



Herzlich Willkommen!

# VMware – vUpdate Austria 2024

19. November 2024 – Wien  
26. November 2024 – Graz



bechtle



evoila



NetApp®



RELAX,  
WE CARE



# Programm:

15:00 – 15:30	Die Gestaltung der Zukunft – What's new from VMware Explore? <i>Peter Trawnicek - VMware</i>
15:30 – 16:00	What's next with VMware Cloud Foundation? <i>Harald Schneider - Bechtle</i>
16:00 – 16:30	Private secure AI with VMware & Nvidia <i>Dominik Steiner - NTS</i>
<b>16:30 – 17:00</b>	<b>PAUSE</b>
17:00 – 17:30	VMware vSphere – What's new? <i>Patrick Hawranek - ACP</i>
17:30 – 18:00	What's new on Tanzu? <i>Maximilian Marschall - Evoila</i>
18:00 – 18:30	VMware & NetApp – What's new? <i>Christoph Bauer - NetApp</i>
18:30	Dinner

# Die Gestaltung der Zukunft

What's new at VMware from Explore



Peter Trawnicek

Country Manager | VMware Austria

**#1** Die Zukunft ist „privat“

**#2** VCF = Skalierung & Automatisierung  
der Cloud im eigenen Haus

**#3** Partnerschaft für Innovation





**Wir hören zu!**

## “Die 3 C’s”

Cost

Complexity

Compliance

KEINE PLÄNE  
ZURÜCKZUKEHREN

57%

83%

Der Unternehmen "planen  
Workloads zurück in die Private  
Cloud zu verlagern"

RÜCKZUGSPLÄNE

43%

17%

2H20

1H21

2H21

1H22

2H22

1H23

2H23

1H24

# Die Zukunft ist Privat

Private  
Cloud



Private  
AI

Private



Data

DIE REALITÄT....

# Silos bremsen Innovation



COMPUTE




STORAGE



NETWORKING



## Cloud Services on AWS, GCP, and Azure Ranked by Share of Costs

Ranking	AWS		Google Cloud		Azure	
1	EC2	42%	Compute Engine	28%	Virtual Machines	29%
2	RDS	7%	Cloud Storage	19%	Managed SQL	17%
3	S3	4%	BigQuery	9%	App Service	10%
4	OpenSearch	4%	Dataflow	9%	Storage	10%
5	DynamoDB	3%	Bigtable 	6%	SQL Database	7%
6	EBS	3%	Pub/Sub	4%	Azure Postgres	4%
7	CloudWatch	1%	Cloud Logging	4%	Redis Cache	2%
8	CloudFront	1%	Spanner	3%	Azure Databricks	2%
9	NAT Gateways	1%	Cloud SQL	2%	Log Analytics	2%
10	ELB	1%	App Engine	2%	Bandwidth	2%

# Traditionelle Architekturen



42%

HÖHERE

cost of  
operations



40%

MEHR

physical server  
footprint



34%

HÖHERE

infrastructure  
cost



34%

HÖHERE

three-year  
cost per VM  
(€2,115)

# Traditionelle Werkzeuge





Alles aber nichts wirklich



# VCF – Unendlichen Möglichkeiten



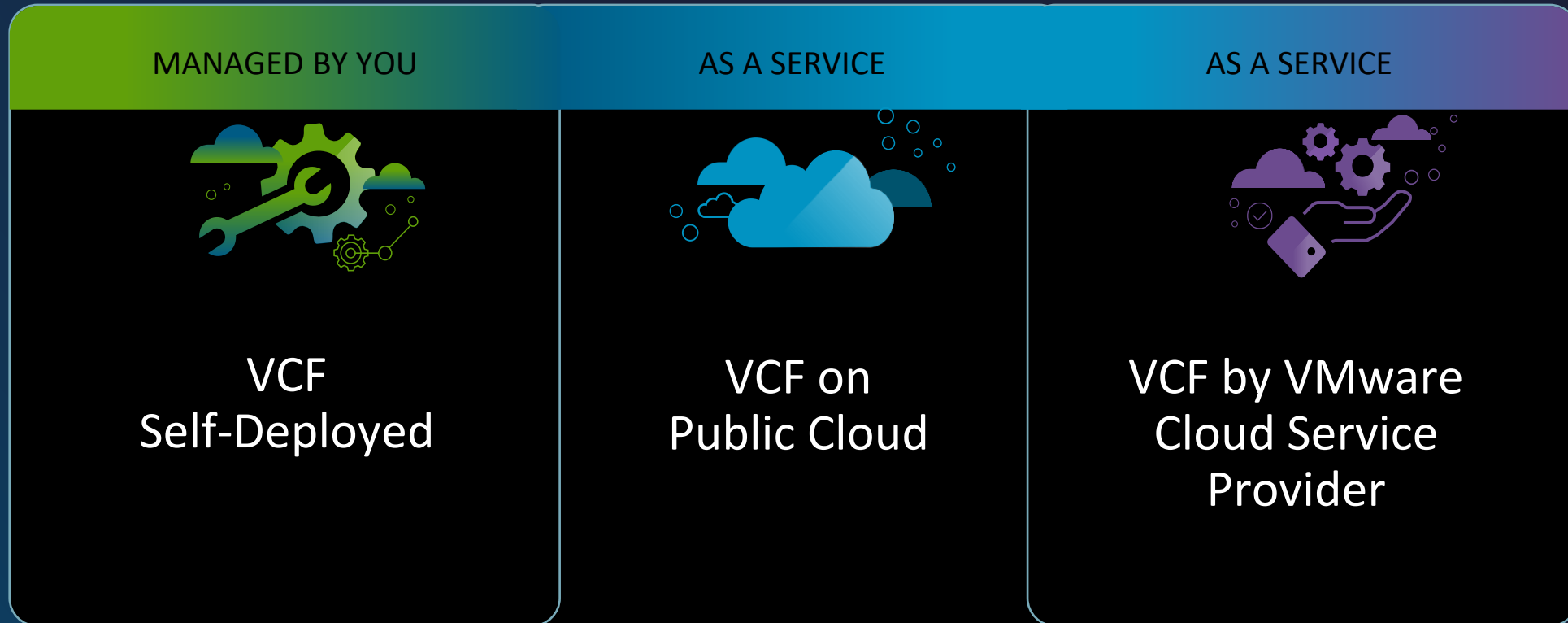


# VMware Cloud Foundation

## Your Private Cloud

# Private Cloud Is Not a Place

# VCF – Private Cloud Flexibilität





# VMware Cloud Foundation

AUTOMATION AND OPERATIONS

COMPUTE



STORAGE



NETWORKING



ADVANCED SERVICES FOR VCF

Private AI

Disaster Recovery

Advanced Security

Load Balancing

Container Application Services

Data Services

Edge Orchestration

Business Process Workload Automation

VMware Cloud Foundation

Modern Cloud Interface

MANAGE

Tenant Management, Content



AI / ML



Traditional VMs



K8s

OPERATE

Service Catalog, Orchestration, Apps



CONSUME

MANAGE

Capacity, Tenancy, Configuration



Automation and Operations



Compute (VMware vSphere)



Storage (VMware vSAN)



Networking (VMware NSX)



OPERATE

SRE Ops, Fleet and Security Management



BUILD  
DEPLOY  
OPERATE



# A Robust Catalog of Advanced Services



VORSTELLUNG



# VMware Cloud Foundation 9

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Wir sind für Euch da!



# Private Cloud Modernization Program Enhancements

1 ASSESS



Private Cloud Maturity and Optimization

2 ACCELERATE



VCF Jumpstart Workshops

3 ACHIEVE



Free Learning and New VCF Certification

100%

# Vielen Dank

**Peter Trawnicek**

Country Manager | VMware Austria

# What's new on VCF?



Harald Schneider

Consultant / Solution Architect | Bechtle Austria GmbH



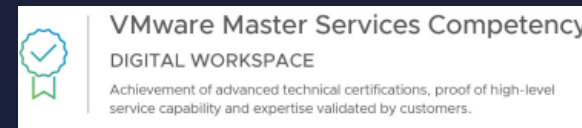
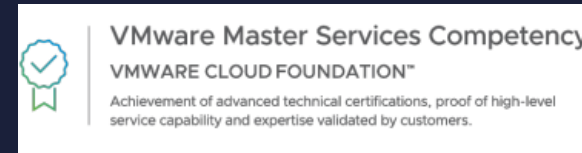
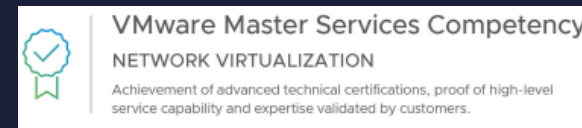
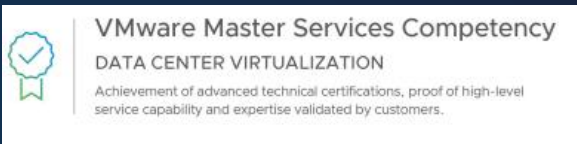
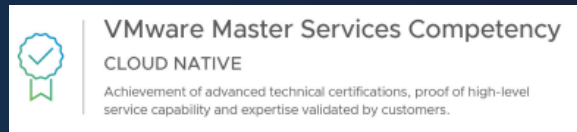


Harald Schneider

Consultant / Solution Architect | Bechtle Austria GmbH

# Bechtle Austria GmbH

## VMware Partner seit < 2009



# Was ist die „Cloud“

- Auslagerung von Speicherplatz, Rechenleistung, Software und anderen IT-Ressourcen auf externe Server, die von Drittanbietern betrieben werden.
- Public Cloud: Die Infrastruktur wird von Drittanbietern betrieben und über das Internet allgemein verfügbar gemacht.
- Private Cloud: Die Cloud-Infrastruktur ist für eine bestimmte Organisation reserviert und kann entweder intern oder von einem externen Dienstleister betrieben werden.
- Hybrid Cloud: Kombination von Private und Public Cloud, um Flexibilität zu gewinnen und Daten oder Anwendungen sicher in der Private Cloud und skalierbare Ressourcen in der Public Cloud zu nutzen.

# Einige Herausforderungen der Cloud

- Kostenkontrolle.
- Übermäßige Abhängigkeit von Cloud-Anbietern.
- Die Einbindung von Drittanbietern.
- Verlust der Kontrolle über Daten und Sicherheit.
- Begrenzter Zugang zum Hochgeschwindigkeits-Internet.
- Fehlende Erfahrung des Teams mit der Cloud.
- Unterstützung für Legacy-Infrastruktur.

# Was brauche ich um eine Cloud zu betreiben (Auszug)

- Hardware-Infrastruktur
  - Server
  - Storage
  - Netzwerk
  - Load Balancer
- Virtualisierungs- oder Container-Software
  - Hypervisor
  - Container-Orchestrierung
- Cloud-Management-Plattform
  - Automatisierungstools
  - Monitoring
  - Logging
  - Self-Service-Portal
- Netzwerksicherheitslösungen
  - Firewall und VPN
  - Intrusion Detection/Prevention Systems (IDS/IPS)
  - Identitäts- und Zugriffsmanagement (IAM)
- Speichermanagement und Backup
  - Datenreplikation
  - Backup- und Recovery-Lösungen
- Abrechnungs- und Monitoring-Software
  - Monitoring-Tools
  - Abrechnungssystem

# Was brauche ich um eine Cloud zu betreiben (Auszug)

- Hardware-Infrastruktur

- Server
- Storage
- Netzwerk
- Load Balancer

- Virtualisierungs- oder Container-Software

- Hypervisor
- Container-Orchestrierung

vSphere with Tanzu

- Cloud-Management-Plattform

- Automatisierungstools
- Monitoring
- Logging
- Self-Service-Portal

VCF Automation

VCF Operations

VCF Operations for Logs

VCF Automation / Cloud Director

# Was brauche ich um eine Cloud zu betreiben (Auszug)

NSX Firewall + Advanced Threat Protection (ATP)

Workspace One Access

Vmware Replication

Vmware Live Recovery

VCF Operations

VCF Operations (aka Chargeback)

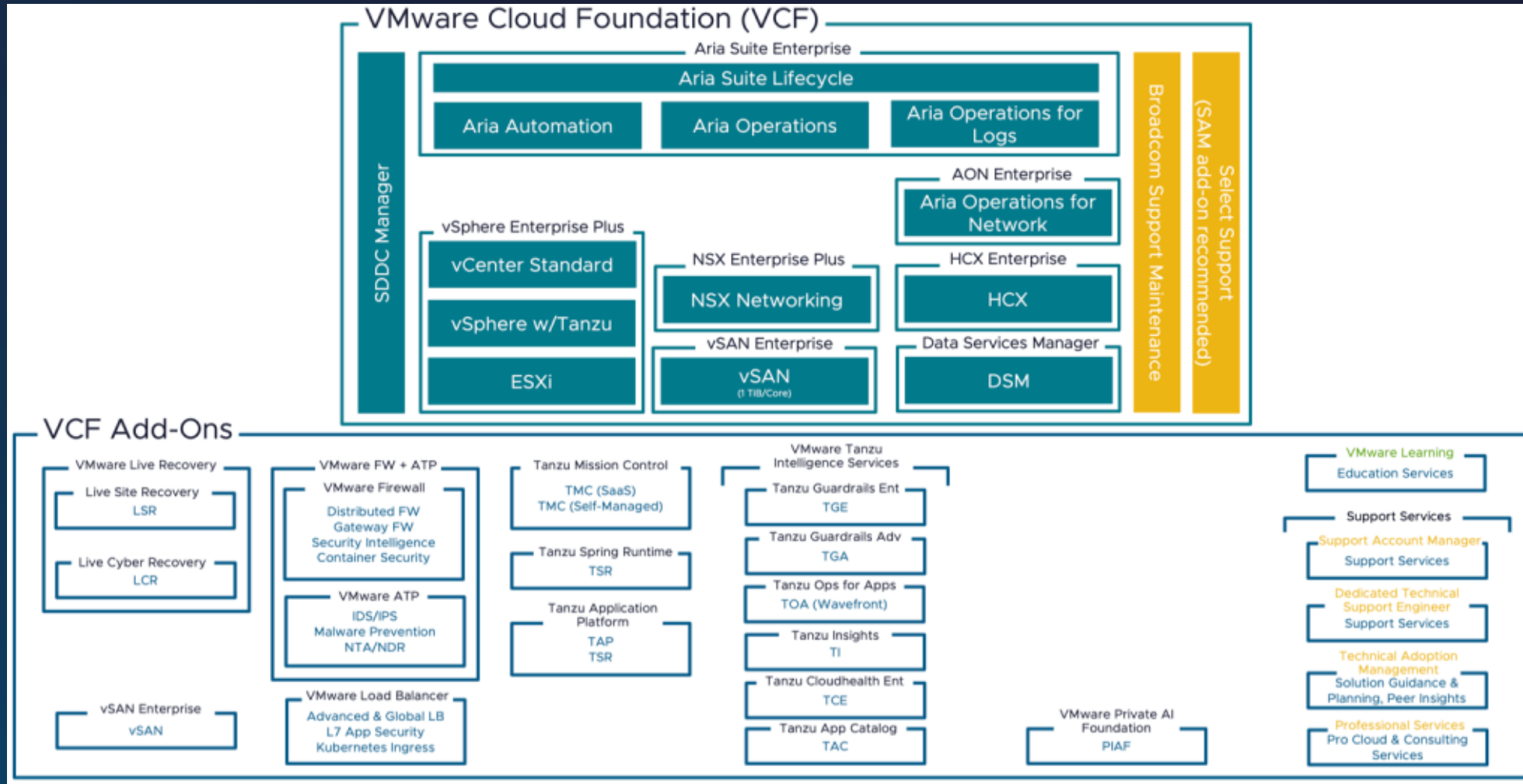
- Netzwerksicherheitslösungen
  - Firewall und VPN
  - Intrusion Detection/Prevention Systems (IDS/IPS)
  - Identitäts- und Zugriffsmanagement (IAM)
- Speichermanagement und Backup
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  - Backup- und Recovery-Lösungen
- Abrechnungs- und Monitoring-Software
  - Monitoring-Tools
  - Abrechnungssystem



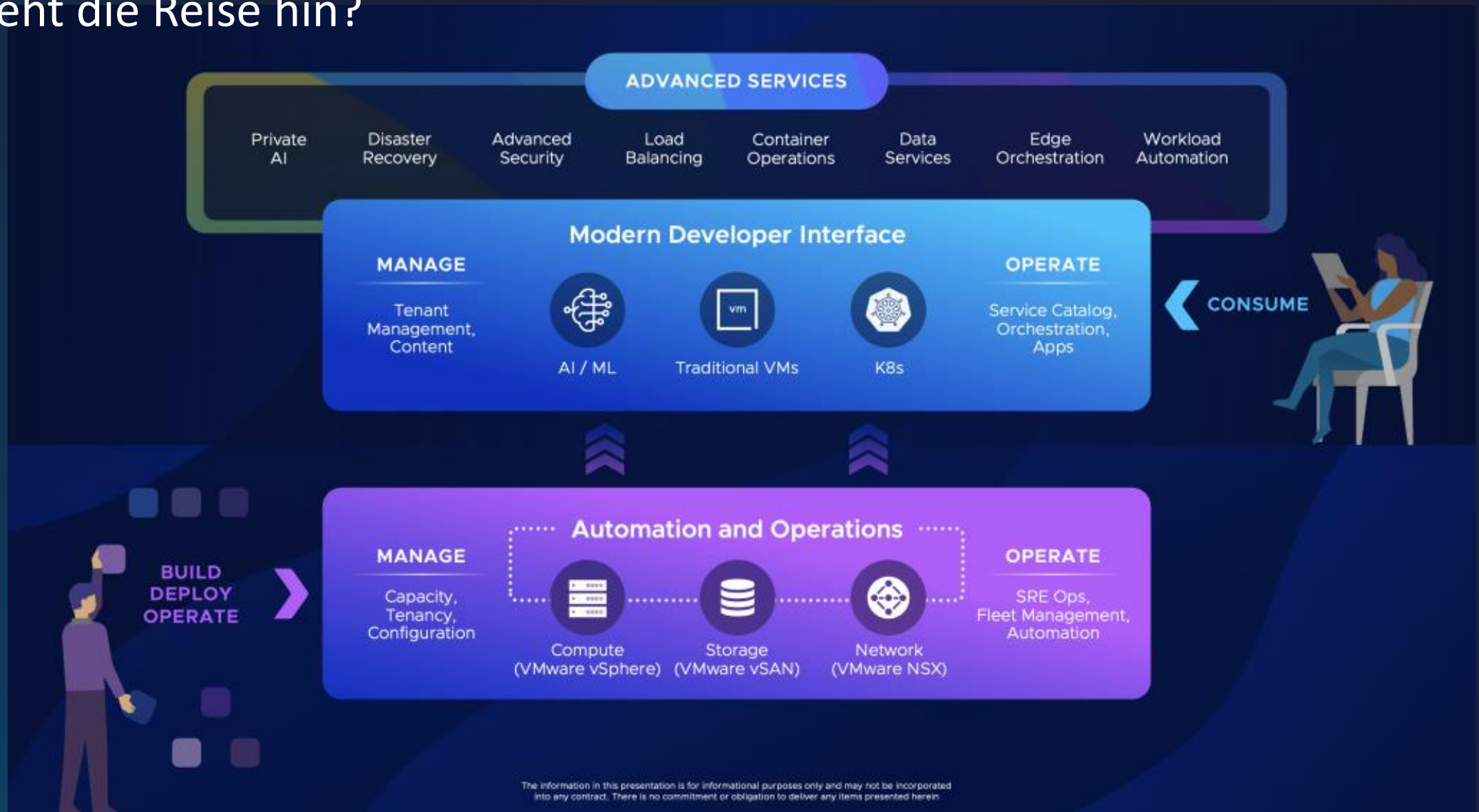
# Was ist VMware Cloud Foundation

- VCF ist mehr als ein Software Bundle – VCF ist ein Betriebsmodell!
- VCF ermöglicht, die Skalierbarkeit und Agilität einer öffentlichen Cloud mit der Sicherheit und Leistung einer privaten Cloud zu kombinieren.

# Komponenten von VMware Cloud Foundation



# Wo geht die Reise hin?

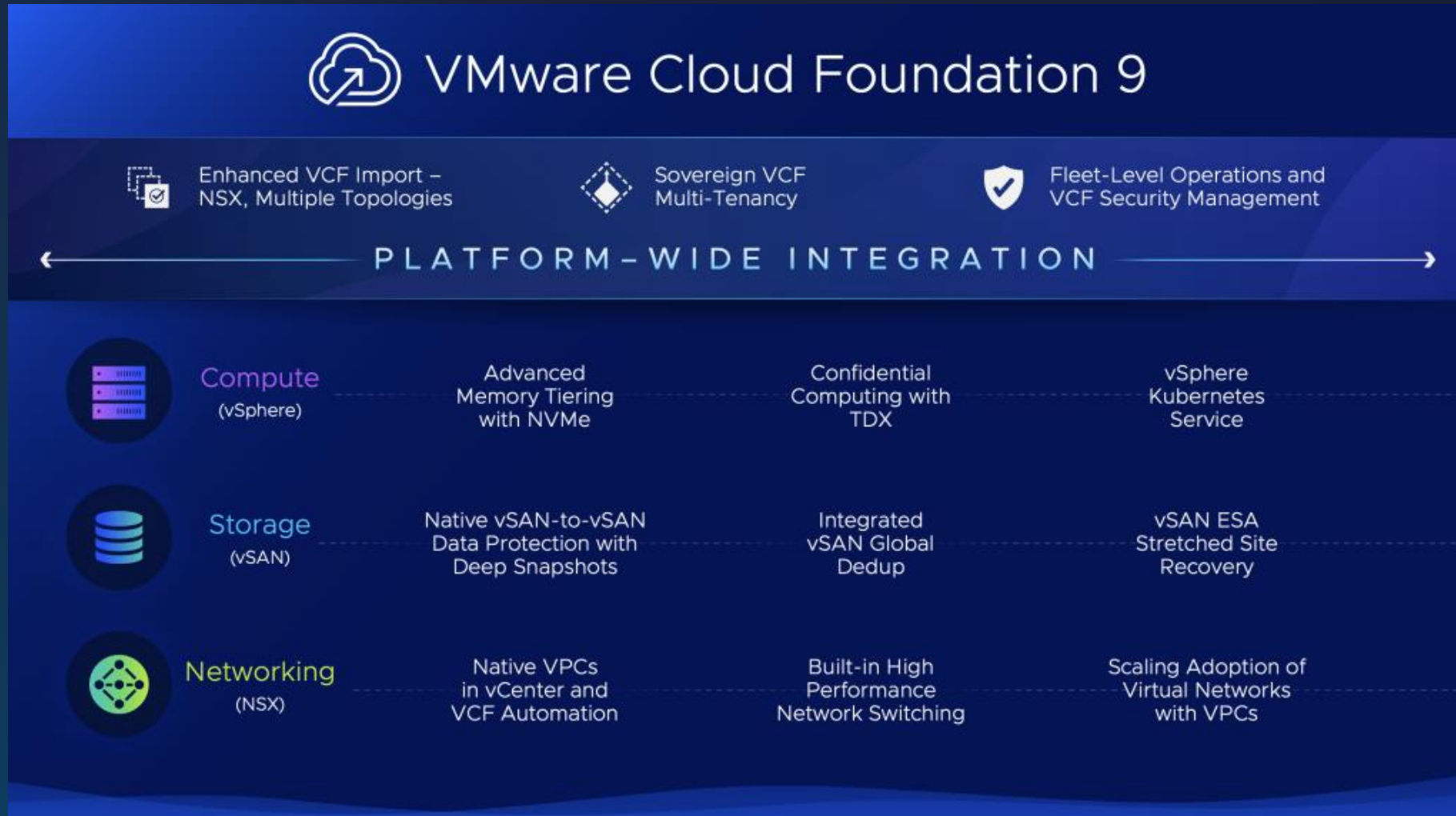


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# Vereinfachung der Bereitstellung und des Betriebs moderner Infrastrukturen

- Cloud Admin
  - Neue zentralisierte Konsole
    - Kapazitäts- und Mandantenverwaltung, Sicherheits-Dashboard.
    - VCF Diagnostics, Application Topology und Network Analysis
- Platform Engineer
  - Unterstützt traditionelle VMs, Kubernetes und containerisierte Anwendungen
  - Enhanced multi-tenancy capabilities

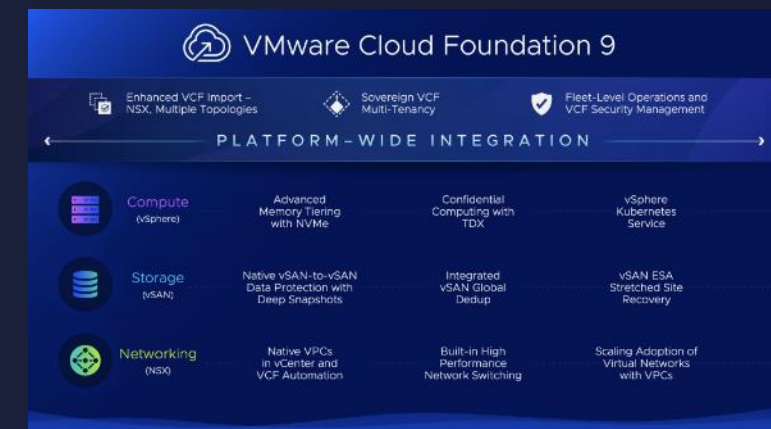
# Transformation der IT-Kerninfrastruktur





# Transformation der IT-Kerninfrastruktur

- Enhanced VCF Import
  - Integriert VMware NSX und verschiedene vSAN-Topologien direkt in VCF-Umgebungen.
  - Reduziert die Ausfallzeiten während der Migration und gewährleistet eine nahtlose Integration und Zukunftssicherheit bestehender Setups.
- Sovereign VCF Multi-Tenancy
  - Ermöglicht sichere, isolierte Multi-Tenant-Umgebungen auf einer gemeinsam genutzten Infrastruktur.
  - Bietet maßgeschneiderte Governance und Ressourcenverwaltung und erhöht die betriebliche Flexibilität.
- Fleet-Level Operations and Security
  - Zentralisierte Verwaltung für alle VCF-Umgebungen
  - Einheitliche Sicherheitskonfigurationen für die gesamte Fleet, verringern Schwachstellen und verbessern die Compliance



# Compute Enhancements in VCF9

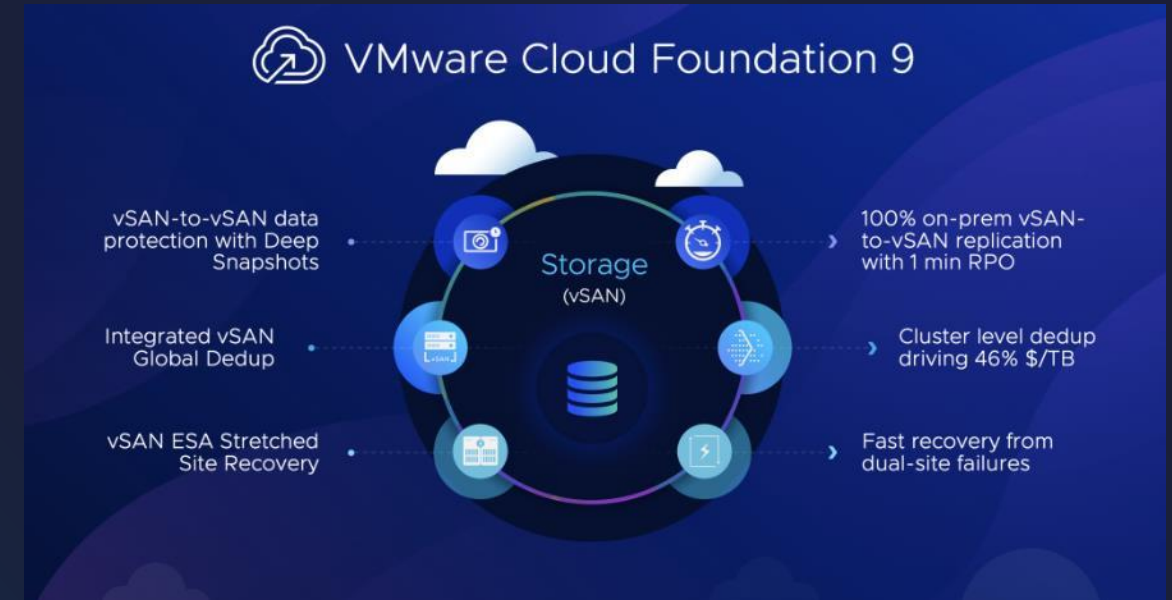
- **Advanced Memory Tiering mit NVMe:**
  - Optimiert die Speicherverwaltung, kalte Daten werden auf NVMe-Speicher ausgelagert.
  - 40-prozentigen Verbesserung der Serverkonsolidierung.
- **Confidential Computing mit TDX:**
  - Intel® Trust Domain Extensions (Intel® TDX)
    - Sicherheit durch Isolierung und Verschlüsselung von Workloads, gewährleistet Datenintegrität und Datenschutz auf Hypervisor-Ebene.



- **vSphere Kubernetes Service Enhancements:**
  - Out-of-the-Box-Unterstützung für Windows-Container, direkte Netzwerkkonnektivität über VPC und native OVF-Unterstützung.
  - Verbesserung der Flexibilität und Skalierbarkeit von containerisierten Anwendungen.

# Delivering Storage Capabilities with vSAN in VCF9

- **Native vSAN-zu-vSAN-Datensicherung mit Deep Snapshots:**
  - Bietet Datenwiederherstellung mit RPOs von 1 Minute und sorgt so für robuste Disaster Recovery und Datenausfallsicherheit.
- **Integrierte globale vSAN-Deduplizierung:**
  - Reduziert die Speicherkosten um 46 % pro Terabyte im Vergleich zu herkömmlichen Lösungen.

