at https://ports.vmware.com/ and can be used by customers to document against the PPSM CAL.
CNTR-K8-000950	CM-7 b	The Kubernetes etcd must enforce ports, protocols, and services (PPS) that adhere to the Ports, Protocols, and Services Management Category Assurance List (PPSM CAL).	Ports and protocols used in the product are available at https://ports.vmware.com/ and can be used by customers to document against the PPSM CAL.
CNTR-K8-001360	SC-2	Kubernetes must separate user functionality.	This is a manual review. User workloads are not allowed to run on the control plane nodes and only contain system level pods.
CNTR-K8-002700	SI-4 d	Kubernetes must remove old components after updated versions have been installed.	This is typically a manual review but since nodes are completely replaced on upgrades no older versions of components will exist.
CNTR-K8-003140	CM-6 b	The Kubernetes Kube Proxy must have file permissions set to 644 or more restrictive.	Kube Proxy is running as a container and the configuration file does not exist on the host OS.
CNTR-K8-003150	CM-6 b	The Kubernetes Kube Proxy must be owned by root.	Kube Proxy is running as a container and the configuration file does not exist on the host OS.

Frequently Asked Questions

Can customers make changes to the vSphere with Tanzu Supervisor or TKr images or appliances?

No. Due to the immutable nature of vSphere with Tanzu deployments any changes would not be persistent. Modification to images and components is not supported. For product improvements please contact your VMware Account Team.

Where can I find the Photon OS 3.0 STIG Readiness Guide?

The Photon OS 3.0 STIG Readiness guide may be found at:

https://github.com/vmware/dod-compliance-and-automation/tree/master/photon/3.0/docs

What is a STIG Readiness Guide?

More information about STIG Readiness Guides can be found at:

https://www.vmware.com/content/dam/digitalmarketing/vmware/en/pdf/docs/vmware-stig-program-overview.pdf

Is there a compliance report for Tanzu Kubernetes Clusters?

A report for TKCs/TKrs will be available in a separate document and those images have a separate lifecycle from vCenter and the Supervisor nodes.

What do the severity codes mean?

The DISA Security Requirements Guides state:

> *Severity Category Codes (referred to as CAT) are a measure of vulnerabilities used to assess a facility or system security posture. Each security policy specified in this document is assigned a Severity Category Code of CAT I, II, or III.*

A description of the category codes are as follows:

DISA Category Code Guidelines	
CAT I	Any vulnerability, the exploitation of which will **directly and immediately** result in loss of Confidentiality, Availability, or Integrity.
CAT II	Any vulnerability, the exploitation of which **has a potential** to result in loss of Confidentiality, Availability, or Integrity.
CAT III	Any vulnerability, the existence of which **degrades measures** to protect against loss of Confidentiality, Availability, or Integrity.

Most severity codes in the associated guides are CAT II. During STIG development, DISA modifies severity codes on a per product and context specific basis.

What does the "status" column in the control list tables mean?

Status Definitions	
Passed	The compliance check passed.
Failed	The compliance check failed.
Not Applicable	The control was determined to be N/A in this context.
Not Reviewed	These controls were skipped as the conditions of the test did not exist on the system or require a manual review.

