

가상 인프라 최적화 및 애플리케이션 현대화

Delivering the Modern Data Experience



Growth

\$1.68 Billion

FY21 Annual Revenue



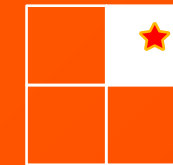
Customers

9,000+

Global Customers



Leadership



Gartner Magic Quadrant

8 X leader!

\$500M

Annual Subscription Services Revenue

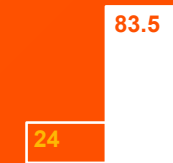
+\$60 Billion TAM

1,500

New Customers in FY21

~50%

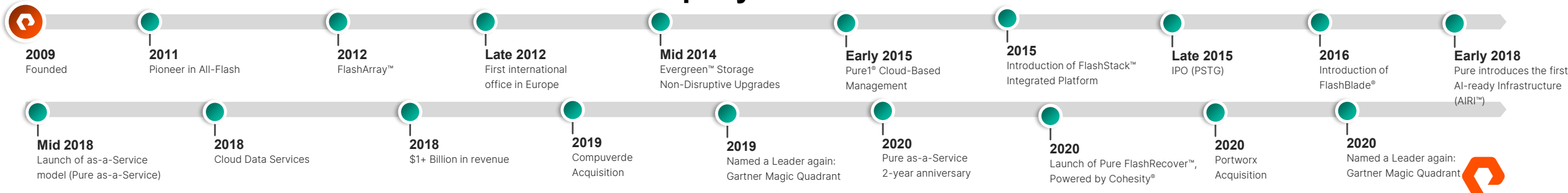
Of Fortune 500 companies



Net Promoter Score

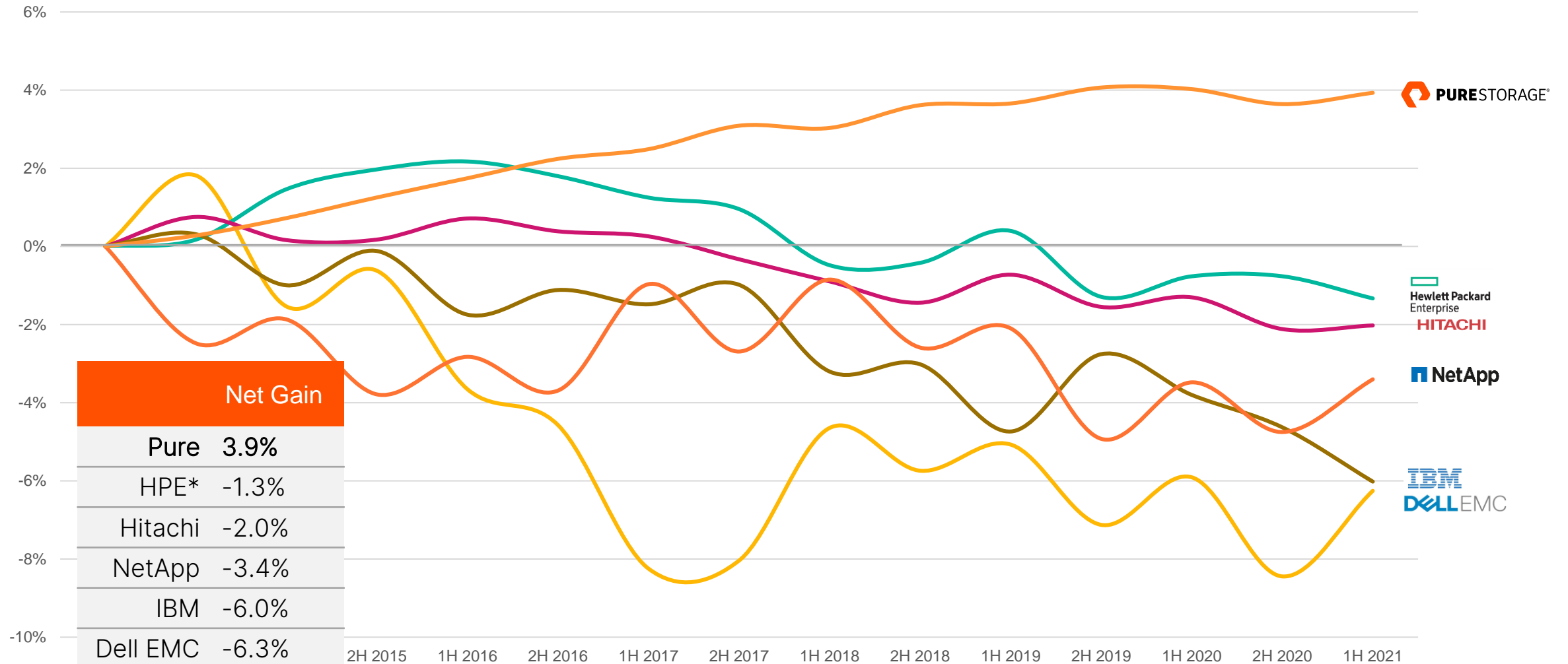
Top 1% of B2B companies

Company Milestones



7 Year Storage Market Share

IDC: Cumulative Market Share Gain/Loss - Half Year Basis



Source: IDC Quarterly Enterprise Storage Systems Tracker, Not counting H3C

©PureStorage 2020



Pure Storage is a Leader 8 Years in a Row!