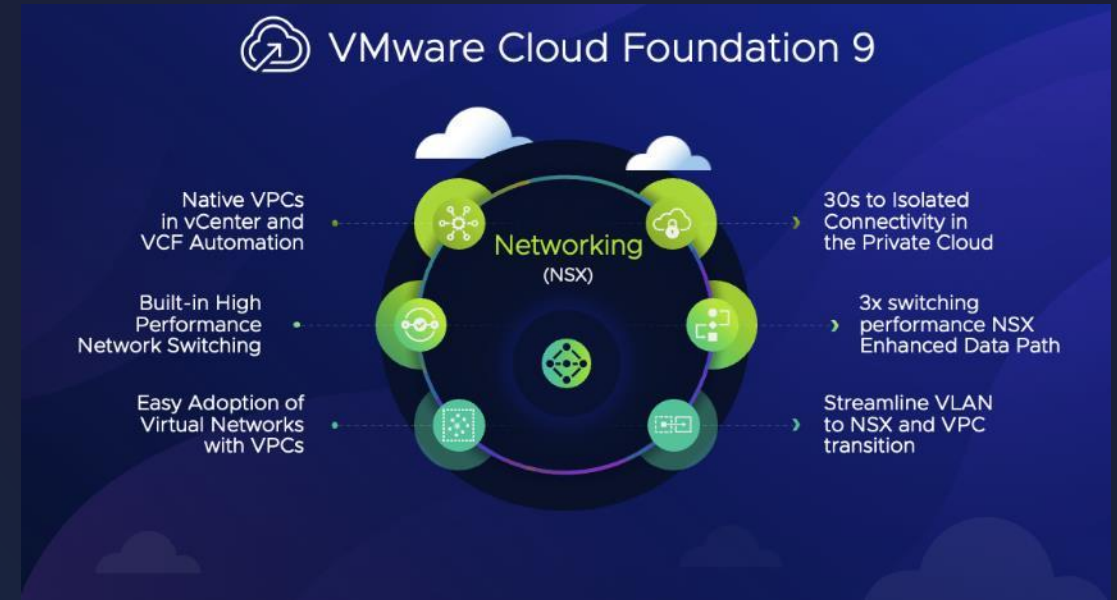


- **vSAN ESA Stretched Site Recovery:**
  - Gewährleistet die Geschäftskontinuität durch Aufrechterhaltung des Betriebs und der Datenverfügbarkeit selbst bei Ausfällen an zwei Standorten und unterstützt kritische Anwendungen mit gestreckter Clusterarchitektur.



# The Power Of Integrated Networking

- **Native VPCs in vCenter und VCF Automation:**
  - Vereinfacht die Erstellung und Verwaltung von sicheren, isolierten Netzwerken und reduziert die Komplexität und den Zeitaufwand für die Einrichtung virtueller Netzwerke.
- **Leistungsstarkes Netzwerk-Switching mit NSX Enhanced Data Path:**
  - Bietet eine bis zu dreifache Switching-Leistung, die den Anforderungen moderner, datenintensiver Anwendungen gerecht wird und die Netzwerklatenz reduziert.



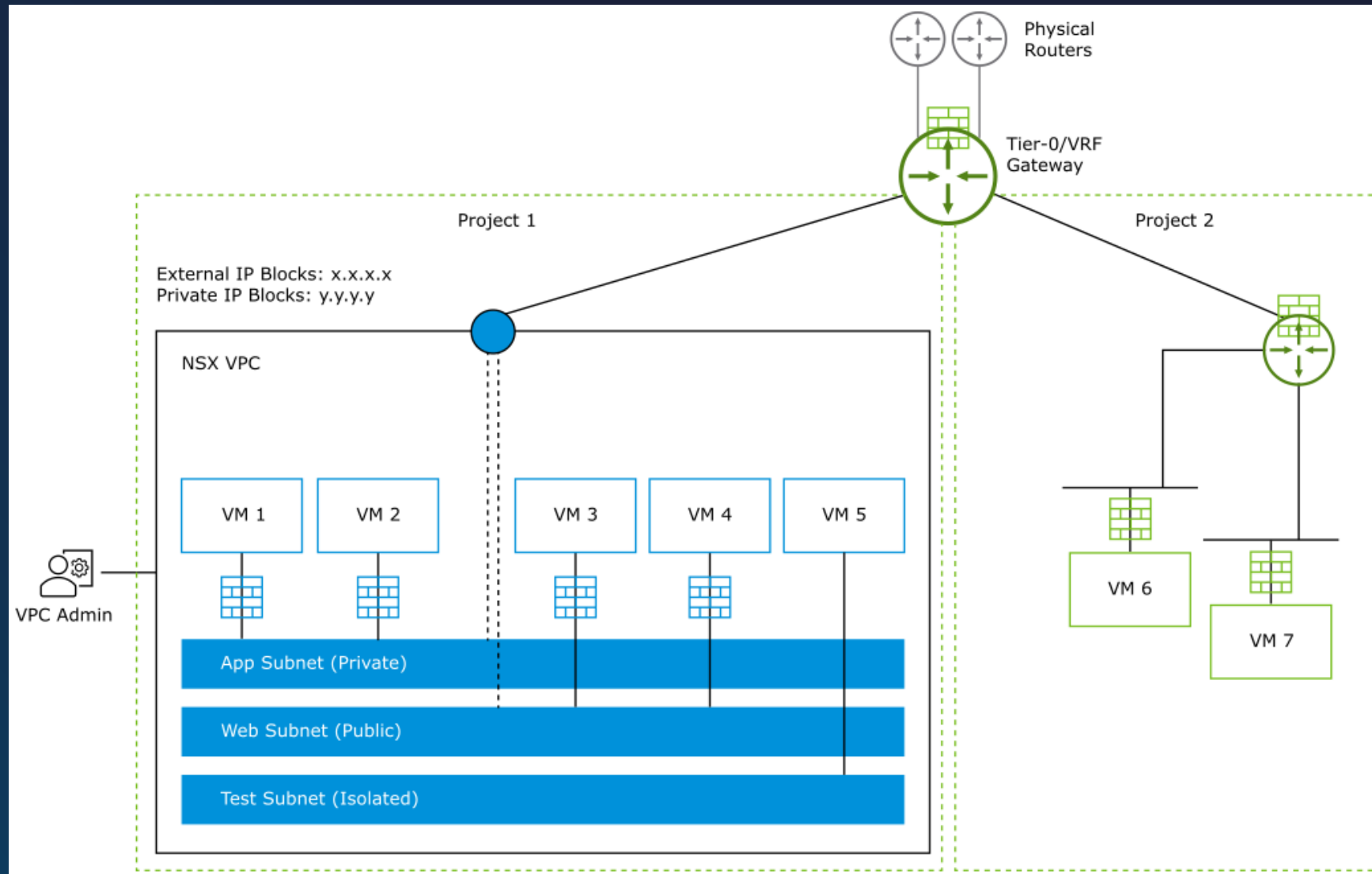
- **Einfacher Übergang von VLAN zu VPC:**
  - Vereinfacht die Migration von herkömmlichen VLAN-basierten Netzwerken zu VPCs, vereinfacht die Netzwerkverwaltung und verbessert die Sicherheit.

# VPC – Virtual Private Cloud im NSX Kontext

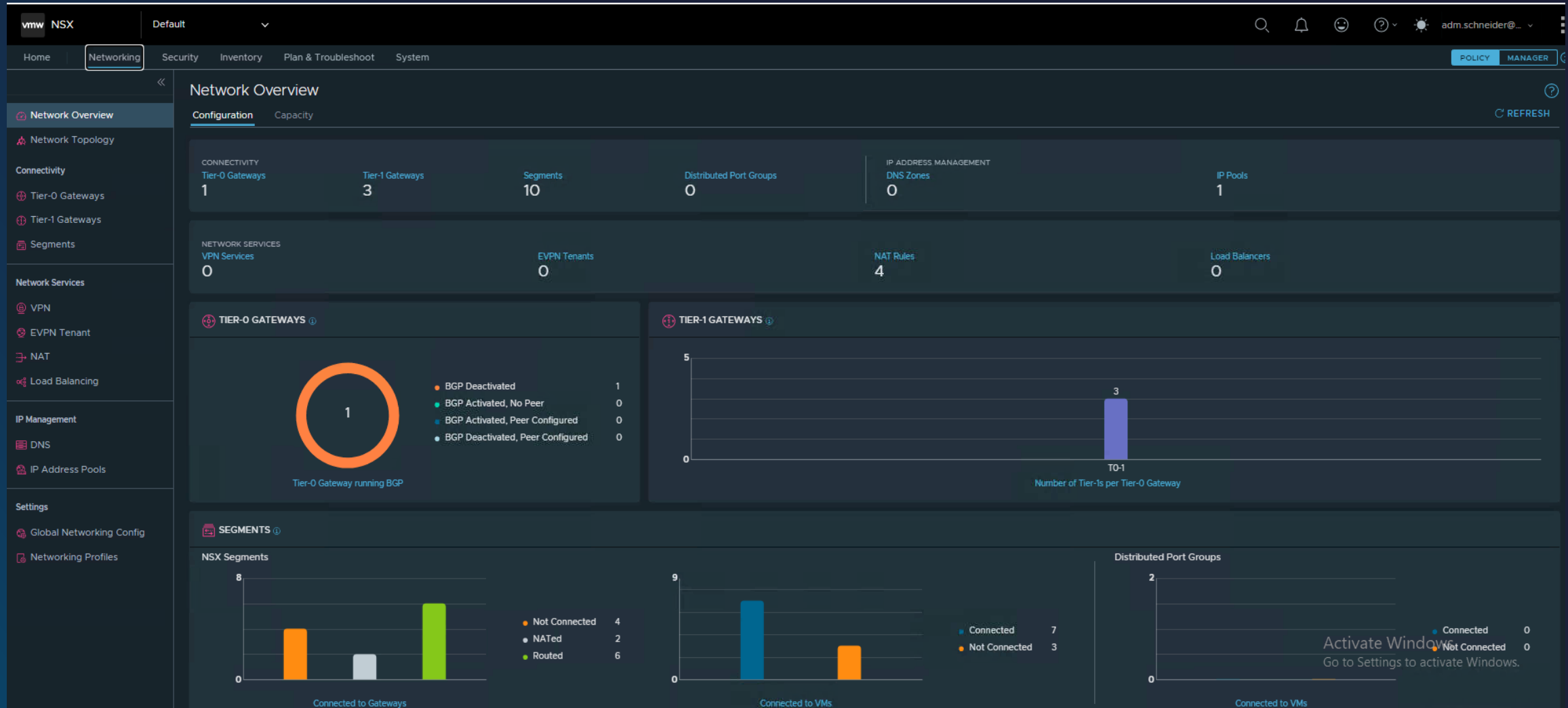
NSX Virtual Private Clouds (VPCs) ist eine Abstraktionsschicht, die die Einrichtung eigenständiger virtueller privater Cloud-Netzwerke innerhalb eines NSX-Projekts vereinfacht, um Netzwerk- und Sicherheitsservices in einem Self-Service-Verbrauchsmodell zu nutzen.

Eine NSX VPC verbirgt die Komplexität der zugrundeliegenden NSX-Infrastruktur, der Netzwerktopologie, der Netzwerkobjekte und der IP-Adressverwaltung vor den Anwendungseigentümern und bietet ihnen ein Self-Service-Nutzungsmodell zur Ausführung von Anwendungen in ihrem eigenen privaten Bereich.

# VPC – Virtual Private Cloud im NSX Kontext



# VPC – Virtual Private Cloud im NSX Kontext



# VPC – Virtual Private Cloud im NSX Kontext

The screenshot displays the VMware NSX Manager interface. The top navigation bar includes 'Home', 'Networking', 'Projects', 'MANAGE', 'Plan & Troubleshoot', and 'System'. A dropdown menu under 'Projects' shows 'Default' and 'No user created projects'. The left sidebar contains sections for 'Network Overview', 'Network Topology', 'Connectivity', 'Network Services', and 'IP Management'. The main content area shows a summary of network metrics:

CONNECTIVITY		NETWORK SERVICES		IP ADDRESS	
Tier-0 Gateways	1	VPN Services	0	DNS Zones	0
Tier-1 Gateways	3	EVPN Tenants	0	NAT Rules	4
Segments	10				
Distributed Port Groups	0				

Below the summary, there are two detailed views:

- TIER-0 GATEWAYS**: Shows 1 gateway. A legend indicates: 1 BGP Deactivated, 0 BGP Activated, No Peer, 0 BGP Activated, Peer Configured, and 0 BGP Deactivated, Peer Configured. The status is 'Tier-0 Gateway running BGP'.
- TIER-1 GATEWAYS**: Shows a bar chart with a y-axis from 0 to 5.

# VPC – Virtual Private Cloud im NSX Kontext

Manage Projects ✕

Projects provide isolated configuration space for your networking and security configuration. You can also create Virtual Private Clouds (VPC) in a Project, that provides a simplified consumption model for application owners. [Learn more about Projects](#)

**Projects** Quotas

**ADD PROJECT** EXPAND ALL Filter by Name, Path and more ☰

	Name	Tier-0 Gateways	Users/User Groups	Quota Status	Status	Alarms
>	Default	Not Applicable	Not Applicable	Not Applicable	Not Applicable	4 <span>🔴🟡</span>

# VPC – Virtual Private Cloud im NSX Kontext

## Project erstellen

Tenant-01 Set

Tier-0 Gateways	Select Tier-0 Gateways <span>i</span>	Edge Clusters	Select Edge Clusters <span>i</span>
External IPv4 Blocks	Select IP Blocks <span>⋮</span> <small>Used for public VPC subnets in this Project</small>	Short log identifier	s0yAvErL
Activate Default Distributed Firewall Rules	<input checked="" type="checkbox"/> Yes <span>i</span>	Organize NSX Portgroups in vCenter folders	<input type="checkbox"/> No <span>i</span>
Description	<input type="text" value="Enter Description"/>	Tags	<input type="text" value="Tag"/> <input type="text" value="Scope"/> <span>+</span> <small>Max 30 allowed. Click (+) to add.</small>

# VPC – Virtual Private Cloud im NSX Kontext

## VPC erstellen

The screenshot displays the VMware NSX Manager web interface. The top navigation bar includes 'vmw NSX' and a 'Default' dropdown menu. Below this, the 'Networking' tab is active, showing a 'Projects | MANAGE' section. A dropdown menu is open, listing 'All Projects ①', 'Default ①', a search bar 'Search Projects', and 'Tenant-01'. A red arrow points to the 'Tenant-01' option. The main content area shows a list of projects, including 'Tenant-01' and 'Tenant-T0', with details like 'T0-1' and 'HA Mode ①' visible.



# VPC – Virtual Private Cloud im NSX Kontext

## VPCs auswählen

The screenshot displays the VMware NSX Network Overview dashboard for Tenant-01. The interface includes a navigation menu on the left and a main content area with several configuration cards. A red arrow points to the 'VPCs' tab in the top navigation bar.

**Navigation Menu:**

- Home
- Networking
- Security
- VPCs
- Inventory
- Plan & Troubleshoot
- System

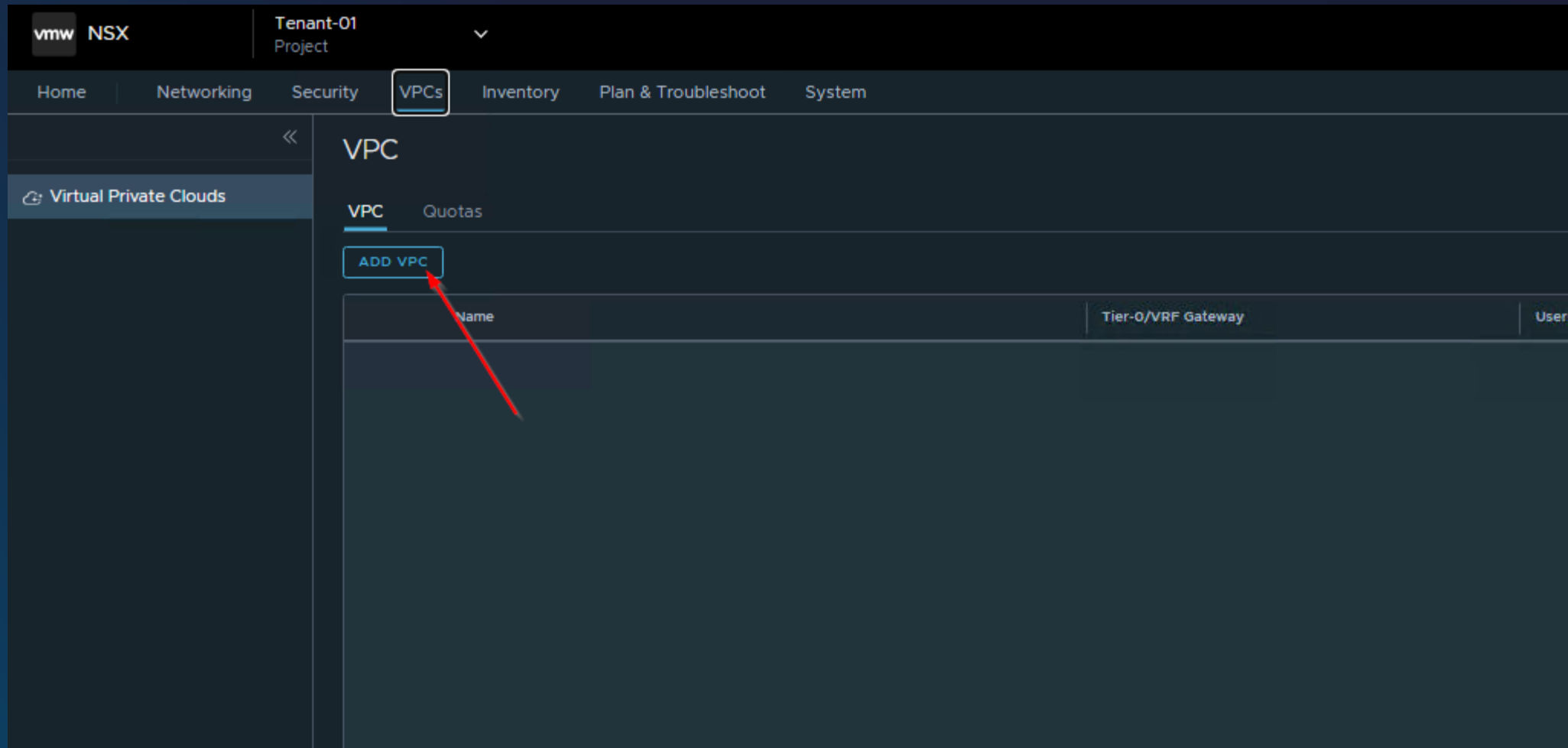
**Configuration Cards:**

- CONNECTIVITY:** Tier-1 Gateways (0), Segments (0)
- IP ADDRESS MANAGEMENT:** DNS Zones (0), IP Pools (0)
- NETWORK SERVICES:** VPN Services (0), NAT Rules (0)

**TIER-1 GATEWAYS:** A chart showing the number of Tier-1s per Tier-0 Gateway. The y-axis ranges from 0 to 2, and the chart area is currently empty.

# VPC – Virtual Private Cloud im NSX Kontext

VPCs erstellen



# VPC – Virtual Private Cloud im NSX Kontext

## VPCs erstellen

VPC Quotas

ADD VPC COLLAPSE ALL

Name	Tier-0/VRF Gateway	Users/User Groups	Quota Status	Alarms
Tenant-01-VPC-01 *	TO-1	Set		

IP Assignment

External IPv4 Blocks\* Tenant-01-External-IP-Block X ⓘ Private IPv4 Blocks Tenant-01-Private-IP-Block X ⋮ ⓘ

DHCP

Managed by NSX Policy Management

External ⓘ

None

DNS Server IPs

Services Settings

N-S Services  On ⓘ

Default Outbound NAT  On ⓘ

Activate Default E-W Firewall Rules  Yes ⓘ

Edge Cluster\*  ⊗ ⌵

Enable for NSX Advanced Load Balancer  Off ⓘ

Profiles

Short log identifier  ⓘ  
This field can be set at VPC creation time and cannot be edited later. Max 8 characters allowed.

Description

Tags ⊗ Tag Scope +  
Max 30 allowed. Click (+) to add.

NOTE - Before further configurations can be done, fill out mandatory fields (\*) above and click Save.

CONNECTIVITY

NETWORK SERVICES

SECURITY

SAVE CANCEL

# VPC – Virtual Private Cloud im NSX Kontext

## VPC Admin View

ADD VPC

Name	Tier-0/VRF Gateway	Users/User Groups	Quota Stati
Tenant-01-VPC-01	TO-1	1	
<p>IP Assignment</p> <p>External IPv4 Blocks: <a href="#">Tenant-01-External-IP-Block</a>      Private IPv4 Blocks: <a href="#">Tenant-01-Private-IP-Block</a></p> <p>DHCP: Managed by NSX Policy Management</p> <p>DNS Server IPs: <i>Not Set</i></p> <p>Services Settings</p> <p>N-S Services: <input checked="" type="checkbox"/> On      Edge Cluster: EC01</p> <p>Default Outbound NAT: <input checked="" type="checkbox"/> On</p> <p>Activate Default E-W Firewall Rules: <input checked="" type="checkbox"/> Yes      Enable for NSX Advanced Load Balancer: <input type="checkbox"/> Off</p> <p>Profiles</p> <p>Short log identifier: Ten01      Description: <i>Not Set</i></p> <p>Tags: 0</p> <p>CONNECTIVITY</p> <p>Subnets: 1      Static Routes: <a href="#">Set</a></p> <p>NETWORK SERVICES</p> <p>SECURITY</p> <p>E-W Firewall Rules: 3      Groups: 1</p> <p>N-S Firewall Rules: 1</p>			

# VPC – Virtual Private Cloud im NSX Kontext

## VPCs Segment erstellen

The image shows the VMware NSX Manager interface. On the left, the 'VPC' configuration page is visible, showing a list of VPCs and various settings like IP Assignment, External IPv4 Blocks, DHCP, DNS Server IPs, Services Settings, N-S Services, Default Outbound NAT, Activate Default E-W Firewall Rules, Profiles, Short log identifier, Tags, and CONNECTIVITY. The 'Subnets' section under CONNECTIVITY shows 1 subnet.

The main part of the image is a 'Set Subnets' dialog box for 'VPC Tenant-01-V...'. It features an 'ADD SUBNET' button and a filter option 'Filter by Name, Path and more'. Below this is a table with the following data:

Name	Access Mode	IP Assignment	Subnet Ports	Status
Tenant-Segment	Private	Automatic	1	

Below the table, there are fields for 'Size (estimated max workloads)' with a value of 64, and 'Description' with an empty text box. To the right, there is a 'Tags' section with a 'Tag' field and a 'Scope' dropdown, and a note 'Max 30 allowed. Click (+) to add.' At the bottom of the dialog are 'SAVE' and 'CANCEL' buttons.

# VPC – Virtual Private Cloud im NSX Kontext

## VPCs Security

The screenshot shows the NSX Firewall configuration interface for 'E-W Firewall'. At the top, there are buttons for 'REVERT' and 'PUBLISH'. Below that, a toolbar contains '+ ADD POLICY', '+ ADD RULE', 'CLONE', 'UNDO', 'DELETE', and a menu icon. A search bar is labeled 'Filter by Name, Path and more'. The main area is a table of firewall rules.

	Name	ID	Sources	Destinations	Services	Profiles	Applied To	Action	
⋮	PROJECT-T... (3)		Applied: DFW				Stateful	● Success ↻	⚙️
⋮	PROJECT-Ten...	7178	PROJE...	Any	Any	None	DFW	● Allow ▾	🔴 <input checked="" type="checkbox"/> ⚙️ 📧
⋮	PROJECT-Ten...	7179	Any	Any	DHCP-... DHCP-...	None	DFW	● Allow ▾	🔴 <input checked="" type="checkbox"/> ⚙️ 📧
⋮	PROJECT-Ten...	7180	Any	Any	Any	None	DFW	● Drop ▾	🔴 <input type="checkbox"/> ⚙️ 📧

# Zeit für Fragen



# Vielen Dank



**Harald Schneider**

Consultant / Solution Architect | Bechtle Austria GmbH

[H.schneider@bechtle.com](mailto:H.schneider@bechtle.com)



# Private AI Foundation

With VMware & NVIDIA



Dominik Steiner

Systems Engineer | NTS Netzwerk Telekom Service AG

# About me

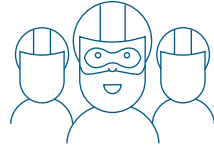
Dipl.-Ing. Dominik Steiner, BSc

- Seit 2020: Systems Engineer DC @ NTS Wien
- Aufgabenbereiche
  - VMware VCF (vSphere, vSAN, NSX, Tanzu, Aria)
  - Cisco UCS
- Zertifizierungen
  - VMware VCIX-DCV, VCIX-NV, VCP-AM, VCP-CMA
  - VMware vSAN, Tanzu & VCF Specialist
  - Cisco CCNP
  - Certified Kubernetes Administrator (CKA)
  - VMware Odyssey Finalist & Broadcom Knight





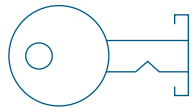
**1000+**  
Kunden



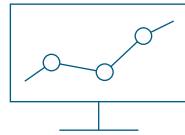
**800+**  
Mitarbeiter:innen



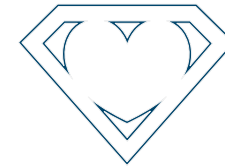
**22**  
Standorte



**100%**  
Eigentümer geführt



**341 Mio €**  
Umsatz 2023



**100%**  
Menschlichkeit

# WARUM **NTS** & vmware® ?

by Broadcom



## VMware Master Services Competency DATA CENTER VIRTUALIZATION

Achievement of advanced technical certifications, proof of high-level service capability and expertise validated by customers.



## VMware Master Services Competency CLOUD NATIVE

Achievement of advanced technical certifications, proof of high-level service capability and expertise validated by customers.

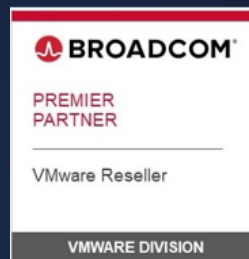


## VMware Master Services Competency NETWORK VIRTUALIZATION

Achievement of advanced technical certifications, proof of high-level service capability and expertise validated by customers.



