

VMware Cloud Foundation – I've Deployed it, What's Next?

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VMUG London
27th April 2023



VMware Cloud
Foundation™

Agenda

Health Checking & Tools

Reporting & Observability

Administration

Patching & Upgrades

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Health Checking & Tools

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SoS Tool

A command-line tool that you can use to run health checks, collect logs for VMware Cloud Foundation components



/opt/vmware/sddc-support/sos

```
--health-check  
--get-vcf-summary  
--password-health  
--get-inventory-info
```



SoS Tool

Example Outputs

Node full checks

Password Checks

Component service status

SL#	Area	Title	State
1	ESXi : esx01.my-sddc.vcd	License check	GREEN
		ESXi Health Status	GREEN
2	ESXi : esx02.my-sddc.vcd	Check disks for partitions	GREEN
		License check	GREEN
		ESXi Health Status	GREEN
3	ESXi : esx03.my-sddc.vcd	Check disks for partitions	GREEN
		License check	GREEN
		ESXi Health Status	GREEN
4	ESXi : esx04.my-sddc.vcd	Check disks for partitions	GREEN
		License check	GREEN
		ESXi Health Status	GREEN
5	uCENTER: vc01.my-sddc.vcd	Check Health Status	GREEN

```
GREEN
| admin | Mar 29, 2023 | Jun 27, 2023 | 90 days
|
| audit | - | - | -
Failed to get details
| SDDC : vcf01.my-sddc.vcf | Nov 28, 2022 | Nov 28, 2023 | 244 days
GREEN
```

SL#	Area	Title	State
1	SDDC : vcf01.my-sddc.vcf	NTP	GREEN
		SOSREST	GREEN
		POSTGRES	GREEN
		COMMON_SERVICES	GREEN
		SDDC_MANAGER_UI	GREEN
		DOMAIN_MANAGER	GREEN
		OPERATIONS_MANAGER	GREEN
		VIP-MANAGER-i18n	GREEN
		LCM	GREEN
2	VCENTER : vc01.my-sddc.vcd	applmgmt	GREEN
		rsyslog	GREEN

Skyline Advisor Pro

Deploy Collector

Register components

In cloud console you can see

- Versions
- Findings and Recommendations
- Log Assist

The screenshot shows the 'Inventory' tab of the Skyline Viewer interface. On the left, a sidebar lists categories: vSphere, NSX-T, NSX-V, vRealize Operations Manager, vRealize Suite Lifecycle Manager, vRealize Automation, vRealize Log Insight, Horizon, and VMware Cloud Foundation. The main area displays a table of inventory items with columns for 'Inventory Type', 'Name', 'Version', and 'Build'. Items listed include SDDC Manager, Management Domain, NSX-T Management Cluster, vCenter, Cluster, Workload Domain, and Workload Domain. A search bar at the top right says 'Search by Object Name and hit enter'. To the right, there's a sidebar for 'SDDC Manager' with 'Support Lifecycle Phase' information: 'Lifecycle Phase Ends' is April 07, 2024, and 'Current Lifecycle Phase' is 'General Support'.

The screenshot shows the 'Findings & Recommendations' tab of the Skyline Viewer interface. At the top, there are tabs for 'Active Findings', 'Hidden Findings', 'Upgrade Recommendations', 'Historical Trends', and 'Findings Catalog'. A search bar shows 'vcf'. Below it, a summary says 'Last Analysis: Apr 6, 2023 9:16 AM BST'. There are buttons for 'SELECT ALL', 'SEVERITY', 'EXPORT', and 'HIDE FINDINGS'. The main area displays three findings cards. The first finding is 'vSphere-VCFExsNTPRule-KB#81647' (CRITICAL) with 6 affected objects, categorized as Compute, found in CONFIGURATION, and related to Environmental Stability. The second finding is 'NSX-T-VCFManagerHostIsolation-KB#81644' (CRITICAL) with 2 affected objects, categorized as Network, found in CONFIGURATION, and related to Infrastructure Stability. The third finding is 'NSX-VCFControllerHostLocation-KB#81656' (CRITICAL) with 1 affected object, categorized as Network, found in CONFIGURATION, and related to Infrastructure Stability. A total of 33 findings are indicated on the right.