Pure is named a leader in the Gartner 2021 Magic Quadrant for Primary Storage and is placed highest for Ability to Execute AND furthest for Completeness of Vision

Source: Gartner Magic Quadrant for Primary Storage, by Jeff Vogel, Roger W. Cox, Joseph Unsworth, Santhosh Rao. Published October 11, 2021.

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Figure 1: Magic Quadrant for Primary Storage



Source: Gartner (October 2021)



Pure Storage is a Leader in File and Object

Pure is named a leader in the Gartner 2021 Magic Quadrant for Distributed File Systems and Object Storage

Source: Gartner Magic Quadrant for Distributed File Systems & Object Storage, By Julia Palmer | Jerry Rozeman | Chandra Mukhyala | Jeff Vogel, Published 1 October 2021. GARTNER is a registered trademark and service mark of Gartner, Inc. and/or its affiliates in the U.S. and internationally and is used herein with permission. All rights reserved.

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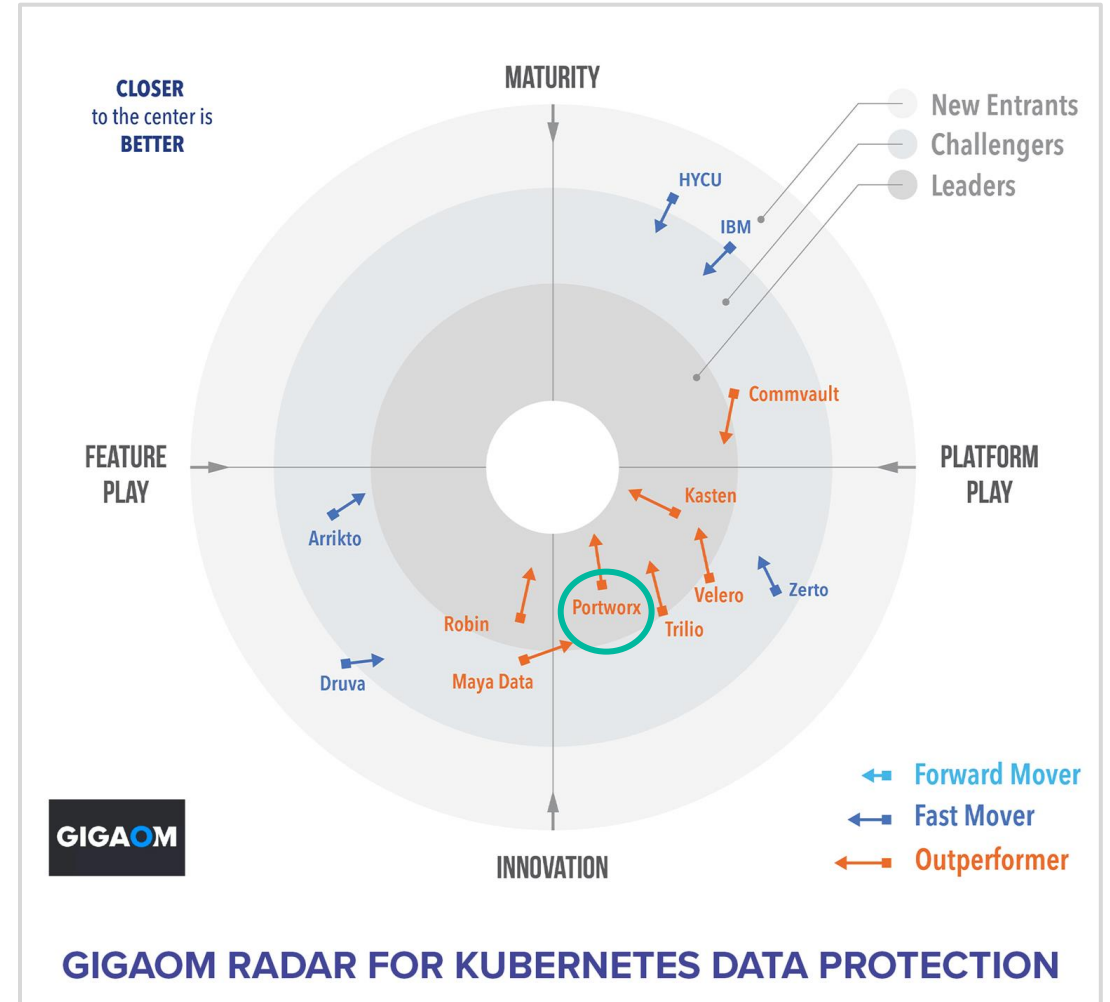
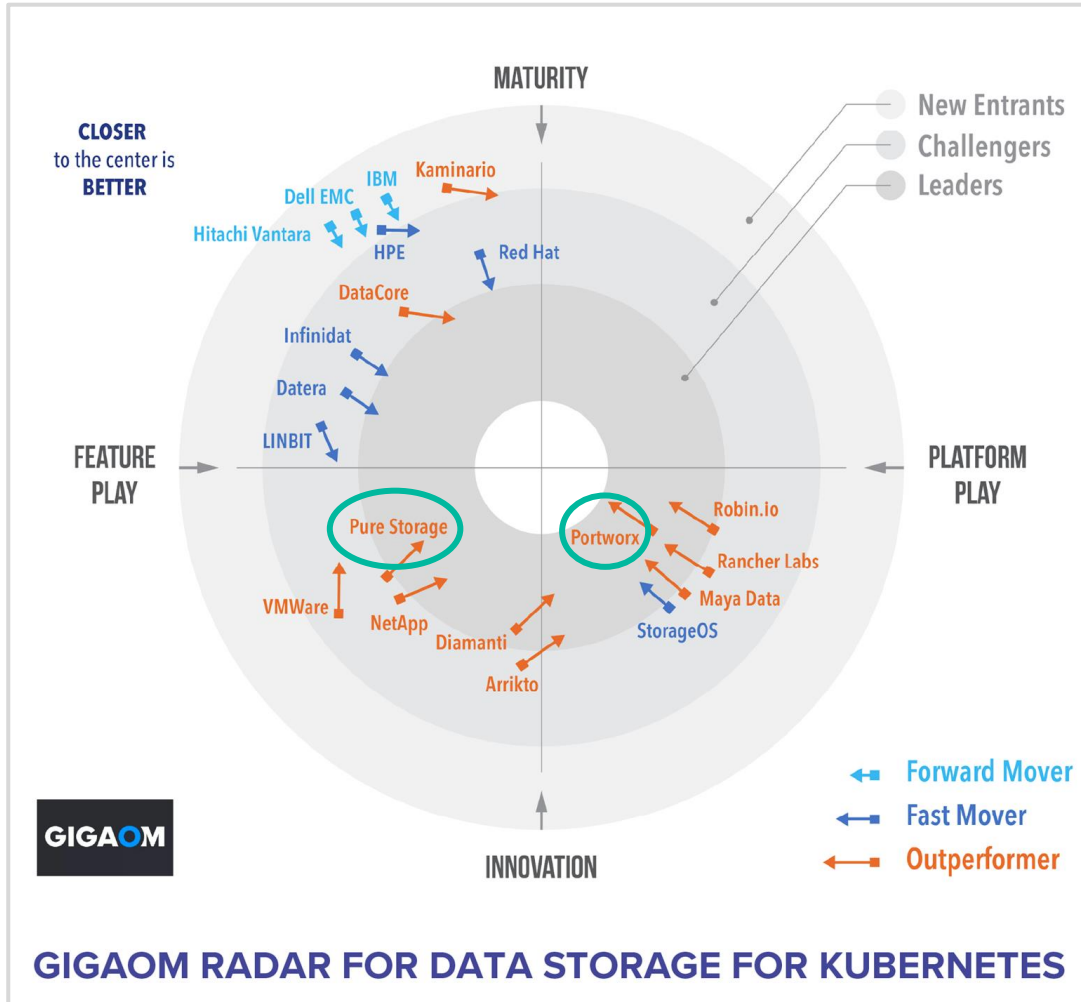
Figure 1: Magic Quadrant for Distributed File Systems and Object Storage