VMware  
Master Services  
Competency  
VMWARE CLOUD FOUNDATION™



VMware  
Master Services  
Competency  
VMWARE CLOUD™ on AWS



# Generative AI



# Predictive AI

PREDICTIVE AI



Data Scientists



Vorausschauende Analysen



Spezialisiertes AI-Modell

Informationsklasse: Customer Confidential

# Generative AI

## PREDICTIVE AI



Data Scientists



Vorausschauende Analysen



Spezialisiertes AI-Modell

## GENERATIVE AI



Marketing



Lieferketten



Verkauf



Personalwesen



Kunden-Service



Forschung und Entwicklung



Rechts-wesen



Software-Entwicklung



Produktion



Verrechnung



IT



Finanz

INTERAKTION MIT NORMALER SPRACHE

APIs



LARGE LANGUAGE MODELLE

# Generative AI

## Häufige Use-Cases



**Code Erstellung**  
Effizienzsteigerung  
der Entwickler



**Kundenservice**  
Verbessern von  
Unterlagen,  
Kundenanfragen &  
Feedback



**IT Betrieb  
automatisieren**  
IT Betriebsteams  
signifikant entlasten



**Erweiterte  
Datenanalyse**  
Dokumentensuche,  
Richtlinien- und  
Arbeitsanweisungs-  
Bereitstellung



# Warum braucht es Private AI?

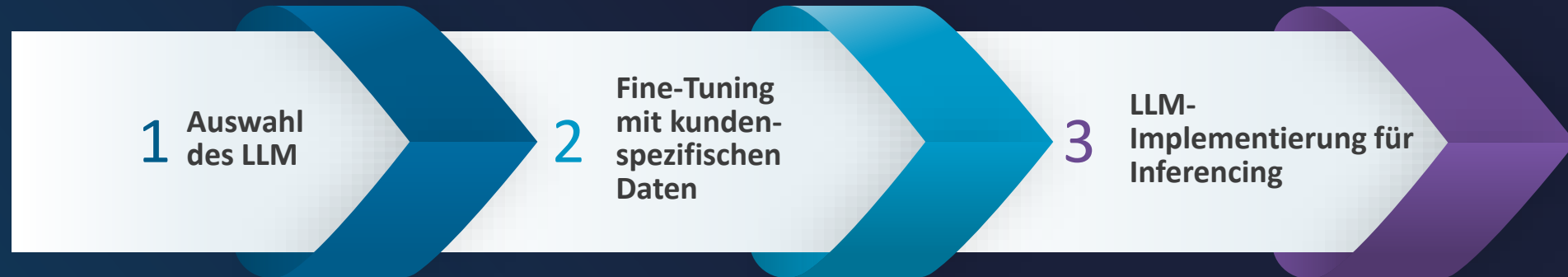


# Warum braucht es Private AI?



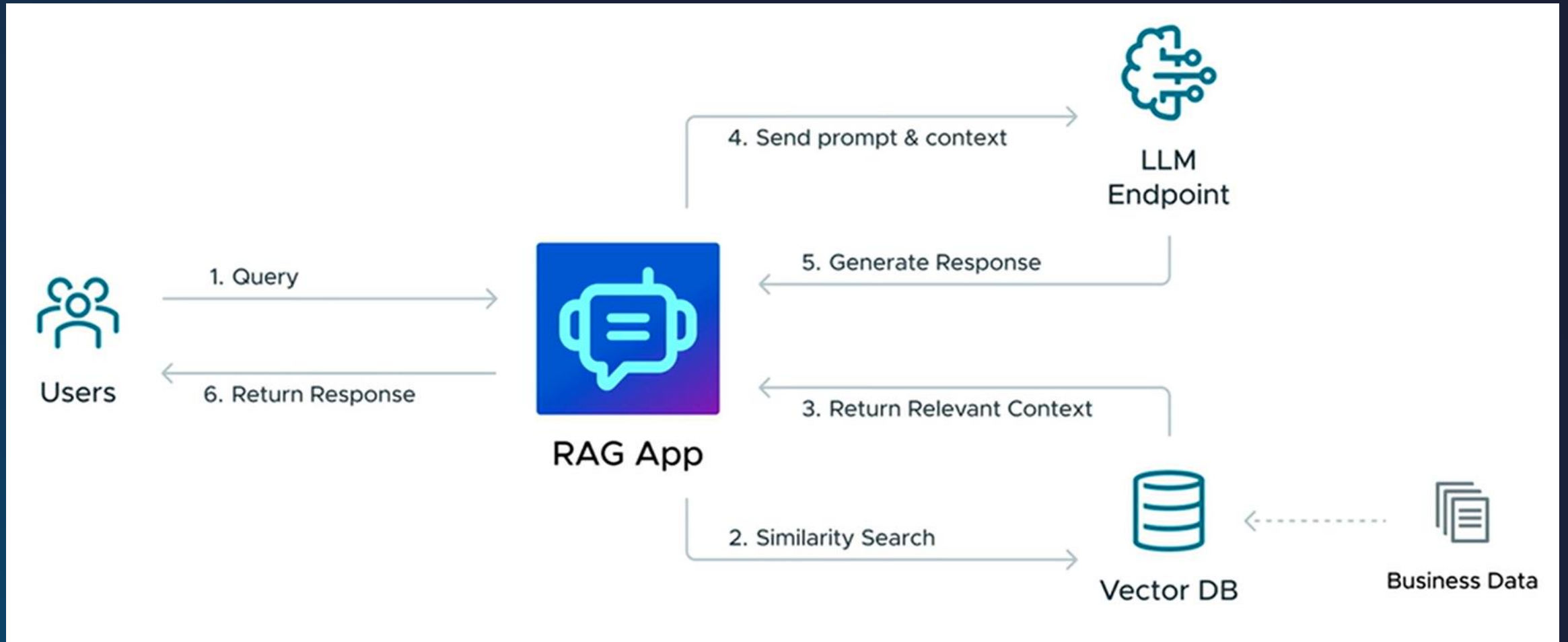
# Retrieval Augmented Generation (RAG)

# Verwendung von LLMs



# RAG: Retrieval Augmented Generation

## Fine-Tuning





# LLM: Zugriffskontrolle



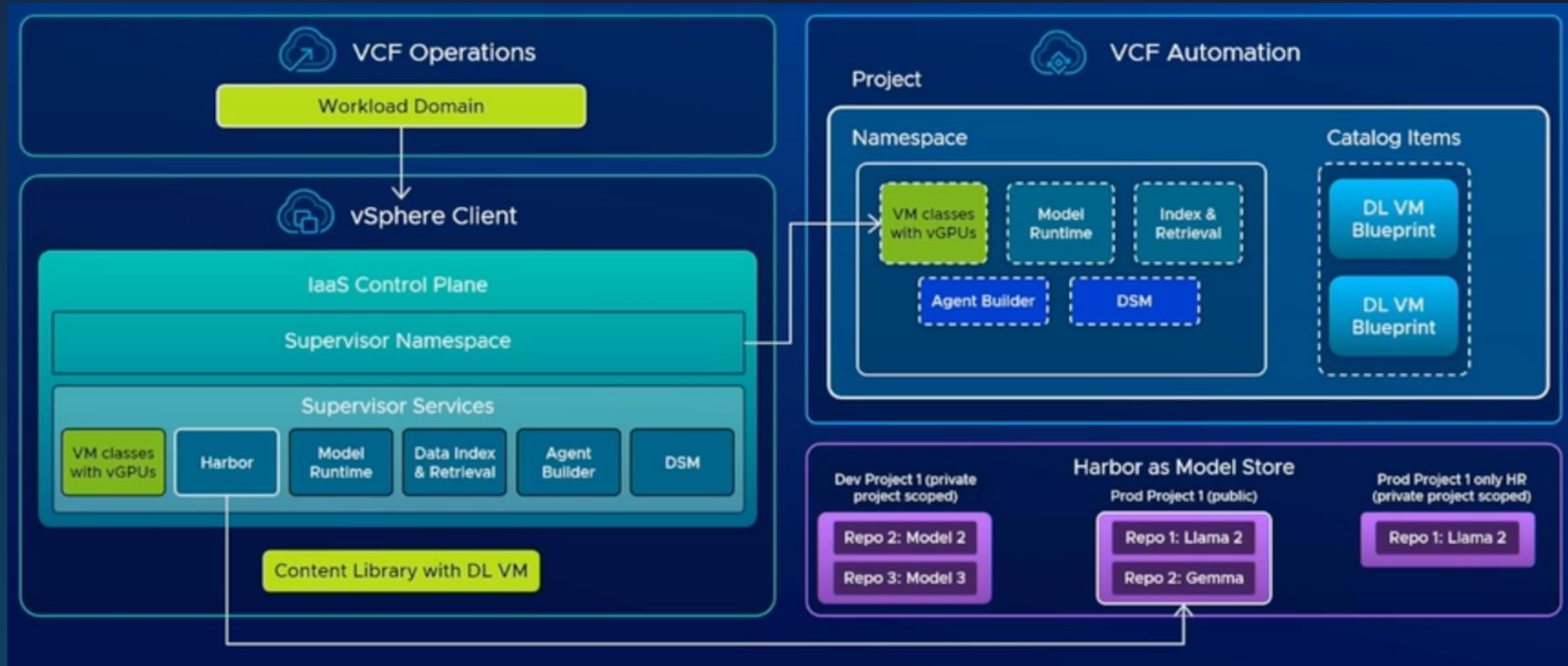
# Warum Private AI mit VCF?





# VCF: Plattform ohne neue Silos

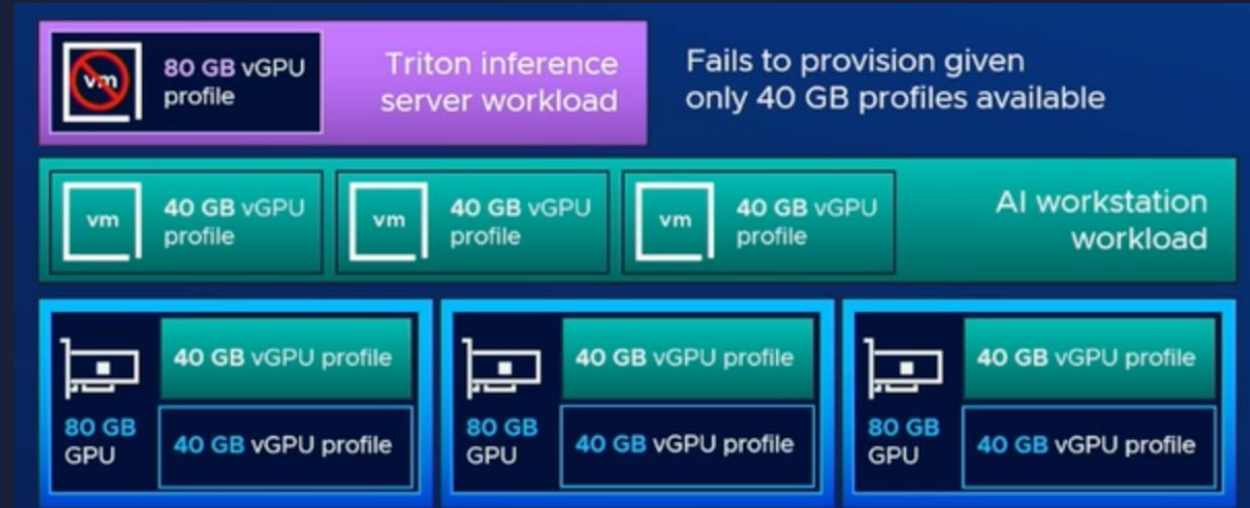
Ende-zu-Ende-Automatisierung inkludiert



# Private AI

## Innovationen in vSphere

- VM-Class: T-Shirt-Size für vGPU VMs
- HA: „Preemptive“ vGPU HA
- DRS: vGPU-VMs migrieren
- Kosten: Konsolidierung von Hardware



# Private AI

## Innovationen in vSphere

- VM-Class: T-Shirt-Size für vGPU VMs
- HA: „Preemptive“ vGPU HA
- DRS: vGPU-VMs migrieren
- Kosten: Konsolidierung von Hardware

The image shows a vSphere vGPU configuration interface and a corresponding HA event log. The configuration part is divided into three sections:

- 80 GB vGPU profile:** A purple box with a red 'X' over the 'vm' icon, labeled "Triton inference server workload". A note states: "Fails to provision given only 40 GB profiles available".
- 40 GB vGPU profile:** Three green boxes, each with a 'vm' icon, labeled "AI workstation workload".
- 80 GB GPU:** Three blue boxes, each with a server icon, labeled "40 GB vGPU profile".

The bottom part of the image is a screenshot of the vSphere HA event log for cluster US-East-1a. The log shows the following events:

Description	Type	Date Time	Target	Event ID
vSphere HA restarted virtual machine ragapp-vm on host esxi01.useast.1a	Warning	08/26/2024, 4:35:22 PM	ragapp-vm	com.vmware.vc.ha.VmResatrtedByHAEvent
vSphere HA powered off virtual machine ai-workstation on host esxi01.useast.1a	Warning	08/26/2024, 4:35:01 PM	ai-workstation	com.vmware.vc.ha.VmPowerOffByHAEvent
vSphere HA initiated a failover action on 1 virtual machines in cluster US-East-1a	Warning	08/26/2024, 4:34:20 PM	US-East-1a	com.vmware.vc.HA.ClusterFailoverActionInitiatedEvent
vSphere HA detected a possible host failure on host esxi03.useast.1a in cluster US-East-1a	Error	08/26/2024, 4:34:07 PM	esxi03.useast.1a	com.vmware.vc.HA.DasHostFailedEvent

# Private AI

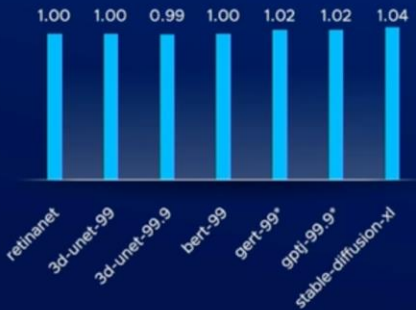
## Innovationen in vSphere

- VM-Class: T-Shirt-Size für vGPU VMs
- HA: „Preemptive“ vGPU HA
- DRS: vGPU-VMs migrieren
- Kosten: Konsolidierung von Hardware

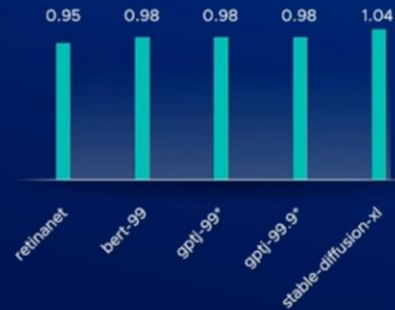
### MLPerf Inference Benchmarks – Queries Per Second – 8 x H100

Bare metal baseline set to 1.0; higher is better

vSphere vs. bare metal –  
Offline scenario (samples per second)  
Dell XE9680 w/ 8x H100 GPUs



vSphere vs. bare metal –  
Server scenario (qps)  
Dell XE9680 w/ 8x H100 GPUs



**80 GB vGPU profile** Triton inference server workload  
Fails to provision given only 40 GB profiles available

**40 GB vGPU profile** AI workstation workload

**40 GB vGPU profile** AI workstation workload

**40 GB vGPU profile** AI workstation workload

**80 GB GPU** 40 GB vGPU profile

**80 GB GPU** 40 GB vGPU profile

**80 GB GPU** 40 GB vGPU profile

**US-East-1a** ACTIONS

Summary Monitor Configure Permissions Hosts VMs Datastores Networks Updates

Issues and Alarms > Events OPEN IN NEW TAB

Performance > EXPORT COPY TO CLIPBOARD FILTER

Task and Events >

Tasks

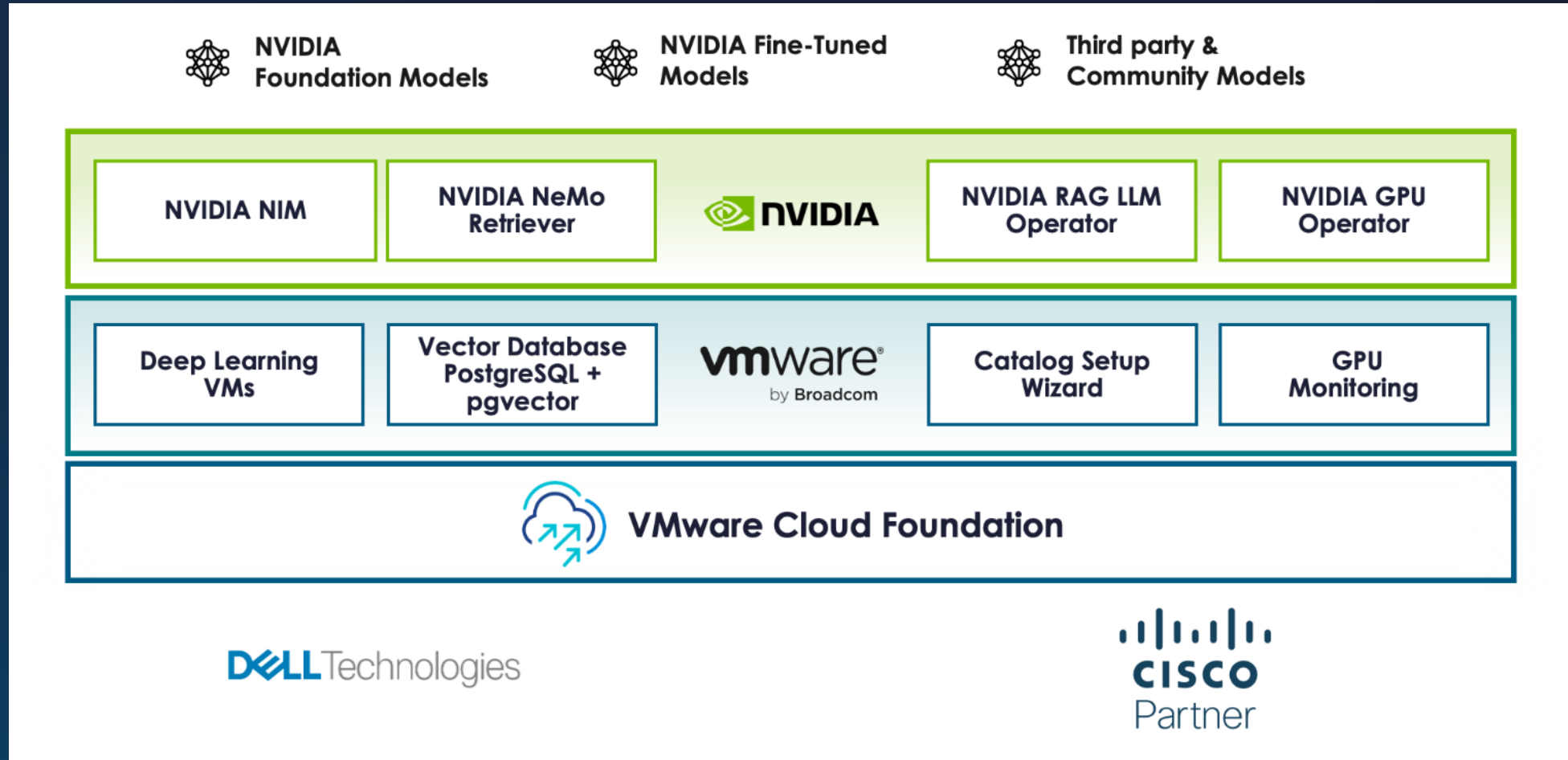
Events

Description	Type	Date Time	Target	Event ID
vSphere HA restarted virtual machine ragapp-vm on host esxi01.useast.1a	Warning	08/26/2024, 4:35:22 PM	ragapp-vm	com.vmware.vc.ha.VmResatrtedByHAEvent
vSphere HA powered off virtual machine ai-workstation on host esxi01.useast.1a	Warning	08/26/2024, 4:35:01 PM	ai-workstation	com.vmware.vc.ha.VmPowerOffByHAEvent
vSphere HA initiated a failover action on 1 virtual machines in cluster US-East-1a	Warning	08/26/2024, 4:34:20 PM	US-East-1a	com.vmware.vc.HA.ClusterFailoverActionInitiatedEvent
vSphere HA detected a possible host failure on host esxi03.useast.1a in cluster US-East-1a	Error	08/26/2024, 4:34:07 PM	esxi03.useast.1a	com.vmware.vc.HA.DasHostFailedEvent

Manage Columns Objects per page 10 4 objects 1 / 1



# Private AI mit NVIDIA



# Private AI: Demo



# Catalog

Context: Global

All Resources

**Catalog**

Content Hub

Blueprints

VM Images

Workflows

Context: Private AI/namespace-1

Services

VM Service

Kubernetes

Volume

Load Balancer

Private AI

Messaging

Model Runtime

Data Indexing and Retrieval

In Memory DB's

Relational DB's

FILTER



Sort: Name (ascending)

## AI WORKSTATION

Workstation with preconfigured GPU Capabilities

Projects: Private AI

REQUEST



## AI KUBERNETES RAG

Deploy a VMware Kubernetes Cluster, customizable, GPU capable worker nodes to run AI/ML workloads.

Projects: Private AI

REQUEST



Context: mi-project/prod-namespace

- Data Indexing & Retrieval
  - Knowledge Bases
  - Data Sources
- Agent Builder
  - Agents

## Data Indexing & Retrieval

### Data Sources

ADD DATA SOURCE

✔ Data Source "Private Cloud Validated Solutions" was successfully added.

Name	URL	Source type	Status	Related KBs
Private Cloud Validated Solutions	https://minio.acme.com/bucket/...	Min.io Object Store	Connected	0
Hybrid Cloud Validated Solutions	https://sharepoint.acme.com/folders/...	Sharepoint	Connected	0
HR Policies	https://sharepoint.acme.com/folders/...	Sharepoint	Connected	3

Manage Columns

Objects per page 10 0 objects 1 / 10

Context: ml-project/prod-namespace



Data Indexing & Retrieval > Knowledge Bases > VMware Validated Solutions KB

Data Indexing & Retrieval

## VMware Validated Solutions KB

ACTIONS

Knowledge Bases

Data Sources

Agent Builder

Agents

⚠ This Knowledge Base hasn't been indexed yet. Complete the steps below and index the Knowledge Base.

### 1. Knowledge Base Details

**Knowledge Base Type**

Data Source

**Created On**

7/1/2024

**Refresh Policy**

Every Week (Default)

**Last Refresh**

--

**Next Refresh**

--

**Description**

Knowledge Base for VMware Validated Solutions

**Status**

Unavailable

**Agents**

No agents attached to this Knowledge Base.

EDIT DETAILS

### 2. Link Data Sources

No data sources linked to this KB,

LINK DATA SOURCES

### 3. Index settings

Configure settings to index the knowledge base

INDEX KNOWLEDGE BASE

Context: ml-project/prod-namespace

- Data Indexing & Retrieval
- Knowledge Bases
- Data Sources
- Agent Builder
- Agents

Data Indexing & Retrieval > Knowledge Bases > VMware Validated Solutions KB

### VMware Validated Solutions KB

ACTIONS

This Knowledge Base hasn't been indexed yet. Complete the steps below and index the Knowledge Base.

#### Link Data Sources

2 data sources selected  Show selected only

<input type="checkbox"/>	Name	Source type	Description	Status
<input checked="" type="checkbox"/>	Private Cloud Valid...	Min.io	Private Cloud Validated Solutions	Active
<input checked="" type="checkbox"/>	Hybrid Cloud Valid...	Sharepoint	Hybrid Cloud Validated Solutions	Active
<input type="checkbox"/>	HR Policies	Sharepoint	AMER - 2024 HR Policies	Active

Objects per page: 5 | 10 objects | 1 / 2

CANCEL ADD

#### 3. Index settings

Configure settings to index the knowledge base

INDEX KNOWLEDGE BASE

Context: ml-project/prod-namespace

Data Indexing & Retrieval > Knowledge Bases > VMware Validated Solutions KB

### VMware Validated Solutions KB

DELETE KNOWLEDGE BASE

✔ This knowledge base has been indexed successfully!

- Data Indexing & Retrieval
- Knowledge Bases
- Data Sources
- Agent Builder
- Agents

#### Knowledge Base Details

<b>Knowledge Base Type</b> Data Source	<b>Description</b> Knowledge Base for VMware Validated Solutions
<b>Created On</b> 8/25/2024	
<b>Refresh Policy</b> Every Week (Default)	<b>Status</b> Available
<b>Last Refresh</b> --	<b>Agents</b> No agents attached to this Knowledge Base.
<b>Next Refresh</b> --	

EDIT DETAILS

#### 2. Link Data Sources

- ✔ Private Cloud Validated Solutions
- ✔ Hybrid Cloud Validated Solutions

ACTIONS

#### Index settings

**Index Status**  
Ready

**Embedding Model**  
nvidia/neva-embedding

**Chunk Size**  
512 (default)

**Token Overlap**  
10 (default)

**Text Splitter**  
Sentence (default)

RE-INDEX KNOWLEDGE BASE

#### Document List

Document Name	File Type	Data Source	Indexed At
---------------	-----------	-------------	------------

Context: mi-project/prod-namespace

- <<
- Data Indexing & Retrieval
  - Knowledge Bases
  - Data Sources
- Agent Builder
  - Agents

## Agents



### Create Your First Agent

To get started, create an Agent by combining a model endpoint and instructions.

[CREATE AGENT](#) [LEARN MORE](#)

#### Prerequisites

<b>Model Endpoint</b> An Agent needs a running Large Language Model (LLM) to generate responses. You can create a new Model Endpoint in the Model Runtime Service. <a href="#">GO TO MODEL RUNTIME</a>	<b>Knowledge Base (Optional)</b> To augment an Agent with your business data it needs access to a Knowledge Base. This optional prerequisite enables an Agent to improve the relevance and accuracy of its responses. <a href="#">GO TO DATA INDEXING &amp; RETRIEVAL</a>
--	---

Context: ml-project/prod-namespace



Agent Builder > Agents > Create Agent

# Create Agent

CREATE

CANCEL

Data Indexing & Retrieval ▾

Knowledge Bases

Data Sources

Agent Builder ▾

Agents

Configure

View Configuration Code

Name \*

Validated Solutions Helper

Description

Chatbot to answer questions about VMware Validated Solutions.

Model Endpoint \* ⓘ

meta/llama3-8B ▾

Instruction ⓘ

You are a friendly and professional VMware Validated Solutions expert. Use VMware Validated Solutions documentation provided to you to answer questions about VMware Validated Solutions.

## Test Agent

NEW SESSION

Use Session ⓘ



Create the agent first to test the agent

Create the agent first to test the agent

SEND

Context: ml-project/prod-namespace



Agent Builder > Agents > VMware Validated Solutions Helper

# Validated Solutions Helper

EDIT

ACTIONS

Data Indexing & Retrieval

Knowledge Bases

Data Sources

Agent Builder

Agents

## Agent Details

### Agent Endpoint

endpoints.pais.hostname.com/agents/vs-helper

### Agent ID

vvs-helper

### Description

Chatbot to answer questions about VMware Validated Solutions.

### Model Endpoint

meta-llama/llama-3-7B

### Instruction

You are a friendly and professional VMware Validated Solutions expert. Use VMware Validated Solutions documentation provided to you to answer questions about VMware Validated Solutions.

### Created on

8/25/2024

## Sample Request

```
01 curl https://endpoints.pais.hostname.com/compatibility/
02 openai/v1/completions \
03 -H "Content-Type: application/json" \
04
```

## Test Agent

CLEAR

NEW SESSION

Use Session

You

What is a VMware Validated Solution?

### Validated Solutions Helper

A VMware validated solution is a technical validated implementation, built and tested by VMware and VMware partners, designed to help customers solve common business problems using VMware Cloud Foundation as the foundational infrastructure.

Some examples of VMware validated solutions for VMware Cloud Foundation include:

- 1) Identity and Access Management for VMware Cloud Foundation
- 2) Developer Ready Infrastructure for VMware Cloud Foundation
- 3) Private Cloud Automation for VMware Cloud Foundation
- 4) Advanced Load Balancing for VMware Cloud Foundation
- 5) Intelligent Operations Management for VMware Cloud Foundation
- 6) Intelligent Logging and Analytics for VMware Cloud Foundation

SHOW DATA REFERENCE

Text to chat



SEND



Context: ml-project/prod-namespace



Agent Builder > Agents > VMware Validated Solutions Helper

# Validated Solutions Helper

EDIT

ACTIONS

- Data Indexing & Retrieval
  - Knowledge Bases
  - Data Sources
- Agent Builder
  - Agents

## Agent Details

### Agent Endpoint

endpoints.pais.hostname.com/agents/vvs-helper

### Agent ID

vvs-helper

### Description

Chatbot to answer questions about VMware Validated Solutions.

### Model Endpoint

meta-llama/llama-3-7B

### Instruction

You are a friendly and professional VMware Validated Solutions expert. Use VMware Validated Solutions documentation provided to you to answer questions about VMware Validated Solutions.

### Created on

8/25/2024

## Sample Request

```
01 curl https://endpoints.pais.hostname.com/compatibility/
02 openai/v1/completions \
03 \
04
```

## Test Agent

CLEAR

NEW SESSION



Use Session

Some examples of VMware validated solutions for VMware Cloud Foundation include:

- 1) Identity and Access Management for VMware Cloud Foundation
- 2) Developer Ready Infrastructure for VMware Cloud Foundation
- 3) Private Cloud Automation for VMware Cloud Foundation
- 4) Advanced Load Balancing for VMware Cloud Foundation
- 5) Intelligent Operations Management for VMware Cloud Foundation
- 6) Intelligent Logging and Analytics for VMware Cloud Foundation

SHOW DATA REFERENCE

You

Is there a VMware validated solution for Private AI?

### Validated Solutions Helper

No, I can't find any reference to a VMware validated solution for Private AI.

SHOW DATA REFERENCE

Text to chat



SEND

**MINIO**  
**OBJECT STORE**

User

- Object Browser
- Access Keys
- Documentation

Administrator

- Buckets
- Policies
- Identity
- Monitoring
- Events
- Tiering
- Site Replication
- Configuration

Object Browser  [Settings] [Help] [Dark Mode]

**vvs-documentation** Created on: Thu, Aug 08 2024 13:29:05 (PDT) Access: PRIVATE 980.9 KiB - 6 Objects [Rewind] [Refresh] [Upload]

< vvs-documentation [Folder Icon] [Create new path]

<input type="checkbox"/>	Name	Last Modified	Size
<input type="checkbox"/>	Before You Begin.pdf	Today, 11:16	163.5 KiB
<input type="checkbox"/>	Design Decisions.pdf	Today, 11:16	163.5 KiB
<input type="checkbox"/>	Design Objectives.pdf	Today, 11:16	163.5 KiB
<input type="checkbox"/>	Implementation.pdf	Today, 11:16	163.5 KiB
<input type="checkbox"/>	Operational Guidance.pdf	Today, 11:16	163.5 KiB
<input type="checkbox"/>	Planning and Preparation Workbook.pdf	Today, 11:16	163.5 KiB



Context: ml-project/prod-namespace

- Data Indexing & Retrieval
  - Knowledge Bases
  - Data Sources
- Agent Builder
  - Agents

Agent Builder > Agents > VMware Validated Solutions Helper

## Validated Solutions Helper

[EDIT](#) [ACTIONS](#)

### Agent Details

**Agent Endpoint**  
endpoints.pais.hostname.com/agents/vvs-helper

**Agent ID**  
vvs-helper

**Description**  
Chatbot to answer questions about VMware Validated Solutions.

**Model Endpoint**  
✔ meta-llama/llama-3-7b

**Instruction**  
You are a friendly and professional VMware Validated Solutions expert. Use VMware Validated Solutions documentation provided to you to answer questions about VMware Validated Solutions.

**Created on**  
8/25/2024

### Sample Request

```
01 curl https://endpoints.pais.hostname.com/compatibility/
02 openai/v1/completions \
03 -H "Content-Type: application/json" \
```

## Test Agent

[CLEAR](#) [NEW SESSION](#)  Use Session ⓘ

**Validated Solutions Helper**

No, I can't find any reference to a VMware validated solution for Private AI.

[SHOW DATA REFERENCE](#)

**You**

Is there a VMware validated solution for Private AI?

**Validated Solutions Helper**

Yes, VMware has a validated solution for Private AI called "Private AI Ready Infrastructure for VMware Cloud Foundation." This solution provides design, implementation, and operational guidance for AI GPU-enabled accelerated workload domains that run on VMware Cloud Foundation.

[HIDE DATA REFERENCE](#)

[Private AI Ready Infrastructure for VCF - Provide enterprise private AI GPU-enabled infrastructure to build an AI platform for data scientists and ML engineers using VMware Cloud Foundation as its foundational layer.](#)

Text to chat [SEND](#)

# VCF Intelligent Assist



Conversations Admin

New Thread

Conversation History ▾

Search in history 🔍

Today

Sharing vSAN Uplinks... 🔒

Removing Failed vSA... 🔒

Understanding vSAN ... 🔒

Previous 7 Days

Generating ESP Toke... 🔒

Previous 30 Days

Understanding Hyper... 🔒

VCF 5.2 BOM Compo... 🔒

Creating Persistent C... 🔒

vSphere Metrics on "C... 🔒

CPU Wait vs Ready in... 🔒

Older

Understanding Hyper... 🔒

Hypervisors Explaine... 🔒

Understanding Hyper... 🔒

Installing ESXi: Hardw... 🔒

Adding User Permissi... 🔒

Gaining vCenter Serv... 🔒

VM CPU Usage vs De... 🔒

VM CPU Usage vs ES... 🔒

## VCF Intelligent Assist



👤 vSAN cluster management, vMotion, and vSAN are using the same uplinks. Is this supported?

🤖 Yes, vSAN cluster management, vMotion, and vSAN traffic can share physical network adapters with other system traffic types, such as vSphere vMotion traffic, vSphere HA traffic, and virtual machine traffic. However, to guarantee the amount of bandwidth required for vSAN, you can use vSphere Network I/O Control (NIOC) in the distributed switch to configure bandwidth allocation for vSAN traffic. This ensures that vSAN traffic receives a minimum bandwidth during contention.

Score the response: 1 2 3 4 5 🗨

[1] [Designing vSAN Netwo...](#) [2] [Characteristics of vSAN](#) [3] [vSAN Network Charact...](#) [4] [Network Design for Sha...](#) [5] [Network Design for Sha...](#) [6] [Designing vSAN Netwo...](#) [7] [vSAN 2 Node with Dire...](#) [8] [ySphere HA Configurati...](#) [9] [Network Design for Str...](#) [10] [Network Design for vS...](#)

👤 That's great, thank you!

🤖 You're welcome! I'm glad I could help. If you have any more questions or need further assistance, please don't hesitate to ask. Have a great day!