Appendix: Supervisor Control List

Supervisor Photon OS 3.0 Control List

Control ID	NIST 800-53[1]	Title	Status
PHTN-30-000001	AC-2 (4)	The Photon operating system must audit all account creations.	Passed
PHTN-30-000002	AC-7 a, AC-7 b	The Photon operating system must automatically lock an account when three unsuccessful logon attempts occur.	Passed
PHTN-30-000003	AC-8 a, AC-8 c 1	The Photon operating system must display the Standard Mandatory DOD Notice and Consent Banner before granting Secure Shell (SSH) access.	Not Applicable
PHTN-30-000004	AC-10	The Photon operating system must limit the number of concurrent sessions to 10 for all accounts and/or account types.	Passed
PHTN-30-000005	AC-11 a, AC-12, MA-4 e	The Photon operating system must set a session inactivity timeout of 15 minutes or less.	Passed
PHTN-30-000006	AC-17 (1)	The Photon operating system must have the sshd SyslogFacility set to "authpriv".	Passed
PHTN-30-000007	AC-17 (1)	The Photon operating system must have sshd authentication logging enabled.	Passed
PHTN-30-000008	AC-17 (1)	The Photon operating system must have the sshd LogLevel set to "INFO".	Passed
PHTN-30-000009	AC-17 (2), MA-4 (6), SC-13, SC-8	The Photon operating system must configure sshd to use approved encryption algorithms.	Passed
PHTN-30-000010	AU-3	The Photon operating system must configure auditd to log to disk.	Passed
PHTN-30-000011	AU-3	The Photon operating system must configure auditd to use the correct log format.	Passed
PHTN-30-000012	AU-3 (1)	The Photon operating system must be configured to audit the execution of privileged functions.	Passed
PHTN-30-000013	AU-12 a, AU-12 c, AU-3, AU-3 (1), CM-3 (5), CM-5 (1), SI-6 a, SI-6 b	The Photon operating system must have the auditd service running.	Passed
PHTN-30-000014	AU-5 (2), AU-5 a	The Photon operating system audit log must log space limit problems to syslog.	Passed
PHTN-30-000015	AU-5 b	The Photon operating system audit log must attempt to log audit failures to syslog.	Passed
PHTN-30-000016	AU-9	The Photon operating system audit log must have correct permissions.	Passed
PHTN-30-000017	AU-9	The Photon operating system audit log must be owned by root.	Passed

[1] Duplicate entries may appear in the NIST 800-53 controls column as an artifact of VMware testing, if the control meets multiple requirements.

PHTN-30-000018	AU-9	The Photon operating system audit log must be group-owned by root.	Passed
PHTN-30-000019	AU-12 b	The Photon operating system must allow only the information system security manager (ISSM) (or individuals or roles appointed by the ISSM) to select which auditable events are to be audited.	Passed
PHTN-30-000020	AU-12 c, MA-4 (1) (a)	The Photon operating system must generate audit records when successful/unsuccessful attempts to access privileges occur.	Passed
PHTN-30-000021	IA-5 (1) (a)	The Photon operating system must enforce password complexity by requiring that at least one uppercase character be used.	Passed
PHTN-30-000022	IA-5 (1) (a)	The Photon operating system must enforce password complexity by requiring that at least one lowercase character be used.	Passed
PHTN-30-000023	IA-5 (1) (a)	The Photon operating system must enforce password complexity by requiring that at least one numeric character be used.	Passed
PHTN-30-000024	IA-5 (1) (b)	The Photon operating system must require that new passwords are at least four characters different from the old password.	Passed
PHTN-30-000025	IA-5 (1) (c)	The Photon operating system must store only encrypted representations of passwords.	Passed
PHTN-30-000026	IA-2 (8), IA-2 (9), IA-5 (1) (c), IA-7, MA-4 (7), MA-4 c, SC-8 (2)	The Photon operating system must use an OpenSSH server version that does not support protocol 1.	Passed
PHTN-30-000027	IA-5 (1) (d)	The Photon operating system must be configured so that passwords for new users are restricted to a 24-hour minimum lifetime.	Passed
PHTN-30-000028	IA-5 (1) (d)	The Photon operating system must be configured so that passwords for new users are restricted to a 90-day maximum lifetime.	Passed
PHTN-30-000029	IA-5 (1) (e)	The Photon operating system must prohibit password reuse for a minimum of five generations.	Passed
PHTN-30-000030	IA-5 (1) (a)	The Photon operating system must enforce a minimum eight-character password length.	Passed
PHTN-30-000031	AC-3	The Photon operating system must require authentication upon booting into single-user and maintenance modes.	Not Applicable
PHTN-30-000032	CM-7 b, IA-3	The Photon operating system must disable the loading of unnecessary kernel modules.	Passed
PHTN-30-000033	IA-2	The Photon operating system must not have duplicate User IDs (UIDs).	Passed
PHTN-30-000035	IA-4 e	The Photon operating system must disable new accounts immediately upon password expiration.	Passed
PHTN-30-000036	SC-5, SC-5 (2)	The Photon operating system must use Transmission Control Protocol (TCP) syncookies.	Passed
PHTN-30-000037	SC-10	The Photon operating system must configure sshd to disconnect idle Secure Shell (SSH) sessions.	Passed