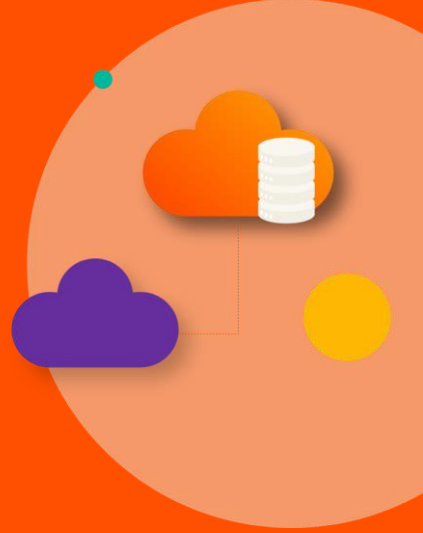


Source: Gartner (October 2021)



Portworx: #1 for Kubernetes Data Services





Enterprises Favor Hybrid Cloud

70% enterprises will deploy unified VMs, Kubernetes, and multicloud management processes and tools, by 2022



96% organizations consider it important that public cloud vendors offer solutions that integrate with on-premises environments



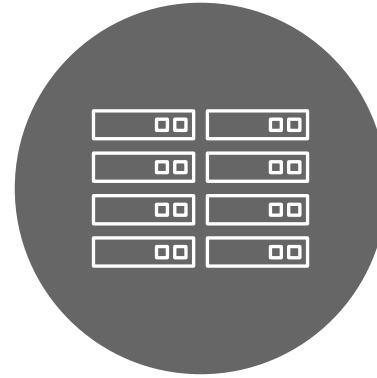
Infrastructure challenges



Managing legacy storage is complicated and time consuming



HCI leads to workload specific infrastructure silos, increasing costs.