Skyline Health Diagnostics

Services Health

NTP Health

General Health

Certificate Health

Password Health

Connectivity Health

Compute Health

Storage Health

DNS Health

Composability Health

Hardware Compatibility Health

Hosts IPs

Inventory Info

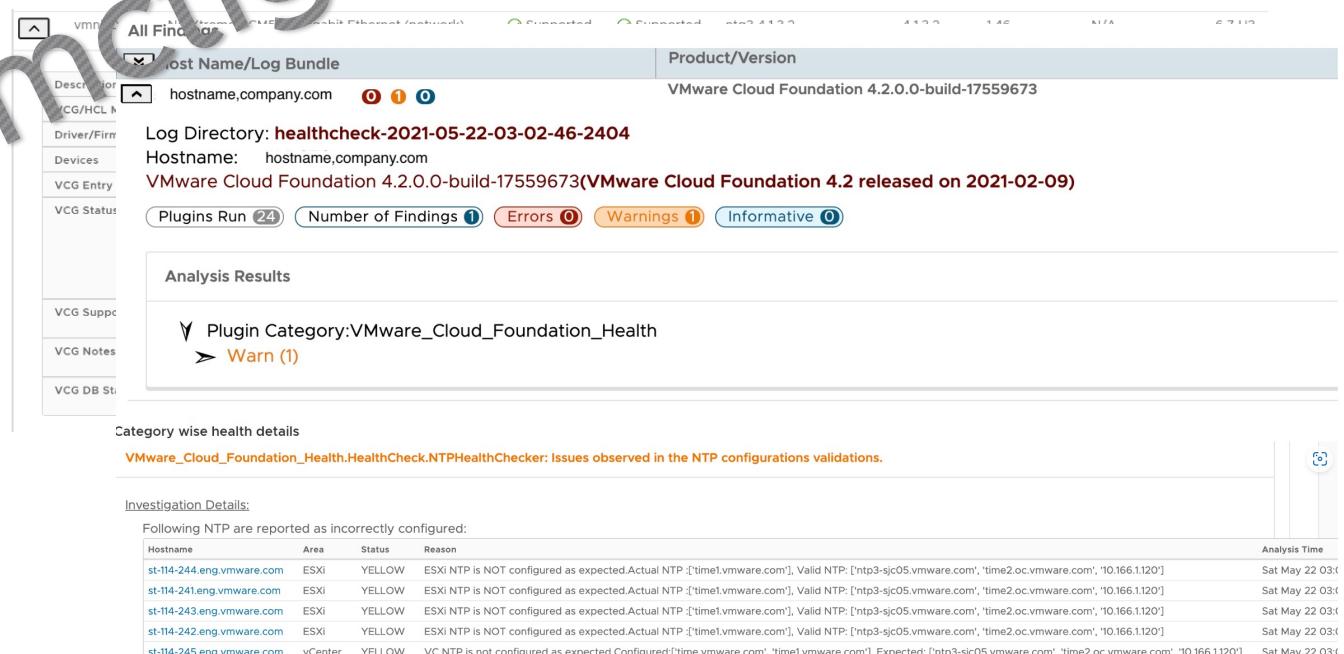
VCG/vSAN HCL Validation Summary									
Device	Description	VCG Status	Driver Status	Current Driver/Version	VCG Driver	Current Firmware	VCG Firmware	Forward Suppor	
Server	HPE ProLiant DL380 Gen10	Supported	N/A	N/A	N/A	U30	HPE U30_2.22 UEFI Mode (Boot Mode:UEFI)	6.7 U3, 7.0	
vmnic0	NetXtreme BCM5719 Gigabit Ethernet (network)	Supported	Supported	ntg3 4.1.3.2 !vmw.670.1.28.10302608	4.1.3.2-!vmw	1.46	N/A	6.7 U3, 7.0	
vmnic1	NetXtreme BCM5719 Gigabit Ethernet (network)	Supported	Supported	ntg3 4.1.3.2 !vmw.670.1.28.10302608	4.1.3.2-!vmw	1.46	N/A	6.7 U3, 7.0	
vmnic2	NetXtreme BCM5719 Gigabit Ethernet (network)	Supported	Supported	ntg3 4.1.3.2 !vmw.670.1.28.10302608	4.1.3.2-!vmw	1.46	N/A	6.7 U3, 7.0	
vmnic3	NetXtreme BCM5719 Gigabit Ethernet (network)	Supported	Supported	ntg3 4.1.3.2 !vmw.670.1.28.10302608	4.1.3.2-!vmw	1.46	N/A	6.7 U3, 7.0	
vmnic4	82599 10 Gigabit Dual Port Network Connection (network)	Supported	Not Latest	ixgben 1.7.15-10EM 670.0.0.8169922	1.8.7	0x8000091d	N/A	6.7 U3, 7.0	
vmnic5	82599 10 Gigabit Dual Port Network Connection (network)	Supported	Not Latest	ixgben 1.7.15-10EM 670.0.0.8169922	1.8.7	0x8000091d	N/A	6.7 U3, 7.0	
vmhba0	Lewisburg SATA AHCI Controller (sata)	Supported	Supported	vmw_ahci 1.2.8-!vmw.670.3.73.14320388	1.2.8-!vmw		N/A	6.7 U3, 7.0	
vmhba1	HPE P408i-a SR Gen10 (sas)	Supported	Not Latest	smartipq 1.0.3.2309-10EM 670.0.0.8169922	10.4.3017	199	2.92-[0]	6.7 U3, 7.0	
vmhba2	QLE2692 Dual Port 16Gb Fibre Channel to PCIe Adapter (fc)	Supported	Not Latest	qjnativfc 3.116.1-10EM 670.0.0.8169922	31.31.0-1	8.08.220	8.08.xx	6.7 U3, 7.0	
vmhba3	QLE2692 Dual Port 16Gb Fibre Channel to PCIe Adapter (fc)	Supported	Not Latest	qjnativfc 3.116.1-10EM 670.0.0.8169922	31.31.0-1	8.08.220	8.08.xx	6.7 U3, 7.0	

