



Stateless Container und das Speichern von Daten

Jochen Schröder | Senior Solution Architect

-----● The Authority on Software-Defined Storage

Über uns: Global bewährt



Über 30.000 Installationen weltweit

Über 10.000 Kunden

Produkt der
10. Generation

Kunden in allen Branchen & Größen

Software-Defined Storage & Hyper-Converged

Technologie: Storage Virtualization & Parallel I/O



Standorte

- Deutschland
- Frankreich
- Japan
- UK
- USA

Das anerkannte Maß der Dinge bei SDS

- Seit über 20 Jahren Vorreiter im Bereich Speichervirtualisierung – mehr als 10.000 Kunden weltweit vertrauen bereits darauf
- 22 Patente, Tendenz steigend!
- Bestens aufgestellt, um SDS in das moderne, softwaredefinierte Rechenzentrum zu bringen
- Fokussiert auf die Vision des *vereinenden* Speichersystems



Alles geht in Richtung 'softwaredefiniert'



- **Frei** – keine HW oder sonstige Abhängigkeit
- **Flexibel** – Entwickeln Sie Ihre Architektur mit Software
- **Integriert** – keine Silos, optimale Ausnutzung
- **Hochverfügbar** – flexible Architekturen ohne Ausfallzeiten
- **Smart** – optimieren Sie Ihre alten und neuen Systeme

Warum Software-Defined Storage (SDS)?

Die richtige Software muss einiges sicherstellen können:

1

Es **verschiedenartigen** Speichergeräte ermöglichen, miteinander zu **kommunizieren**

2

Das **Trennen** von Vorteilen in der **Software** von Vorteilen in der **Hardware**

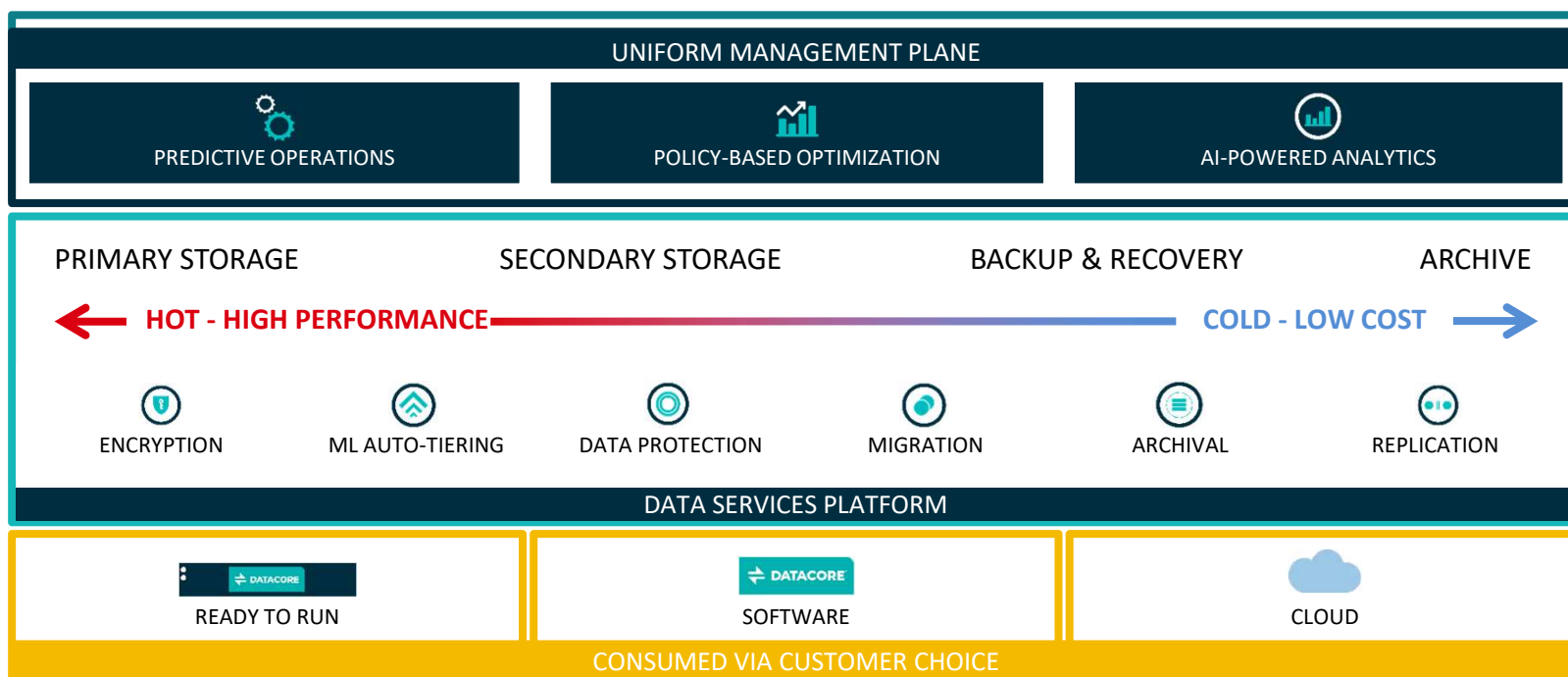
3

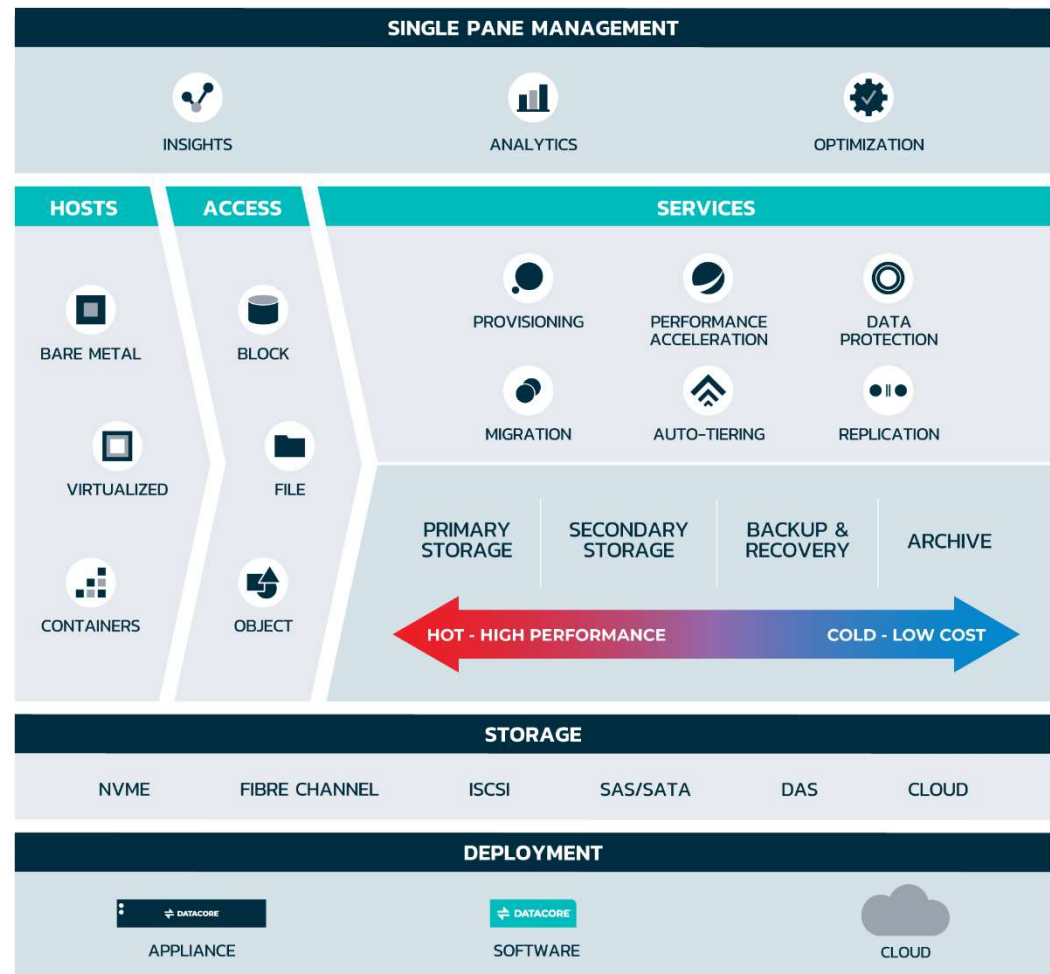
Das **Bündeln** aller Speicherkapazitäten und über ein zentrales **Management** zur Verfügung stellen

4

Hardware-Wartung, Daten Migration und Hardware-Austausch **vereinfachen**

DataCore ONE™ – Unified Storage Vision







DataCore Storage Integration am Beispiel Docker Swarm

Portainer

10.10.4.210:9000/#/volumes

Apps SolaX X-Monitoring Download Windows

Portainer support dc my account log out

Remove Add volume

Search...