Score the response: 1 2 3 4 5 🗨

Ask me a question about VMware.

## Filter Sources

0 filters applied

- Blogs
- Broadcom KBs
- Broadcom TechDocs
- Broadcom.com
- Carbon Black
- Clarity
- SASE
- Spring.io
- Tanzu
- TechZone
- TechZone - Apps & Cloud Management
- TechZone - NSX
- Telco
- VMware Docs
- VMware Explore
- VMware.com
- vSphere Metrics Book
- Wavefront Docs

This list is incomplete; you can help by [expanding it!](#)

# VCF Intelligent Assist

vmw NSX Default

Home Networking Security Inventory Plan & Troubleshoot Threat Detection & Response System

## IDS/IPS

Monitoring Packet Capture Query REFRESH

**INTRUSION ATTEMPTS** Total: 542 7 Days: 211 Clusters: 1/2 Gateways: 3/4 Last 7 Days Timeline

Unique Intrusions (27) Filter by Attack Type or more

Traffic: ALL TRAFFIC VIEWING SIGNATURE ACTIONS (3/3) CRITICAL 3 HIGH 6 MEDIUM 4 LOW 0 SUSPICIOUS 14

Impact Score	Severity	Last Detected	ID & Details	Users Affected	Where Detected	CVE Details	CVSS	Intelligent Assist
75	Critical	Aug 23, 2024, 2:43:41 PM Single Attempt	2027512 ET MALWAR...	1	1		0.0 None	🗨️
70	Critical	Aug 19, 2024, 3:05:12 PM Multiple Attempts	1105535 NSX - (Comm...	2	2		0.0 None	🗨️
65	High	Aug 19, 2024, 10:49:36 AM Single Attempt	2024297 ET EXPLOIT ...	1	1	CVE-CVE-2017-0143	0.0 None	🗨️

1 - 9 of 9 < Back Next >

### Intelligent Assist

< Return to Chat: NSX - (Exfiltration) Detect possible outbound dnscat2 ...

Assisting on...

**60 High** 2024-08-19 Source 17.41.22+0... 192.168.20.34 56354 Destination 175.45.176.111 53

Explain this event to me.

### Intelligent Assist

The main event is a Dnscat (MITRE Tactics: Exfiltration) detection on host 192.168.20.34 attempting to contact 175.45.176.111. This indicates a potential attempt to steal data from the organization using a DNS-based command and control channel.

**Hypothesis 1: Compromised Host Exfiltrating Data**  
The Dnscat detection for Exfiltration on 192.168.20.34, coupled with the previous Dnscat detection for Command and Control on the same host, suggests that this host has been compromised and is being used as a conduit for data exfiltration. The attacker may have established a persistent command and control channel using Dnscat and is now attempting to steal sensitive information from the organization. The earlier Darkside detection on the same host further supports this hypothesis as Darkside is known to be delivered via phishing or exploiting remote systems and accounts, potentially leading to the initial compromise.

**Hypothesis 2: Lateral Movement and Data Exfiltration**  
The detection of Darkside on 192.168.100.34 followed by Dnscat on 192.168.20.34 suggests that the attacker may have moved laterally from 192.168.100.34 to 192.168.20.34 and is now attempting to exfiltrate data. Darkside is known to use the TOR network for its command and control, which might have facilitated the lateral movement. The attacker may have exploited vulnerabilities on 192.168.100.34 to gain access and then moved to 192.168.20.34 to establish a more covert exfiltration channel using Dnscat.

Tell me more about threat 'Dnscat'.

Enter message...

# VCF Intelligent Assist

## IDS/IPS Events in VMware NSX

Tell me more about threat 'Dnscat'.

Intelligent Assist

Dnscat is a tool used to establish a covert command-and-control (C&C) channel over the Domain Name System (DNS) protocol. This means that attackers can use DNS traffic, which is typically allowed through firewalls and network security devices, to communicate with compromised systems and control them remotely.

Dnscat2, a specific implementation of Dnscat, is particularly effective because it encrypts the communication, making it difficult for security tools to detect and analyze.

The detection of Dnscat activity on a host, such as 192.168.20.34 in this case, indicates a possible attempt to exfiltrate data or establish a persistent command-and-control channel for further malicious activity.

Intelligent Assist

Tell me more about threat 'Dnscat'.

What events did happen on '175.45.176.111'?

What events did happen on '192.168.20.34'?



# VCF Intelligent Assist

## IDS/IPS Events in VMware NSX

Tell me more about threat 'Dnscat'.

Intelligent Assist

Dnscat is a tool used to establish a covert command-and-control (C&C) channel over the Domain Name System (DNS) protocol. This means that attackers can use DNS traffic, which is typically allowed through firewalls and network security devices, to communicate with compromised systems and control them remotely.

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The detection of Dnscat activity on a host, such as 192.168.20.34 in this case, indicates a possible attempt to exfiltrate data or establish a persistent command-and-control channel for further malicious activity.

Intelligent Assist

Tell me more about threat 'Dnscat'.

What events did happen on '175.45.176.111'?

What events did happen on '192.168.20.34'?

what are the IOCs from this event

Intelligent Assist

The IOCs (Indicators of Compromise) from this event are:

- Source IP: 192.168.20.34 (potentially compromised host)
- Destination IP: 175.45.176.111 (potential C&C server)
- Threat: Dnscat (MITRE Tactics: Exfiltration)
- Protocol: DNS (Domain Name System)
- Activity: Communication over DNS, potentially for data exfiltration or establishing a persistent command-and-control channel.

Additional IOCs based on the event history:

- Threat: Darkside (MITRE Tactics: Command and Control, Exfiltration)
- Source IP: 192.168.100.34 (potentially compromised host)
- Destination IP: 175.45.176.111 (potential C&C server)
- Protocol: TOR (The Onion Router) network (for Darkside C&C)
- Activity: Communication over TOR, potentially for ransomware activity or data exfiltration.

Important Considerations:

- The use of Dnscat, which is designed for covert communication over DNS, suggests an attempt to avoid detection by traditional security tools.
- The repeated detections of Dnscat and Darkside on both 192.168.20.34 and 192.168.100.34 indicates a potential lateral movement by the attacker from one compromised host to another.

Enter message...

# VCF Intelligent Assist

## IDS/IPS Events in VMware NSX

Tell me more about threat 'Dnscat'.

Intelligent Assist

Dnscat is a tool used to establish a covert command-and-control (C&C) channel over the Domain Name System (DNS) protocol. This means that attackers can use DNS traffic, which is typically allowed through firewalls and network security devices, to communicate with compromised systems and control them remotely.

Dnscat2, a specific implementation of Dnscat, is particularly effective because it encrypts the communication, making it difficult for security tools to detect and analyze.

The detection of Dnscat activity on a host, such as 192.168.20.34 in this case, indicates a possible attempt to exfiltrate data or establish a persistent command-and-control channel for further malicious activity.

Intelligent Assist

Tell me more about threat 'Dnscat'.

What events did happen on '175.45.176.111'?

What events did happen on '192.168.20.34'?

what are the IOCs from this event

Intelligent Assist

The IOCs (Indicators of Compromise) from this event are:

- Source IP: 192.168.20.34 (potentially compromised host)
- Destination IP: 175.45.176.111 (potential C&C server)
- Threat: Dnscat (MITRE Tactics: Exfiltration)
- Protocol: DNS (Domain Name System)
- Activity: Communication over DNS, potentially for data exfiltration or establishing a persistent command-and-control channel.

Additional IOCs based on the event history:

- Threat: Darkside (MITRE Tactics: Command and Control, Exfiltration)
- Source IP: 192.168.100.34 (potentially compromised host)
- Destination IP: 175.45.176.111 (potential C&C server)
- Protocol: TOR (The Onion Router) network (for Darkside C&C)
- Activity: Communication over TOR, potentially for ransomware activity or data exfiltration.

Important Considerations:

- The use of Dnscat, which is designed for covert communication over DNS, suggests an attempt to avoid detection by traditional security tools.
- The repeated detections of Dnscat and Darkside on both 192.168.20.34 and 192.168.100.34 indicates a potential lateral movement by the attacker from one compromised host to another.

Enter message...

tell me a joke...

Intelligent Assist

It seems like your question is a bit off-topic for a Cybersecurity Assistant! 🟡 I'm here to help with all things related to computer security. Would you like to ask me a cybersecurity-related question instead? For example:

- What are some common phishing techniques?
- How can I improve my password security?
- What are some best practices for securing a home network?

I'm happy to help you with any cybersecurity concerns you may have!

Enter message...

# VCF Intelligent Assist

## IDS/IPS Events in VMware NSX

Remediate using 'Effective' strategy.

Intelligent Assist

Previously we added policies in the IDS/IPS & Malware Prevention page for Effective strategy. These policies were:

Source	Destination	Signatures
192.168.20.34 :*	* :*	1095773

You just selected the Effective remediation strategy. Below are the policies that can help with remediation using this strategy:

Source	Destination	Signatures
192.168.20.34 :*	* :*	1095773

Would you like to create this policy?

Yes

No



# VCF Intelligent Assist

## IDS/IPS Events in VMware NSX

Remediate using 'Effective' strategy.

**Intelligent Assist**

Previously we added policies in the IDS/IPS & Malware Prevention page for Effective strategy. These policies were:

Source	Destination	Signatures
192.168.20.34 :*	* :*	1095773

You just selected the Effective remediation strategy. Below are the policies that can help with remediation using this strategy:

Source	Destination	Signatures
192.168.20.34 :*	* :*	1095773

Would you like to create this policy?

Yes

No

**Intelligent Assist**

We have successfully created following policies to remediate this event.

**Policy Resources**

Resource	ID	Action	Status
IdsProfile	copilot-1095773	Unchanged	✓
Service	copilot-UDP-ANY	Unchanged	✓
IdsSecurityPolicy	copilot-remediations	Create	✓
Group	copilot-192.168.20.34	Unchanged	✓
Group	copilot-vm-192.168.20.34	Unchanged	✓
IdsRule	copilot-192.168.20.34-ANY-UDP-ANY	Create	✓

Please review and enable the rules in the IDS/IPS & Malware Prevention page.

Enter message...



# VCF Intelligent Assist

## IDS/IPS Events in VMware NSX

The screenshot displays the VMware NSX Security console interface. The top navigation bar includes 'vmw NSX', 'Default', and user information 'bpuliyanda@vm...'. The main navigation menu shows 'Home', 'Networking', 'Security', 'Inventory', 'Plan & Troubleshoot', 'Threat Detection & Response', and 'System'. The left sidebar lists various security features, with 'IDS/IPS & Malware Prevention' selected. The main content area is titled 'IDS/IPS & Malware Prevention' and contains tabs for 'Distributed Rules', 'Gateway Rules', 'Profiles', and 'Settings'. Below the tabs, there are 'REVERT' and 'PUBLISH' buttons. A progress indicator shows 'EMERGENCY THREAT RULES (1)' and 'THREAT RULES (7)'. Action buttons include '+ ADD POLICY', '+ ADD RULE', 'CLONE', 'UNDO', 'DELETE', and a menu icon. A table lists the rules with columns for Name, ID, Sources, Destinations, Services, Security Profiles, Applied To, and Mode. The table contains two rows: one for 'Co-Pilot Remediations (1)' in 'Stateful' mode with a 'Success' status, and another for a specific rule 'copilot-192.168.20.34-AN...' with ID '18414', source 'Co-Pilot 192.168.2...', destination 'Any', service 'copilot-UDP-ANY', security profile 'copilot-1095773', and applied to 'Co-Pilot VM 192.1...'. The mode for this rule is 'Detect & Prevent'.

Name	ID	Sources	Destinations	Services	Security Profiles	Applied To	Mode
Co-Pilot Remediations (1)							Stateful <span>Success</span>
copilot-192.168.20.34-AN...	18414	Co-Pilot 192.168.2...	Any	copilot-UDP-ANY	copilot-1095773	Co-Pilot VM 192.1...	Detect & Prevent

# VCF Intelligent Assist

## Netflow-Analysen





# VCF Intelligent Assist

## Fragen zum Upgrade-Pfad

Me



Help me understand the upgrade path to NSX 4.2

Here is the upgrade paths to **NSX 4.2.0** from your current manager, NSX 4.0.1.1.

- **NSX 4.0.X > NSX 4.2.0**

Here is a list of compatible VMware vCenter Server and VMware ESXi for NSX 4.2.0.

LEGEND	VMware NSX
✓ Compatible	4.2.0.0
<b>VMware vCenter Server</b>	
8.0U3	✓
8.0U2	✓
8.0U1	✓
8.0	✓
7.0U3	✓
7.0U2	✓
7.0U1	✓
7.0	✓
<b>VMware vESXi</b>	

Enter message...  

# VCF Intelligent Assist

## Code-Generierung für Automatisierung

Me

Generate a shell script for deleting all groups with a tag= sales-test

See the Shell script below [Copy Script](#)

```
# Tag to filter groups
TAG=sales-test

# Function to get the list of groups
get_groups() {
  curl -k -u "$USERNAME:$PASSWORD" -X GET "$NSXT_MANAGER/policy/api/v1/infra/
domains/default/groups" -H "Accept: application/json"
}

# Function to delete a group
delete_group() {
  local group_id=$1
  curl -k -u "$USERNAME:$PASSWORD" -X DELETE "$NSXT_MANAGER/policy/api/v1/
infra/domains/default/groups/$group_id"
}
```

# Private AI

## Vorteile



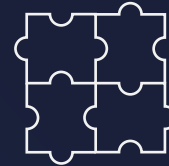
**Effizienz & Automatisierung  
durch VMware Cloud Foundation**



**Kontrolle über Daten-Zugriff und  
deren Nutzung**



**Effizienzsteigerung durch bessere  
Auslastung und leichterem Betrieb  
von (GPU-)Ressourcen**



**Deep Learning VM Templates  
& Vector Datenbank für  
RAG-Workflows**



**Kein neuer Silo für Betrieb  
von AI & Nutzen von  
Partner-Ökosystem**



**Self-Service Plattform für  
Data Scientists +  
Automatisierung**

# Vielen Dank



RELAX,  
WE CARE

**Dominik Steiner**

Systems Engineer, NTS Netzwerk Telekom Service AG

+43 664 88533879

[dominik.steiner@nts.eu](mailto:dominik.steiner@nts.eu)

16:30-17:00

# PAUSE

# VMware vSphere

Whats new?



Patrick Hawranek

Consultant | ACP IT Solutions GmbH



- About Me and ACP
- VMware vSphere Product Line Comparison
  - VMware vSphere Standard (VVS)
  - VMware vSphere Enterprise Plus (VVEP)
  - VMware vSphere Foundation (VVF)
  - VMware Cloud Foundation (VCF)
- VMware vSphere 8 Update 3
- VMware Cloud Foundation Operations

# About Me – Patrick Hawranek

Seit 2017 bei ACP IT Solutions GmbH beschäftigt

Tätigkeiten: Consulting, Pre-Sales, Licensing

## VMware Zertifizierungen:

- Double VCP - Data Center Virtualization & Desktop Mobility
- Double VCP - Network Virtualization & Desktop Mobility
- VMware Certified Professional - Desktop Management 2023
- VMware Certified Professional - Network Virtualization 2023
- VMware Certified Advanced Professional - Network Virtualization Design 2023
- VMware Certified Specialist - vSAN 2023
- VMware Certified Specialist - vSAN 2022
- VMware Certified Specialist - vSphere with Tanzu 2022
- VMware Certified Advanced Professional - Data Center Virtualization Deployment 2020
- VMware Certified Advanced Professional - Data Center Virtualization Design 2020
- VMware Certified Implementation Expert - Data Center Virtualization 2020



## About ACP

<https://www.acp-gruppe.com>

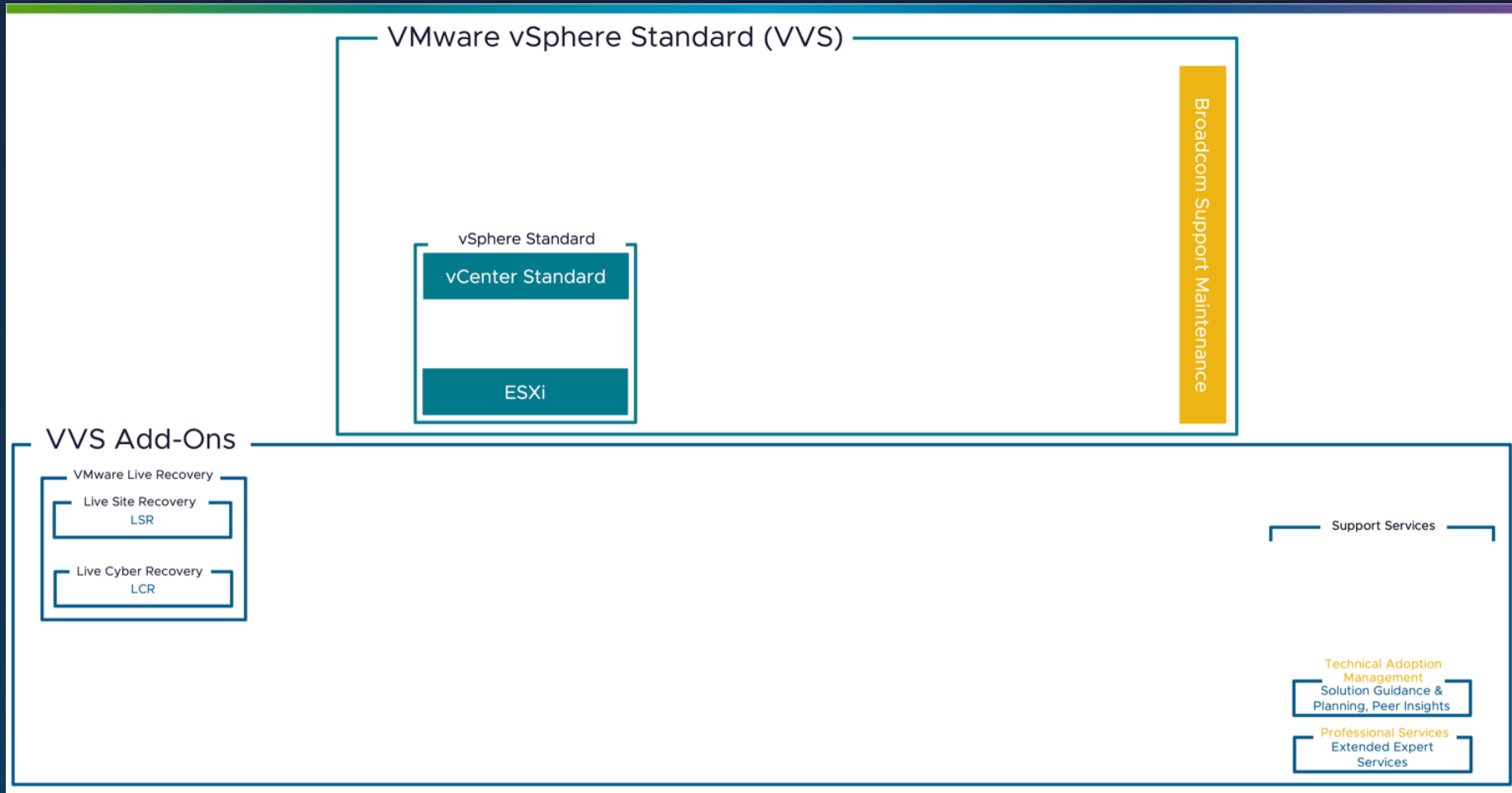
- Standorte: 50+ in AT und DE
- Mitarbeiter: ca. 2500 hochqualifizierte IT-Expert:innen
- Wir bieten Kunden innovative und maßgeschneiderte Lösungen
- Managed Services



- VMware Premier Partner
- VMware by Broadcom Service Provider Lizenzierung (VCSP)

# VMware vSphere Product Line Comparison

# VMware vSphere Standard (VVS)



## VMware vSphere Standard (VVS)

### VVS Features included:

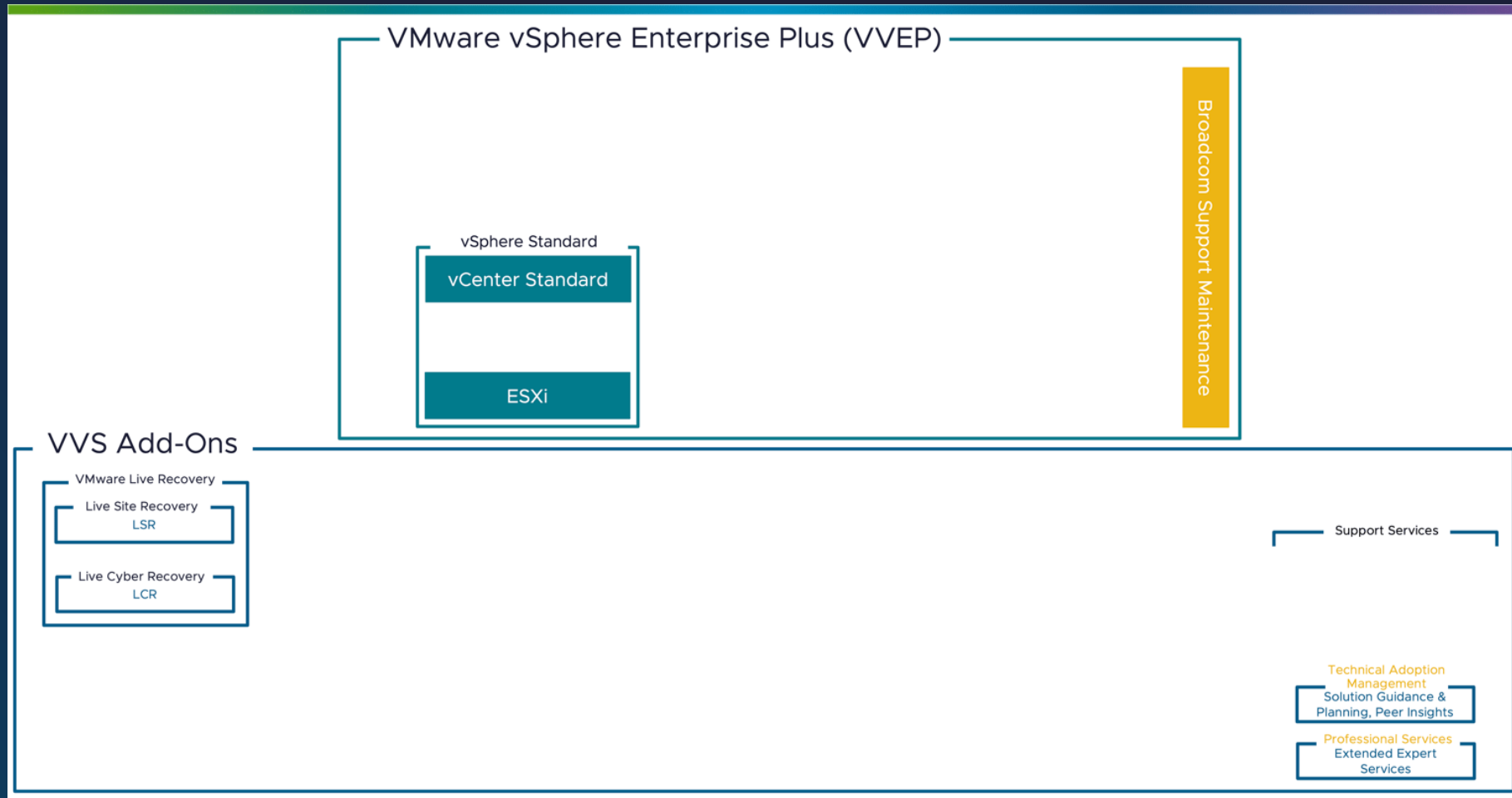
- vSphere Standard
  - vCenter Server Standard
  - vSphere ESXi
- Broadcom Software Maintenance

### Add-Ons:

- VMware Live Recovery (VLR) *(Sold as Per Protected VM)*
  - VMware Live Site Recovery (LSR)
  - VMware Live Cyber Recovery (LCR) *(Sold as protected TiB)*



# VMware vSphere Enterprise plus (VVEP)



## VMware vSphere Enterprise plus (VVEP)

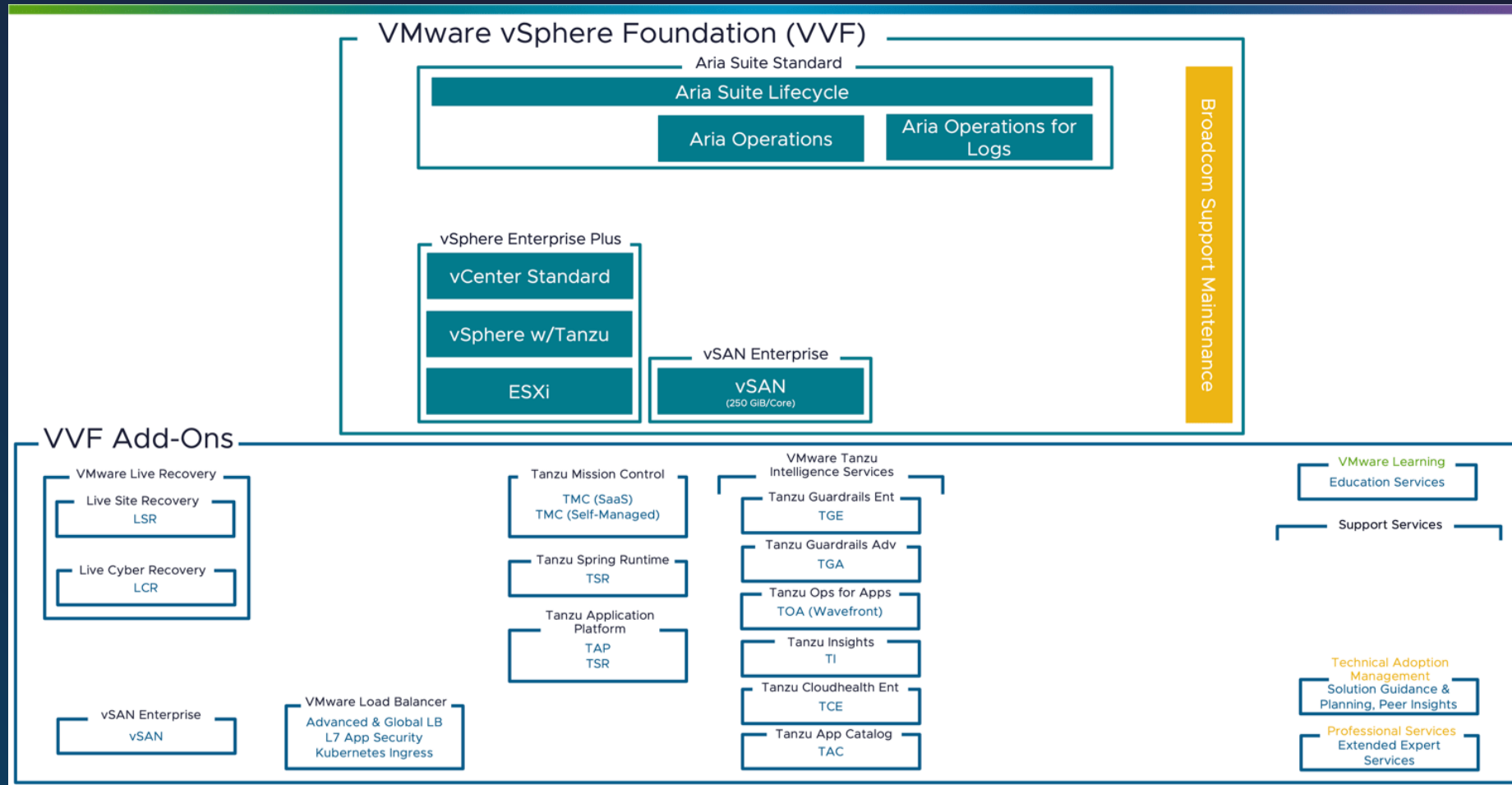
### VVEP Features included:

- vSphere Standard
  - vCenter Server Standard
  - vSphere ESXi
- Broadcom Software Maintenance

### Add-Ons:

- VMware Live Recovery (VLR) (*Sold as Per Protected VM*)
  - VMware Live Site Recovery (LSR)
  - VMware Live Cyber Recovery (LCR) (*Sold as protected TiB*)

# VMware vSphere Foundation (VVF)



## VMware vSphere Foundation (VVF)

VVF Features included:

### vSphere Enterprise Plus

- vCenter Server Standard
- vSphere with Tanzu (includes TKG Runtime)
- vSphere ESXi

vSAN Enterprise (NEW: includes 250GiB per CPU Core per host)

### Aria Suite Standard

- Aria Suite Lifecycle
- Aria Automation Orchestrator (Basic)
- Aria Operations
- Aria Operations for Logs

## VMware vSphere Foundation (VVF)

### Add-Ons:

- VMware Live Recovery (VLR) *(Sold as Per Protected VM)*
  - VMware Live Site Recovery (LSR)
  - VMware Live Cyber Recovery (LCR) *(Sold as protected TiB)*
- vSAN Enterprise *Sold as Per TiB (no minimum purchase)*