Containerized applications have dynamic persistent storage needs



Availability and data protection needs are becoming more stringent

...with VMware on Pure

Modern data experience for VMware



Simplify Management

Up to 10x faster ESXi
node updates



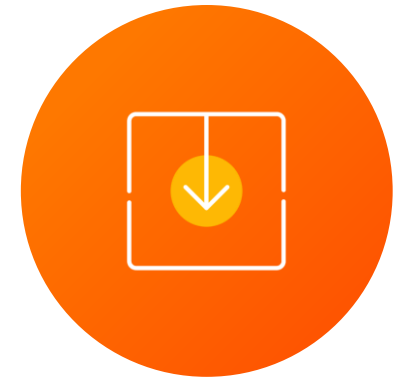
Protect Everywhere

Near Zero Recovery
Point Objective



Accelerate Modernization

Complete
Kubernetes data
services platform



Optimize Resources

Up to 75%
reduction in storage
spent vs HCI



Optimize Resources

Explore Cost Savings and Risk Reduction with Pure Storage

Optimize Resources



Reduce infrastructure costs

Eliminate silos with a true disaggregated architecture

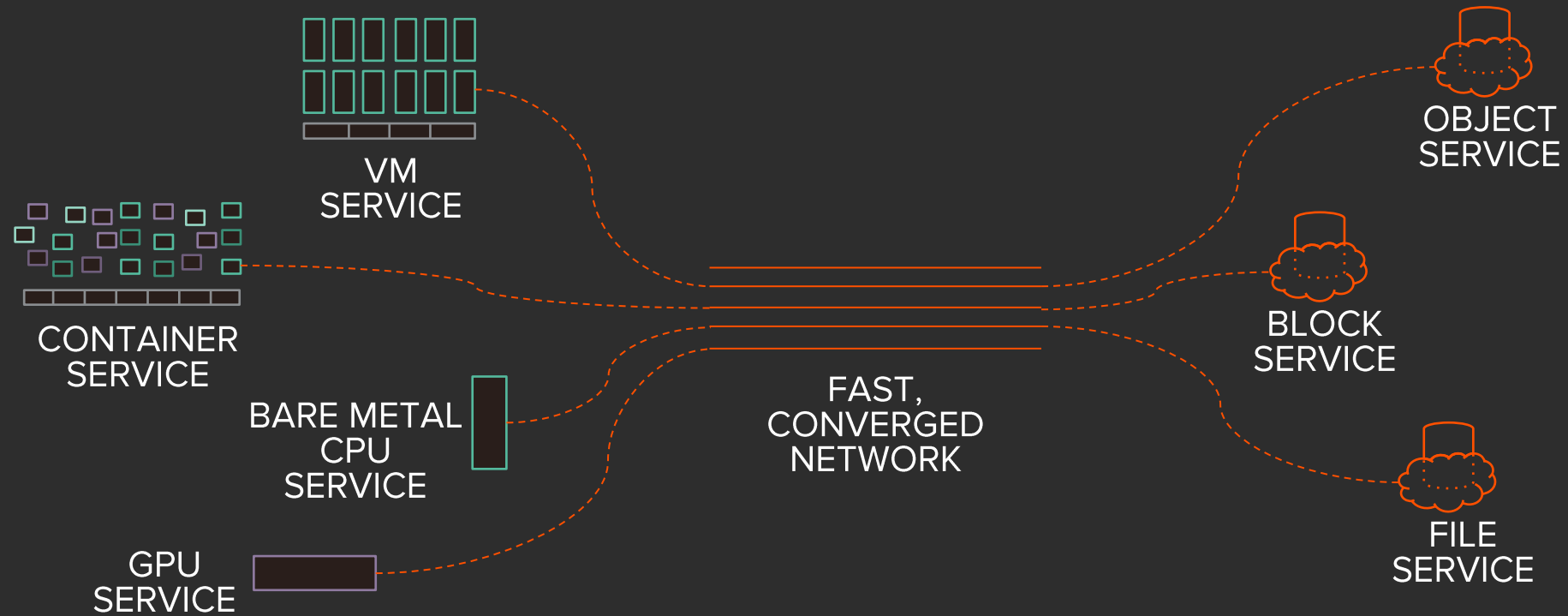


Ready for the future

with choice of fabric and intelligent workload planning