Name

Stack

Driver

Mount point

☐

b4f129e22523cd988ad6ffac1c33cd1194044...

☐

Unused

local

/var/lib/docker/volum

☐

DataVol

☐

browse

-

datacore:latest

/var/lib/docker/plugin

☐

DataVol

☐

browse

-

datacore:latest

/var/lib/docker/plugin

☐

DataVol

☐

browse

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datacore:latest

/var/lib/docker/plugin

☐

DataVol

☐

browse

-

datacore:latest

/var/lib/docker/plugin

☐

portainer_portainer_data

☐

browse

portainer

local

/var/lib/docker/volum

Items per page All

Home Common Actions

Virtual Disks Hosts Storage Profiles Virtual Disk Templates System Health Live Performance Recorded Performance Tasks Reports Event Log Alerts Layout Roles Help

Lists Diagnostics

DataCore Servers Fujitsu-Blades Virtual Disks Live Performance

WS2012-Blade1

Cluster

5 GB 1,38 GB

WS201...

Healthy

4 items (1 selected)

DataVol (Mirrored) Summary

WS2012-Blade1 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-2 (Connected)

Storage source: Blade1-DAS, 1,38 GB allocated (Online) Replace Move

WS2012-Blade2 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-2 (Connected)

Storage source: Blade2-DAS, 1,38 GB allocated (Online) Replace Move

Add Mirror

Operations

26.09.2018 13:22:33.779 Refresh all Done

Server Group

(localhost)

Server Group - 192.1...

nuc1

Fujitsu-Blades - ws20...

Connect to Server Group

Connected as administrator

Portainer

10.10.4.210:9000/#/volumes/new

AppsSolaX X-MonitoringDownload Windows

Create volume

Volumes > Add volume

Portainer supportdc

my accountlog out

Name

New-Volume

Driver configuration

Driver

datacore:latest

Driver options

add driver option

name

size

value

15gb

Access control

Enable access control

Actions

Create the volume

DataCore™ Management Console - Advanced View

HomeCommon Actions

Virtual DisksDisk PoolsHostsStorage ProfilesVirtual Disk TemplatesSystem HealthLive PerformanceRecorded PerformanceTasksReportsEvent LogAlertsLayoutUsersRolesHelp

ListsDiagnostics

DataCore Servers

Fujitsu-Blades

WS2012-Blade1

Physical Disks

DataCore Disks

Virtual Disks

Disk Pools

Server Ports

WS2012-Blade2

Physical Disks

DataCore Disks

Virtual Disks

Disk Pools

Server Ports

WS2012-Blade3

Physical Disks

DataCore Disks

Virtual Disks

Disk Pools

Server Ports

WS2012-Blade4

Physical Disks

DataCore Disks

Virtual Disks

Disk Pools

Server Ports

Virtual Disks

Cluster

DataVol

5 GB

1,38 GB

WS201...

...

...

Healthy

Create Virtual Disks

4 items (1 selected)

DataVol (Mirrored) Summary

WS2012-Blade1 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-2 (Connected)

Storage source: Blade1-DAS, 1,38 GB allocated (Online)

Replace

Move

WS2012-Blade2 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-2 (Connected)

Storage source: Blade2-DAS, 1,38 GB allocated (Online)

Replace

Move

Add Mirror

Operations

26.09.2018 13:22:33.779

Refresh all

Done

Hosts

Cluster

V-Cluster-1

V-Cluster-2

centos7-1

Virtual Disks

Server Ports

centos7-2

Virtual Disks

Server Ports

centos7-3

Virtual Disks

Server Ports

centos7swarm

Virtual Disks

Server Ports

centos-7-kubernetes

Virtual Disks

Server Ports

Server Group...

(localhost)

Server Group - 192.1...

nuc1

Fujitsu-Blades - ws20...

Connect to Server Group

Portainer

10.10.4.210:9000/#/volumes

Apps SolaX X-Monitoring Download Windows

Portainer support dc my account log out

Volume list

Remove Add volume

Search...

Name	Stack	Driver	Mount point
b4f129e22523cd988ad6ffac1c33cd1194044...	-	local	/var/lib/docker/volum...
DataVol	-	datacore.latest	/var/lib/docker/plugir
DataVol	-	datacore.latest	/var/lib/docker/plugir
DataVol	-	datacore.latest	/var/lib/docker/plugir
DataVol	-	datacore.latest	/var/lib/docker/plugir
New-Volume	-	datacore.latest	/var/lib/docker/plugir
portainer_portainer_data	portainer	local	/var/lib/docker/volum...

Items per page All

DataCore™ Management Console - Advanced View

Home Common Actions Virtual Disks Hosts Storage Profiles Virtual Disk Templates System Health Live Performance Recorded Performance Tasks Reports Event Log Alerts Layout Users Roles Help

Virtual Disks

Name	Size	Allocated	Histo...	DataCo...	Repli...	Status
Cluster	5 GB	1,38 GB	...	WS201...	...	Healthy
DataVol	15	0 B	...	WS201...	...	Healthy

Create Virtual Disks

5 Items (1 selected)

New-Volume (Mirrored) Summary

WS2012-Blade2 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s):

Storage source: Blade2-DAS, 0 B allocated (Online) Replace Move

WS2012-Blade1 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s):

Storage source: Blade1-DAS, 0 B allocated (Online) Replace Move

Add Mirror

Operations

26.09.2018 13:28:13.745	Rescanning port Microsoft iSCSI Initia...	Done
26.09.2018 13:28:13.747	Rescanning port Microsoft iSCSI Initia...	Done
26.09.2018 13:28:13.747	Rescanning port Microsoft iSCSI Initia...	Done
26.09.2018 13:28:13.747	Rescanning port Microsoft iSCSI Initia...	Done

Server Group...

- (localhost)
- Server Group - 192.1...
- nuc1
- Fujitsu-Blades - ws20...

Connect to Server Group

Portainer

Nicht sicher | 10.10.4.210:9000/#/containers

Apps | SolaX X-Monitoring | Download Windows

Container list

Portainer support | dc | my account | log out

Containers

Columns | Settings

Start | Stop | Kill | Restart | Pause | Resume | Remove | Add container

Search...

Name	State Filter	Quick actions	Stack	Image	Created
webserver.1.vytqfw0q6svtihua...	stopped		-	httpd:latest	2018-09-20 12:
webserver-nonpersistent.1.mry...	stopped		-	httpd:latest	2018-09-20 13:
webserver.1.wv3awzyf73tjelk1...	stopped		-	httpd:latest	2018-09-20 12:
webserver.1.m4pekl4lolamedl...	stopped		-	httpd:latest	2018-09-20 12:
webserver-nonpersistent.1.ntt...	running		-	httpd:latest	2018-09-20 13:
webserver.1.0l1fzgx8a1vek14mm...	running		-	httpd:latest	2018-09-20 13:
webserver-nonpersistent.1.ij2...	stopped		-	httpd:latest	2018-09-20 12:
webserver.1.le6yoaxuvcs6cnz8f...	stopped		-	httpd:latest	2018-09-20 13:
webserver-nonpersistent.1.vpj...	stopped		-	httpd:latest	2018-09-20 12:
webserver-nonpersistent.1.kr8...	stopped		-	httpd:latest	2018-09-20 12:
2048.1.d14n9si0v0ao0v6krjqhlo030	running		-	ponsfrilus/2048nginx:latest	2018-09-20 12:
portainer_agent.5km394cs9hjiz...	running		portainer	portainer/agent:latest	2018-09-19 16:
portainer_agent.ivzuurtspkphh...	running		portainer	portainer/agent:latest	2018-09-20 13:
portainer_agent.ivzuurtspkphh...	stopped		portainer	portainer/agent:latest	2018-09-20 13:
portainer_agent.ivzuurtspkphh...	stopped		portainer	portainer/agent:latest	2018-09-20 12:
portainer_agent.ivzuurtspkphh...	stopped		portainer	portainer/agent:latest	2018-09-19 18:
portainer_agent.ivzuurtspkphh...	stopped		portainer	portainer/agent:latest	2018-09-19 17:
portainer_agent.plzawtevr0sy...	running		portainer	portainer/agent:latest	2018-09-20 12:

DataCore™ Management Console - Advanced View

Home | Common Actions

Virtual Disks | Hosts | Storage Profiles | Virtual Disk Templates | System Health | Live Performance | Recorded Performance | Tasks | Reports | Event Log | Alerts | Layout | Users | Roles | Help

Lists | Diagnostics

DataCore Servers

Fujitsu-Blades

WS2012-Blade1

Cluster

Name	Size	Allocated ...	Histo...	DataCo...	...	Repli...	Status
DataVol	5 GB	1,38 GB	...	WS201...	...	...	Healthy
New-V...	15 ...	0 B	...	WS201...	...	...	Healthy

Create Virtual Disks

5 items (1 selected)

DataVol (Mirrored) Summary

WS2012-Blade1 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-2 (Connected)

Storage source: Blade1-DAS, 1,38 GB allocated (Online) | Replace | Move

WS2012-Blade2 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-2 (Connected)

Storage source: Blade2-DAS, 1,38 GB allocated (Online) | Replace | Move

Add Mirror

Operations

✓ 26.09.2018 13:28:13.745	Rescanning port Microsoft iSCSI Initia...	Done
✓ 26.09.2018 13:28:13.747	Rescanning port Microsoft iSCSI Initia...	Done
✓ 26.09.2018 13:28:13.747	Rescanning port Microsoft iSCSI Initia...	Done
✓ 26.09.2018 13:28:13.747	Rescanning port Microsoft iSCSI Initia...	Done

Server Grou...

(localhost)

Server Group - 192.1...

nuc1

Fujitsu-Blades - ws20...

Connect to Server Group

Connected as administrator

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DATACORE

12

Portainer

Nicht sicher | 10.10.4.210:9000/#/containers

Apps SolaX X-Monitoring Download Windows

Portainer support dc
my account log out

Containers

Containers Columns Settings

Start Stop Kill Restart Pause Resume Remove Add container

Search...

Quick actions	Stack	Image	Created	IP Address	Host	Publish Ports
	-	httpd:latest	2018-09-20 12:46:59	-	centos7swarm.dcs muc	-
	-	httpd:latest	2018-09-20 13:23:56	-	centos7-3.dcs lab.muc	-
	-	httpd:latest	2018-09-20 12:48:13	-	centos7-3.dcs lab.muc	-
	-	httpd:latest	2018-09-20 12:41:34	-	centos7-3.dcs lab.muc	-
	-	httpd:latest	2018-09-20 13:27:14	10.255.0.27	centos7-2.dcs lab.muc	-
	-	httpd:latest	2018-09-20 13:23:56	10.255.0.26	centos7-2.dcs lab.muc	-
	-	httpd:latest	2018-09-20 12:34:53	-	centos7-1.dcs lab.muc	-
	-	httpd:latest	2018-09-20 13:21:37	-	centos7-1.dcs lab.muc	-
	-	httpd:latest	2018-09-20 12:36:19	-	centos7-1.dcs lab.muc	-
	-	httpd:latest	2018-09-20 12:31:46	-	centos7-1.dcs lab.muc	-
	-	ponsfrilus/2048nginx:latest	2018-09-20 12:53:50	10.255.0.21	centos7-2.dcs lab.muc	-
	portainer	portainer/agent:latest	2018-09-19 16:53:14	10.0.0.7	centos7swarm.dcs muc	-
	portainer	portainer/agent:latest	2018-09-20 13:37:10	10.0.0.25	centos7-3.dcs lab.muc	-
	portainer	portainer/agent:latest	2018-09-20 13:23:43	-	centos7-3.dcs lab.muc	-
	portainer	portainer/agent:latest	2018-09-20 12:40:14	-	centos7-3.dcs lab.muc	-
	portainer	portainer/agent:latest	2018-09-19 18:59:29	-	centos7-3.dcs lab.muc	-
	portainer	portainer/agent:latest	2018-09-19 17:34:26	-	centos7-3.dcs lab.muc	-
	portainer	portainer/agent:latest	2018-09-20 12:50:53	10.0.0.22	centos7-2.dcs lab.muc	-

DataCore™ Management Console - Advanced View

Home Common Actions

Virtual Disks Hosts Storage Profiles Virtual Disk Templates System Health Live Performance Recorded Performance Tasks Reports Event Log Alerts Layout Roles Help

Lists Diagnostics

DataCore Servers

Fujitsu-Blades

WS2012-Blade1

Cluster

DataVol 5 GB 1,38 GB ... WS201... Healthy

New-V... 15 ... 0 B ... WS201... Healthy

Create Virtual Disks

5 items (1 selected)

DataVol (Mirrored) Summary

WS2012-Blade1 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-2 (Connected)

Storage source: Blade1-DAS, 1,38 GB allocated (Online) Replace Move

WS2012-Blade2 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-2 (Connected)

Storage source: Blade2-DAS, 1,38 GB allocated (Online) Replace Move

Add Mirror

Operations

26.09.2018 13:28:13.745 Rescanning port Microsoft iSCSI Initia... Done

26.09.2018 13:28:13.747 Rescanning port Microsoft iSCSI Initia... Done

26.09.2018 13:28:13.747 Rescanning port Microsoft iSCSI Initia... Done

26.09.2018 13:28:13.747 Rescanning port Microsoft iSCSI Initia... Done

Server Group

(localhost)

Server Group - 192.1...

nuc1

Fujitsu-Blades - ws20...

Connect to Server Group

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DATACORE 13

Portainer

10.10.4.210:9000/#/nodes/p1zawtevr0sybqsvkpkpszd0

Node details

Swarm nodes > centos7-2.dcslab.muc

Portainer support dc
my account log out

Node specification

Name: e.g. my-manager

Host name: centos7-2.dcslab.muc

Role: worker

Availability: **Drain**

Status: **ready**

[View the Docker Swarm mode Node documentation here.](#)

Apply changes

Node description

CPU	1
Memory	16.23 GB
Platform	linux x86_64
Docker Engine version	18.06.1-ce

Engine labels

There are no engine labels for this node.

Node labels

There are no labels for this node.

DataCore™ Management Console - Advanced View

Home Common Actions

Virtual Disks Disk Pools Hosts Storage Profiles Virtual Disk Templates System Health Live Performance Recorded Performance Tasks Reports Event Log Alerts Layout Roles Help

Lists Diagnostics

DataCore Servers

Fujitsu-Blades

- WS2012-Blade1
 - Physical Disks
 - DataCore Disks
 - Virtual Disks
 - Disk Pools
 - Server Ports
- WS2012-Blade2
 - Physical Disks
 - DataCore Disks
 - Virtual Disks
 - Disk Pools
 - Server Ports
- WS2012-Blade3
 - Physical Disks
 - DataCore Disks
 - Virtual Disks
 - Disk Pools
 - Server Ports
- WS2012-Blade4
 - Physical Disks
 - DataCore Disks
 - Virtual Disks
 - Disk Pools
 - Server Ports

Virtual Disks

Name	Size	Allocated	...	Histo...	...	DataCo...	...	Repli...	Status
Cluster									
DataVol	5 GB	1,38 GB				WS201...			Healthy
New-V...	15 ...	0 B				WS201...			Healthy

[Create Virtual Disks](#)

5 items (1 selected)

DataVol (Mirrored) Summary

WS2012-Blade1 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-2 (Connected)

Storage source: Blade1-DAS, 1,38 GB allocated (Online) [Replace](#) [Move](#)

WS2012-Blade2 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-2 (Connected)

Storage source: Blade2-DAS, 1,38 GB allocated (Online) [Replace](#) [Move](#)

[Add Mirror](#)

Operations

✓	26.09.2018 13:28:13.745	Rescanning port Microsoft iSCSI Initia...	Done
✓	26.09.2018 13:28:13.747	Rescanning port Microsoft iSCSI Initia...	Done
✓	26.09.2018 13:28:13.747	Rescanning port Microsoft iSCSI Initia...	Done
✓	26.09.2018 13:28:13.747	Rescanning port Microsoft iSCSI Initia...	Done

Hosts

Cluster

- V-Cluster-1
- V-Cluster-2
- centos7-1
 - Virtual Disks
 - Server Ports
- centos7-2
 - Virtual Disks
 - Server Ports
- centos7-3
 - Virtual Disks
 - Server Ports
- centos7-4
 - Virtual Disks
 - Server Ports
- centos7-5
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- centos7-99
 - Virtual Disks
 - Server Ports
- centos7-100
 - Virtual Disks
 - Server Ports

Server Group

(localhost)

- Server Group - 192.1...
- nuc1
- Fujitsu-Blades - ws20...