VMware Load Balancer (NSX Advanced Load Balancer) *(Sold as per service unit)*

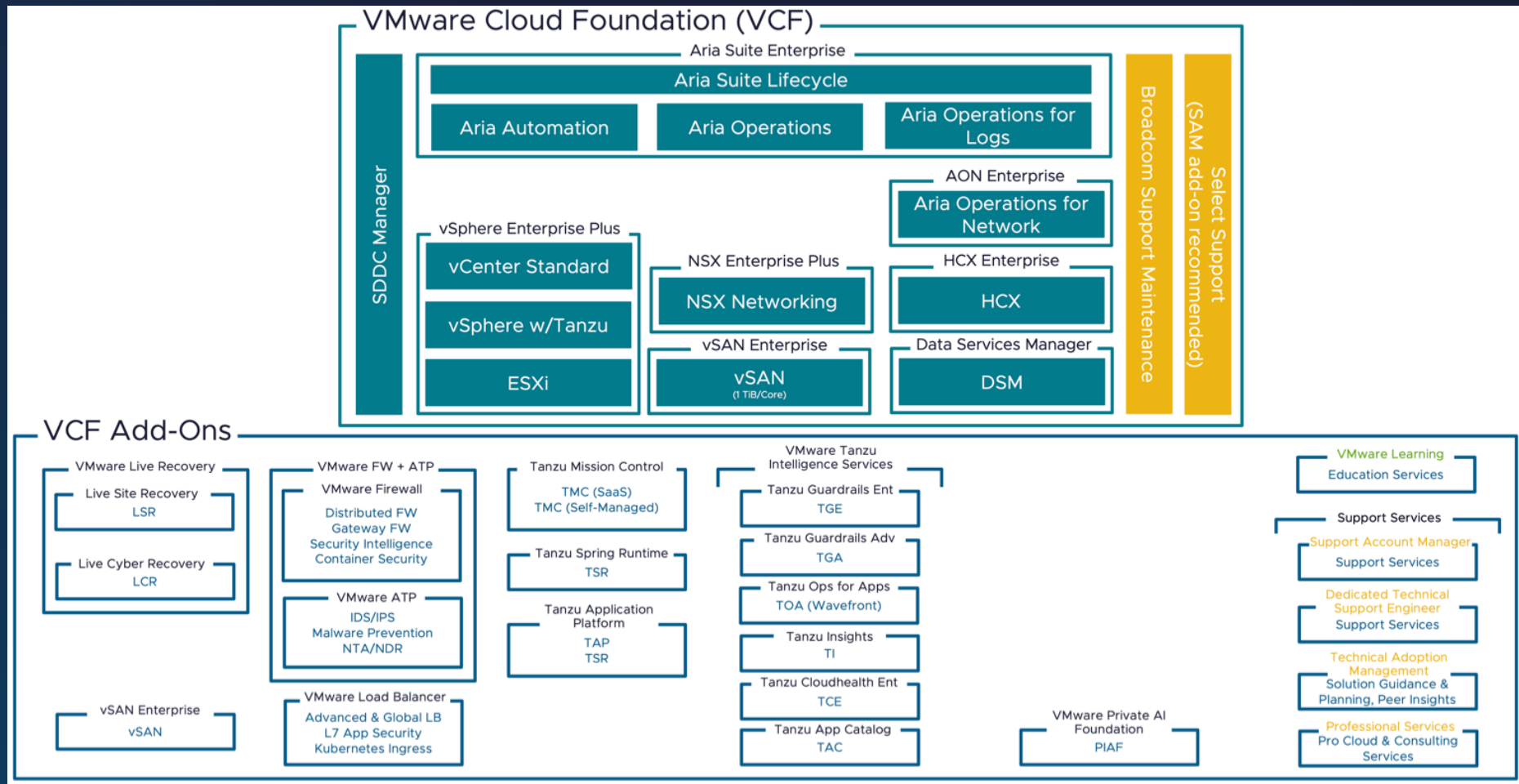
Tanzu Mission Control (TMC)

Tanzu Application Platform (TAP)

Tanzu Spring Runtime (TSR)

Tanzu Guardrails Enterprise (TGE)

# VMware Cloud Foundation (VCF)





## VMware vSphere Product Line Comparison

Feature Comparison VVS, VVEP and VVF:

<https://www.vmware.com/docs/vmw-datasheet-vsphere-product-line-comparison>

## VMware vSphere 8 Update 3

- vCenter Reduced Downtime
- vSphere Lifecycle Manager
- vSphere Configuration Profiles
- Live Patching
- GPU Profiles
- Cluster Level GPU Monitoring
- CPU C-State Virtualization
- Security Configuration Guides & Baselines  
<https://docs.vmware.com/en/VMware-vSphere/8.0/vsphere-esxi-vcenter-803-security-guide.pdf>

# VMware vSphere 8 Update 3 Live Patching

Lifecycle Manager | ACTIONS ▾

Image Depot | Updates | Imported ISOs | Baselines | Settings

ESXi VERSIONS | VENDOR ADDONS | COMPONENTS Last Sync: n/a. Next Sync: n/a

ESXi 8.0 U3a - 23658840 ⚡ Live Patch Category: Enhancement

⚡ Live Patch eligible from 8.0 Update 3 - 23653650 ⓘ

**ESXi Version** 8.0 U3a - 23658840 ▾ *(released 04/30/2024)*

⚡ Live Patch eligible from 8.0 Update 3 - 23653650 ⓘ

**Vendor Addon** ⓘ SELECT *(optional)*

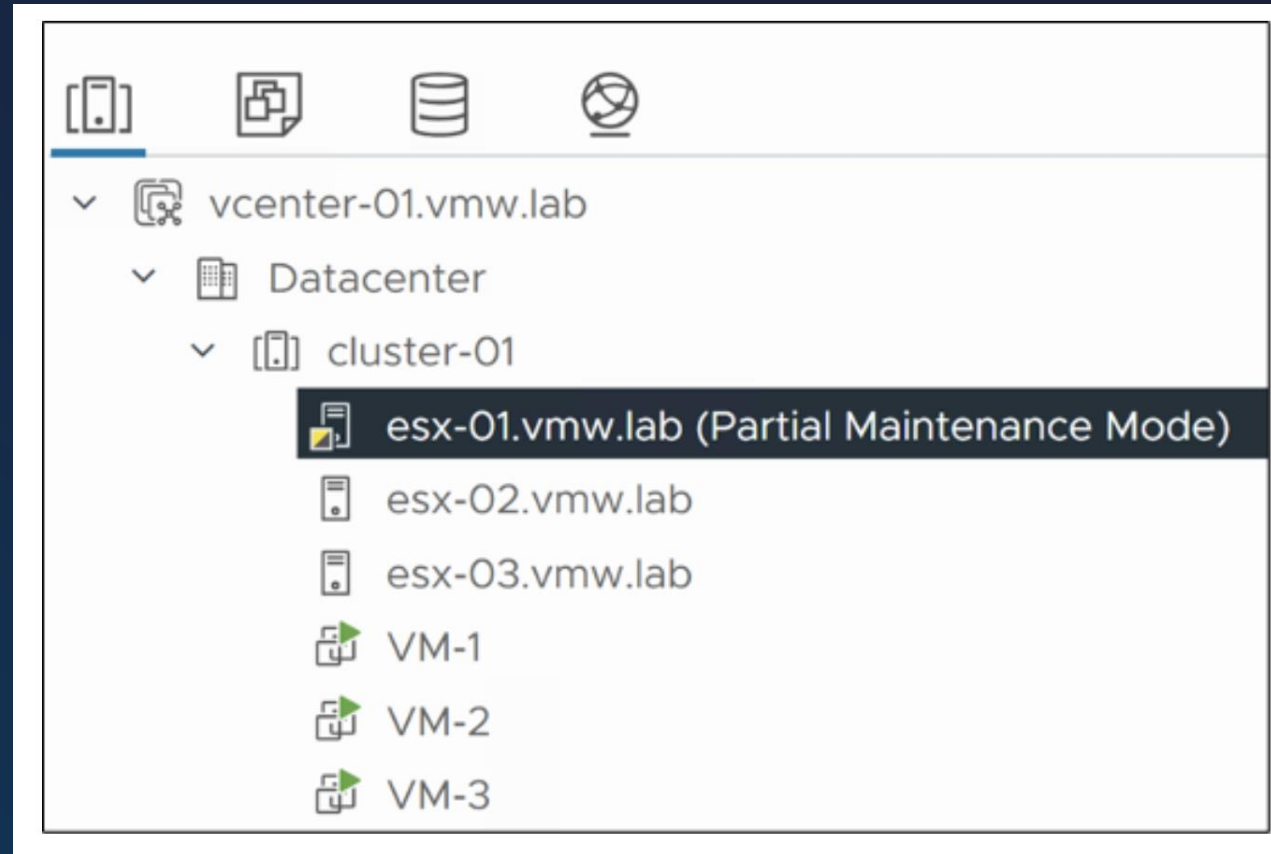
**Firmware and Drivers Addon** ⓘ SELECT *(optional)*

**Components** ⓘ 2 additional components [Show details](#)

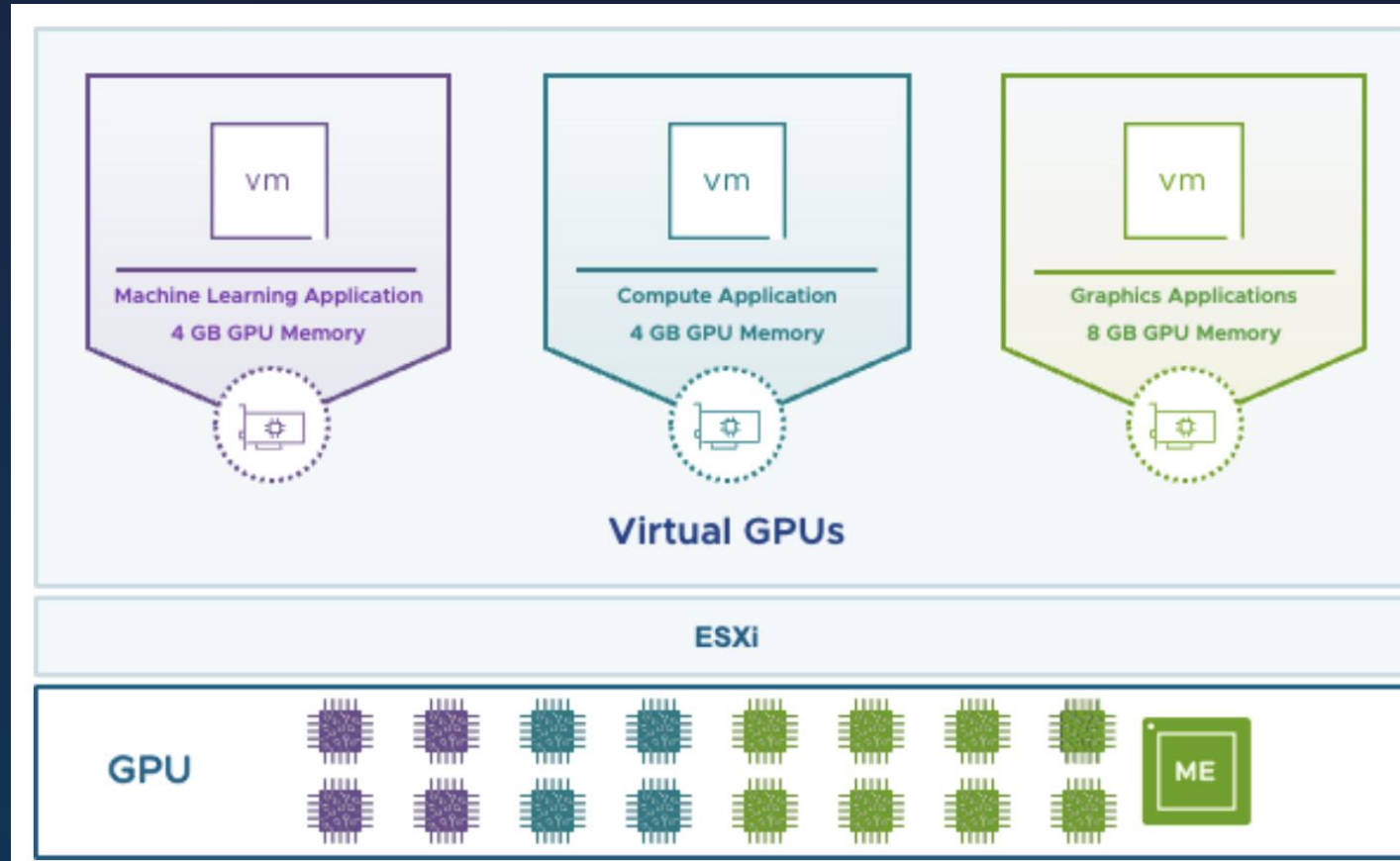
SAVE VALIDATE CANCEL

# VMware vSphere 8 Update 3

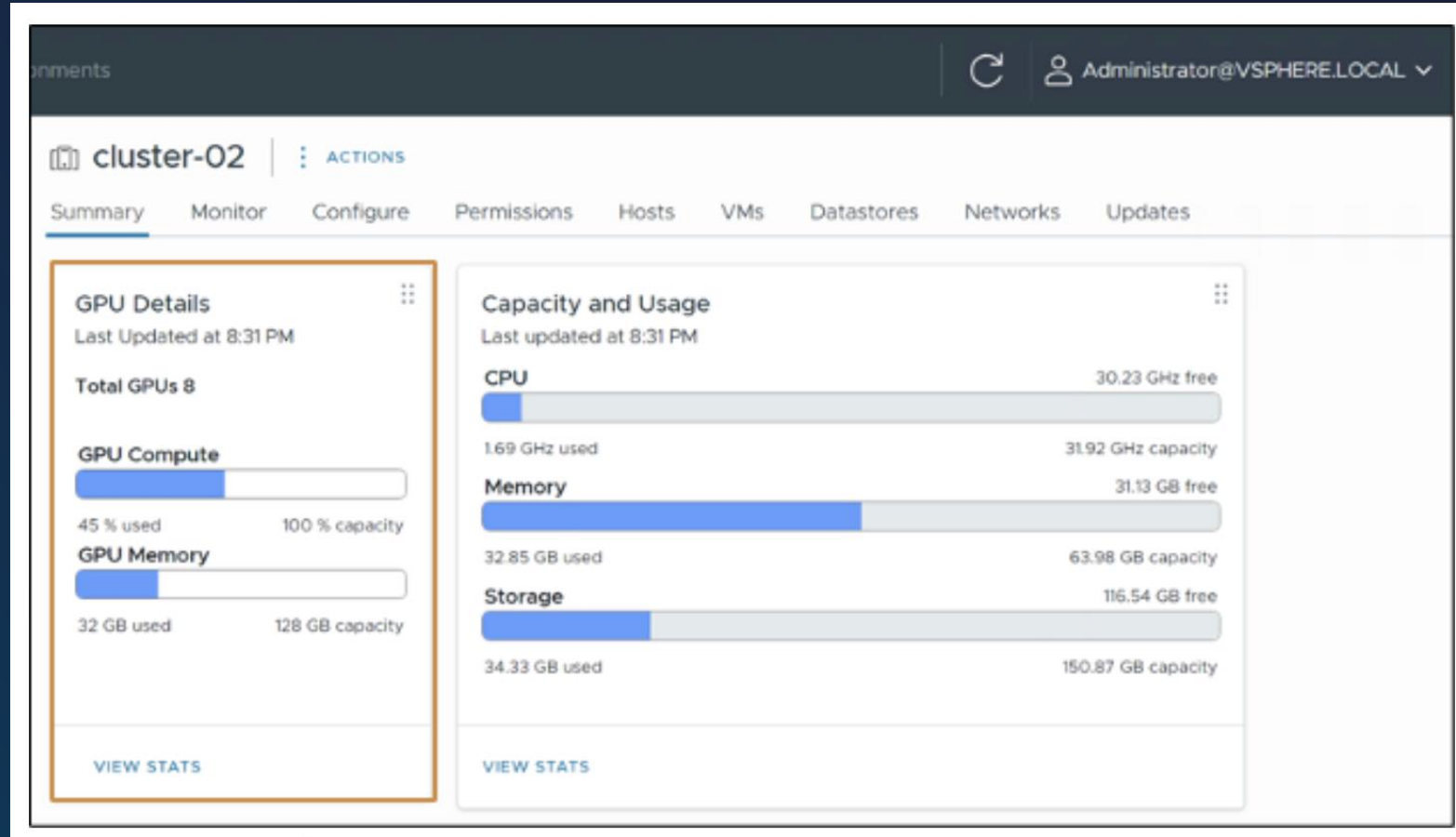
## Live Patching



# VMware vSphere 8 Update 3 GPU Profiles

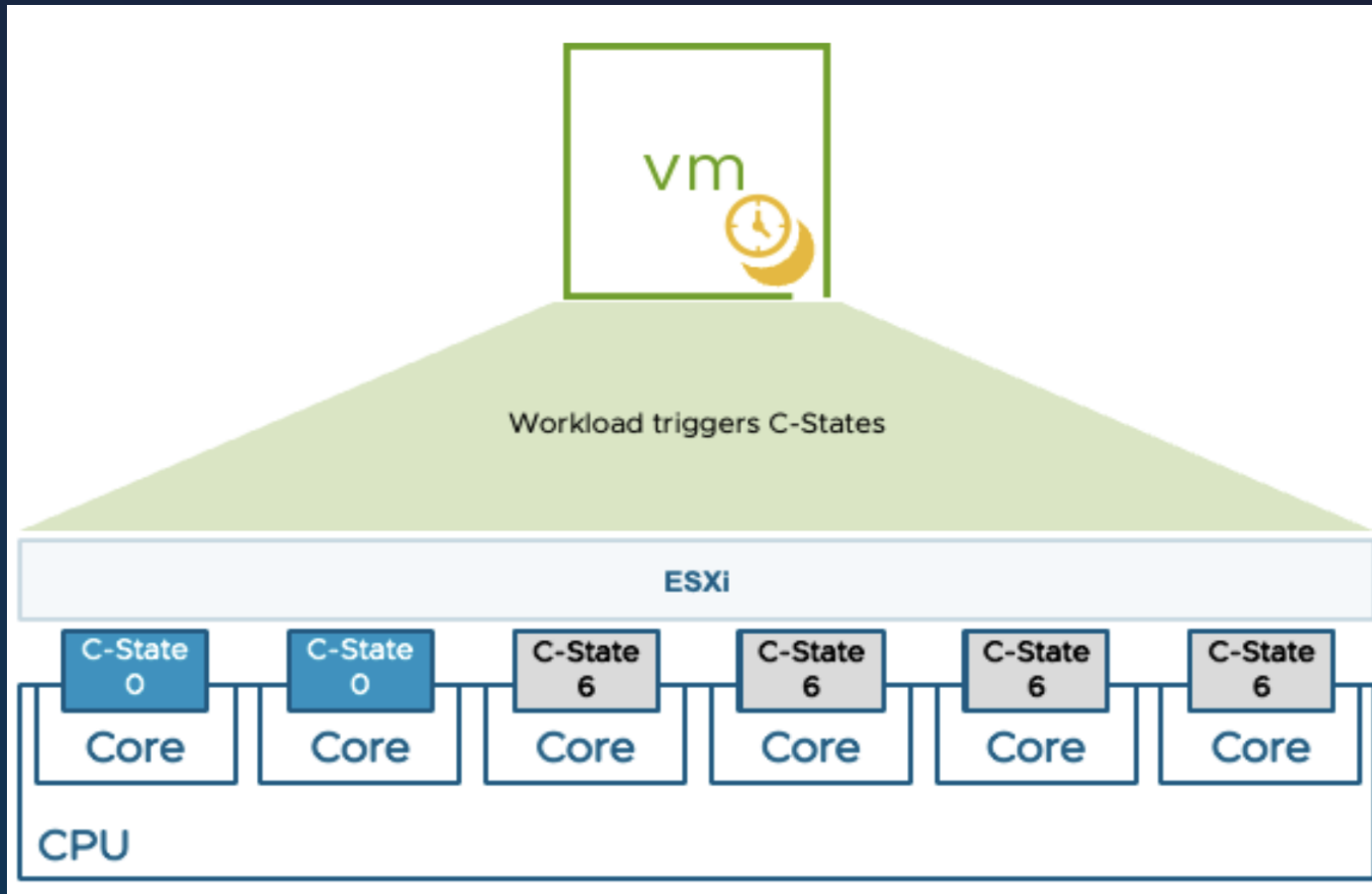


# VMware vSphere 8 Update 3 Cluster Level GPU Monitoring





# VMware vSphere 8 Update 3 CPU C-State Virtualization

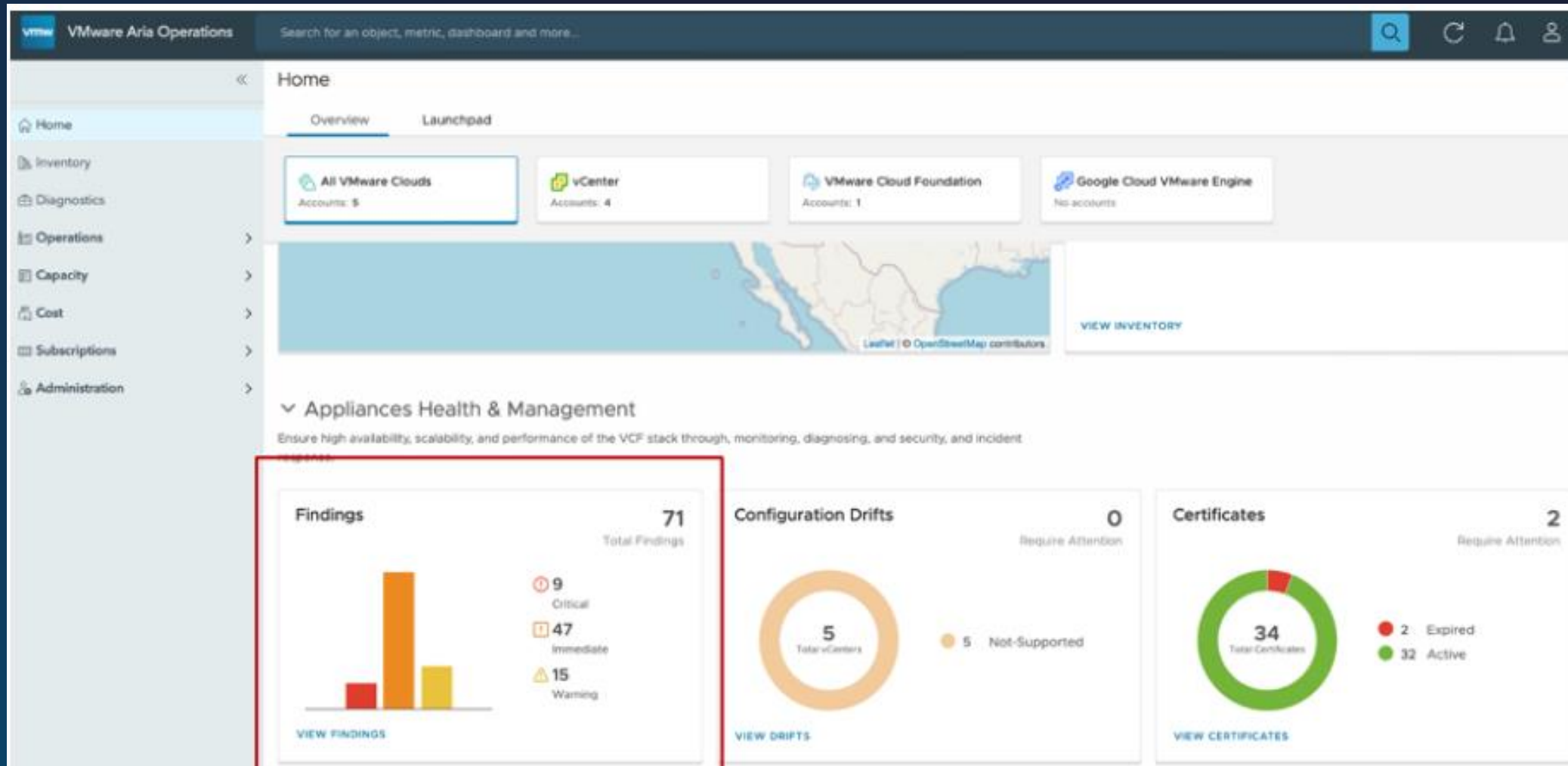


## VMware Cloud Foundation Operations

New console experience that adds diagnostics capabilities into VMware Cloud Foundation Operations

- Overall Findings and Security Advisories
  - Combination of Skyline Health Diagnostics, Skyline Advisor, and VMware Aria Operations for Logs
  - Categorize findings based on criticality (critical, immediate, and warnings)
- Certificate Management
  - Shows all certificates in the environment and status
- New Dashboards for Health, vCenter, ESXi, vSAN, Snapshots and more
- VCF Chargeback (Aria Chargeback)

# VMware Cloud Foundation Operations Home Overview Dashboard



# VMware Cloud Foundation Operations

## Home Overview Dashboard

Diagnostic Findings ?

Diagnostics / Diagnostic Findings

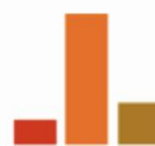
Active Findings Historical Findings

Active Findings ⓘ REFRESH FINDINGS

Overview 71 Total Findings


Distribution based on finding severity

- ❗ 9 Critical
- ⚠️ 47 Immediate
- ⚠️ 15 Warning




Distribution based on finding type

- 7 Security Advisory
- 38 Availability
- 3 Pre-Upgrade Checks
- 22 Operation Diagnostics
- 1 Performance



Distribution based on VCF component

- 71 vSphere



Search by Finding and hit Enter

Filter <<

**VCF Inventory** ▾

- >  10.216.121.183
- >  sc2vc03.cmbu.local
- >  sc2vc01.cmbu.local
- >  sc2vc02.cmbu.local
- >  sddc-manager.cmbu.local

**VCF Component** ▾

- vSphere 71

Finding	Description	Severity	Finding Type	Refresh Type	Check Last Run	Affected Objects
>> vSphere_StoragevMotion_KB_88957	Cancelling a stora...	❗ Critical	Availability	Auto	07/19/24 09:27 ...	53
>> vSphere_PSODStorageHeap_KB_84001	ESXi 7.0 U2a host...	❗ Critical	Availability	Auto	07/19/24 09:27 ...	2
>> vSphere_PSODdlmalloc_KB_88623	ESXi fails with PS...	❗ Critical	Availability	Auto	07/19/24 09:27 ...	2
>> vSphere_PSODFastSlabAllocSlow_KB_89131	*FastSlabAllocSlo...	❗ Critical	Availability	Auto	07/19/24 09:27 ...	53
>> vSphere_PSODFastSlabAlloc_KB_90052	ESXi hosts might f...	❗ Critical	Availability	Auto	07/19/24 09:27 ...	47
>> vSphere_Log4jremotecodeexe_VMSA_202128	Remote code exe...	❗ Critical	Security Advis...	Auto	07/19/24 09:27 ...	1
>> vSphere_CVE202437079to37081_VM5A_202412	VMware vCenter ...	❗ Critical	Security Advis...	Auto	07/19/24 09:27 ...	3
>> vSphere_VMcrashVmotion_KB_91218	Virtual machines ...	❗ Critical	Availability	Auto	07/19/24 09:27 ...	55

# VMware Cloud Foundation Operations

## Findings Example

Summary **Affected Objects** Recommendations ✕

**Finding**  
vSphere\_StoragevMotion\_KB\_88957

<b>Severity</b> 🚫 Critical	<b>Finding Type</b> Availability	<b>Product Area</b> Storage	<b>Check Last Run</b> 07/19/24 09:27 AM	<b>Last Observed</b> 06/21/24 10:20 AM
-------------------------------	-------------------------------------	--------------------------------	--	---

**Description**  
Cancelling a storage vMotion task causes a VM to crash

**Additional Information**  
This is due to how the cancellation for a storage vMotion is handled on the backend with individual disks for a VM compared to how storage vMotion is handled for an entire VM migration.

<b>VCF Component</b> vSphere	<b>VCF Capability</b> <ul style="list-style-type: none"><li>vMotion</li></ul>
---------------------------------	---

# Vielen Dank



**Patrick Hawranek**

Consultant / HCDC

+43 664 60187 11762

[patrick.hawranek@acp.at](mailto:patrick.hawranek@acp.at)





# What's new on Tanzu?

Tanzu Platform & vSphere Supervisor



Maximilian Marschall

Unit Lead – Cloud Native International | evoila

# Tanzu Plattform 10

“Eine cloud-native Anwendungsplattform, die darauf abzielt, die Softwarebereitstellung zu beschleunigen und die betriebliche Effizienz für Plattform-Engineering-Teams zu verbessern.“

General Available ab 27.11.2024

# Tanzu Plattform 10



air-gapped  
Setup möglich



Unterstützung  
von Kubernetes



Unterstützung  
von Cloud  
Foundry



Integration von  
DSM

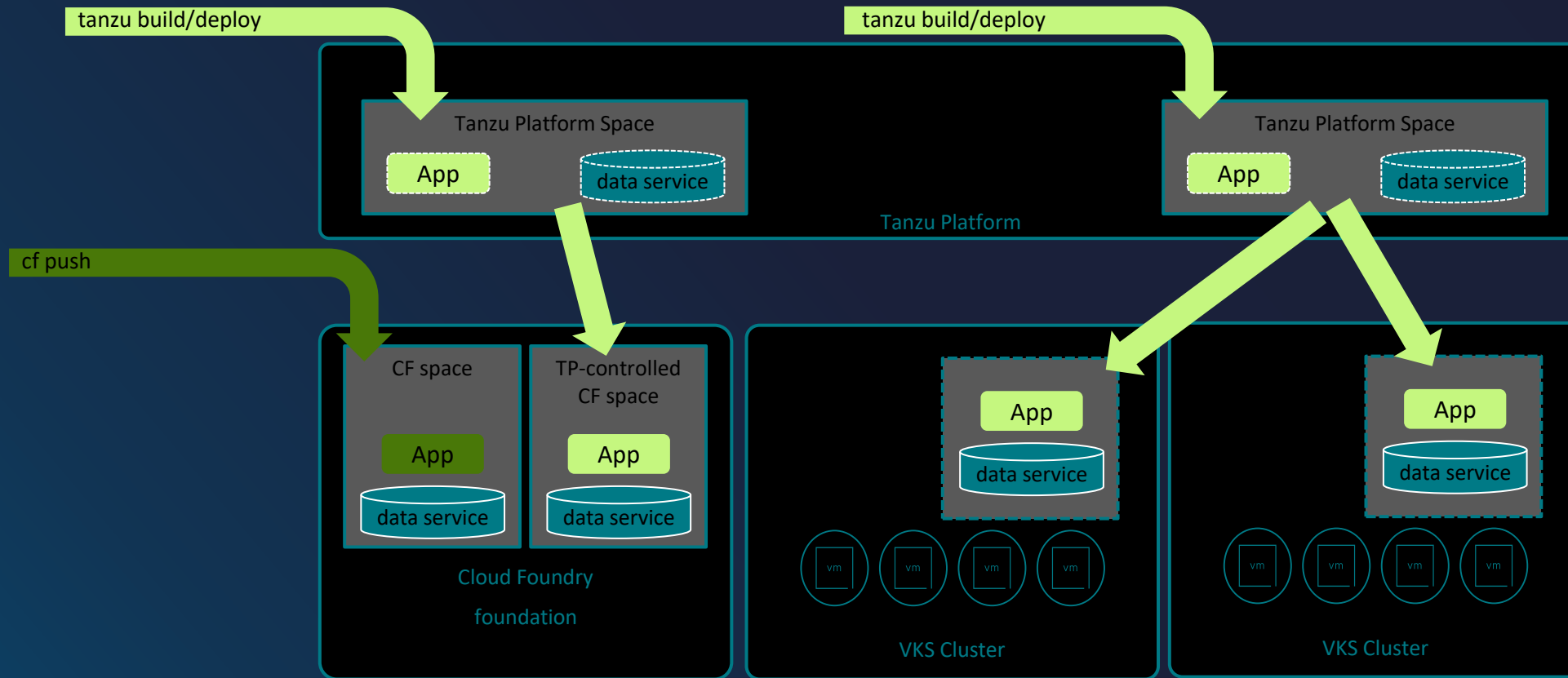
# Tanzu Platform 10

Tanzu Platform nutzt Spaces um Infrastruktur für Entwickler zu abstrahieren.