Status Indicators

- ⓘ Not Checked Device was not checked for compatibility as VCG Database is not updated.
- ⚠ Not Listed This device was not found on the compatibility guide.
- ✅ Supported Device is supported for the current version of ESXi running.
- ⓘ Not Supported Device is NOT supported for the current version of ESXi running.
- ⚠ Not Latest Driver currently being used is not the latest as compared to the one listed on VCG
- ⓘ Not Minimum Driver currently being used is does not meet the minimum version listed on VCG

VCG Details

Each row in the VCG/vSAN HCL Validation can be expanded to view further details from the compatibility guide. Click  to expand the row and view the details. Clicking the same collapses the details section.



The screenshot shows the VMware Cloud Foundation HealthCheck interface. At the top, it displays the product version as "VMware Cloud Foundation 4.2.0.0-build-17559673". Below this, the log directory is shown as "healthcheck-2021-05-22-03-02-46-2404" and the hostname as "hostname.company.com". The interface indicates that the check was run on "VMware Cloud Foundation 4.2.0.0-build-17559673 (VMware Cloud Foundation 4.2 released on 2021-02-09)". The analysis results section highlights a warning under the "Plugin Category:VMware_Cloud_Foundation_Health" category, specifically for the "Warn (1)" issue related to NTP configurations. The "Category wise health details" section provides a summary of findings for the "VMware_Cloud_Foundation_Health.HealthCheck.NTPHealthChecker" plugin, stating there are issues observed in the NTP configurations validations. The "Investigation Details" section lists specific hostnames and their status regarding NTP configuration issues, such as "st-l14-244.eng.vmware.com" and "st-l14-245.eng.vmware.com".

PowerShell Module for VMware Cloud Foundation Reporting



PowerShell module designed to produce HTML reports detailing the operational state of a VCF environment

The screenshot shows two instances of the VMware Cloud Foundation Health Report interface. Both instances are for the SDDC Manager at sfo-vcf01.sfo.rainpole.io. The left instance shows a single row in the Service Health Status table:

Component	Resource	Service Name	Alert	Message
SDDC	sfo-vcf01.sfo.rainpole.io	OPERATIONS_MANAGER	GREEN	OPERATIONS_MANAGER service is running successfully. Verified by running command systemctl status operationsmanager grep Active.

The right instance shows a more detailed view with multiple rows in the table:

Component	Resource	Service Name	Alert	Message
SDDC	sfo-vcf01.sfo.rainpole.io	OPERATIONS_MANAGER	GREEN	OPERATIONS_MANAGER service is running successfully. Verified by running command systemctl status operationsmanager grep Active.
SDDC	sfo-vcf01.sfo.rainpole.io	DOMAIN_MANAGER	GREEN	DOMAIN_MANAGER service is running successfully. Verified by running command systemctl status domainmanager grep Active.
SDDC	sfo-vcf01.sfo.rainpole.io	LCM	GREEN	LCM service is running successfully. Verified by running command systemctl status lcm grep Active.
SDDC	sfo-vcf01.sfo.rainpole.io	VIP-MANAGER-iBHN	GREEN	VIP-MANAGER-iBHN service is running successfully. Verified by running command systemctl status vip-manager-iBhn grep Active.
SDDC	sfo-vcf01.sfo.rainpole.io	SDDC_MANAGER_UI	GREEN	SDDC_MANAGER_UI service is running successfully. Verified by running command systemctl status sddc-manager-ui-app grep Active.
SDDC	sfo-vcf01.sfo.rainpole.io	SOSREST	GREEN	SOSREST service is running successfully. Verified by running command systemctl status sosrest grep Active.
SDDC	sfo-vcf01.sfo.rainpole.io	NTP	GREEN	NTP service is running successfully. Verified by running command systemctl status ntpd grep Active.
SDDC	sfo-vcf01.sfo.rainpole.io	COMMON_SERVICES	GREEN	COMMON_SERVICES service is running successfully. Verified by running command systemctl status commonsvc grep Active.
SDDC	sfo-vcf01.sfo.rainpole.io	POSTGRES	GREEN	POSTGRES service is running successfully. Verified by running command systemctl status postgres grep Active.
VCENTER	sfo-m01-vc01.sfo.rainpole.io	RSYSLOG	GREEN	sfo-m01-vc01.sfo.rainpole.io rsyslog Service Run State is STARTED, it is fully functional.
VCENTER	sfo-m01-vc01.sfo.rainpole.io	APPLMGMT	GREEN	sfo-m01-vc01.sfo.rainpole.io green Good. All components in the appliance are healthy.
VCENTER	sfo-w01-vc01.sfo.rainpole.io	RSYSLOG	GREEN	sfo-w01-vc01.sfo.rainpole.io rsyslog Service Run State is STARTED, it is fully functional.
VCENTER	sfo-w01-vc01.sfo.rainpole.io	APPLMGMT	GREEN	sfo-w01-vc01.sfo.rainpole.io green Good. All components in the appliance are healthy.