FOLLOW THE LESSONS OF THE PUBLIC CLOUD



USE CASE AND SUCCESS CRITERIA

CONSOLIDATION

VSI & VDI

AFFORDABILITY

OPERATIONAL
SIMPLICITY

INFRASTRUCTURE
AVAILABILITY

TIER 1 APPLICATION

APPLICATION
PERFORMANCE

APPLICATION
AVAILABILITY

REMOTE & BRANCH OFFICES

REMOTE DEPLOYMENT

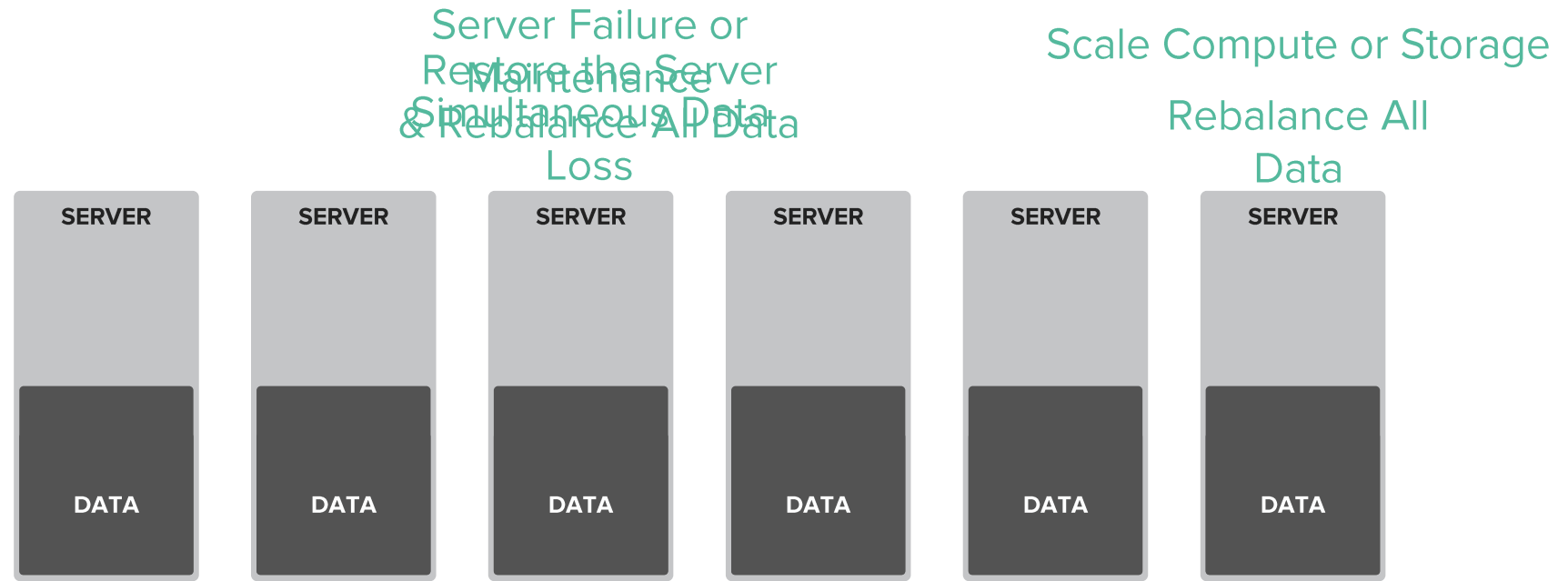
REMOTELY OPERATED

SUPPORTED BY NON-IT
STAFF



DATA MANAGEMENT AT SCALE?

SHARE-NOTHING DAS BASED ARCHITECTURES WILL IMPACT APPLICATION PERFORMANCE



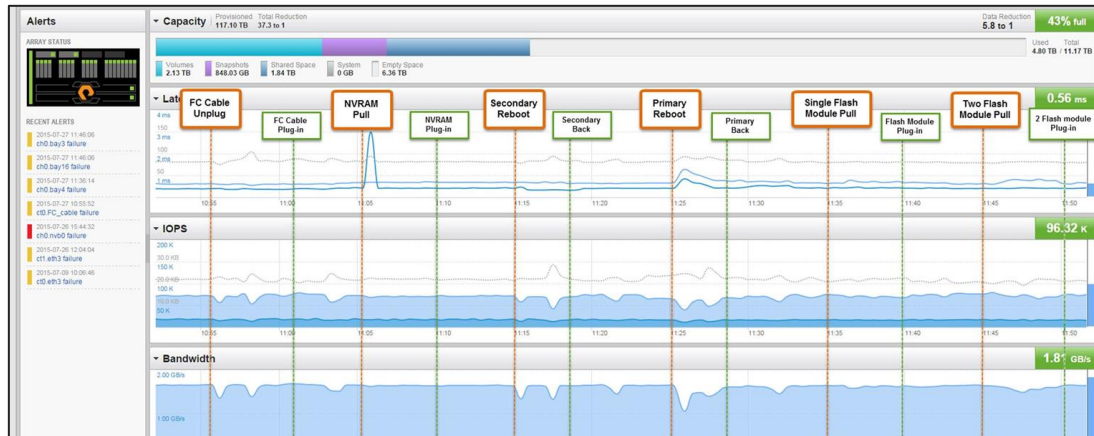
Run with Less Protection or Rebuild Lost Data???



SCALABILITY & AVAILABILITY

THE PERFORMANCE IMPACT OF SHARED-NOTHING DAS BASED ARCHITECTURES

PURE STORAGE



>99.9999% FlashArray uptime
Resilient with 100% performance
through failures & maintenance
(due to modular fault tolerant architecture)