[Connect to Server Group](#)

Connected as administrator

Portainer

10.10.4.210:9000/#/nodes/p1zawtevr0sybqsvkpkpszd0

AppsSolaX X-MonitoringDownload Windows

portainer.io

HomePRIMARYDashboardApp TemplatesStacksServicesContainersImagesNetworksVolumesConfigsSecretsSwarmSETTINGSUsersEndpointsRegistriesSettings

portainer.io 1.19.1

Node details

Swarm nodes > centos7-2.dcslab.muc

Portainer supportdcmy accountlog out

Node specification

Name

e.g. my-manager

Host name

centos7-2.dcslab.muc

Role

worker

Availability

Drain

Status

ready

View the Docker Swarm mode Node documentation here.

Apply changes

Node description

CPU	1
Memory	16.23 GB
Platform	linux x86_64
Docker Engine version	18.06.1-ce

Engine labels

There are no engine labels for this node.

Node labels

There are no labels for this node.

DataCore™ Management Console - Advanced View

HomeCommon ActionsVirtual DisksHostsStorage ProfilesVirtual Disk TemplatesSystem HealthLive PerformanceRecorded PerformanceTasksReportsEvent LogAlertsLayoutUsersRolesHelpSeu...Help

DataCore Servers

Fujitsu-Blades

WS2012-Blade1

Physical Disks

DataCore Disks

Virtual Disks

Disk Pools

Server Ports

WS2012-Blade2

Physical Disks

DataCore Disks

Virtual Disks

Disk Pools

Server Ports

WS2012-Blade3

Physical Disks

DataCore Disks

Virtual Disks

Disk Pools

Server Ports

WS2012-Blade4

Physical Disks

DataCore Disks

Virtual Disks

Disk Pools

Server Ports

Virtual Disks

Cluster

DataVol

5 GB

1,38 GB

WS201...

Healthy

New-V...

15 ...

0 B

WS201...

Healthy

Create Virtual Disks

Live Performance

Histo...

DataCo...

Repli...

Status

Alerts

Hosts

Cluster

V-Cluster-1

Virtual Disks

Server Ports

V-Cluster-2

centos7-1

Virtual Disks

Server Ports

centos7-2

Virtual Disks

Server Ports

centos7-3

Virtual Disks

Server Ports

centos7swarm

Virtual Disks

Server Ports

centos-7-kubernetes

Virtual Disks

Server Ports

5 items (1 selected)

DataVol (Mirrored) Summary

WS2012-Blade1 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-1 (Connected)

Storage source: Blade1-DAS, 1,38 GB allocated (Online)ReplaceMove

WS2012-Blade2 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-1 (Connected)

Storage source: Blade2-DAS, 1,38 GB allocated (Online)ReplaceMove

Add Mirror

Operations

26.09.2018 13:28:13.745

Rescanning port Microsoft iSCSI Initia...

Done

26.09.2018 13:28:13.747

Rescanning port Microsoft iSCSI Initia...

Done

26.09.2018 13:28:13.747

Rescanning port Microsoft iSCSI Initia...

Done

26.09.2018 13:28:13.747

Rescanning port Microsoft iSCSI Initia...

Done

Server Grou...

(localhost)

Server Group - 192.1...

nuc1

Fujitsu-Blades - ws20...

Connect to Server Group

Connected as administrator

Portainer

10.10.4.210:9000/#/containers

Apps SolaX X-Monitoring Download Windows

portainer.io

Home PRIMARY Dashboard App Templates Stacks Services Containers Images Networks Volumes Configs Secrets Swarm SETTINGS Users Endpoints Registries Settings

Container list

Containers

Start Stop Kill Restart Pause Resume Remove Add container

Search...

Name	State	Quick actions	Stack	Image
webserver.1.vytqfw0q6svtihua...	stopped		-	httpd:latest
webserver-nonpersistent.1.i77...	running		-	httpd:latest
webserver-nonpersistent.1.mry...	stopped		-	httpd:latest
webserver.1.tvw3awzyf73j1elk1...	stopped		-	httpd:latest
webserver.1.wn85xf8qyo6sprth...	running		-	httpd:latest
webserver.1.le6yoaxuvcs6cnz8f...	stopped		-	httpd:latest
webserver-nonpersistent.1.vpj...	stopped		-	httpd:latest
2048.1.qvnihemiyote36doz3inbzbw0s	running		-	ponsfrilus/204
portainer_agent.5km394cs9hjiz...	running		portainer	portainer/ager
portainer_agent.ivzuurtskpihh...	running		portainer	portainer/ager
portainer_agent.ivzuurtskpihh...	stopped		portainer	portainer/ager
portainer_agent.ivzuurtskpihh...	stopped		portainer	portainer/ager
portainer_agent.ivzuurtskpihh...	stopped		portainer	portainer/ager
portainer_agent.ivzuurtskpihh...	stopped		portainer	portainer/ager
portainer_agent.48yve9c958ld6...	running		portainer	portainer/ager
portainer_agent.48yve9c958ld6...	stopped		portainer	portainer/ager
portainer_agent.48yve9c958ld6...	stopped		portainer	portainer/ager

DataCore™ Management Console - Advanced View

Home Common Actions Virtual Disks Hosts Storage Profiles Virtual Disk Templates System Health Live Performance Recorded Performance Tasks Reports Event Log Alerts Layout Roles Help

Virtual Disks Hosts Storage Profiles Virtual Disk Templates System Health Live Performance Recorded Performance Tasks Reports Event Log Alerts Layout Roles Help

DataCore Servers

Fujitsu-Blades

WS2012-Blade1

Physical Disks DataCore Disks Virtual Disks Disk Pools Server Ports

WS2012-Blade2

Physical Disks DataCore Disks Virtual Disks Disk Pools Server Ports

WS2012-Blade3

Physical Disks DataCore Disks Virtual Disks Disk Pools Server Ports

WS2012-Blade4

Physical Disks DataCore Disks Virtual Disks Disk Pools Server Ports

Virtual Disks

Cluster

DataVol 5 GB 1,38 GB ... WS201... Healthy

New-V... 15 ... 0 B ... WS201... Healthy

Create Virtual Disks

Hosts

Cluster

V-Cluster-1

Virtual Disks Server Ports

V-Cluster-2

centos7-1

Virtual Disks Server Ports

centos7-2

Virtual Disks Server Ports

centos7-3

Virtual Disks Server Ports

centos7swarm

Virtual Disks Server Ports

centos-7-kubernetes

Virtual Disks Server Ports

DataVol (Mirrored) Summary

WS2012-Blade1 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-1 (Connected)

Storage source: Blade1-DAS, 1,38 GB allocated (Online) Replace Move

WS2012-Blade2 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-1 (Connected)

Storage source: Blade2-DAS, 1,38 GB allocated (Online) Replace Move

Add Mirror

Operations

26.09.2018 13:28:13.745 Rescanning port Microsoft iSCSI Initia... Done

26.09.2018 13:28:13.747 Rescanning port Microsoft iSCSI Initia... Done

26.09.2018 13:28:13.747 Rescanning port Microsoft iSCSI Initia... Done

26.09.2018 13:28:13.747 Rescanning port Microsoft iSCSI Initia... Done

Server Grou...

(localhost)

Server Group - 192.1...

nuc1

Fujitsu-Blades - ws20...

Connect to Server Group

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DATACORE

16

Portainer

10.10.4.210:9000/#/containers

AppsSolaX X-MonitoringDownload Windows

portainer.io

HomePRIMARYDashboardApp TemplatesStacksServicesContainersImagesNetworksVolumesConfigsSecretsSwarmSETTINGSUsersEndpointsRegistriesSettings

Container list

Containers

StartStopKillRestartPauseResumeRemoveAdd container

Search...