vSphere Diagnostic Tool (Fling)

Python based script that runs diagnostic commands



DNS Checks

Lookup Service Checks

Certificate Checks

VMdir Checks

Postgres DB Checks

NTP Checks

Disk Checks

Root Account Checks

Port Checks

```
root@vc01 [ /tmp/vdt-v1.1.4 ]# python vdt.py
```

```
VC CERTIFICATE CHECK
[PASS] ESXi Certificate Management Mode: vmca
Checking MACHINE_SSL_CERT
[PASS] Supported Signature Algorithm
[PASS] Certificate trust check
[PASS] Certificate expiration check
[INFO] Certificate SAN check
DETAILS: SAN contains hostname but not IP.

Checking Other Certificate Stores
MACHINE
[PASS] Supported Signature Algorithm
[PASS] Certificate trust check
[PASS] Certificate expiration check
[INFO] Certificate SAN check
DETAILS: SAN contains hostname but not IP.

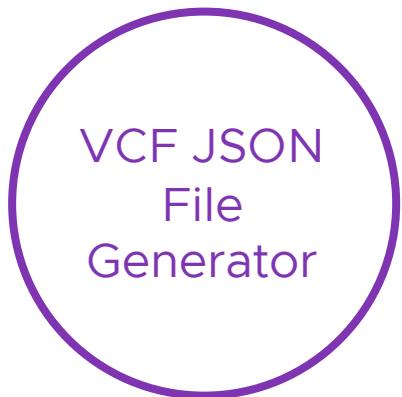
VSPHERE-WEBCLIENT
[PASS] Supported Signature Algorithm
[PASS] Certificate trust check
[PASS] Certificate expiration check
[INFO] Certificate SAN check
DETAILS: SAN contains hostname but not IP.

VPXD
[PASS] Supported Signature Algorithm
[PASS] Certificate trust check
[PASS] Certificate expiration check
[INFO] Certificate SAN check
DETAILS: SAN contains hostname but not IP.

VPXD-EXTENSION
[PASS] Supported Signature Algorithm
[PASS] Certificate trust check
[PASS] Certificate expiration check
[PASS] Check extended key usage
[INFO] Certificate SAN check
DETAILS: SAN contains hostname but not IP.
```

Other Tools

Can your toolbox ever be big enough?