HYPER CONVERGED

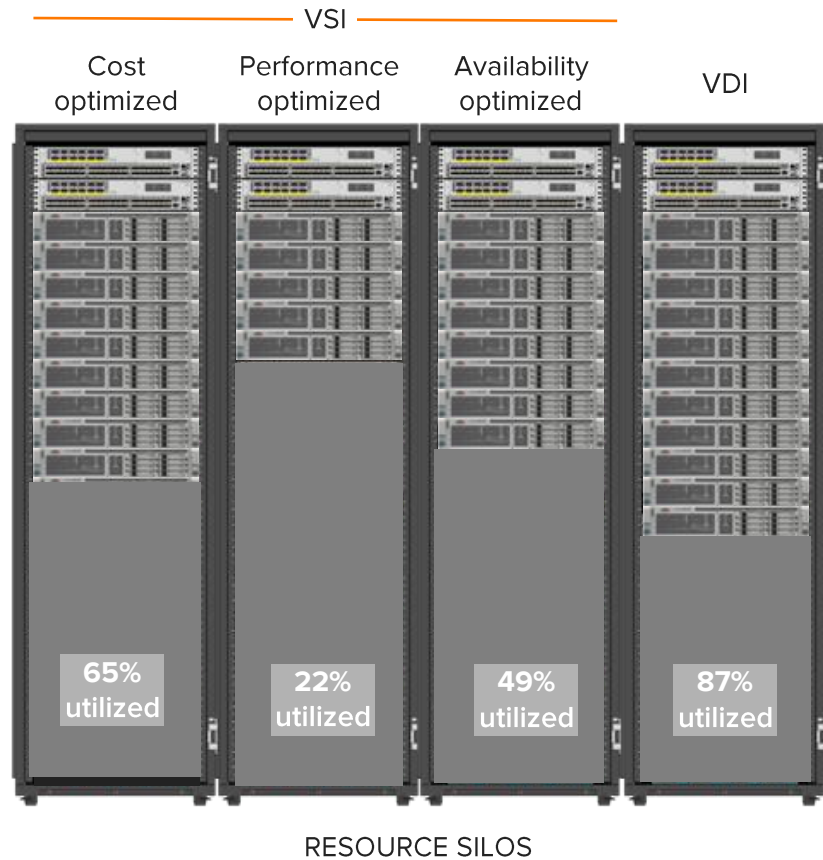


All failures & maintenance
events
require data to be rebuilt,
migrated, rehydrated
or lose data protection



ELIMINATE HARDWARE SILOS

FLASHSTACK PROVIDES SOFTWARE-DEFINED STORAGE POOLS



4-10X
Rack Density

25%
CPU Offload

FULL
Data Services



FLASHSTACK IS IDEAL FOR MIXED WORKLOADS

Optimized for cost, performance & availability

Allows for dynamic, resizable, software-defined storage pools

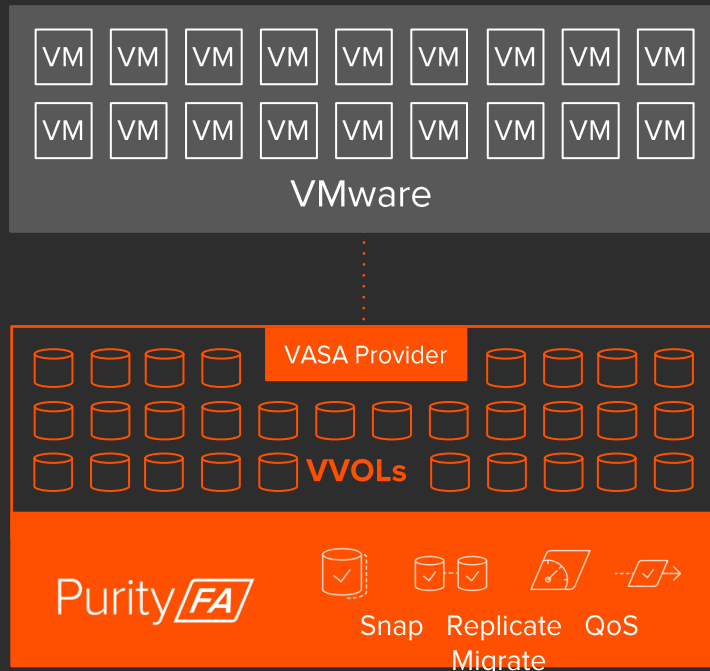
Avoid lost, excess capacity from hardware defined silos

Disaggregated architecture scale resources independently based on needs



STORAGE-ON-DEMAND

INDUSTRY LEADING STORAGE ARRAY FOR VMWARE VIRTUAL VOLUMES (VVOLS)



Storage Automatically Provisioned via Policies

- No datastores or storage pre-provisioning

Per-VM Software-Defined Data Services

- Per-VM policies for snaps, replication & QoS
- Managed by vSphere SPBM & vRealize APIs

Higher Performing, Simpler Storage

- No more VMFS snapshot or cloning overheads
- End-to-end VM to storage visibility