PHTN-30-000038	SC-10	The Photon operating system must configure sshd to disconnect idle Secure Shell (SSH) sessions.	Passed
PHTN-30-000039	AC-2 (4), AU-4 (1), SI-11 a, SI-6 d	The Photon operating system must configure rsyslog to offload system logs to a central server.	Not Applicable
PHTN-30-000040	SI-11 b	The Photon operating system "/var/log" directory must be owned by root.	Passed
PHTN-30-000041	SI-11 b	The Photon operating system messages file must have the correct ownership and file permissions.	Not Applicable
PHTN-30-000042	AC-2 (4)	The Photon operating system must audit all account modifications.	Passed
PHTN-30-000043	AC-2 (4)	The Photon operating system must audit all account modifications.	Passed
PHTN-30-000044	AC-2 (4)	The Photon operating system must audit all account disabling actions.	Passed
PHTN-30-000045	AC-2 (4)	The Photon operating system must audit all account removal actions.	Passed
PHTN-30-000046	AU-14 (1)	The Photon operating system must initiate auditing as part of the boot process.	Passed
PHTN-30-000047	AU-9	The Photon operating system audit files and directories must have correct permissions.	Passed
PHTN-30-000048	AU-9	The Photon operating system must protect audit tools from unauthorized modification and deletion.	Passed
PHTN-30-000049	CM-5 (6)	The Photon operating system must limit privileges to change software resident within software libraries.	Passed
PHTN-30-000050	IA-5 (1) (a)	The Photon operating system must enforce password complexity by requiring that at least one special character be used.	Passed
PHTN-30-000051	AU-9 (3)	The Photon operating system package files must not be modified.	Passed
PHTN-30-000054	AC-6 (9), AU-12 c	The Photon operating system must audit the execution of privileged functions.	Passed
PHTN-30-000055	AU-4	The Photon operating system must configure auditd to keep five rotated log files.	Passed
PHTN-30-000056	AU-4	The Photon operating system must configure auditd to keep logging in the event max log file size is reached.	Passed
PHTN-30-000057	AU-5 (1)	The Photon operating system must configure auditd to log space limit problems to syslog.	Passed
PHTN-30-000058	AU-8 (1) (a), AU-8 (1) (b)	The Photon operating system must be configured to synchronize with an approved DOD time source.	Failed
PHTN-30-000059	CM-5 (3)	The Photon operating system RPM package management tool must cryptographically verify the authenticity of all software packages during installation.	Passed