Created	IP Address	Host	Published Ports	Ownership	
2018-09-20 12:46:59	-	centos7swarm.dcs muc	-	public	
2018-09-26 13:35:37	10.255.0.32	centos7-3.dcs lab.muc	-	public	
2018-09-20 13:23:56	-	centos7-3.dcs lab.muc	-	public	
2018-09-20 12:48:13	-	centos7-3.dcs lab.muc	-	public	
2018-09-26 13:35:37	10.255.0.30	centos7-1.dcs lab.muc	-	public	
2018-09-20 13:21:37	-	centos7-1.dcs lab.muc	-	public	
2018-09-20 12:36:19	-	centos7-1.dcs lab.muc	-	public	
ginx:latest	2018-09-26 13:36:30	10.255.0.31	centos7-3.dcs lab.muc	-	public
atest	2018-09-19 16:53:14	10.0.0.7	centos7swarm.dcs muc	-	public
atest	2018-09-20 13:37:10	10.0.0.25	centos7-3.dcs lab.muc	-	public
atest	2018-09-20 13:23:43	-	centos7-3.dcs lab.muc	-	public
atest	2018-09-20 12:40:14	-	centos7-3.dcs lab.muc	-	public
atest	2018-09-19 18:59:29	-	centos7-3.dcs lab.muc	-	public
atest	2018-09-19 17:34:26	-	centos7-3.dcs lab.muc	-	public
atest	2018-09-20 13:36:57	10.0.0.24	centos7-1.dcs lab.muc	-	public
atest	2018-09-20 12:36:05	-	centos7-1.dcs lab.muc	-	public
atest	2018-09-20 12:02:36	-	centos7-1.dcs lab.muc	-	public

portainer.io 1.19.1

DataCore™ Management Console - Advanced View

HomeCommon ActionsVirtual DisksHostsStorage ProfilesVirtual Disk TemplatesSystem HealthLive PerformanceRecorded PerformanceTasksReportsEvent LogAlertsLayoutRolesHelpUsersSeu...Help

DataCore Servers

Fujitsu-Blades

WS2012-Blade1

Physical DisksDataCore DisksVirtual DisksDisk PoolsServer Ports

WS2012-Blade2

Physical DisksDataCore DisksVirtual DisksDisk PoolsServer Ports

WS2012-Blade3

Physical DisksDataCore DisksVirtual DisksDisk PoolsServer Ports

WS2012-Blade4

Physical DisksDataCore DisksVirtual DisksDisk PoolsServer Ports

Virtual Disks

Cluster

DataVol5 GB1,38 GBWS201...Healthy

New-V...15...0 BWS201...Healthy

Create Virtual Disks

Live Performance

Hosts

Host(s): centos7-1 (Connected)

Storage source: Blade1-DAS, 1,38 GB allocated (Online)ReplaceMove

Diagnosics

DataVol (Mirrored) Summary

WS2012-Blade1 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-1 (Connected)

Storage source: Blade1-DAS, 1,38 GB allocated (Online)ReplaceMove

WS2012-Blade2 (Running)

Data status: Up to date

Host access: Read/Write

Mirror link: Available

Host(s): centos7-1 (Connected)

Storage source: Blade2-DAS, 1,38 GB allocated (Online)ReplaceMove

Add Mirror

Operations

26.09.2018 13:28:13.745Rescanning port Microsoft iSCSI Initia...Done

26.09.2018 13:28:13.747Rescanning port Microsoft iSCSI Initia...Done

26.09.2018 13:28:13.747Rescanning port Microsoft iSCSI Initia...Done

26.09.2018 13:28:13.747Rescanning port Microsoft iSCSI Initia...Done

Server Grou...

(localhost)

Server Group - 192.1...

nuc1

Fujitsu-Blades - ws20...

Connect to Server Group

Connected as administrator

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DATACORE

17



DataCore Storage Integration am Beispiel Kubernetes

Kubernetes Dashboard

The screenshot shows the Kubernetes Dashboard interface. The left sidebar contains a menu with categories like Persistent Volumes, Roles, Storage Classes, Namespace (selected), Overview, Workloads, Cron Jobs, Daemon Sets, Deployments, Jobs, Pods, Replica Sets, Replication Controllers, Stateful Sets, Discovery and Load Balancing, Ingresses, Services, Config and Storage, Config Maps, Persistent Volume Claims, Secrets, Settings, and About. The main content area is titled 'Workloads' and includes a 'Workloads Statuses' section with five green circular progress indicators for Daemon Sets, Deployments, Pods, Replica Sets, and Stateful Sets, all showing 100.00%. Below this is a 'Daemon Sets' table with columns for Name, Labels, Pods, Age, and Images. The first row, 'csi-datacore-plugin', is highlighted with a red box. A red arrow points from the 'Namespace' dropdown in the sidebar to the 'csi-datacore-plugin' row. Below the Daemon Sets table is a 'Deployments' section.

Name	Labels	Pods	Age	Images
csi-datacore-plugin	-	3 / 3	6 days	quay.io/k8scsi/driver-registrar:v0.3.0 datacoresoftware/csi-plugin:1.0.0
kube-flannel-ds	app: flannel tier: node	4 / 3	6 days	quay.io/coreos/flannel:v0.10.0-amd64 quay.io/coreos/flannel:v0.10.0-amd64
kube-flannel-ds-amd64	app: flannel tier: node	4 / 4	6 days	quay.io/coreos/flannel:v0.10.0-amd64 quay.io/coreos/flannel:v0.10.0-amd64
kube-flannel-ds-arm	app: flannel tier: node	0 / 0	6 days	quay.io/coreos/flannel:v0.10.0-arm quay.io/coreos/flannel:v0.10.0-arm
kube-flannel-ds-arm64	app: flannel tier: node	0 / 0	6 days	quay.io/coreos/flannel:v0.10.0-arm64 quay.io/coreos/flannel:v0.10.0-arm64
kube-flannel-ds-ppc64le	app: flannel tier: node	0 / 0	6 days	quay.io/coreos/flannel:v0.10.0-ppc64le quay.io/coreos/flannel:v0.10.0-ppc64le
kube-flannel-ds-s390x	app: flannel tier: node	0 / 0	6 days	quay.io/coreos/flannel:v0.10.0-s390x quay.io/coreos/flannel:v0.10.0-s390x
kube-proxy	k8s-app: kube-proxy	4 / 4	6 days	k8s.gcr.io/kube-proxy:v1.13.1

Das DataCore Deamon Set

The screenshot shows the Kubernetes dashboard interface. The left sidebar contains navigation links for Persistent Volumes, Roles, Storage Classes, Namespace (kube-system), Overview, Workloads (Cron Jobs, Daemon Sets, Deployments, Jobs, Pods, Replica Sets, Replication Controllers, Stateful Sets), Discovery and Load Balancing (Ingresses, Services), Config and Storage (Config Maps, Persistent Volume Claims, Secrets), Settings, and About. The main content area displays the details for the 'csi-datacore-plugin' DaemonSet in the 'kube-system' namespace. The 'Details' section shows the Name, Namespace, Annotations, Creation Time, and Images. The 'Services' section indicates there are no services to display. The 'Pods' section shows a table of three running pods, each on a 'centos7-k8s-1.dcslab.muc' node. The 'Events' section indicates there are no events to display.