Space Name	Status	Profiles	Availability Target	Last Updated
where-for-dinner	READY	+2	us-region eu-region	May 24, 2024, 9:12 AM
spring-music	READY	+2	eu-region	May 24, 2024, 11:28 AM

# Tanzu Platform 10

## Deployment Pfade



# vSphere Supervisor und VKS



WE KEEP CHANGING NAMES, WE'RE SORRY!

There is a lot of confusion that has been caused by all of these changes, and I know it's hard to navigate. Let me try to explain where we are now as these names are here to stay (👉)

vSphere with Tanzu -> vSphere IaaS control plane = vSphere Supervisor  
TKG Service = vSphere Kubernetes Service (VKS)

Please accept this Haiku as a form of apology 🙏

(PS: Docs and Product UI will be updated to reflect the changes.)



**Katarina Brookfield**

@MrsBrookfield

Tech Marketing - vSphere Supervisor. CKA. VCIX7-DTM. VCAP7-CMA. VCIX6-DCV. VDM004. MBA & Ing. [@virtualhobbit](#)'s wife. [#katcooks](#)

Screenshots by Robert Kloosterhuis

# vSphere Supervisor

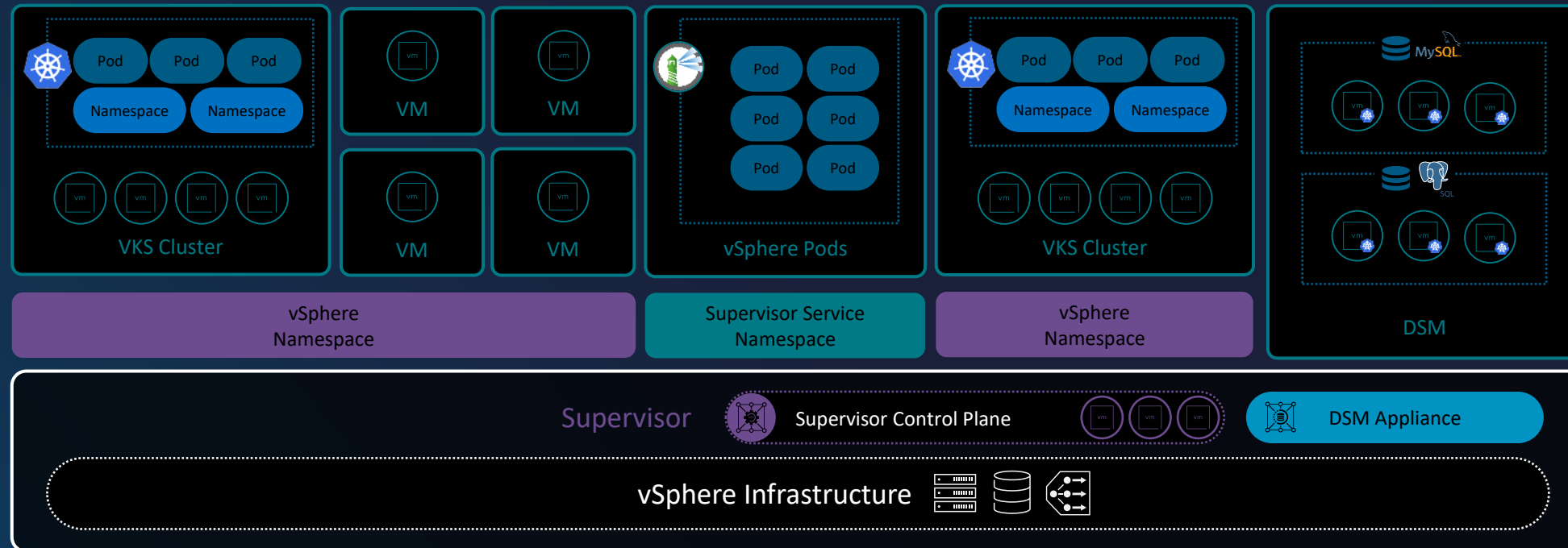
Namenserklärung



~~vSphere with Tanzu~~  
~~IaaS Control Plane~~  
vSphere Supervisor



# vSphere Supervisor



## Virtuelle Maschinen

Self-service um VMs zu deployen und managen via Kubernetes API

## VKS Clusters

Voll upstream-konforme Cluster deployen und managen

## Supervisor Services

Plattform mittels Services um Funktionen erweitern

## Data Services\*

Datenbanken as a Service

\*nur in VCF verfügbar

# vSphere Supervisor

## Neuerungen

### VKS als Supervisor Service

Neue Workload Cluster  
Versionen unabhängig vom  
vCenter

### Local Consumption Interface als Supervisor Service

Cluster erstellen und verwalten  
im vCenter GUI

### Velero als Supervisor Service

Jetzt automatisch deployed

### Inkludiert in VVF und VCF

Enterprise Kubernetes Solution  
ohne zusätzlichen Lizenzkosten!

# vSphere Supervisor Services

The screenshot shows the 'Workload Management' section in vCenter, specifically the 'Supervisor Services' page. The page title is 'Supervisor Services' and it is associated with the namespace 'VCENTER.LAB.MARSCHALL.MANAGEMENT'. A brief description states that Supervisor Services is a platform for managing core infrastructure components like virtual machines, and application teams can deploy instances within their own namespaces. A link is provided to 'Discover and download available Supervisor Services here.' The interface includes a 'Sort By' dropdown set to 'Recently added' and a note that services are registered to the vCenter Server system. Below this, there are several service cards: 1. 'Add New Service' card with an 'ADD' button. 2. 'VM Service' card, described as allowing developers to self-service VMs and set policies, with a 'MANAGE' button. 3. 'Consumption Interface' card, with status 'Active', 2 active versions, and 1 supervisor, providing a Local Consumption Interface (LCI), with an 'ACTIONS' dropdown. 4. 'MinIO' card, with status 'Active', 2 active versions, and 1 supervisor, described as a high-performance, cloud-native object storage, with an 'ACTIONS' dropdown. 5. 'Tanzu Kubernetes Grid Service' card, with status 'Active', 'Core Service' tag, 4 active versions, and 1 supervisor, for cluster management, with an 'ACTIONS' dropdown. 6. 'Velero vSphere Operator' card, with status 'Active', 'Core Service' tag, 1 active version, and 1 supervisor, helping users install Velero and the vSphere plugin, with an 'ACTIONS' dropdown.

Supervisor Services können im vCenter GUI verwaltet werden.

# VKS – vSphere Kubernetes Service

## Versions Verwaltung

Neue Versionen können via Manifest nachinstalliert werden.

Wird automatisch deployed.

### Manage Versions: Tanzu Kubernetes Grid Service

Service ID: tkg.vsphere.vmware.com

Find details about all versions of 'Tanzu Kubernetes Grid Service' in the below table.

- To delete a service version, first deactivate the version and then remove it from the Supervisors where it is installed.
- To delete a service, first deactivate the entire service and then remove all of its versions from the Supervisors where it is installed.

You cannot create instances on Supervisors with deactivated versions and services.

DEACTIVATE DELETE

	Service Version Name	Version	Status	Supervisors
<input type="radio"/>	Kubernetes Service	3.2.0	Active	1
<input type="radio"/>	Tanzu Kubernetes Grid Service	3.1.1-embedded	Active	0
<input type="radio"/>	Tanzu Kubernetes Grid Service	3.1.0	Active	0
<input type="radio"/>	Tanzu Kubernetes Grid Service	3.0.0-embedded	Active	0

Manage Columns 4 items

Deactivate entire service CONFIRM

You must deactivate a service before deleting it.

- By deactivating the service you deactivate all its service versions.
- You will be unable to add or change service versions.
- You will be unable to install service versions on Supervisors.

CLOSE

# VKS – vSphere Kubernetes Service

## Unterstützte Versionen

	TKG Service	
	3.2.0	3.1.0
VMware vCenter Server		
8.0U3	✓	✓
Tanzu Kubernetes releases		
TKr 1.31.1 for vSphere 8.x	✓	-
TKr 1.30.1 for vSphere 8.x	✓	✓
TKr 1.29.4 for vSphere 8.x	✓	✓
TKr 1.28.8 for vSphere 8.x	✓	✓
TKr 1.28.7 for vSphere 7.x (Photon)	✓	✓
TKr 1.28.7 for vSphere 7.x (Ubuntu)	✓	✓
TKr 1.27.11 for vSphere 8.x	✓	✓
TKr 1.27.10 for vSphere 7x (Photon)	✓	✓
TKr 1.27.10 for vSphere 7x (Ubuntu)	✓	✓
TKr 1.27.6 for vSphere 7.x (Photon)	✓	✓
TKr 1.27.6 for vSphere 7.x (Ubuntu)	✓	✓
TKr 1.26.13 for vSphere 8.x	-	✓
TKr 1.26.12 for vSphere 7.x (Photon)	-	✓
TKr 1.26.12 for vSphere 7.x (Ubuntu)	-	✓
TKr 1.26.10 for vSphere 7.x (Photon)	-	✓
TKr 1.26.10 for vSphere 7.x (Ubuntu)	-	✓
TKr 1.26.5 for vSphere 8.x	-	✓

Unterstützte Versionen für Workload Cluster können unter <https://sim.esp.spespg1.vmw.saas.broadcom.com/Interoperability?col=1794> nachgeschlagen werden.





# LCI – Local Consumption Interface

## Versions Verwaltung

Ist als fling verfügbar und ermöglicht das Grafische verwalten von Ressourcen im vSphere Supervisor.

### Manage Versions: Consumption Interface

Service ID: cci-service.fling.vsphere.vmware.com

Find details about all versions of 'Consumption Interface' in the below table.

- To delete a service version, first deactivate the version and then remove it from the Supervisors where it is installed.
- To delete a service, first deactivate the entire service and then remove all of its versions from the Supervisors where it is installed.

You cannot create instances on Supervisors with deactivated versions and services.

DEACTIVATE DELETE

	Service Version Name	Version	Status	Supervisors
<input type="radio"/>	Consumption Interface	1.0.1	Active	1
<input type="radio"/>	Consumption Interface	1.0.0	Active	0

Manage Columns 2 items

Deactivate entire service [CONFIRM](#)

You must deactivate a service before deleting it.

- By deactivating the service you deactivate all its service versions.
- You will be unable to add or change service versions.
- You will be unable to install service versions on Supervisors.

CLOSE

# LCI – Local Consumption Interface

## Übersicht

The screenshot displays the VMware Local Consumption Interface (LCI) for a namespace named 'test'. The interface includes a navigation bar with tabs for Summary, Monitor, Configure, Permissions, Compute, Storage, Network, and Resources (which is currently selected). Below the navigation bar, the 'test' namespace is identified, along with 'SERVICES' and refresh/refresh icons. The main content area is divided into five resource cards, each with a title, description, count, and an 'OPEN' button:

- Virtual Machine:** Deploy and manage Virtual Machines using Kubernetes APIs. 2 Virtual Machines. OPEN
- Tanzu Kubernetes Grid:** Deploy and manage fully upstream compliant Kubernetes clusters. 1 TKG Cluster. OPEN
- Volume:** Deploy and manage your Kubernetes storage objects. 0 Volumes. OPEN
- Network:** Deploy and manage your Kubernetes network services. 1 Network Service. OPEN
- VM Image:** Manage Virtual Machine images for supervisor and namespace. 68 VM Images. OPEN

# LCI – Local Consumption Interface

## Erstellung neuer Ressourcen

test > Tanzu Kubernetes Grid service > create-cluster

### New Kubernetes Cluster

A Tanzu Kubernetes cluster is an opinionated, production-ready full distribution of the open-source Kubernetes container orchestration platform that is built, signed, and supported by VMware.

1. **Configuration Type** How would you like to configure your Kubernetes workload cluster?

Select the cluster type and configuration to provision a Kubernetes workload cluster.

**Cluster Type**  ClusterClass API  TanzuKubernetesCluster API

**Configuration Type**  Default Configuration  Custom Configuration

**NEXT**

2. **General Settings** Define the storage and networking settings for this cluster

3. **Control Plane** Define the topology of the cluster controller

4. **Nodepools** Add nodepool information

5. **Review and Confirm** Review all the details before you deploy this cluster

» » **Kubernetes Resource YAML**

```
1 apiVersion: cluster.x-k8s.io/
2 kind: Cluster
3 metadata:
4   name: tkg-cluster-6bv5
5   namespace: test
6   labels:
7     tkg-cluster-selector: tkg
8
```

Mittels LCI können diverse Ressourcen wie Kubernetes Cluster in einem Supervisor Namespace angelegt werden.

# Velero

## Versions Verwaltung

Neue Versionen können via Manifest nachinstalliert werden.

Wird automatisch deployed.

### Manage Versions: Velero vSphere Operator

Service ID: velero.vsphere.vmware.com

Find details about all versions of 'Velero vSphere Operator' in the below table.

- To delete a service version, first deactivate the version and then remove it from the Supervisors where it is installed.
- To delete a service, first deactivate the entire service and then remove all of its versions from the Supervisors where it is installed.

You cannot create instances on Supervisors with deactivated versions and services.

DEACTIVATE DELETE

	Service Version Name	Version	Status	Supervisors
<input type="radio"/>	Velero vSphere Operator	1.6.1-embedded+23741747	Active	1

Manage Columns 1 item

Deactivate entire service [CONFIRM](#)

You must deactivate a service before deleting it.

- By deactivating the service you deactivate all its service versions.
- You will be unable to add or change service versions.
- You will be unable to install service versions on Supervisors.

CLOSE

..und es gibt noch mehr!

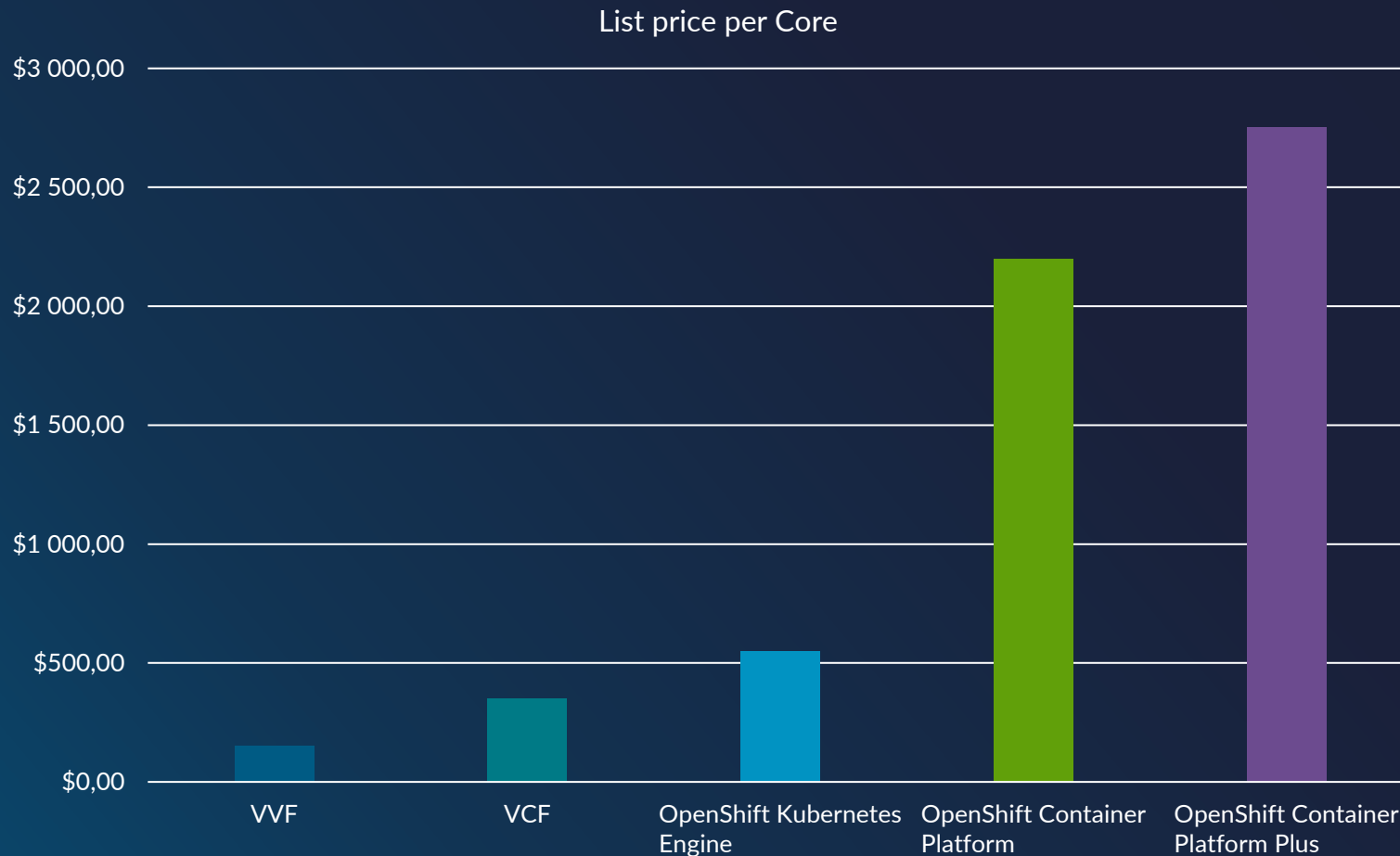
<https://vsphere-tmm.github.io/Supervisor-Services/>



VKS ist in VVF & VCF inkludiert!



# VVF/VCF vs. IBM Red Hat Price Comparison



## OpenShift Kubernetes Engine

- Kann durch VKS abgelöst werden

## OpenShift Container Platform

- Kann durch VKS + Tanzu Platform abgelöst werden

## OpenShift Container Platform Plus

- Kann durch VKS + Tanzu Platform abgelöst werden





evoila.de



marschall.systems  
Persönlicher Blog

# Vielen Dank



**Maximilian Marschall**

Unit Lead – Cloud Native International | evoila

Mail: [mmarschall@evoila.com](mailto:mmarschall@evoila.com)



# VMware & NetApp

What's new?



Christoph Bauer

Field-CTO & PTL | NetApp Österreich

# NetApp – Portfolio Snapshot 2024

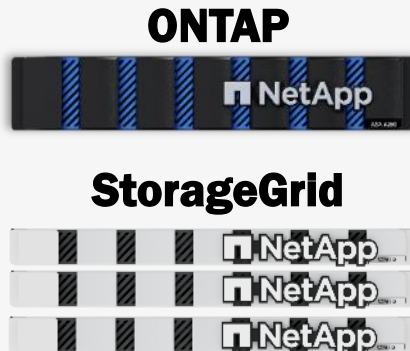
## INTELLIGENT DATA INFRASTRUCTURE

### Infrastructure observability

Insights from on-premises, hybrid, and multi-cloud infrastructures

### On-premises data storage

State-of-the-art storage including leading all-flash



### Cloud data storage

Enterprise-grade storage on the world's biggest clouds



### BlueXP Data services

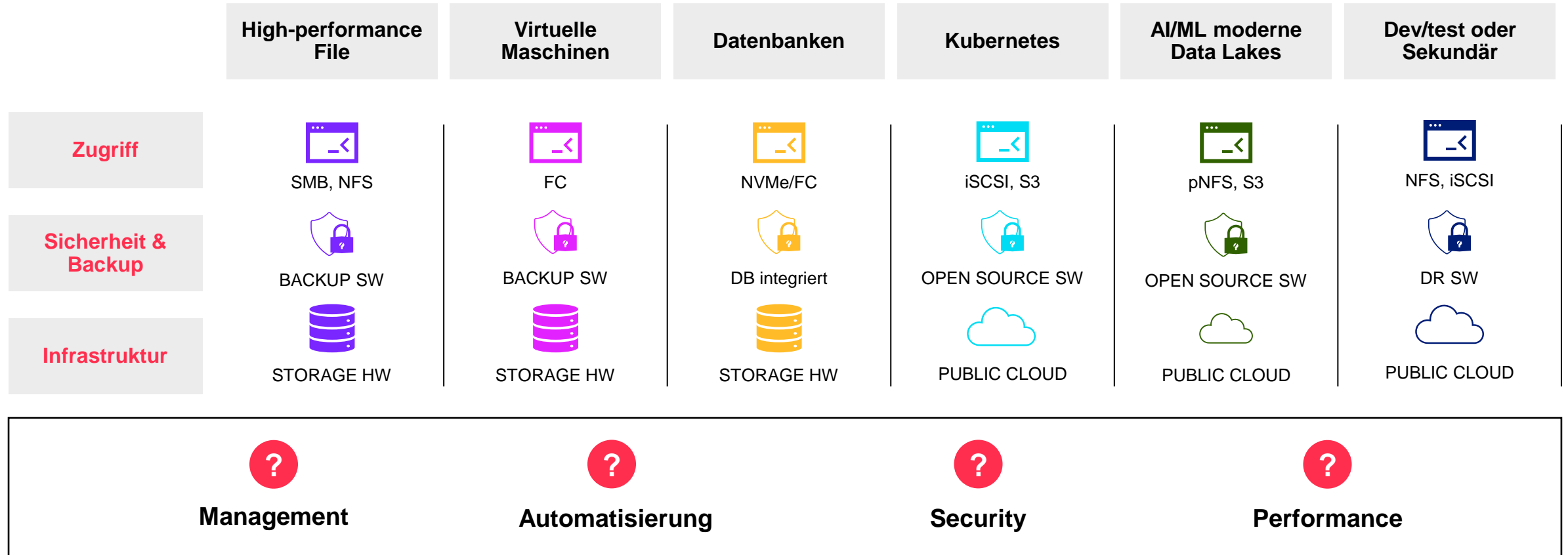
World-class data management with built-in cyber resilience



AI  
Backup  
Tiering  
Caching  
Classification

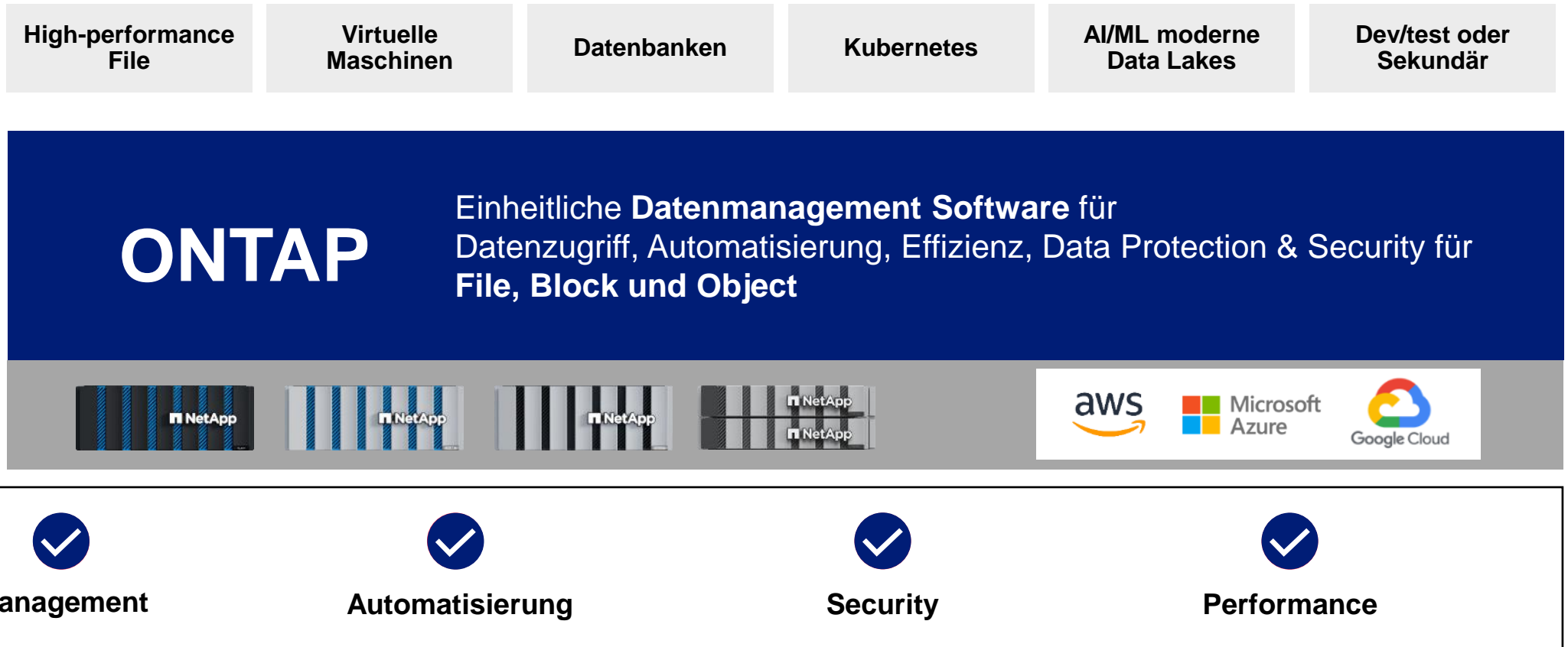
# Komplexität verringert die IT Produktivität

Dedizierte Infrastruktur Silos für Applikationen, Daten und Cloud sind ineffizient, teuer und risikoreich

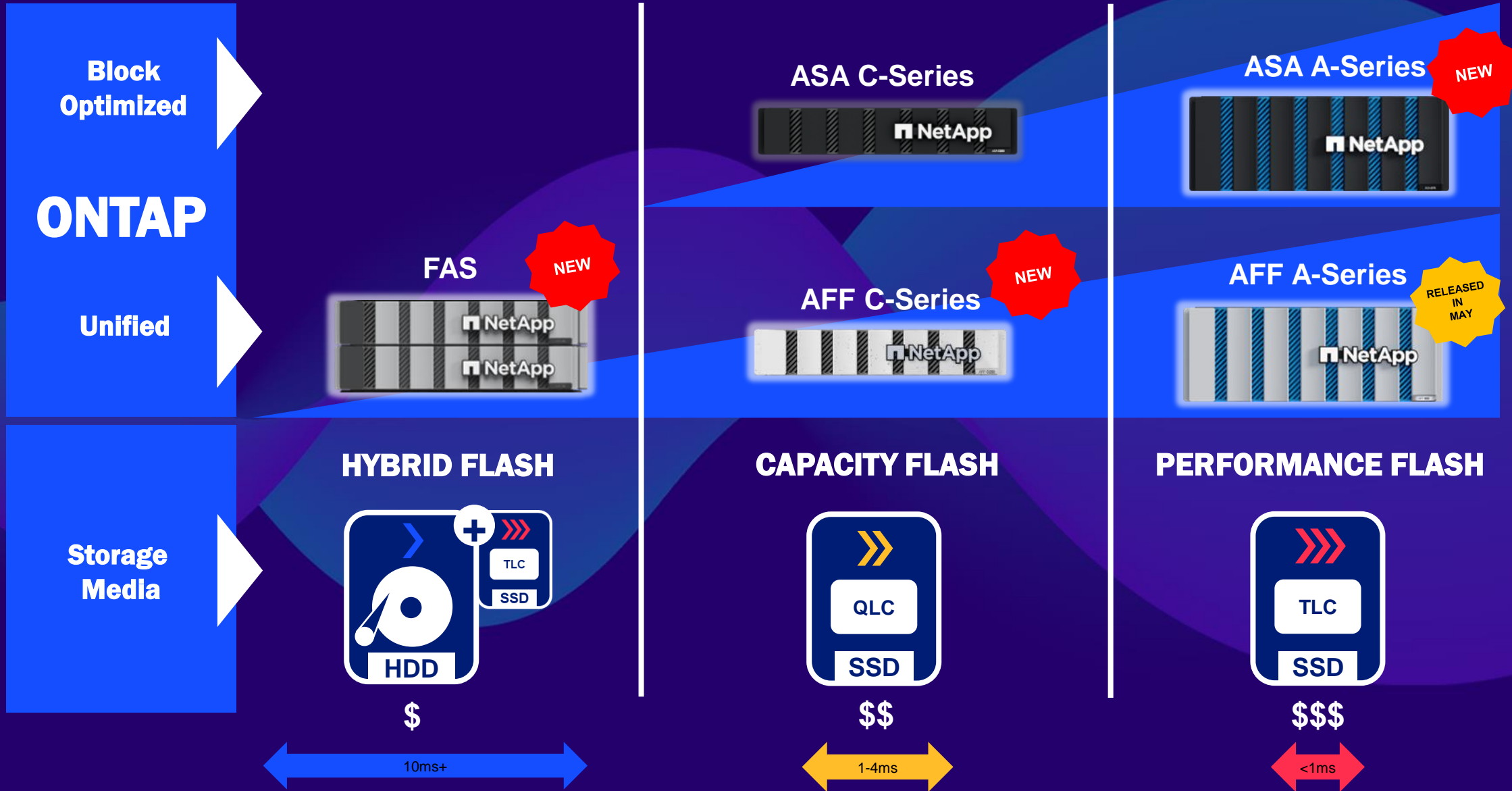


# Komplexität verringert die IT Produktivität

Dedizierte Infrastruktur Silos für Applikationen, Daten und Cloud sind ineffizient, teuer und risikoreich