PHTN-30-000060	CM-5 (3)	The Photon operating system RPM package management tool must cryptographically verify the authenticity of all software packages during installation.	Passed
PHTN-30-000061	CM-5 (3)	The Photon operating system YUM repository must cryptographically verify the authenticity of all software packages during installation.	Passed
PHTN-30-000062	IA-11	The Photon operating system must require users to reauthenticate for privilege escalation.	Not Applicable
PHTN-30-000064	MA-4 (6), SC-8 (1)	The Photon operating system must configure sshd to use FIPS 140-2 ciphers.	Passed
PHTN-30-000065	SI-16	The Photon operating system must implement address space layout randomization (ASLR) to protect its memory from unauthorized code execution.	Passed
PHTN-30-000066	SI-2 (6)	The Photon operating system must remove all software components after updated versions have been installed.	Passed
PHTN-30-000067	AU-12 c	The Photon operating system must generate audit records when the sudo command is used.	Passed
PHTN-30-000068	AU-12 c	The Photon operating system must generate audit records when successful/unsuccessful logon attempts occur.	Passed
PHTN-30-000069	AU-12 c	The Photon operating system must audit the "insmod" module.	Passed
PHTN-30-000070	AU-12 c	The Photon operating system auditd service must generate audit records for all account creations, modifications, disabling, and termination events.	Passed
PHTN-30-000071	CM-6 b	The Photon operating system must use the "pam_cracklib" module.	Passed
PHTN-30-000072	CM-6 b	The Photon operating system must set the "FAIL_DELAY" parameter.	Passed
PHTN-30-000073	CM-6 b	The Photon operating system must enforce a delay of at least four seconds between logon prompts following a failed logon attempt.	Passed
PHTN-30-000074	CM-6 b	The Photon operating system must ensure audit events are flushed to disk at proper intervals.	Passed
PHTN-30-000075	CM-6 b	The Photon operating system must create a home directory for all new local interactive user accounts.	Passed
PHTN-30-000076	CM-6 b	The Photon operating system must disable the debug-shell service.	Passed
PHTN-30-000078	CM-6 b	The Photon operating system must configure sshd to disallow Generic Security Service Application Program Interface (GSSAPI) authentication.	Passed
PHTN-30-000079	CM-6 b	The Photon operating system must configure sshd to disable environment processing.	Passed
PHTN-30-000080	CM-6 b	The Photon operating system must configure sshd to disable X11 forwarding.	Passed

PHTN-30-000081	CM-6 b	The Photon operating system must configure sshd to perform strict mode checking of home directory configuration files.	Passed
PHTN-30-000082	CM-6 b	The Photon operating system must configure sshd to disallow Kerberos authentication.	Passed
PHTN-30-000083	CM-6 b	The Photon operating system must configure sshd to disallow authentication with an empty password.	Passed
PHTN-30-000084	CM-6 b	The Photon operating system must configure sshd to disallow compression of the encrypted session stream.	Passed
PHTN-30-000085	CM-6 b	The Photon operating system must configure sshd to display the last login immediately after authentication.	Passed
PHTN-30-000086	CM-6 b	The Photon operating system must configure sshd to ignore user-specific trusted hosts lists.	Passed
PHTN-30-000087	CM-6 b	The Photon operating system must configure sshd to ignore user-specific known_host files.	Passed
PHTN-30-000088	CM-6 b	The Photon operating system must configure sshd to limit the number of allowed login attempts per connection.	Passed
PHTN-30-000089	CM-6 b	The Photon operating system must be configured so the x86 Ctrl-Alt-Delete key sequence is disabled on the command line.	Passed
PHTN-30-000090	CM-6 b	The Photon operating system must be configured so the "/etc/skel" default scripts are protected from unauthorized modification.	Passed
PHTN-30-000091	CM-6 b	The Photon operating system must be configured so the "/root" path is protected from unauthorized access.	Passed
PHTN-30-000092	CM-6 b	The Photon operating system must be configured so that all global initialization scripts are protected from unauthorized modification.	Passed
PHTN-30-000093	CM-6 b	The Photon operating system must be configured so that all system startup scripts are protected from unauthorized modification.	Passed
PHTN-30-000094	CM-6 b	The Photon operating system must be configured so that all files have a valid owner and group owner.	Passed
PHTN-30-000095	CM-6 b	The Photon operating system must be configured so that the "/etc/cron.allow" file is protected from unauthorized modification.	Passed
PHTN-30-000096	CM-6 b	The Photon operating system must be configured so that all cron jobs are protected from unauthorized modification.	Passed
PHTN-30-000097	CM-6 b	The Photon operating system must be configured so that all cron paths are protected from unauthorized modification.	Passed
PHTN-30-000098	CM-6 b	The Photon operating system must not forward IPv4 or IPv6 source-routed packets.	Passed
PHTN-30-000099	CM-6 b	The Photon operating system must not respond to IPv4 Internet Control Message Protocol (ICMP) echoes sent to a broadcast address.	Passed