Details

Name: csi-datacore-plugin
Namespace: kube-system
Annotations: deprecated.daemonset.template.generation: 1
Creation Time: 2019-01-02T14:20 UTC
Images: quay.io/k8scsi/driver-registrar:v0.3.0, datacoresoftware/csi-plugin:1.0.0

Status
Pods: 3 running

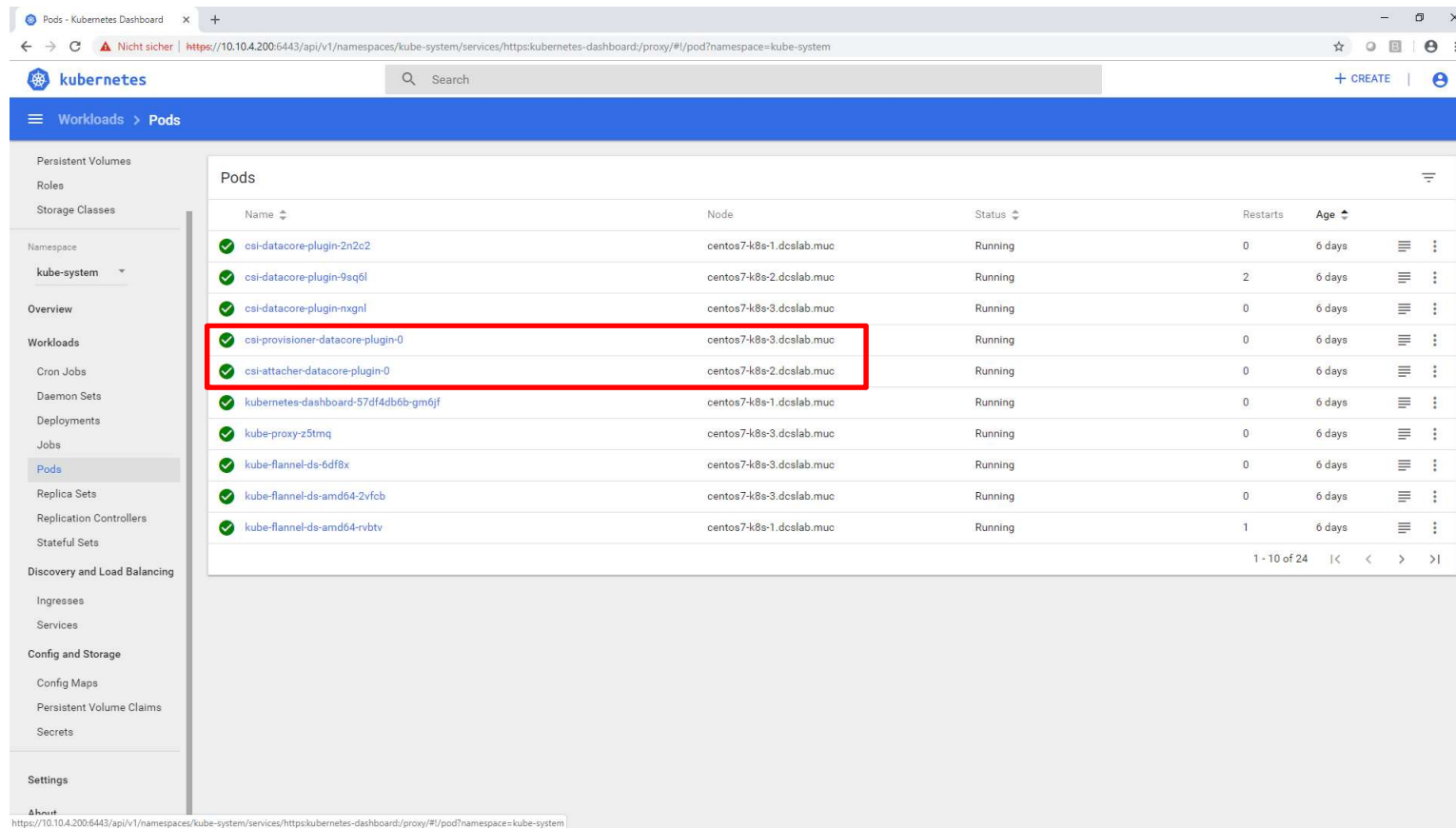
Services
There is nothing to display here
There are currently no Services with the same label selector as this Daemon Set.

Pods

Name	Node	Status	Restarts	Age
csi-datacore-plugin-2n2c2	centos7-k8s-1.dcslab.muc	Running	0	6 days
csi-datacore-plugin-9sq6l	centos7-k8s-2.dcslab.muc	Running	2	6 days
csi-datacore-plugin-nxgnl	centos7-k8s-3.dcslab.muc	Running	0	6 days

Events
There is nothing to display here
It is possible that all events have expired.

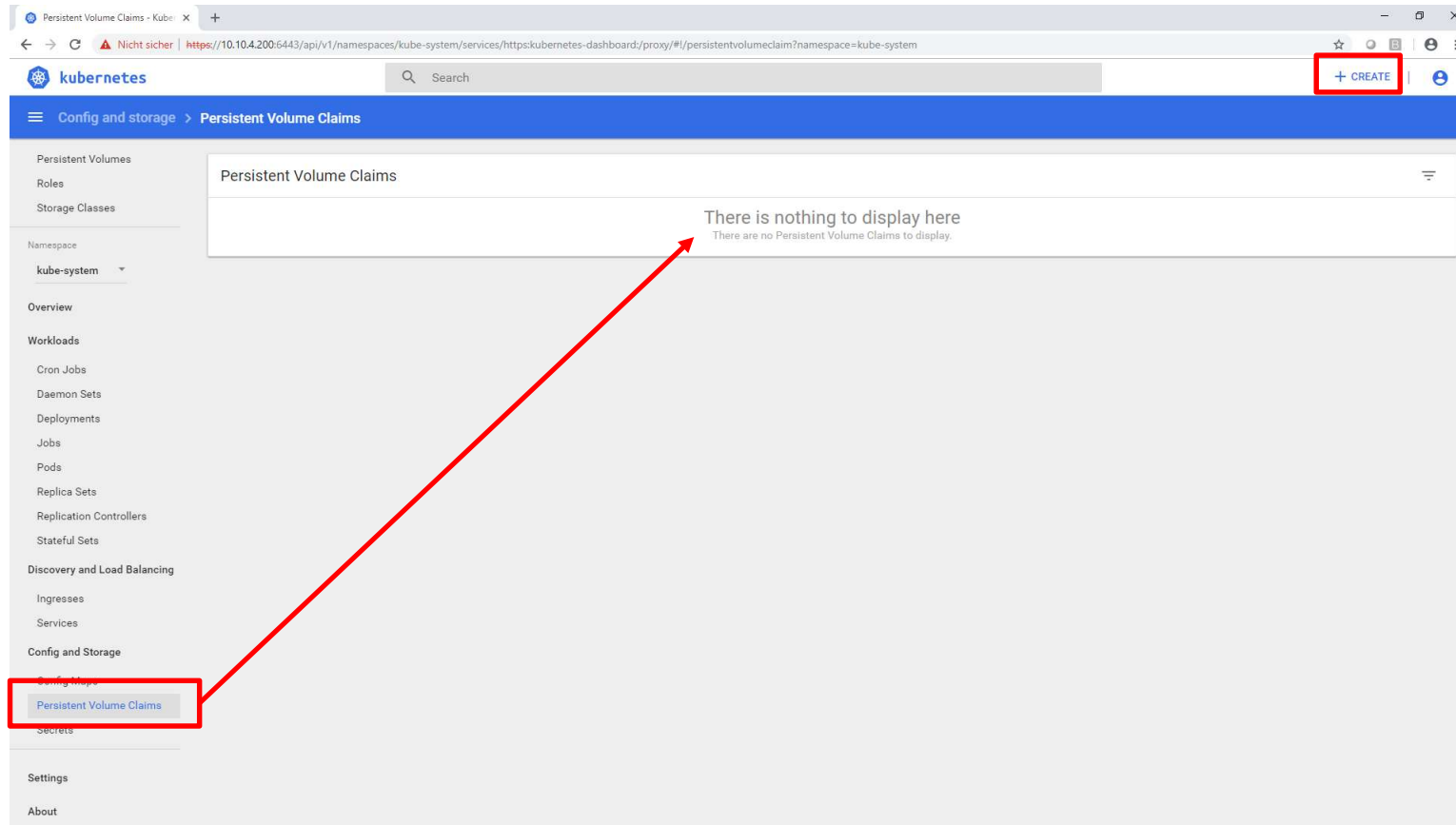
Zusätzliche Pods zur Verwaltung



The screenshot shows the Kubernetes Dashboard interface. The left sidebar contains navigation links for various Kubernetes resources. The main area displays a table of Pods in the 'kube-system' namespace. The table has columns for Name, Node, Status, Restarts, and Age. Two Pods are highlighted with a red box: 'csi-provisioner-datacore-plugin-0' and 'csi-attacher-datacore-plugin-0'. Both are in a 'Running' status on the 'centos7-k8s-2.dcslab.muc' node.