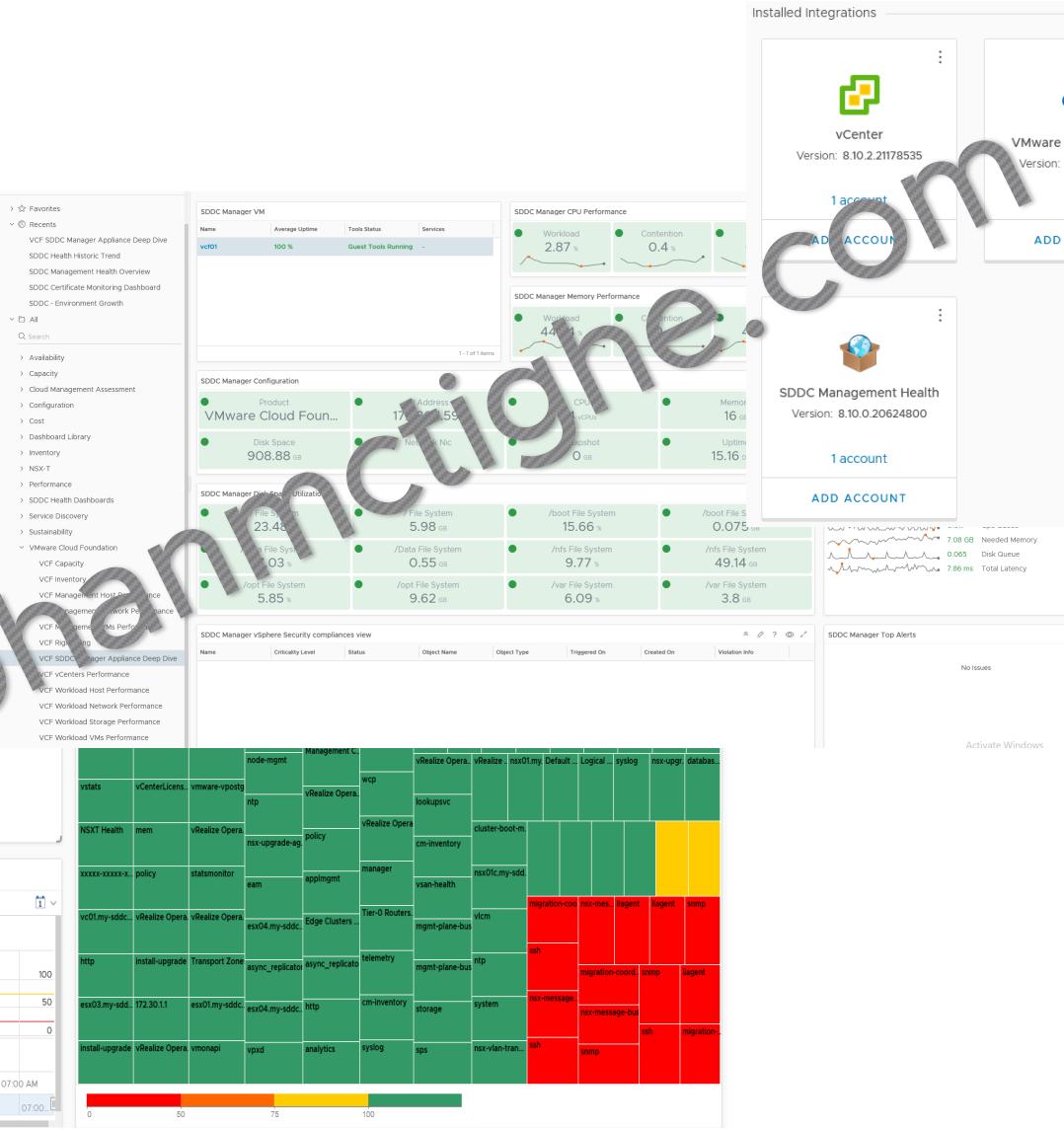
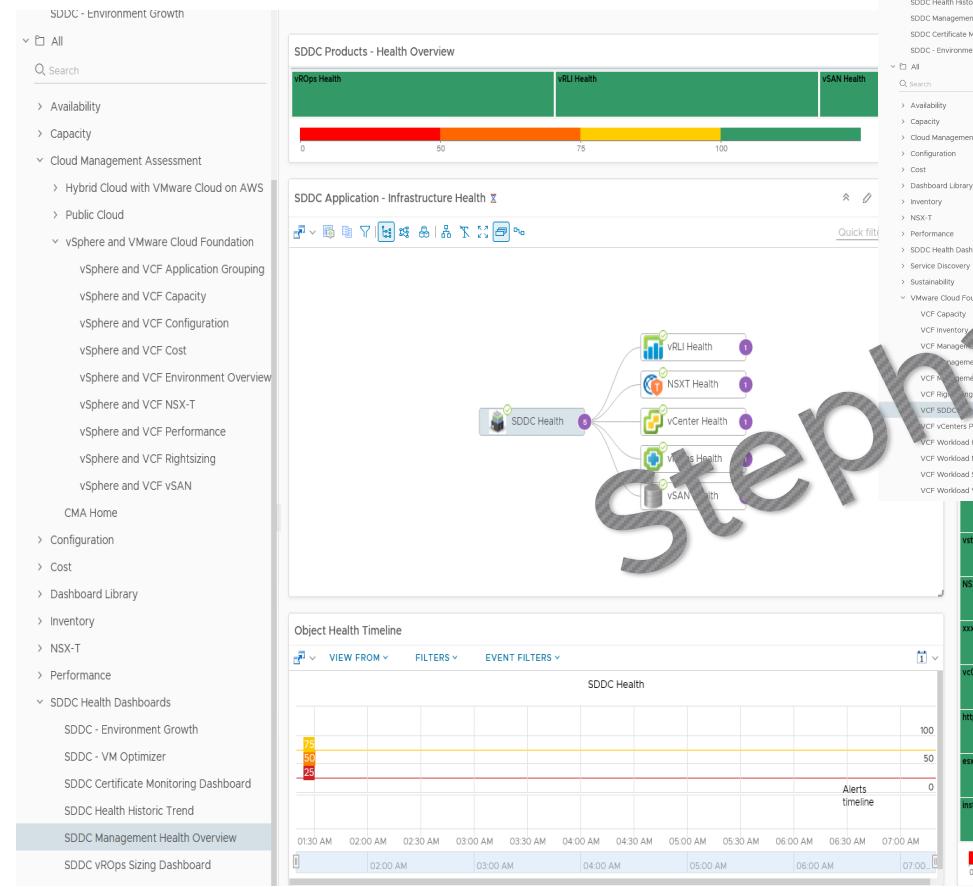
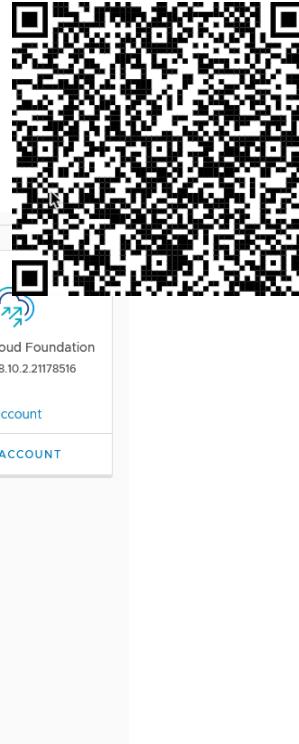