PHTN-30-000100	CM-6 b	The Photon operating system must prevent IPv4 Internet Control Message Protocol (ICMP) redirect messages from being accepted.	Passed
PHTN-30-000101	CM-6 b	The Photon operating system must prevent IPv4 Internet Control Message Protocol (ICMP) secure redirect messages from being accepted.	Passed
PHTN-30-000102	CM-6 b	The Photon operating system must not send IPv4 Internet Control Message Protocol (ICMP) redirects.	Passed
PHTN-30-000103	CM-6 b	The Photon operating system must log IPv4 packets with impossible addresses.	Passed
PHTN-30-000104	CM-6 b	The Photon operating system must use a reverse-path filter for IPv4 network traffic.	Failed
PHTN-30-000105	CM-6 b	The Photon operating system must not perform multicast packet forwarding.	Passed
PHTN-30-000106	CM-6 b	The Photon operating system must not perform IPv4 packet forwarding.	Passed
PHTN-30-000107	CM-6 b	The Photon operating system must send Transmission Control Protocol (TCP) timestamps.	Passed
PHTN-30-000108	CM-6 b	The Photon operating system must be configured to protect the Secure Shell (SSH) public host key from unauthorized modification.	Passed
PHTN-30-000109	CM-6 b	The Photon operating system must be configured to protect the Secure Shell (SSH) private host key from unauthorized access.	Passed
PHTN-30-000110	CM-6 b	The Photon operating system must enforce password complexity on the root account.	Passed
PHTN-30-000111	CM-6 b	The Photon operating system must protect all boot configuration files from unauthorized modification.	Passed
PHTN-30-000112	CM-6 b	The Photon operating system must protect sshd configuration from unauthorized access.	Passed
PHTN-30-000113	CM-6 b	The Photon operating system must protect all "sysctl" configuration files from unauthorized access.	Passed
PHTN-30-000114	CM-6 b	The Photon operating system must set the "umask" parameter correctly.	Passed
PHTN-30-000115	CM-6 b	The Photon operating system must configure sshd to disallow HostbasedAuthentication.	Passed
PHTN-30-000117	IA-5 (1) (c)	The Photon operating system must store only encrypted representations of passwords.	Passed
PHTN-30-000118	IA-5 (1) (e)	The Photon operating system must ensure the old passwords are being stored.	Passed
PHTN-30-000119	CM-6 b	The Photon operating system must configure sshd to restrict AllowTcpForwarding.	Passed
PHTN-30-000120	CM-6 b	The Photon operating system must configure sshd to restrict LoginGraceTime.	Passed

PHTN-30-000240	SC-13	The Photon operating system must implement NIST FIPS-validated cryptography for the following: to provision digital signatures, generate cryptographic hashes, and protect unclassified information requiring confidentiality and cryptographic protection in accordance with applicable federal laws, Executive Orders, directives, policies, regulations, and standards.	Passed
PHTN-30-000245	CM-6 b	The Photon operating system must disable systemd fallback Domain Name System (DNS).	Passed