# ONTAP Hardware Portfolio



# Unparalleled performance to power your mission-critical workloads

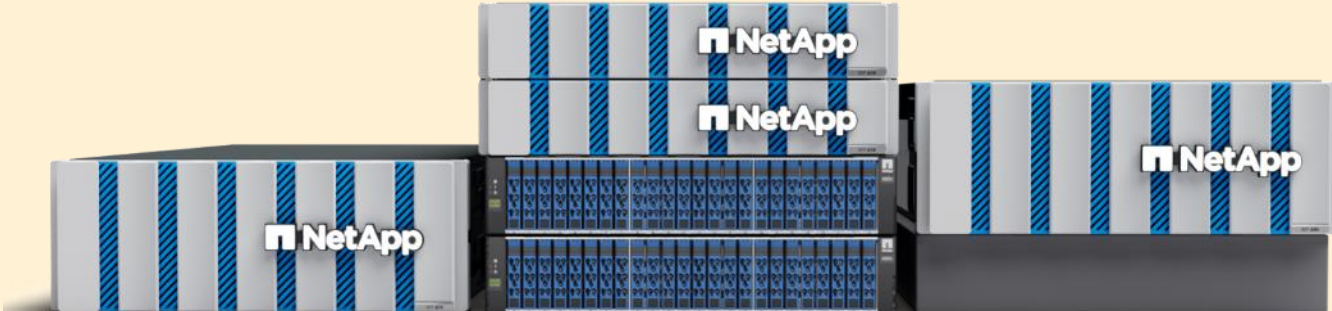
Boost your VMware, databases, and AI initiatives

Up to  
**2X** PERFORMANCE

Up to  
**40M** IOPS

Up to  
**1TB/S** THROUGHPUT

Maximum performance with  
**always-on storage efficiency**



1) 2X performance claim is based on 100% increase in IOPs from the A400 to AFF A70  
2) Based on transfers per second of A800 system to AFF A90



# AFF A-Series

Unified (file, block, and object) high performance storage for mission-critical workloads



AFF A20



AFF A30



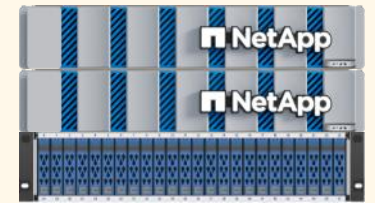
AFF A50



AFF A70



AFF A90



AFF A1K

**HA System**

- 15.36TB– 737.28TB raw
- Up to 3.28PB effective
- 2U base / 24 drives

- 15.36TB–1.10PB raw
- Up to 4.92PB effective
- 2U base / 24 drives

- 15.36TB–3.30PB raw
- Up to 14.70PB effective
- 2U base / 24 drives

- 91TB–3.7PB raw
- Up to 15.5PB effective
- 4U base w/ 48 drives

- 91TB–3.7PB raw
- Up to 15.5PB effective
- 4U base w/ 48 drives

- 91TB–3.7PB raw
- Up to 15.5PB effective
- 2U+2U base + 2U drive shelf

**Cluster**

- 15.36TB – 8.84PBs raw
- Up to 37PBs effective

- 15.36TB –13.27PB raw
- Up to 54PB effective

- 15.36TB – 39.65PB raw
- Up to 92PB effective

- 91TB–44PB raw
- Up to 185PB effective

- 91TB–44PB raw
- Up to 185PB effective

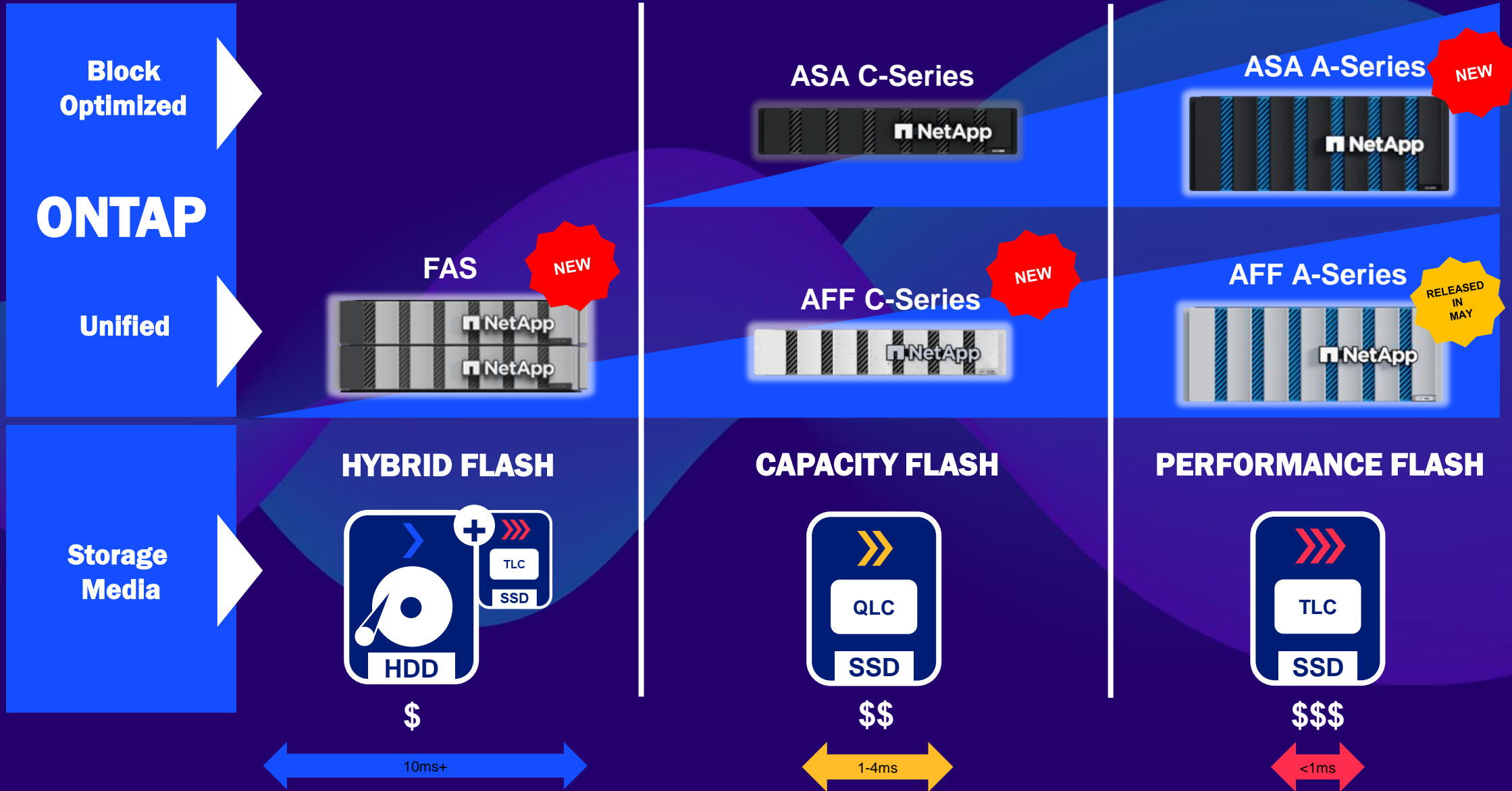
- 91TB–44PB raw
- Up to 185PB effective

**Kleinste Konfig: 7,5TB**

**Protocols**

NVMe/FC, NVMe/TCP, FC, iSCSI, NFS, SMB, S3

# ONTAP Hardware Portfolio



# New AFF C-Series Systems

Capacity flash to modernize and consolidate general-purpose workloads



**AFF C30**



**AFF C60**



**AFF C80**



## HA system

- 122TB– 2.2PB raw
- Up to 9.7PB effective
- 2U base / 24 drives

## Cluster (NAS)

- 122TB – 26.5PBs raw
- Up to 106PBs effective

**Kleinste Konfig: 66TB**

- 245TB–7.3PB raw
- Up to 32.4PB effective
- 2U base / 24 drives

- 245TB –87.6PB raw
- Up to 353.6PB effective

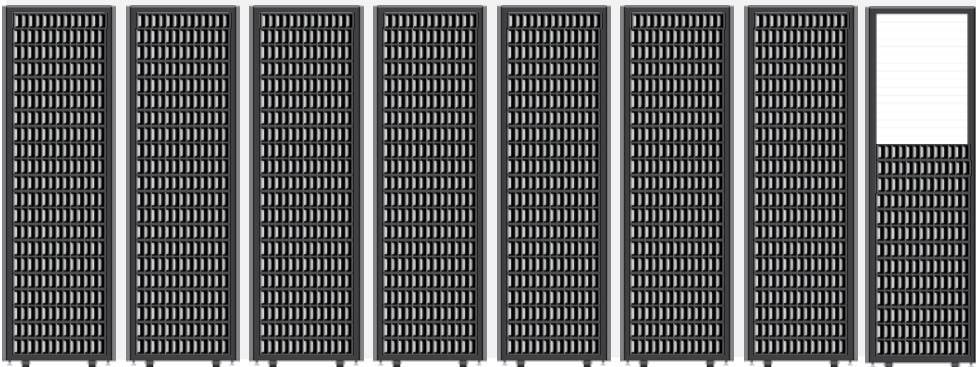
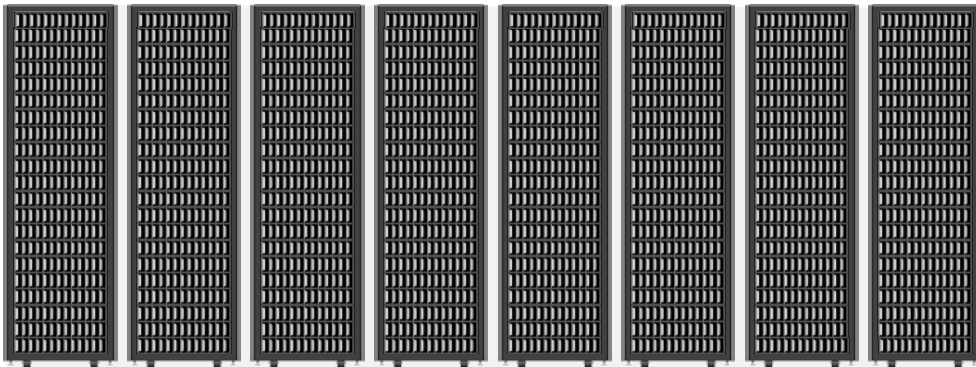
- 367TB–14.7PB raw
- Up to 65.4PB effective
- 4U base / 48 drives

- 367TB – 176.8PB raw
- Up to 707.3PB effective

Effective capacity calculation includes a 5:1 storage efficiency possibility.

# Modernize your hybrid flash data center with NetApp AFF C-Series

Experience significant power and floor space savings and gain the performance of all-flash



Hybrid 1.2TB 10K SAS HDD

VS.

## NetApp AFF C60



5.2PB effective at 4:1 data efficiency

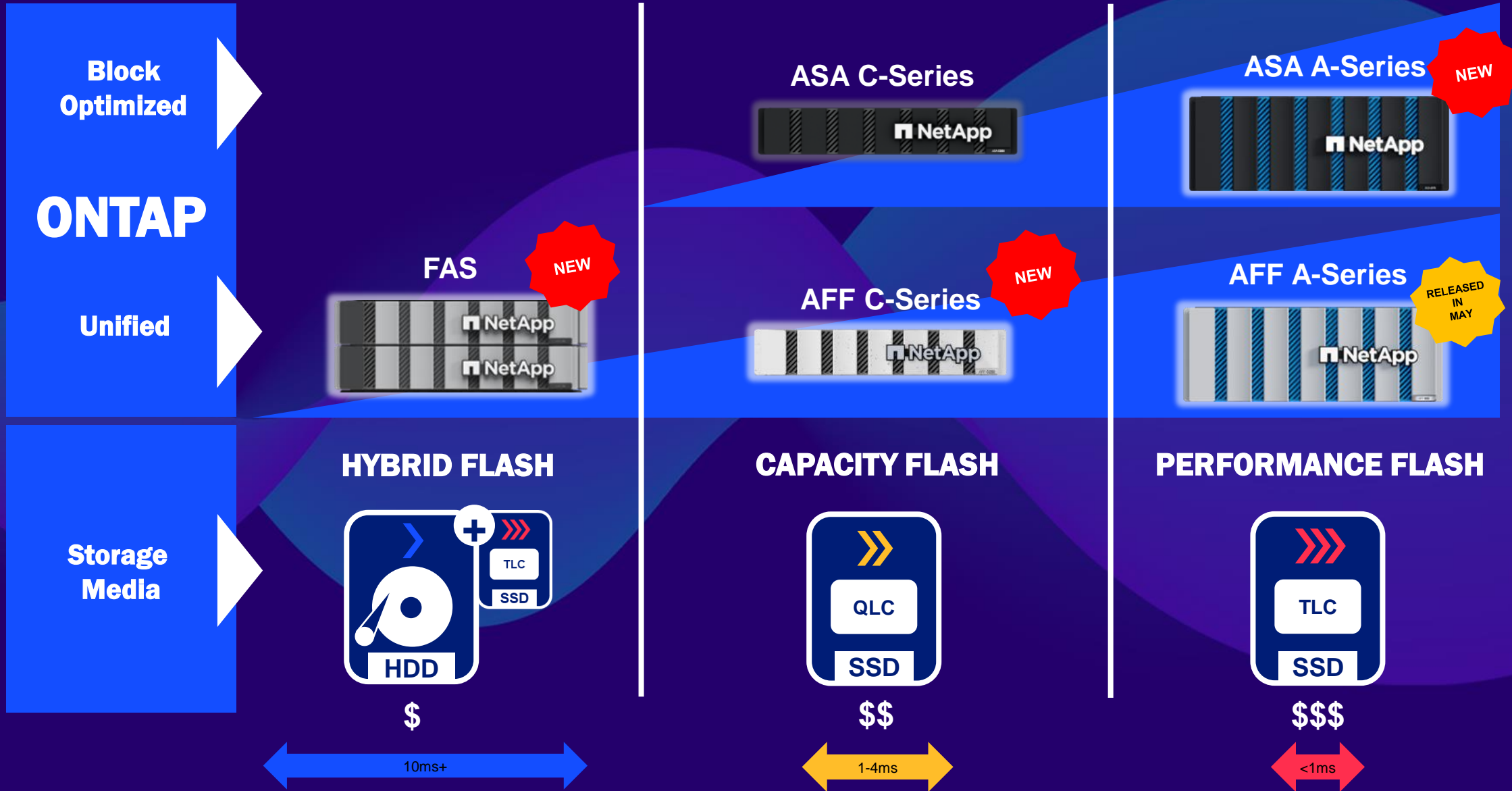


99% decrease in rack space  
97% less power consumption

	kWh/year
SAS 10K	494,738
1 x C60 24 x 61.4TB	6,508

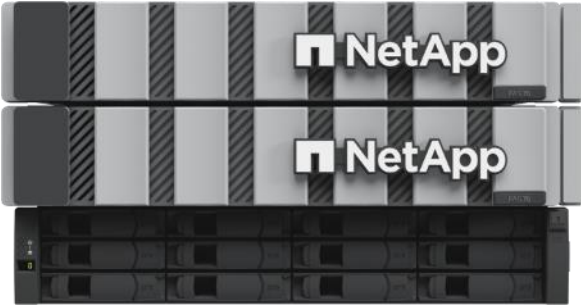
Equivalent to the greenhouse gas emissions of 48 gas-powered passenger vehicles driven for one year

# ONTAP Hardware Portfolio

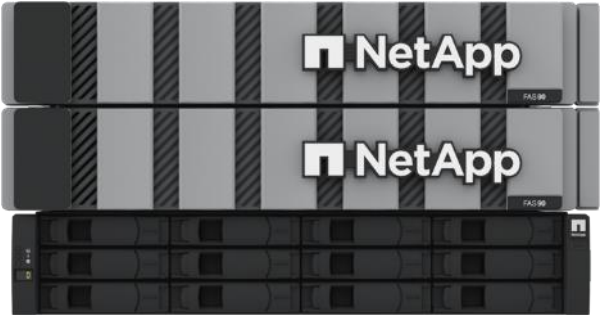


# New FAS Systems

New mid-range and high-end secondary storage systems



FAS70



FAS90

## HA system

- 96TB–14.7PB raw
- 2x2U base + 2U drive shelf

- 96TB–14.7PB raw
- 2x2U base + 2U drive shelf

## Cluster

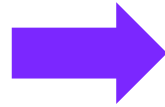
- 96TB–176PB raw

- 96TB–176PB raw

**A-Series / C-Series**



Primary Storage



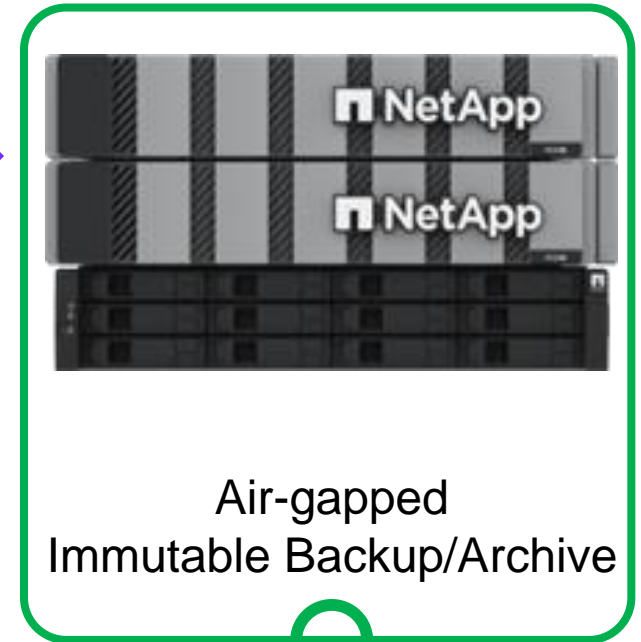
**C-Series**



Disaster Recovery  
Fast Backup/Recovery



**FAS**



Air-gapped  
Immutable Backup/Archive



**Cyber Vault**



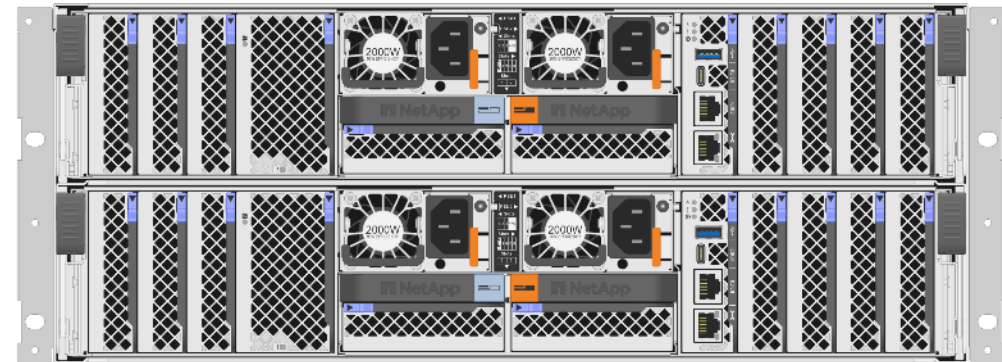
# Controller Connectivity

## Rear view

AFF A20, A30, A50  
AFF C30, C60



AFF A70, A90, A1K  
ASA A70, A90, A1K  
AFF C80  
FAS70, FAS90



# ONTAP Enterprise Features

Viele Features wegen Unified

AUTO SUPPORT

Active IQ  
Automated Intelligent Support



## DATA ACCESS



## DATA MANAGEMENT



FlexClones



Astra Trident  
Container-Storage

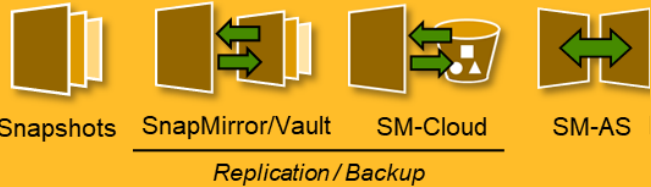


QOS



SVMs

## DATA PROTECTION



SnapCenter  
App/DB consistent  
Snapshots

## DATA SECURITY



MFA



Multi-Admin  
Verify

Admin Access Control



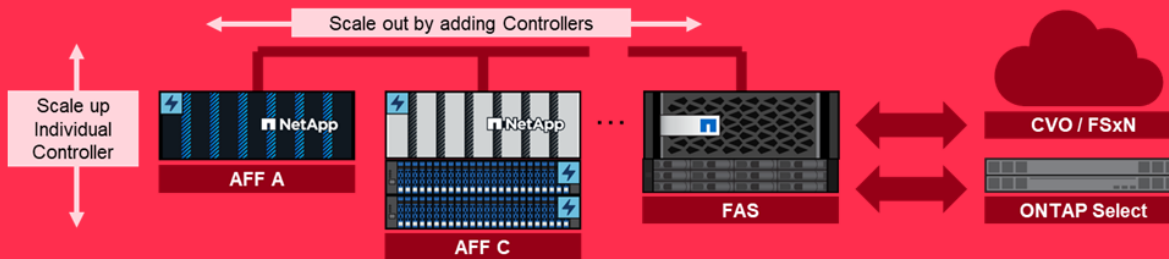
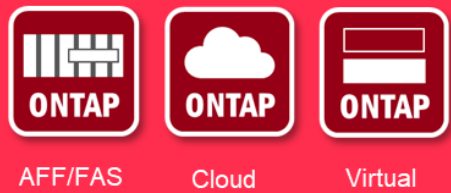
Tamperproof  
Snapshots

Immutability



Encryption  
SW/HW

## DATA MOBILITY



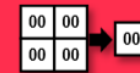
## EFFICIENCY



Fabric Pool

Cold Data Tiering

Storage Efficiencies



Zero-block Dedup



Compression



Deduplication



Compaction

# Introducing powerful new systems built for block storage



## NetApp® ASA A-Series

# New ASA A-Series

A new mid-range and high-end family of high-performance all-flash block storage

ASA A70



ASA A90



ASA A1K



## HA system

- 68TB – 2.67PB raw
- Up to 9PB effective
- 4U base w/ 48 drives

- 91TB – 2.67PB raw
- Up to 9PB effective
- 4U base w/ 48 drives

- 91TB – 2.67PB raw
- Up to 9PB effective
- 2x2U base + 2U drive shelf

## Cluster <sup>[1]</sup>

- 68TB – 16PB Raw
- Up to 54PB effective

- 91TB – 16PB raw
- Up to 54PB effective

- 91TB – 16PB raw
- Up to 54PB effective

<sup>[1]</sup> Maximum scale out to 12 nodes available with 9.16.1 update

Effective capacity calculation includes a 4:1 storage efficiency possibility (from Usable).

# Why ASA?

## Designed for the IT generalist

- **ASA design drivers:**
  - **Simplicity** is primary driver
  - Designed for the **IT generalist**, NetApp PhD not required
  - **Intuitive** workflows
  - Initial release of “new” ASA **focused on VMware workloads**
- **Technical:**
  - Symmetric active/active pathing
  - SAN-only design
  - Best-practice defaults
  - Single Storage Pool

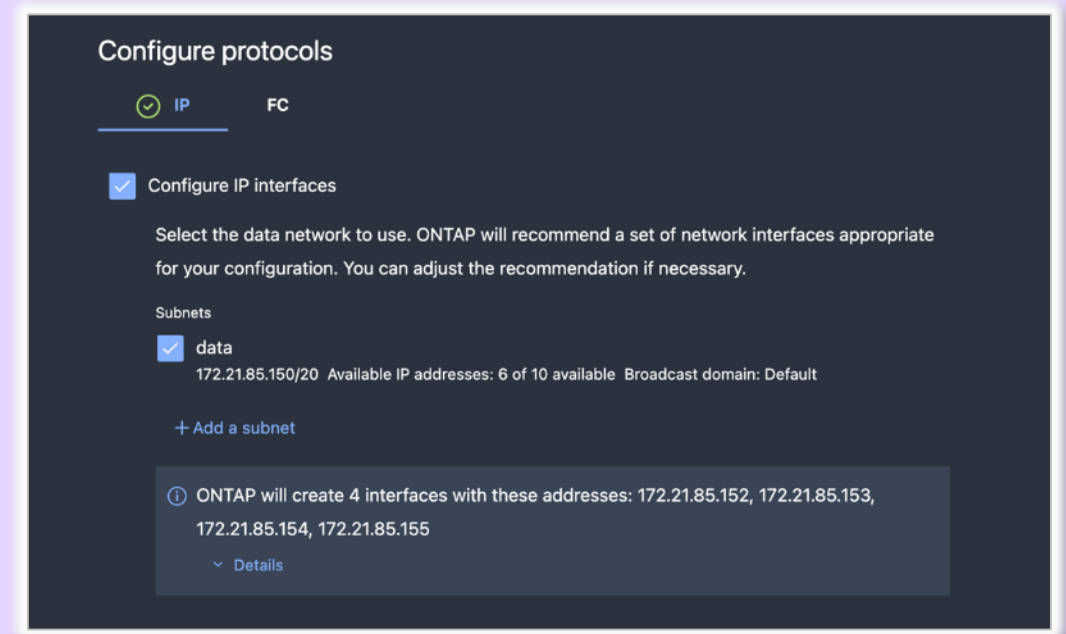




# Deploy new ASA in minutes



**Unpacks easily from eco-friendly packaging**



**New simplified GUI**

# Modern Look & Feel, aligned with BlueXP

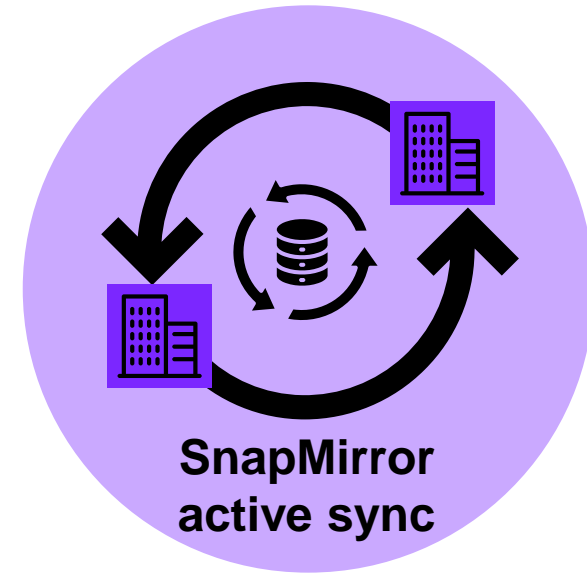
The screenshot displays the NetApp storage management interface for a storage system named **SQL\_1**. The interface is organized into several sections:

- Navigation:** A left sidebar contains menu items: Insights, Storage (selected), Hosts, Network, Events & jobs, Protection, Cluster, Overview, Settings, Storage VMs, Disks, and Support.
- System Overview:** At the top, the system name **SQL\_1** is shown with a dropdown arrow. Below it are tabs for **Overview** (selected), **Snapshots**, and **Replication**. Action buttons for **Edit** and **More** are located in the top right.
- Key Metrics:** Four cards provide essential information:
  - Status:** Online (indicated by a power icon).
  - Storage VM:** svm1 (indicated by a storage icon).
  - Serial No.:** wtlej+Wen6mO (indicated by a barcode icon).
  - Format:** linux (indicated by a document icon).
- Storage Performance:** A large card shows storage usage with a progress bar. It indicates **4.74 MiB** Physical used and **15.5 MiB** Available. Below the bar, it shows **Data reduction 7.41 to 1** and **Snapshot used 2.14 MiB**.
- Performance:** A card titled **Performance** features a **Latency** graph showing a value of **0.85 ms** over a time period from 10:00 to 10:45. Below the graph, the **IOPS** is displayed as **481**.
- Protection:** A card at the bottom left includes a toggle switch for **Show uninitialized**.





- **Bis 4:1 Storage Efficiency Garantie** für SAN Workloads
- Wenn Efficiency nicht erreicht wird, **liefert NetApp kostenlos nach.**

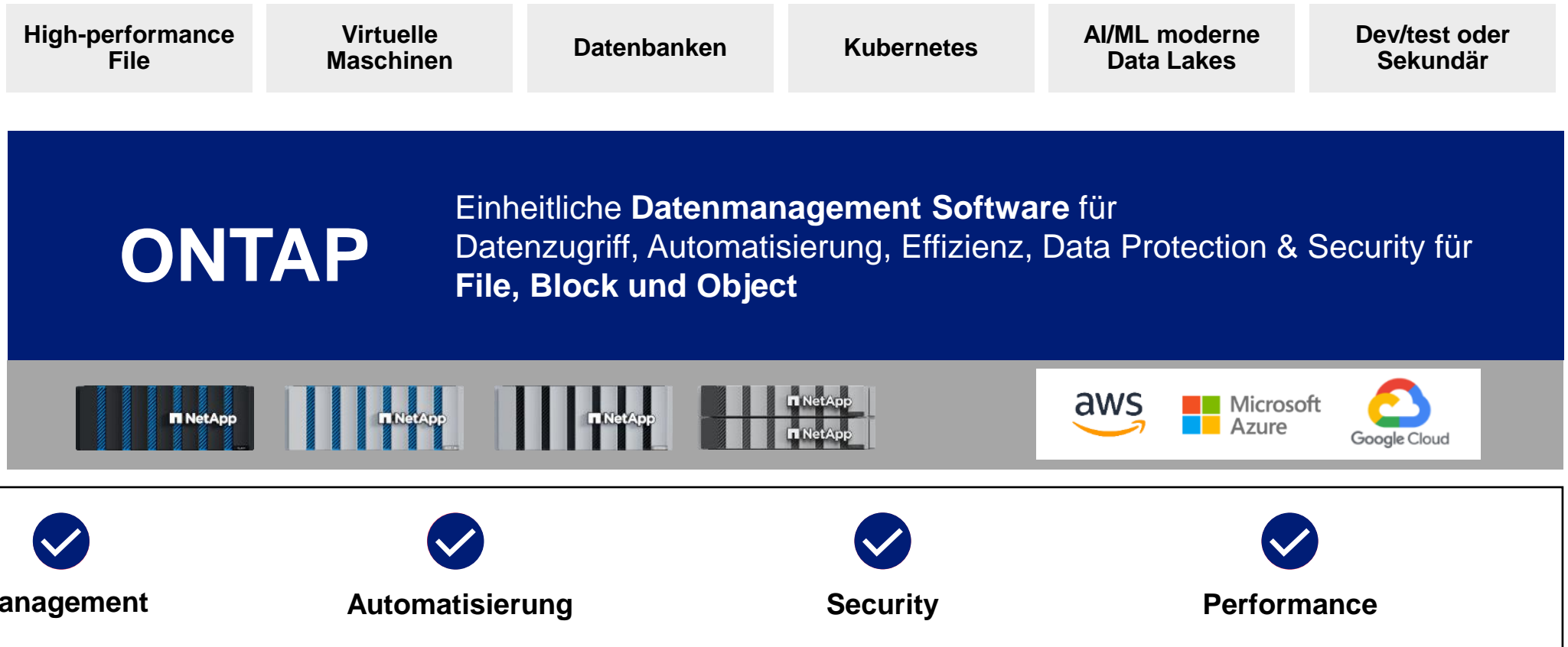


- **MetroCluster** bei kleineren Umgebungen teurer
  - Dedizierte Switches
  - Mindestanforderung an Einstiegsgrößen
- **SnapMirror Active-Sync** ist flexibler und kostengünstiger
  - Unterschiedliche Systeme pro Seite
  - Kleinste Systemgröße = kleinste SM-as Größe
  - Keine dedizierten Switches nötig
  - **Perfekte Lösung für gespiegelte SAN-Umgebungen**

**ASA → bestes Preis-Leistungsverhältnis für SAN**

# Komplexität verringert die IT Produktivität

Dedizierte Infrastruktur Silos für Applikationen, Daten und Cloud sind ineffizient, teuer und risikoreich



## Generative AI in Social Engineering and Information Operations

Generative AI has potential for use in numerous fields not likely identified or popularized in mainstream public discourse. AI's continuous development will undoubtedly increase the potency of its potential misuse — particularly within the scope of information operations and especially for less digitally literate audiences. The degree to which popular generative AI tools can be used maliciously will likely adapt over time as companies, tool owners and governments respond to new developments and perceived misuse.