Reporting & Observability

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Aria Operations SDDC Management Packs

Managing VCF with vRealize Operations and the SDDC Health Management Pack - VMware Cloud Management



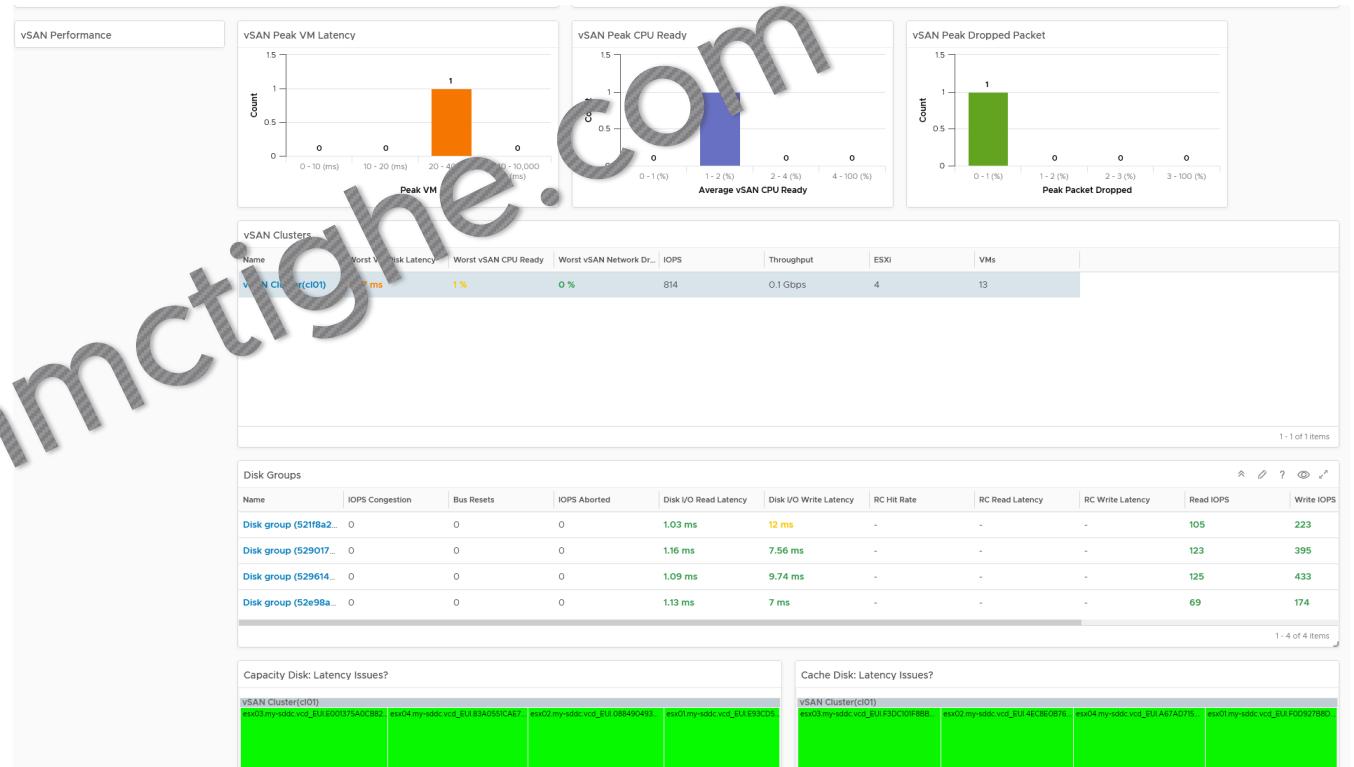
12

vSAN Performance Dashboard

28 Different Metrics in a dashboard

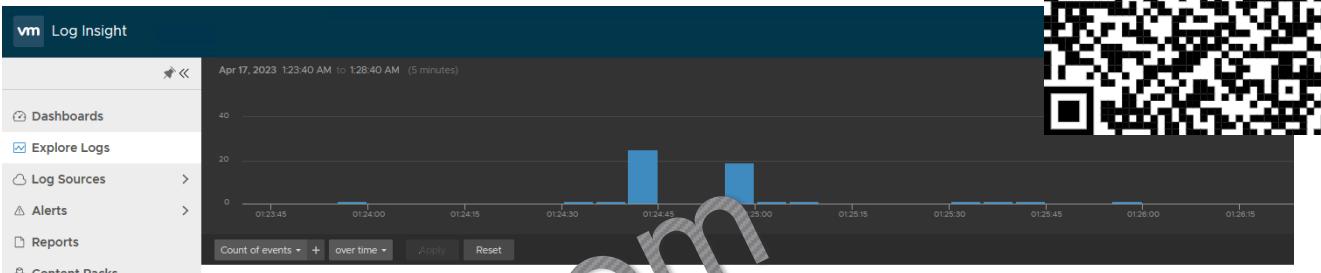
- Performance
 - Networking
 - disk
 - CPU
- Configuration details
- Capacity and cost
- Dedupe and compression info
- Utilization