Supervisor Kubernetes Control List

Control ID	NIST 800-53[1]	Title	Status
CNTR-K8-000150	AC-17 (2)	The Kubernetes Controller Manager must use TLS 1.2, at a minimum, to protect the confidentiality of sensitive data during electronic dissemination.	Passed
CNTR-K8-000160	AC-17 (2)	The Kubernetes Scheduler must use TLS 1.2, at a minimum, to protect the confidentiality of sensitive data during electronic dissemination.	Passed
CNTR-K8-000170	AC-17 (2)	The Kubernetes API Server must use TLS 1.2, at a minimum, to protect the confidentiality of sensitive data during electronic dissemination.	Passed
CNTR-K8-000180	AC-17 (2)	The Kubernetes etcd must use TLS to protect the confidentiality of sensitive data during electronic dissemination.	Passed
CNTR-K8-000190	AC-17 (2)	The Kubernetes etcd must use TLS to protect the confidentiality of sensitive data during electronic dissemination.	Passed
CNTR-K8-000220	AC-2 (1)	The Kubernetes Controller Manager must create unique service accounts for each work payload.	Passed
CNTR-K8-000270	AC-3	The Kubernetes API Server must enable Node,RBAC as the authorization mode.	Passed
CNTR-K8-000290	CM-6 b	User-managed resources must be created in dedicated namespaces.	Passed
CNTR-K8-000300	AC-3	The Kubernetes Scheduler must have secure binding.	Passed
CNTR-K8-000310	AC-3	The Kubernetes Controller Manager must have secure binding.	Passed
CNTR-K8-000320	AC-3	The Kubernetes API server must have the insecure port flag disabled.	Not Applicable
CNTR-K8-000330	AC-3	The Kubernetes Kubelet must have the read-only port flag disabled.	Passed
CNTR-K8-000340	AC-3	The Kubernetes API server must have the insecure bind address not set.	Passed
CNTR-K8-000350	AC-3	The Kubernetes API server must have the secure port set.	Passed
CNTR-K8-000360	AC-3	The Kubernetes API server must have anonymous authentication disabled.	Passed

CNTR-K8-000370	AC-3	The Kubernetes Kubelet must have anonymous authentication disabled.	Passed
CNTR-K8-000380	AC-3	The Kubernetes kubelet must enable explicit authorization.	Passed
CNTR-K8-000400	AC-3	Kubernetes Worker Nodes must not have sshd service running.	Not Applicable
CNTR-K8-000410	AC-3	Kubernetes Worker Nodes must not have the sshd service enabled.	Not Applicable
CNTR-K8-000420	AC-3	Kubernetes dashboard must not be enabled.	Passed
CNTR-K8-000430	AC-3	Kubernetes Kubectl cp command must give expected access and results.	Passed
CNTR-K8-000440	AC-3	The Kubernetes kubelet static PodPath must not enable static pods.	Failed
CNTR-K8-000450	AC-3	Kubernetes DynamicAuditing must not be enabled.	Passed
CNTR-K8-000460	AC-3	Kubernetes DynamicKubeletConfig must not be enabled.	Not Applicable
CNTR-K8-000470	AC-3	The Kubernetes API server must have Alpha APIs disabled.	Passed
CNTR-K8-000600	AU-14 (1)	The Kubernetes API Server must have an audit policy set.	Passed
CNTR-K8-000610	AU-14 (1)	The Kubernetes API Server must have an audit log path set.	Passed
CNTR-K8-000700	AC-2 (4), AU-3 a, AU-3 b, AU-3 c, AU-3 d, AU-3 e, AU-3 (1), AU-12 c, AC-2 (4), AC-2 (4), AU-3 f, AU-3 (2), AC-16 a	Kubernetes API Server must generate audit records that identify what type of event has occurred, identify the source of the event, contain the event results, identify any users, and identify any containers associated with the event.	Passed
CNTR-K8-000850	CM-5 (6)	Kubernetes Kubelet must deny hostname override.	Passed
CNTR-K8-000860	CM-5 (6)	The Kubernetes manifests must be owned by root.	Passed
CNTR-K8-000880	CM-5 (6)	The Kubernetes kubelet configuration file must be owned by root.	Passed
CNTR-K8-000890	CM-5 (6)	The Kubernetes kubelet configuration files must have file permissions set to 644 or more restrictive.	Passed
CNTR-K8-000900	CM-5 (6)	The Kubernetes manifests must have least privileges.	Passed
CNTR-K8-000910	CM-7 a	Kubernetes Controller Manager must disable profiling.	Passed
CNTR-K8-000920	CM-7 b	The Kubernetes API Server must enforce ports, protocols, and services (PPS) that adhere to the Ports, Protocols, and Services Management Category Assurance List (PPSM CAL).	Not Reviewed
CNTR-K8-000930	CM-7 b	The Kubernetes Scheduler must enforce ports, protocols, and services (PPS) that adhere to the Ports, Protocols, and Services Management Category Assurance List (PPSM CAL).	Not Reviewed
CNTR-K8-000940	CM-7 b	The Kubernetes Controllers must enforce ports, protocols, and services (PPS) that adhere to the Ports, Protocols, and Services Management Category Assurance List (PPSM CAL).	Not Reviewed