Connect vVols to VMs, Bare Metal or Public Cloud

- Simplify volume migration and data recovery

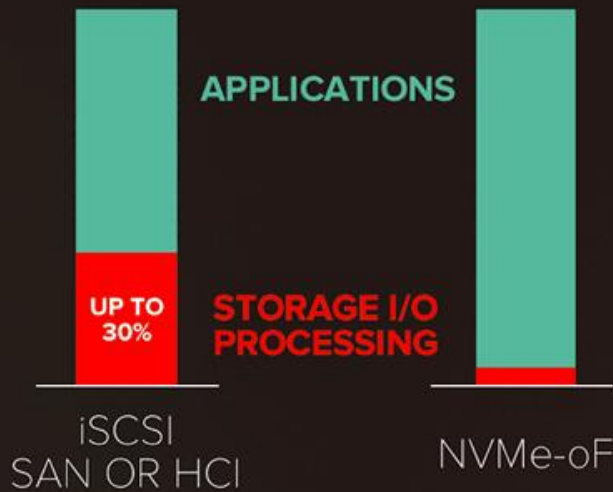


WHY FAST NETWORKS CAN CHANGE EVERYTHING

ELIMINATES THE "OUTSIDE THE BOX" PENALTY

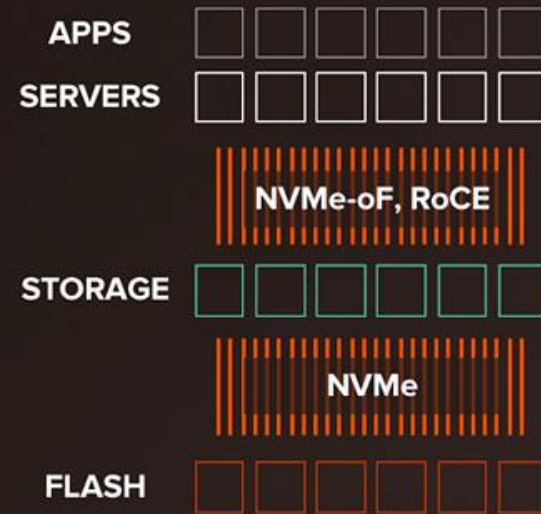


GETS CPU_s TOTALLY FOCUSED ON APPLICATIONS*

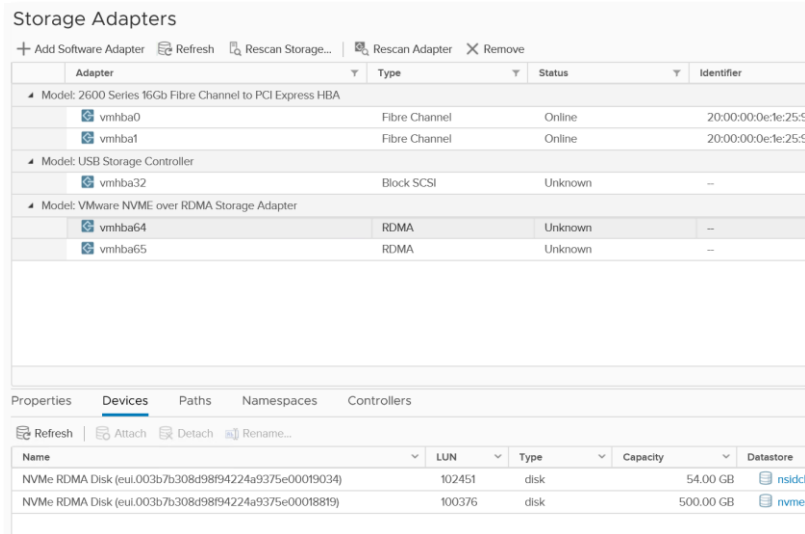


*** AND GETS STORAGE ARRAY CPU_s TOTALLY FOCUSED ON STORAGE**

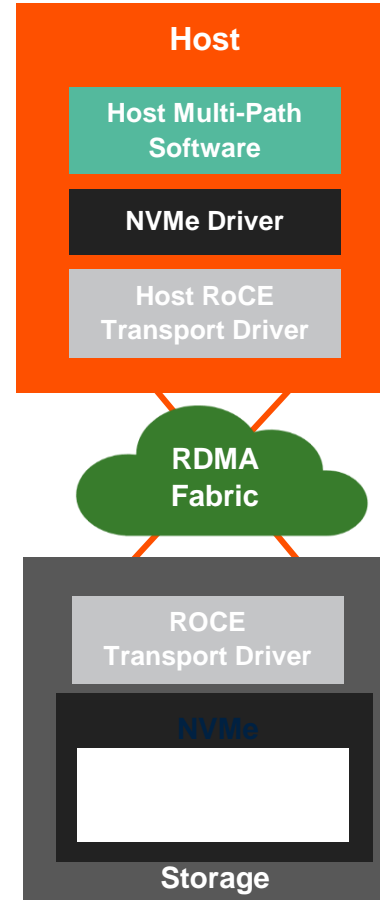
MAKES THE ENTIRE ARCHITECTURE PARALLEL



NVMe-oF Support in vSphere 7



[https://support.purestorage.com/Solutions/VMware_Platform_Guide/VMware%3A_NVMe_over_Fabrics_\(NVMe-oF\)](https://support.purestorage.com/Solutions/VMware_Platform_Guide/VMware%3A_NVMe_over_Fabrics_(NVMe-oF))



Overview

NVMe is a highly optimized controller interface that significantly improves performance for enterprise workloads

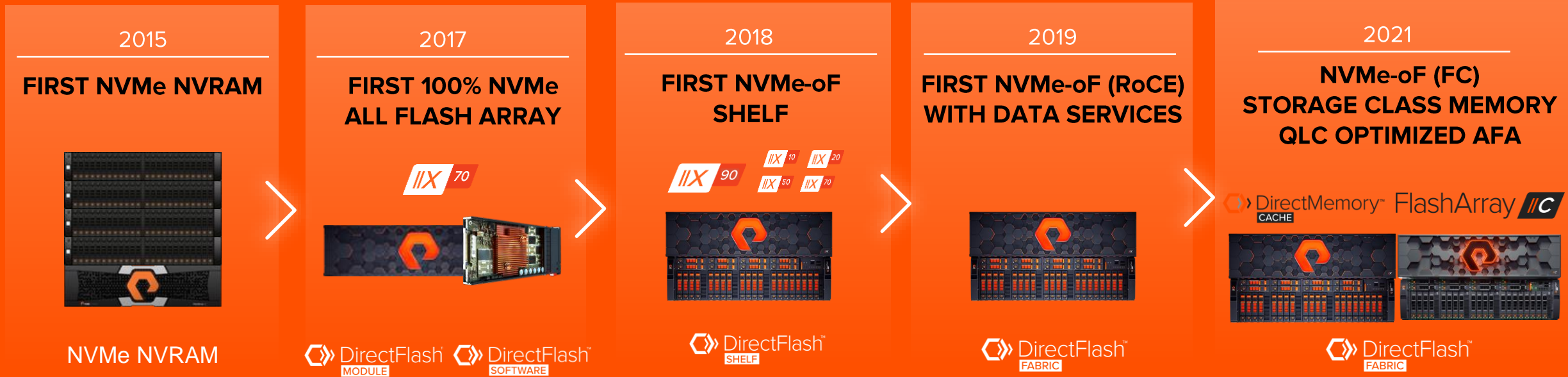
Support NVMe-oF for RDMA over Converged Ethernet v2 (RoCEv2) and Fiber Channel (FC)