<https://go.crowdstrike.com/rs/281-OBQ-266/images/GlobalThreatReport2024.pdf>



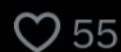
**Daniel Feldman** @d\_feldman · 1 Std. ⋮

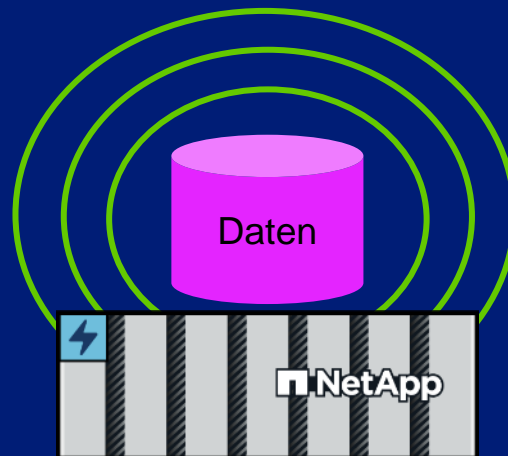
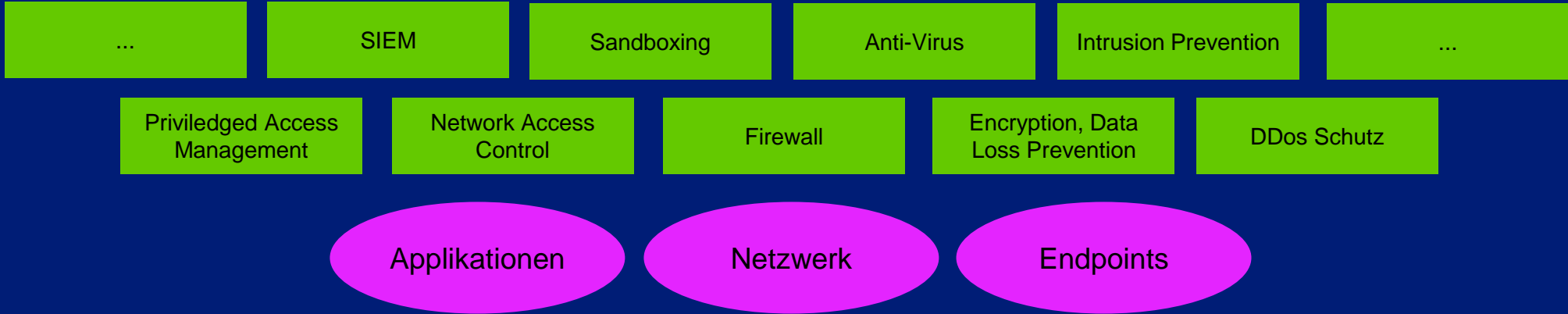
China's ICBC is the 3rd-largest bank in the world.

Their entire network was taken over by ransomware.

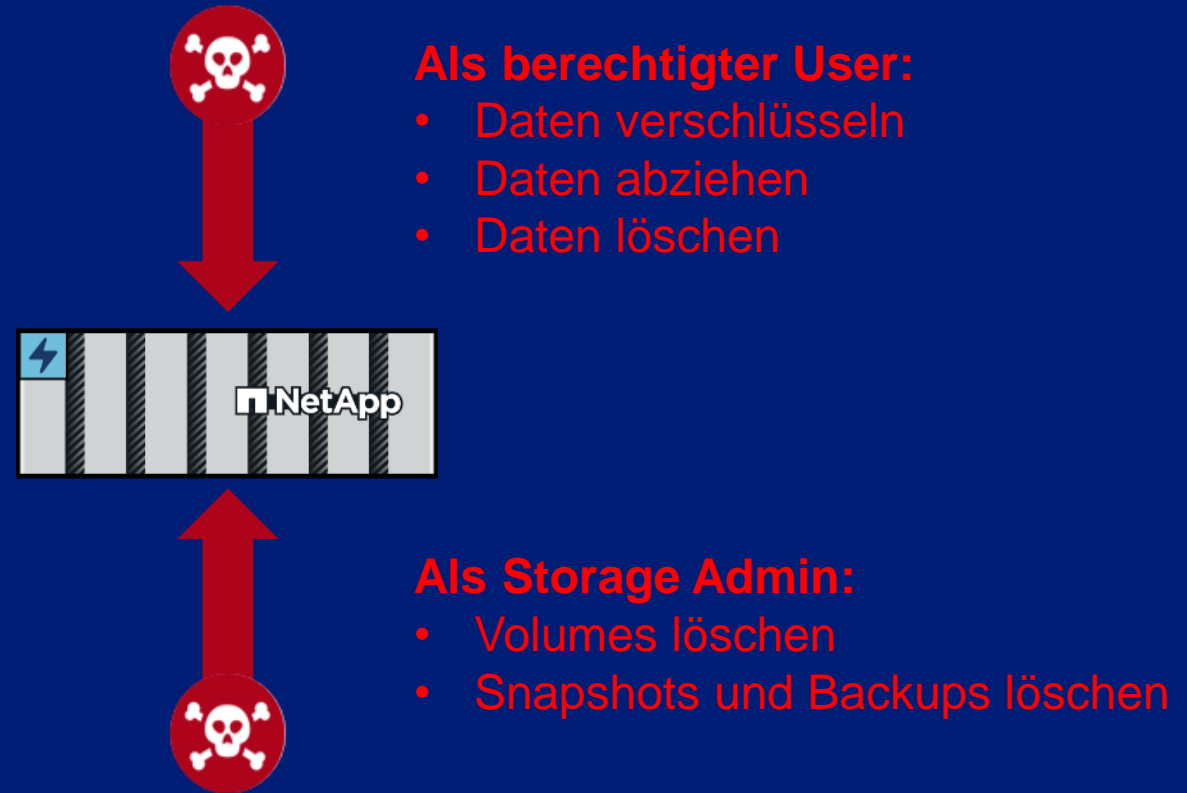
But they got back online quickly -- because their trading system used a Novell Netware server that the ransomware didn't understand.

For its part, ICBC has told users that its US division is back online and operational, the people said. One person familiar with the hack and investigation said a reason the bank could get back online quickly was that a key part of its trading system was unaffected by the attack — a server that was more than 20 years old, made by now-defunct IT equipment maker Novell Inc. That server contained much of the bank's trading data and capabilities and is so old that LockBit's ransomware didn't work on it, the person said.

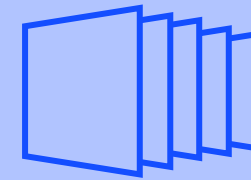




# NetApp Cybersecurity



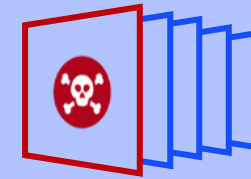
# NetApp Cybersecurity



**Snapshots**  
unveränderbar

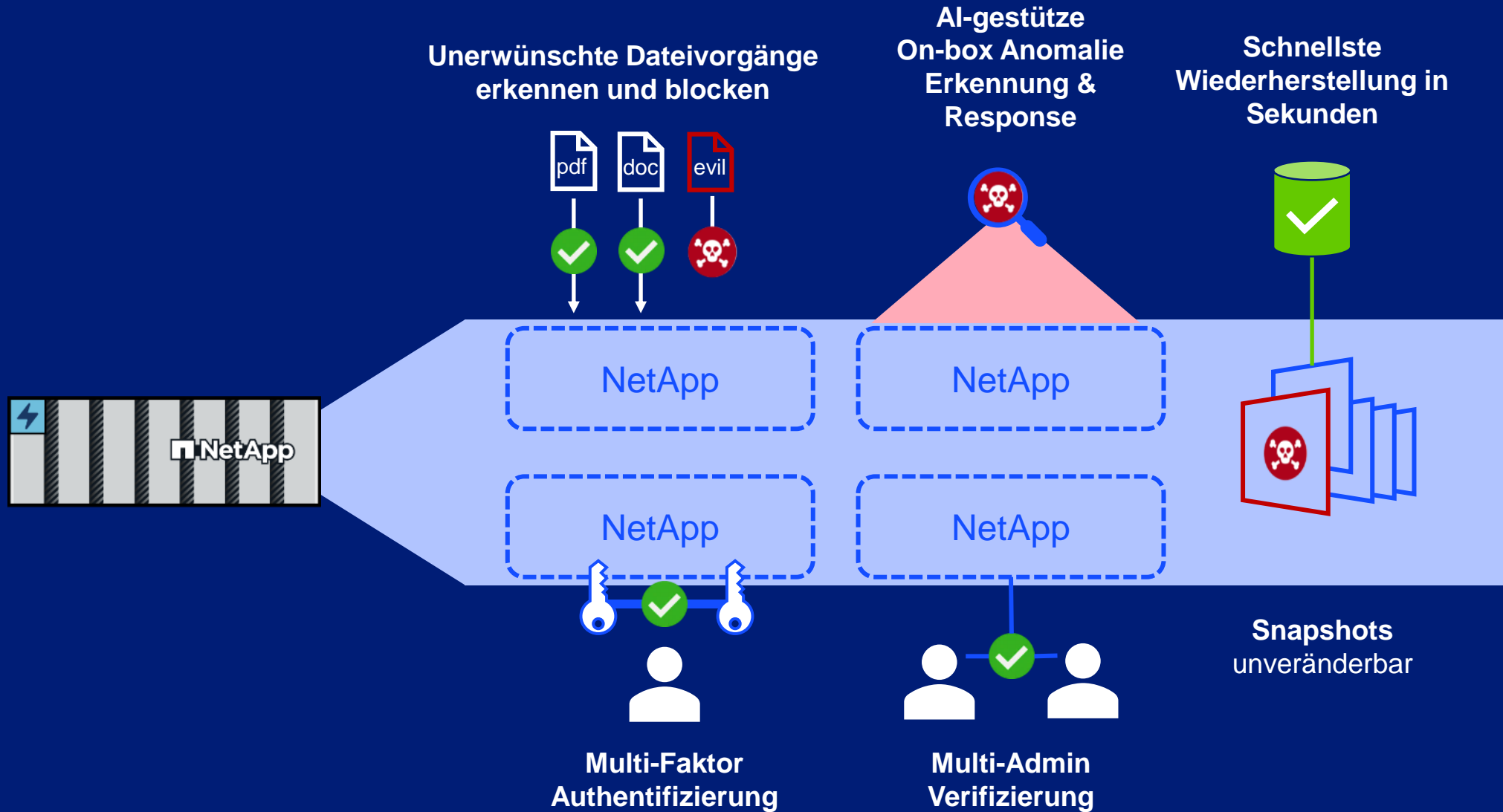


# NetApp Cybersecurity



**Snapshots**  
unveränderbar

# NetApp Cybersecurity



# NetApp Cybersecurity

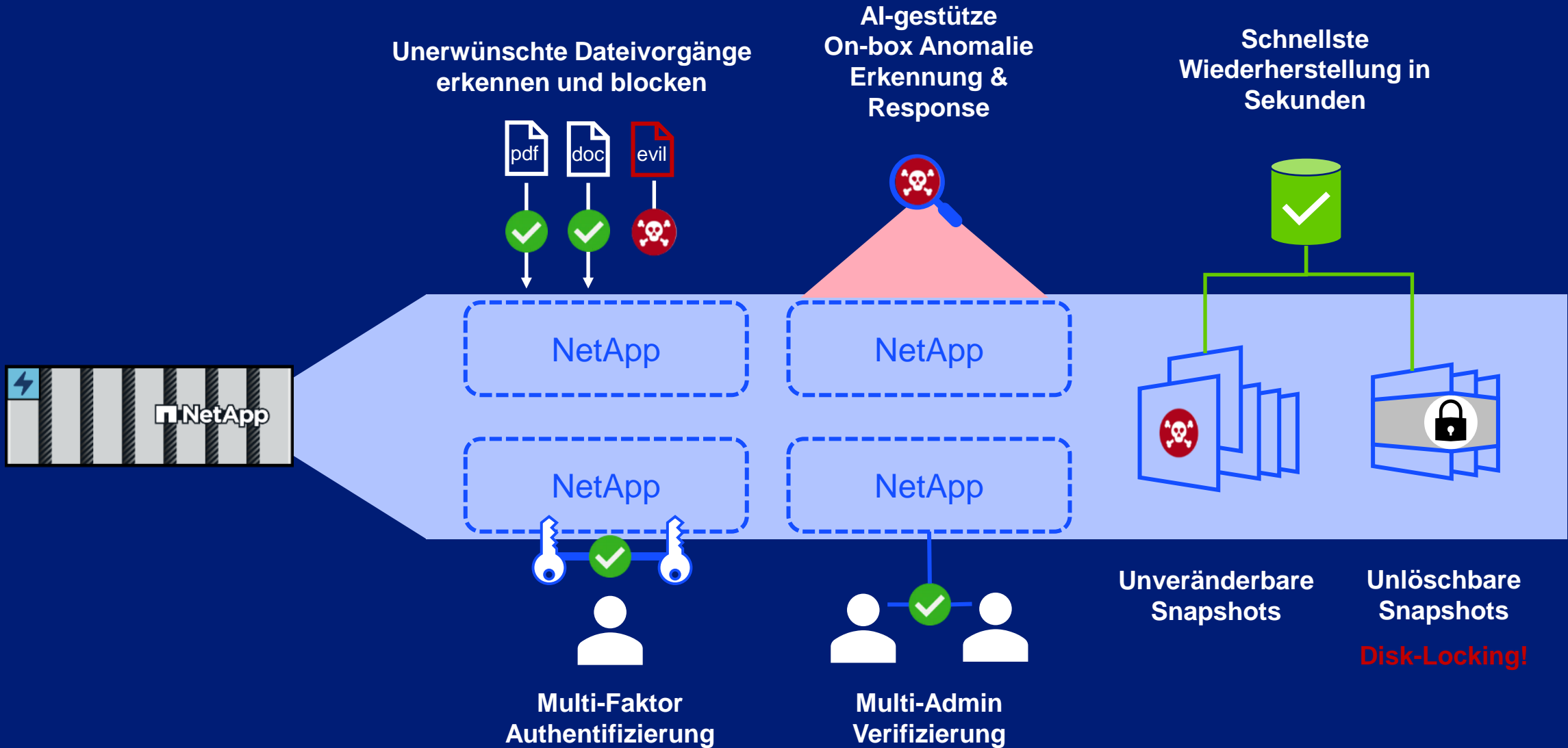
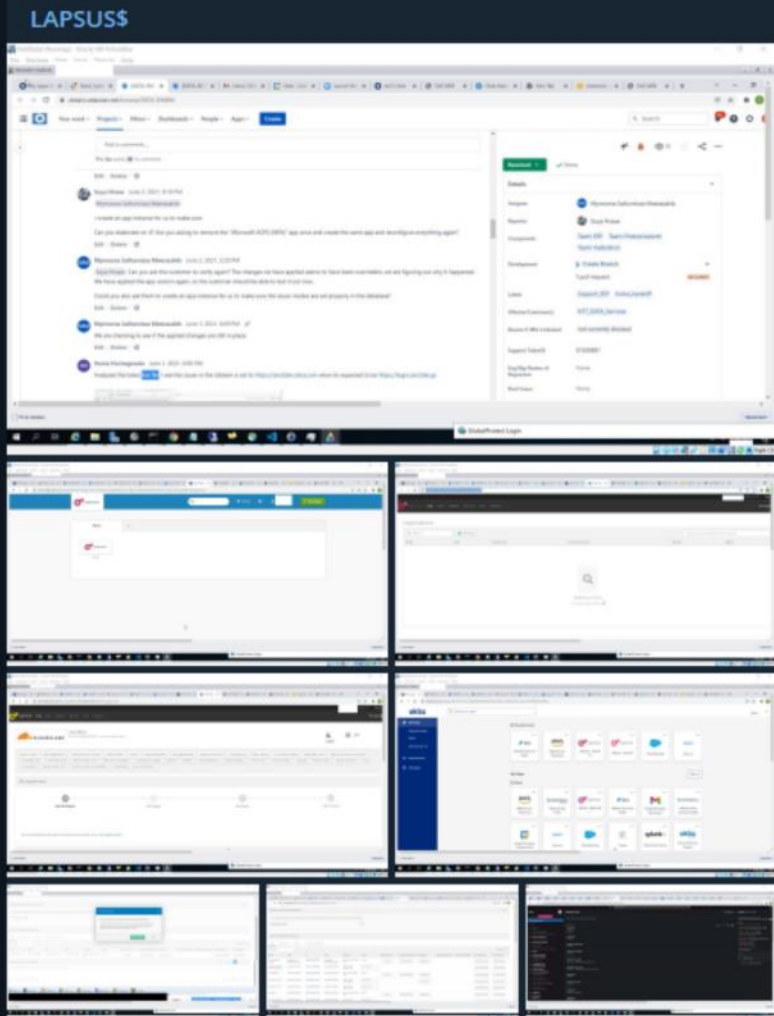


Figure 1: Magic Quadrant for Access Management



Source: Gartner (November 2021)

LAPSUSS



Just some photos from our access to [Okta.com](#) Superuser/Admin and various other systems.

For a service that powers authentication systems to many of the largest corporations, I think these security measures are pretty poor.

1 11:09 PM

B 7 comments

tsddfsd [Running] - Oracle VM VirtualBox

File Machine View Inout Devices Help

Remote Control

My Apps x Slack | syi x [OKTA-20] x [OKTA-40] x Inbox (12) x Okta - Co x Launch M x ok12-ok1 x ok7-ok7 x TAG WEB x Okta Hel x New Tab x Instances x TAG WEB x

okta.okta.com/app/UserHome?iss=https%3A%2F%2Fokta.okta.com&session\_hint=AUTHENTICATED

okta Search your apps Okta

My Apps

- Recently Used
- Work
- Add section +
- Notifications
- Add apps

Recently Used

- Jira Atlassian Cloud Jira SAML
- aws AWS Account Federation...
- superuser OK12 SU - US Cell 12
- superuser OK3 SU - US Cell 3
- Okta Sales Org
- zoom Zoom.us

My Apps

Sort

Work

- aws AWS Account Federation...
- Cornerstone Okta Learning Portal
- superuser OK8 SU - APAC Cell 1
- Jira Atlassian Cloud Jira SAML
- Google Workspace Mail (Gmail)
- Confluence Atlassian Cloud Confluence SAML
- Google Workspace Calendar (Gcal)
- zoom Zoom.us
- Okta Sales Org
- Crayon
- splunk Splunk Cloud (main)
- okta Okta Certification Program

Fit to Window Disconnect

GlobalProtect Login

21/01/2022

Right Ctrl

fsdfdsd [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Remote Control

ok7-okta.okta.com/su/org/00o71fx230jBjQjBF3567fromLogin=true

### System Log Event log threshold

For adjusting the type and volume of events in system log. (Requires feature flag "LOG\_LEVEL" to be turned on for the org.)

Events log threshold: INFO

### Users, Applications & Groups

Users Applications Groups Group App Assignments

Search Show 10

Name	Login	ID	Email	Updated	Status	Reset Password	Send Temp Password	Reset MFA	Grant Temp Sign On	Disconnect from AD	Group Reconcile	Execute Rules
Svc questaweb-import	questaweb-import@cloudflare...	00u95h5gb8QM4...	questaweb-import@cloudflare...	May 4, 2021 2:18:04 PM	Active	Reset	Temp Password	Reset MFA			Group Reconcile	Execute Rules
Google FI Master 2 (Travel Accounts)	googlefimaster2@...	00u9k2n3qf5iBu4...	googlefimaster2@...	May 21, 2021 12:46:42 AM	Deactivated						Group Reconcile	Execute Rules
CloudflareTV 1	cloudflaretv1@clo...	00u9927ux8Q87f...	cloudflaretv1@clo...	May 5, 2021 1:26:15 PM	Active	Reset	Temp Password	Reset MFA			Group Reconcile	Execute Rules
Google FI CN 100	googleficn100@clo...	00u9k23mk4wUG...	googleficn100@clo...	May 21, 2021 12:37:46 AM	Deactivated			Reset MFA			Group Reconcile	Execute Rules
Google FI CN 101	googleficn101@clo...	00u9k28i82kjRipP...	googleficn101@clo...	May 21, 2021 12:42:01 AM	Deactivated						Group Reconcile	Execute Rules
BK SG 101	bks101@cloudflar...	00u9vfuhjdHqjQZ...	bks101@cloudflar...	Jun 16, 2021 8:44:52 PM	Active	Reset	Temp Password	Reset MFA			Group Reconcile	Execute Rules
Google FI CN 102	googleficn102@clo...	00u9k2cytpwc2dZ...	googleficn102@clo...	May 21, 2021	Deactivated						Group Reconcile	Execute Rules

Fit to Window Disconnect

GlobalProtect Login

21/01/2022


Right Ctrl



(yes we know the URL has a email address. the account is suspended - we dont care)

**BEFORE PEOPLE START ASKING: WE DID NOT ACCESS/STEAL ANY DATABASES FROM OKTA - our focus was ONLY on okta customers.**

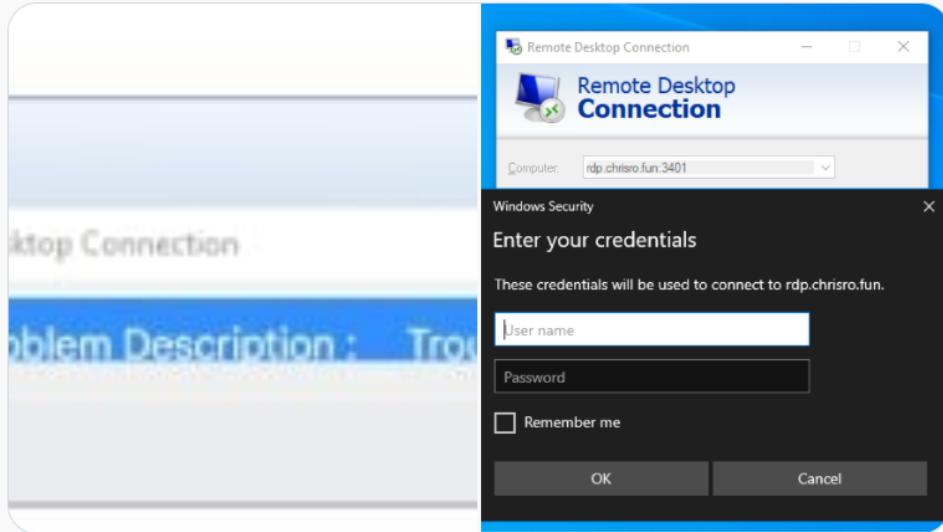


 2290 edited 11:09 PM



**Bill Demirkapi** @BillDemirkapi · 22. März

This RDP server in one of the screenshots "rdp[.]chrisro[.]fun" is still active. Perhaps part of LAPSUS\$ internal infrastructure? Hosted in AWS (us-west-2) [@awscloud](#) [@AWSSecurityInfo](#)



**Bill Demirkapi** @BillDemirkapi · 22. März

Interesting note. The "chrisro[.]fun" domain is registered to "SYKES LATIN AMERICA" and in this screenshot below we can see some tool in the taskbar named "SYKES Secur...".



LAPSUS\$

Reply

**We recruit employees/insider at the following!!!!**

- Any company providing Telecommunications (Claro, Telefonica, ATT, and other similar)
- Large software/gaming corporations (Microsoft, Apple, EA, IBM, and other similar)
- Callcenter/BPM (Atento, Teleperformance, and other similar)
- Server hosts (OVH, Locaweb, and other similar)

**TO NOTE: WE ARE NOT LOOKING FOR DATA, WE ARE LOOKING FOR THE EMPLOYEE TO PROVIDE US A VPN OR CITRIX TO THE NETWORK, or some anydesk**

If you are not sure if you are needed then send a DM and we will respond!!!!

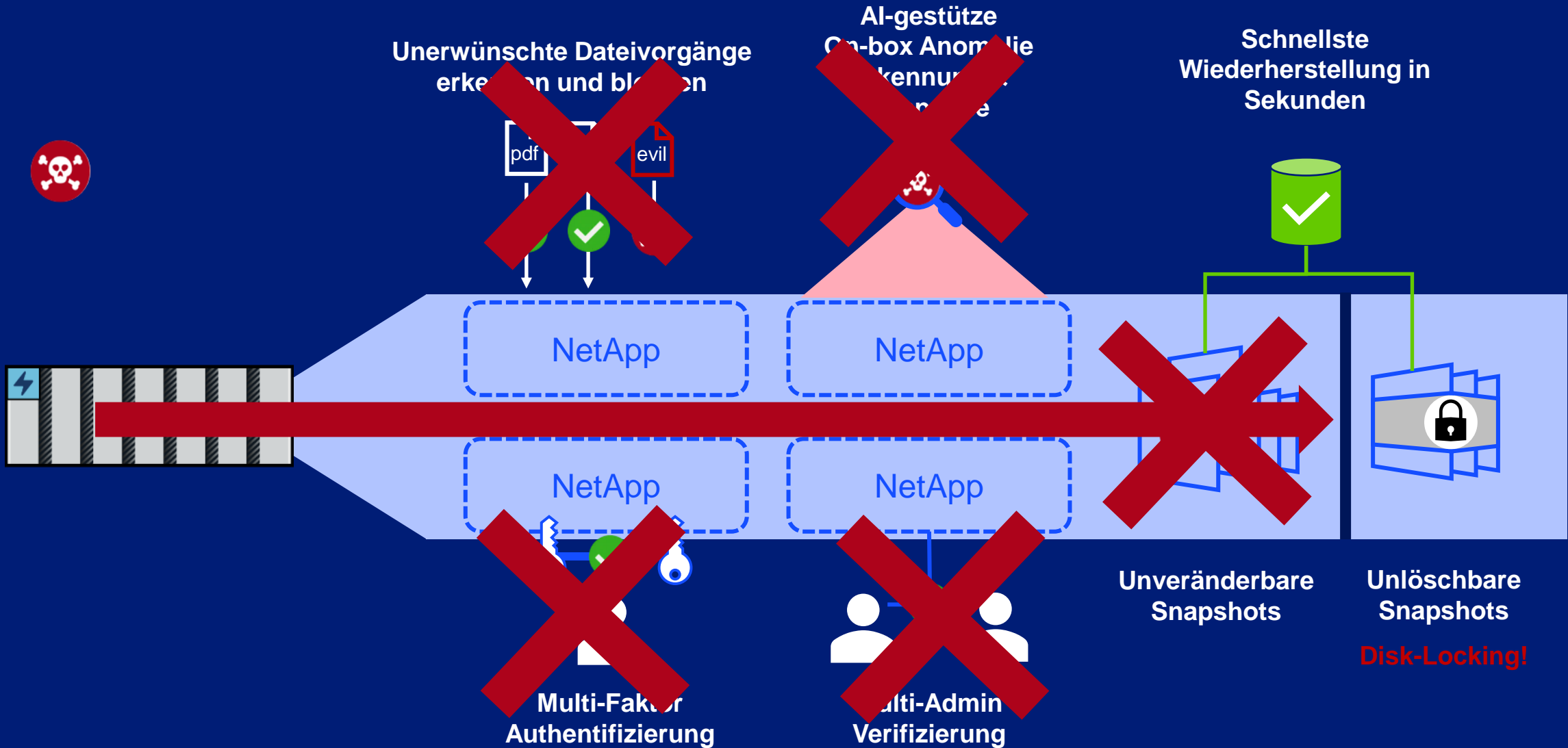
If you are not a employee here but have access such as VPN or VDI then we are still interested!!

**You will be paid if you would like. Contact us to discuss that**

@lapsusjobs

← 837 👁 37.2K ⭐ 2:37 PM 👍

# NetApp Cybersecurity



# NetApp Ransomware Recovery Garantie

Für Enterprise Primary Storage



NetApp garantiert die Daten-Wiederherstellung aus Snapshots im Falle einer Ransomware Attacke



Wenn die Daten nicht wiederhergestellt werden können, zahlt NetApp eine Entschädigung



Deployed NetApp AFF, ASA, and FAS storage according to NetApp ransomware protection best practices, with support from NetApp PS. Warranty includes both technology deployment and PS engagement. Terms and conditions apply.



**Der einzige validierte Enterprise  
Storage Hersteller für die  
Speicherung von Top-Secret Daten!**



FIPS 140-3



Common Criteria



U.S. Department of Defense  
Information Network (DoDIN)  
Approved Products List  
(APL)



Commercial Solutions for  
Classified (CSfC) Program  
Component List



Der einzige validierte  
Storage Hersteller  
Speicherung von



0-3

n Criteria

Department of Defense  
Information Network (DoDIN)  
Approved Products List

Commercial Solutions for  
Approved (CSfC) Program  
Approved Product List





**NetApp** **The most secure storage  
on the planet**

# Key Takeaways

VMware & NetApp – what's new



Hardware Refresh für  
A-Serie, C-Serie, FAS



Neue ASA ist perfekt  
für VMware



NetApp =  
„most secure Storage“

# Vielen Dank



**Christoph Bauer**

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# Vielen Dank

Wir wünschen viel Spaß  
beim Networking!