Name	Node	Status	Restarts	Age
csi-datacore-plugin-2n2c2	centos7-k8s-1.dcslab.muc	Running	0	6 days
csi-datacore-plugin-9sq6l	centos7-k8s-2.dcslab.muc	Running	2	6 days
csi-datacore-plugin-nxgnl	centos7-k8s-3.dcslab.muc	Running	0	6 days
csi-provisioner-datacore-plugin-0	centos7-k8s-3.dcslab.muc	Running	0	6 days
csi-attacher-datacore-plugin-0	centos7-k8s-2.dcslab.muc	Running	0	6 days
kubernetes-dashboard-57df4db6b-gm6jf	centos7-k8s-1.dcslab.muc	Running	0	6 days
kube-proxy-z5tmq	centos7-k8s-3.dcslab.muc	Running	0	6 days
kube-flannel-ds-6df8x	centos7-k8s-3.dcslab.muc	Running	0	6 days
kube-flannel-ds-amd64-2vfcv	centos7-k8s-3.dcslab.muc	Running	0	6 days
kube-flannel-ds-amd64-rvbtv	centos7-k8s-1.dcslab.muc	Running	1	6 days

DataCore vDisk als Persistent Volume Claim



DataCore vDisk als Persistent Volume Claim

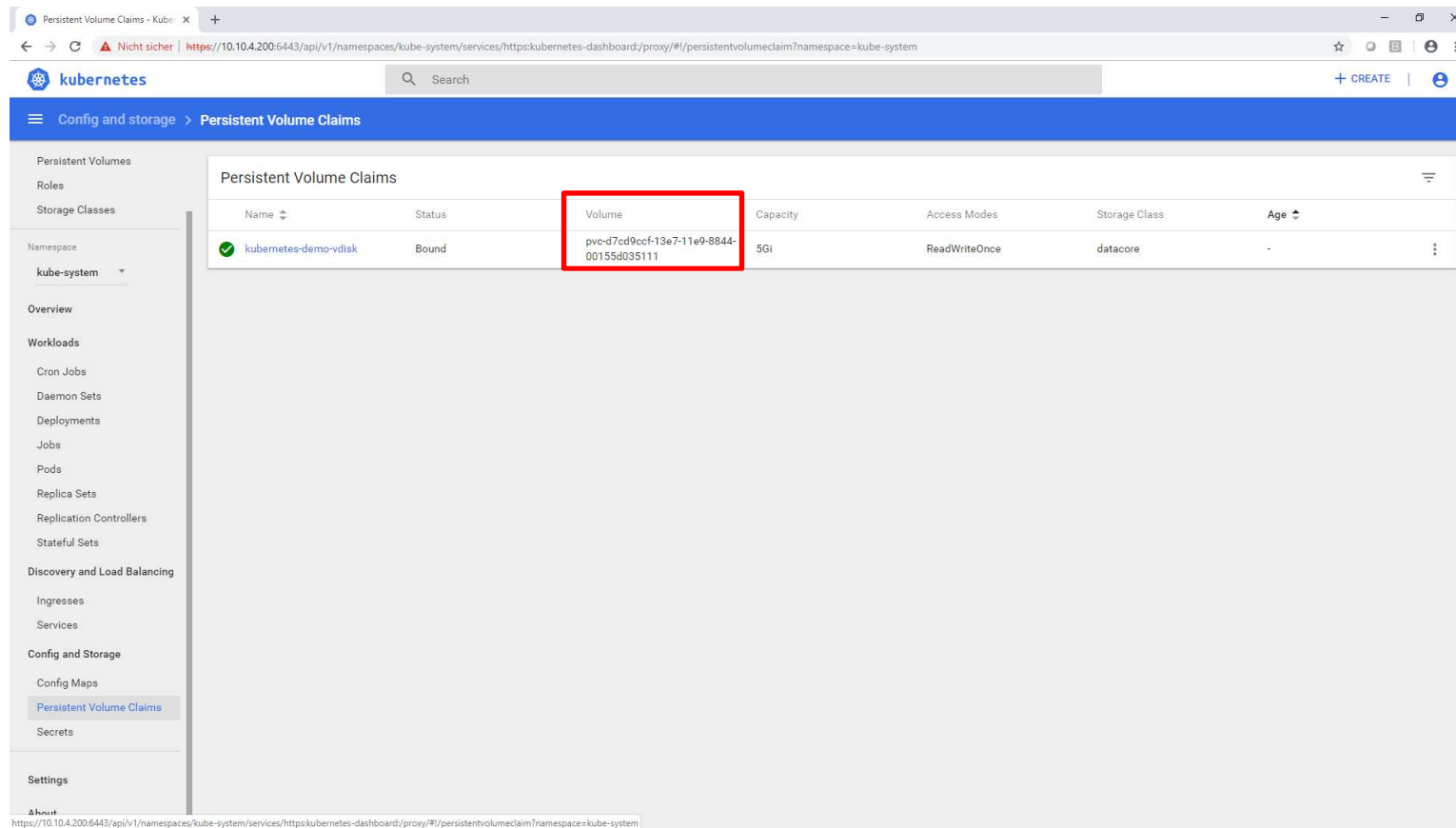
The screenshot shows the 'Resource creation' page in the Kubernetes dashboard. The left sidebar contains a navigation menu with categories like Persistent Volumes, Roles, Storage Classes, Namespace (set to kube-system), Overview, Workloads, Cron Jobs, Daemon Sets, Deployments, Jobs, Pods, Replica Sets, Replication Controllers, Stateful Sets, Discovery and Load Balancing, Ingresses, Services, Config and Storage, Config Maps, Persistent Volume Claims, Secrets, Settings, and About.

The main content area has three tabs: 'CREATE FROM TEXT INPUT' (selected), 'CREATE FROM FILE', and 'CREATE AN APP'. Below the tabs is a text area for entering YAML or JSON content. The content is a PersistentVolumeClaim configuration for 'kubernetes-demo-vdisk' using the 'datacore' storage class. The configuration is as follows:

```
1 apiVersion: v1
2 kind: PersistentVolumeClaim
3 metadata:
4   name: kubernetes-demo-vdisk
5 spec:
6   accessModes:
7     - ReadWriteOnce
8   resources:
9     requests:
10      storage: 5Gi
11   storageClassName: datacore
```

A red box highlights the YAML content, and another red box highlights the 'UPLOAD' button. A red arrow points from the 'storageClassName: datacore' line to the 'UPLOAD' button.

DataCore vDisk als Persistent Volume Claim



The screenshot shows the Kubernetes dashboard interface. The left sidebar contains navigation links for Persistent Volumes, Roles, Storage Classes, and various Kubernetes resources. The main panel displays the 'Persistent Volume Claims' table for the 'kube-system' namespace. A single claim, 'kubernetes-demo-vdisk', is listed with a status of 'Bound'. The 'Volume' column for this claim contains the ID 'pvc-d7cd9ccf-13e7-11e9-8844-00155d035111', which is highlighted by a red rectangular box.

Name	Status	Volume	Capacity	Access Modes	Storage Class	Age
✓ kubernetes-demo-vdisk	Bound	pvc-d7cd9ccf-13e7-11e9-8844-00155d035111	5Gi	ReadWriteOnce	datacore	-

Blick in die SANsymphony Konsole

The screenshot displays the DataCore Management Console in 'Advanced View'. The interface includes a top navigation bar with tabs for 'Home', 'Common Actions', and 'Virtual Disk Actions'. Below this is a toolbar with icons for 'Add Mirror', 'Serve to Hosts', 'Start Reclamation', 'Abort Reclamation', 'Delete', 'Create Snapshot', and 'Create Replication'. The main content area is divided into three panes. The left pane, 'DataCore Servers', shows a tree view of the environment including 'Fujitsu-Blades' and various 'WS2012-Blade' instances. The central pane, 'Virtual Disks', is active and shows a list of virtual disks. One disk, 'Virtual Disk pvc-d7cd9ccf-13e7-11e9-8844-00155d035111', is highlighted with a red box. The right pane, 'Hosts', shows a list of hosts including 'Cluster', 'V-Cluster-1', 'V-Cluster-2', and several 'centos' and 'FreesDP' instances. Below the main content area is an 'Operations' section showing a log of recent actions, including 'Refresh all' and 'Add physical disk 'EMC SYMMETRIX' to pool 'EMC-Pool1''. The bottom status bar indicates 'Connected as administrator'.