All newly added clusters and workload domains automatically configured and added



Aria Operations for Logs Filtering

Unstructured Data



Basic text or RegEx Filtering

Agent based ingestion

Queries can be saved for future use or with Dashboards

View events in context

Offline Logs Importer

Auto Discovery

Integration with Aria Operations



Certificate Monitoring with Aria Operations

vCenter

ESXi

NSX-T

SDDC

Adapter \ Integration

The screenshot displays the SDDC Certificate Monitoring Dashboard. On the left, a sidebar lists various dashboards under 'Dashboards'. The 'SDDC Certificate Monitoring Dashboard' is selected and highlighted.

The main dashboard area contains several sections:

- Read Me**: A brief introduction to the dashboard.
- Certificate Monitoring Dashboard - Widget Details**: A list of certificate types monitored:
 - vCenter certificates provide information about vCenter root certificates.
 - ESXi certificates provide information about ESXi host system certificates.
 - NSX-T certificates provide information about configured NSX-T adapter instances.
 - NSX-T manager node certificates provide information about NSX-T manager nodes.
 - SDDC product certificate alerts provide certificate expiry information related to vCenter, ESXi, NSX-T server & manager nodes.
 - Adapter certificate alerts provide certificate expiry information related to vCenter, NSX-T, vRA, vRNI, AWS, GCP & VMC adapter instances.
- vCenter certificates**: A table showing certificate details for vCenter. One row is highlighted: **vc01.my-sddc.vcd** (3,568 days, OU=VMware Engine...).
- ESXi certificates**: A table showing certificate details for ESXi hosts. Four entries are listed: **esx01.my-sddc.vcd**, **esx02.my-sddc.vcd**, **esx03.my-sddc.vcd**, and **esx04.my-sddc.vcd**, all with 1,688 days remaining.
- NSX-T certificates**: A table showing certificate details for NSX-T components. Five entries are listed: **nsx01.my-sddc.vcd** (LocalManager, 688 days, CN=local-manager, ...), **nsx01.my-sddc.vcd** (mp-cluster certificate, 688 days, CN=nsx01a.my-sddc...), **nsx01.my-sddc.vcd** (tomcat certificate fo..., 688 days, CN=nsx01a.my-sddc...), **nsx01.my-sddc.vcd** (tomcat certificate fo..., 688 days, CN=nsx01b.my-sddc...), and **nsx01.my-sddc.vcd** (tomcat certificate fo..., 688 days, CN=nsx01c.my-sddc...).
- NSX-T manager node certificates**: A table showing certificate details for NSX-T manager nodes. Six entries are listed: **nsx01a.my-sddc.vcd** (83a7b866-29bc-41f..., 688 days, OU=VMware Engine...), **nsx01a.my-sddc.vcd** (APH-AR certificate f..., 3,513 days, UID=7075f1a2-2d66-...), **nsx01b.my-sddc.vcd** (7b5436ed-fd4b-4b8..., 688 days, OU=VMware Engine...), **nsx01b.my-sddc.vcd** (APH-AR certificate f..., 3,513 days, UID=8fc244ba-3873-...), **nsx01c.my-sddc.vcd** (5056db82-20c7-43..., 688 days, OU=VMware Engine...), and **nsx01c.my-sddc.vcd** (APH-AR certificate f..., 3,513 days, UID=2f05367c-3fbe-...).

Operational Do's & Don'ts

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VCF is NOT vSphere



Do everything in SDDC Manager if you don't then you break things

If its not documented, don't do it!

Be methodical and get it right the first time

Backups are even more important in VCF so make sure they are configured, running and export to a different location

SDDC Manager

vCenter

NSX Manager

Password Management & Rotation

Avoid changing passwords outside of SDDC Manager !

Passwords can be remediated, updated and rotated

Passwords can be retrieved via API or the command line

Because of the API, passwords can be fed into CMDB or password storage tools

Passwords Expire!

Avoid removing expiration settings!

The screenshot displays the VMware Cloud Foundation Password Manager interface. It shows two main sections: a table of credentials for ESXI hosts and a terminal window for retrieving a password.

Table Headers: ROTATE ALL, ROTATE NOW, SCHEDULE ROTATION, User Name, FQDN, Status, Domain, Last Modified.