CNTR-K8-000950	CM-7 b	The Kubernetes etcd must enforce ports, protocols, and services (PPS) that adhere to the Ports, Protocols, and Services Management Category Assurance List (PPSM CAL).	Not Reviewed
CNTR-K8-000960	CM-7 b	The Kubernetes cluster must use non-privileged host ports for user pods.	Passed
CNTR-K8-001160	IA-5 (1) (c)	Secrets in Kubernetes must not be stored as environment variables.	Passed
CNTR-K8-001300	SC-10	Kubernetes Kubelet must not disable timeouts.	Passed
CNTR-K8-001360	SC-2	Kubernetes must separate user functionality.	Not Reviewed
CNTR-K8-001400	SC-23	The Kubernetes API server must use approved cipher suites.	Passed
CNTR-K8-001410	SC-23	Kubernetes API Server must have the SSL Certificate Authority set.	Passed
CNTR-K8-001420	SC-23	Kubernetes Kubelet must have the SSL Certificate Authority set.	Passed
CNTR-K8-001430	SC-23	Kubernetes Controller Manager must have the SSL Certificate Authority set.	Passed
CNTR-K8-001440	SC-23	Kubernetes API Server must have a certificate for communication.	Passed
CNTR-K8-001450	SC-23	Kubernetes etcd must enable client authentication to secure service.	Passed
CNTR-K8-001460	SC-23	Kubernetes Kubelet must enable tls-private-key-file for client authentication to secure service.	Failed
CNTR-K8-001470	SC-23	Kubernetes Kubelet must enable tls-cert-file for client authentication to secure service.	Failed
CNTR-K8-001480	SC-23	Kubernetes etcd must enable client authentication to secure service.	Passed
CNTR-K8-001490	SC-23	Kubernetes etcd must have a key file for secure communication.	Passed
CNTR-K8-001500	SC-23	Kubernetes etcd must have a certificate for communication.	Passed
CNTR-K8-001510	SC-23	Kubernetes etcd must have the SSL Certificate Authority set.	Passed
CNTR-K8-001520	SC-23	Kubernetes etcd must have a certificate for communication.	Passed
CNTR-K8-001530	SC-23	Kubernetes etcd must have a key file for secure communication.	Passed
CNTR-K8-001540	SC-23	Kubernetes etcd must have peer-cert-file set for secure communication.	Passed
CNTR-K8-001550	SC-23	Kubernetes etcd must have a peer-key-file set for secure communication.	Passed
CNTR-K8-001620	SC-3	Kubernetes Kubelet must enable kernel protection.	Passed
CNTR-K8-001990	AC-3, AU-1 b 2, AC-16 b	Kubernetes must prevent non-privileged users from executing privileged functions to include disabling, circumventing, or altering implemented security safeguards/countermeasures or the installation of patches and updates.	Passed
CNTR-K8-002000	AC-16 a	The Kubernetes API server must have the ValidatingAdmissionWebhook enabled.	Passed