Virtual Disk pvc-d7cd9ccf-13e7-11e9-8844-00155d035111

Description: Created from template 0b35d7f1f5e-11e9-8844-00155d035111

Size: 5 GB
Sector size: 512 B
Reserved space: 0 B
Storage profile: Normal
Host(s):

Info Settings Paths Snapshots Rollbacks Replication Owned By Performance Events

WS2012-Blade2 (Running)

Data status: Up to date
Host access: Read/Write
Mirror link: Available
Host(s):
Storage source: Blade2-OAS, 0 B allocated (Online) Replace Move
Tier affinity: 1, 2

WS2012-Blade1 (Running)

Data status: Up to date
Host access: Read/Write
Mirror link: Available
Host(s):
Storage source: Blade1-OAS, 0 B allocated (Online) Replace Move
Tier affinity: 1, 2

Add Mirror

Operations

09.01.2019 09:24:50.955 Refresh all Done
09.01.2019 09:25:06.467 Add physical disk 'EMC SYMMETRIX' to pool 'EMC-Pool1' Done



Coming soon...



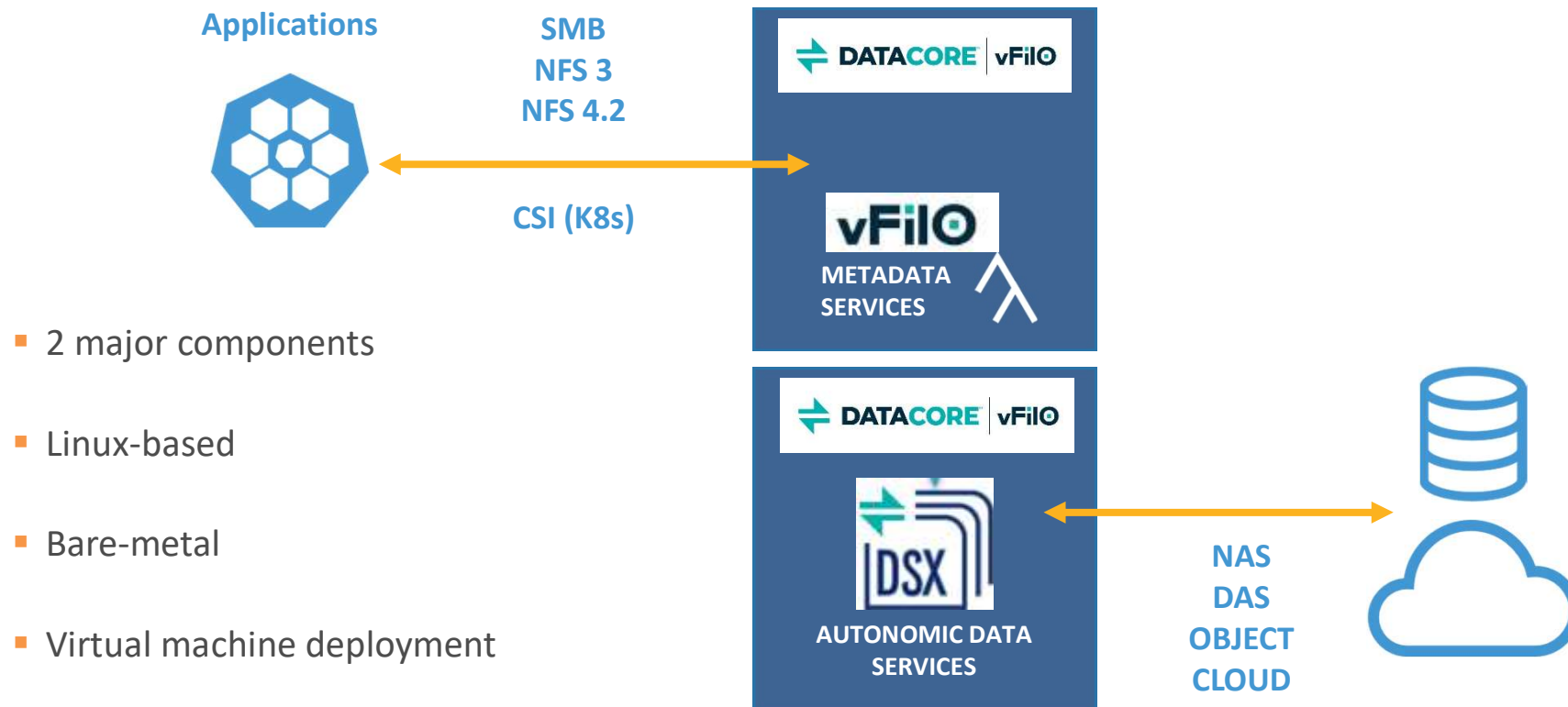
Wait...



Coming TODAY.



Software Components



- 2 major components
- Linux-based
- Bare-metal
- Virtual machine deployment

Dashboard

Performance

IOPS

Read Write

No data to display.

1PM 2PM 3PM

Bandwidth

Read Write

No data to display.

1PM 2PM 3PM

Metadata OPS

Max: 2 OPS

0 OPS Read & Write



1PM 2PM 3PM

Open File Performance

No data to display

Capacity

Storage

8 Storage Systems | 5 Volumes | 6 Shares | 22 Files

Total

595 GB Total

30.5 GB used 94.9% free

Growth



Wed Thu Fri Sat Sun Mon Tue

Capacity

22 Files



Alignment

Volumes Exceeding Thresholds (0)

Performance Capacity

No data to display.

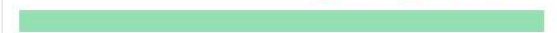
4PM

Mobility Bandwidth

No data to display.

File Alignment

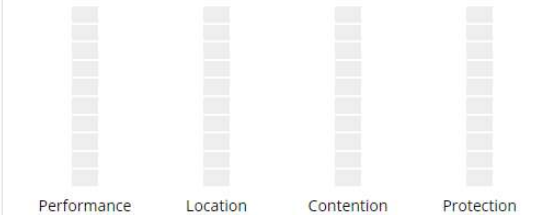
0.00% 0.00% 100%



Last updated: 4:04 PM Nov 12, 2019

Current Mobility Reasons

0 Files



Managed Objects: Infrastructure & Data

[Shares](#)
[Storage Systems](#)
[Volume Groups](#)
[Volumes](#)

+ Add Storage System

Name	Volumes	Volume Status	Type
dsx1alfons.dclslab.muc	1	1 0 0 0	DataCore
dsxalfons2.dclslab.muc	1	1 0 0 0	DataCore
dsx3.dclslab.muc	1	0 0 0 1	DataCore
DFS Test	1	0 0 1 0	Other
Google Cloud	2	0 0 0 2	Google Cloud Stor
Ubuntu Share	1	0 0 0 1	Other
Isilon	3	1 0 0 2	EMC Isilon
NetApp	1	0 1 0 0	NetApp C-

Add Storage System

Name:

Type:

EMC Isilon
 EMC Unity
 EMC VNX
 Google Cloud Filestore
 NetApp 7-Mode
 NetApp C-Mode
 NetApp Cloud Volume
 SoftNAS Cloud
 Other NFS
 AWS S3
 Azure
 Cloudian HyperStore
 Dell/EMC ECS
 Generic S3
 Google Cloud Storage

Add Storage System

Supports [CSI Spec 1.1.0](#)

Implements the Identity, Node, and Controller interfaces as single Golang binary.

Supported Capabilities

- CREATE_DELETE_VOLUME
- GET_CAPACITY
- CREATE_DELETE_SNAPSHOT
- STAGE_UNSTAGE_VOLUME
- GET_VOLUME_STATS

Unsupported Capabilities

- LIST_VOLUMES
- LIST_SNAPSHOTS
- EXPAND_VOLUME
- CLONE_VOLUME

Volume Types

File-backed Block Volume (raw device)

- Storage is exposed to the container as a raw device
- Exists as a special device file on  **DATACORE** | **vFile** share (backing share)

File-backed Mounted volume (filesystem)

- Storage is exposed to the container as a directory
- Exists as a special device file on  **DATACORE** | **vFile** share (backing share) which contains a filesystem

Share-backed Mounted volume (shared filesystem)

- Storage is exposed to the container as a directory
- Exists as  **DATACORE** | **vFile** share
- Mounted via NFS



Fragen? Fragen!



Vielen Dank.