Table Data (ESXI Section):

User Name	FQDN	Status	Domain	Last Modified
root	esx01.my-sddc.vcd	Active	m01	11/28/22, 3:08 AM
svc-vcf-esx01	esx01.my-sddc.vcd	Active	m01	11/28/22, 3:08 AM
root	esx02.my-sddc.vcd	Active	m01	11/28/22, 3:08 AM
svc-vcf-esx02	esx02.my-sddc.vcd	Active	m01	11/28/22, 3:08 AM
root	esx03.my-sddc.vcd	Active	m01	11/28/22, 3:08 AM
svc-vcf-esx03	esx03.my-sddc.vcd	Active	m01	11/28/22, 3:08 AM

Terminal Session (Right Panel):

```
root@vcf01 [ /home/vcf ]# lookup_passwords
Password lookup operation requires ADMIN user credentials. Please refer VMware Cloud Foundation documentation for more information.
Supported entity types: ESXI VCENTER PSC NSX_MANAGER NSX_CONTROLLER NSXT_MANAGER NSXT_EDGE VPC
Enter an entity type from above list: VCENTER
Enter page number (optional):
Enter page size (optional, default=50):
Enter Username: administrator@vsphere.local
Enter Password:
VCENTER
identifiers: 172.30.1.100,vc01.my-sddc.vcd
workload: m01
username: root
password: VMware123!
type: SSH
account type: USER
Page : 1/1, displaying 1 of total 1 entities in a page.
```

Table Headers (NSXT Manager Section): ROTATE ALL, ROTATE NOW, SCHEDULE ROTATION, User Name, FQDN, Status, Domain, Last Modified, Rotation Schedule, Next Rotation.

Table Data (NSXT Manager Section):

User Name	FQDN	Status	Domain	Last Modified	Rotation Schedule	Next Rotation
admin	nsx01.my-sddc.vcd	Active	m01	3/29/23, 4:12 AM	Disabled	--
root	nsx01.my-sddc.vcd	Active	m01	3/29/23, 4:59 AM	Disabled	--
audit	nsx01.my-sddc.vcd	Active	m01	3/29/23, 7:14 AM	Disabled	--

Patching & Upgrades

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Pre Upgrade Checks

Example runbook considerations

Check release notes!

Hardware and firmware checks

Custom images

Upgrade bundles

Run health checks

Confirm backups

Cold Snapshots

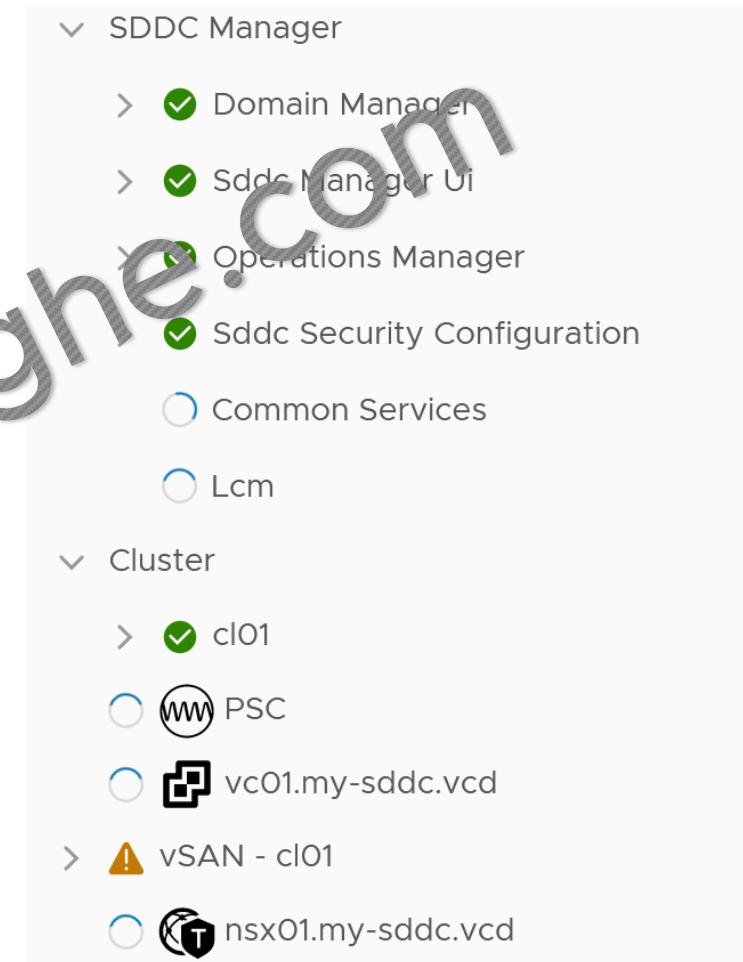
Backup vDS

3rd Party integrations

Proactive SR (if you have an appropriate support agreement)



Upgrade pre assessment



Example Upgrade Order



VMware Aria Suite

Formerly vRealize

Individual Aria product upgrades (Flexible)

Product Support Packs

Interoperability

Configuration Automation (Workload Domains)

Certificate and Password Management



Questions?



Thank You