CNTR-K8-002001	AC-16 a	Kubernetes must have a Pod Security Admission feature gate set.	Failed
CNTR-K8-002010	AC-16 a	Kubernetes must have a pod security policy set.	Not Applicable
CNTR-K8-002011	AC-16 a	Kubernetes must have a Pod Security Admission control file configured.	Failed
CNTR-K8-002600	SC-7 (21)	Kubernetes API Server must configure timeouts to limit attack surface.	Passed
CNTR-K8-002620	SC-12 (3)	Kubernetes API Server must disable basic authentication to protect information in transit.	Passed
CNTR-K8-002630	SC-12 (3)	Kubernetes API Server must disable token authentication to protect information in transit.	Failed
CNTR-K8-002640	SC-12 (3)	Kubernetes endpoints must use approved organizational certificate and key pair to protect information in transit.	Passed
CNTR-K8-002700	SI-4 d	Kubernetes must remove old components after updated versions have been installed.	Not Reviewed
CNTR-K8-002720	SI-3 (10) (a)	Kubernetes must contain the latest updates as authorized by IAVMs, CTOs, DTMs, and STIGs.	Passed
CNTR-K8-003110	CM-6 b	The Kubernetes component manifests must be owned by root.	Passed
CNTR-K8-003120	CM-6 b	The Kubernetes component etcd must be owned by etcd.	Passed
CNTR-K8-003130	CM-6 b	The Kubernetes conf files must be owned by root.	Passed
CNTR-K8-003140	CM-6 b	The Kubernetes Kube Proxy must have file permissions set to 644 or more restrictive.	Not Applicable
CNTR-K8-003150	CM-6 b	The Kubernetes Kube Proxy must be owned by root.	Not Applicable
CNTR-K8-003160	CM-6 b	The Kubernetes Kubelet certificate authority file must have file permissions set to 644 or more restrictive.	Passed
CNTR-K8-003170	CM-6 b	The Kubernetes Kubelet certificate authority must be owned by root.	Passed
CNTR-K8-003180	CM-6 b	The Kubernetes component PKI must be owned by root.	Passed
CNTR-K8-003190	CM-6 b	The Kubernetes kubelet config must have file permissions set to 644 or more restrictive.	Passed
CNTR-K8-003200	CM-6 b	The Kubernetes kubelet config must be owned by root.	Passed
CNTR-K8-003210	CM-6 b	The Kubernetes kubeadm.conf must be owned by root.	Passed
CNTR-K8-003220	CM-6 b	The Kubernetes kubeadm.conf must have file permissions set to 644 or more restrictive.	Passed
CNTR-K8-003230	CM-6 b	The Kubernetes kubelet config must have file permissions set to 644 or more restrictive.	Passed
CNTR-K8-003240	CM-6 b	The Kubernetes kubelet config must be owned by root.	Passed
CNTR-K8-003250	CM-6 b	The Kubernetes API Server must have file permissions set to 644 or more restrictive.	Passed

CNTR-K8-003260	CM-6 b	The Kubernetes etcd must have file permissions set to 644 or more restrictive.	Passed
CNTR-K8-003270	CM-6 b	The Kubernetes admin.conf must have file permissions set to 644 or more restrictive.	Passed
CNTR-K8-003280	CM-6 b	Kubernetes API Server audit logs must be enabled.	Passed
CNTR-K8-003290	CM-6 b	The Kubernetes API Server must be set to audit log max size.	Passed
CNTR-K8-003300	CM-6 b	The Kubernetes API Server must be set to audit log maximum backup.	Passed
CNTR-K8-003310	CM-6 b	The Kubernetes API Server audit log retention must be set.	Passed
CNTR-K8-003320	CM-6 b	The Kubernetes API Server audit log path must be set.	Passed
CNTR-K8-003330	CM-6 b	The Kubernetes PKI CRT must have file permissions set to 644 or more restrictive.	Passed
CNTR-K8-003340	CM-6 b	The Kubernetes PKI keys must have file permissions set to 600 or more restrictive.	Passed
CNTR-K8-003350	AC-17 (2)	The Kubernetes API Server must prohibit communication using TLS version 1.0 and 1.1, and SSL 2.0 and 3.0.	Passed