Benefits

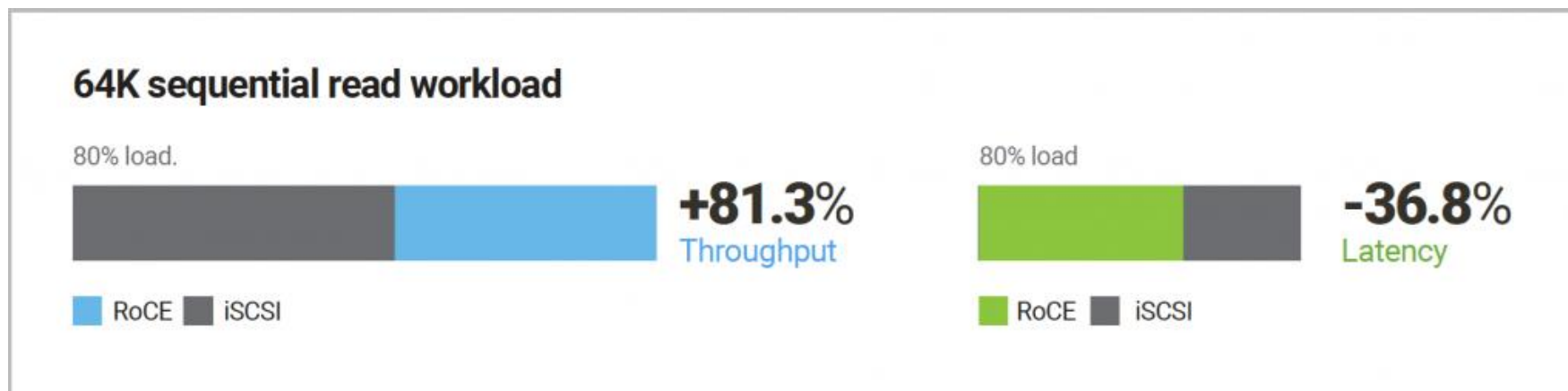
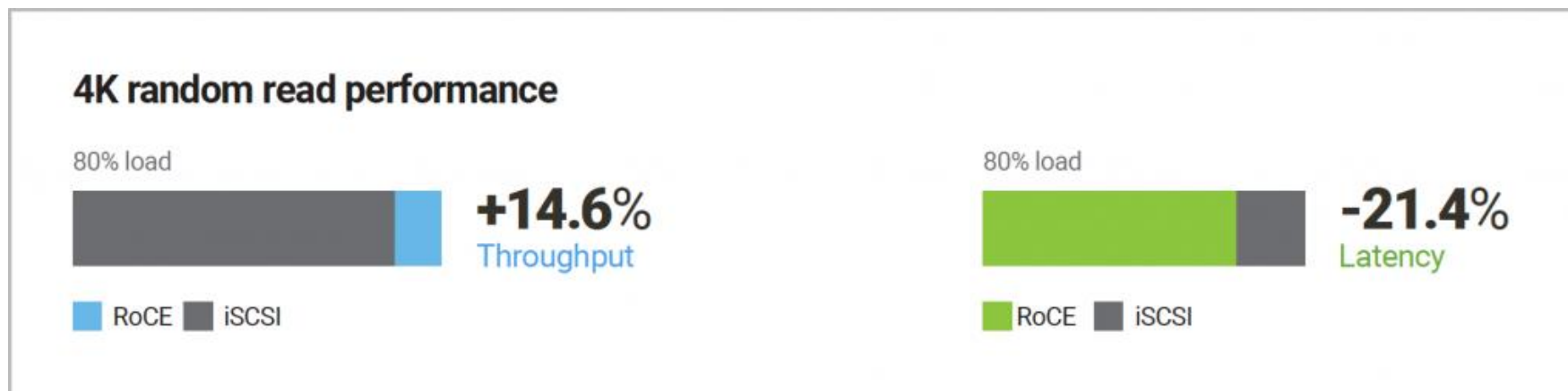
High performance ESXi access to external storage arrays



The NVMe Journey with Pure ALWAYS EVERGREEN - NO FORKLIFT OR MIGRATION



VMware vSphere Performance with NVMe-oF



SQL & Oracle on vSphere Performance with NVMe-oF

SQL 90/10 workload

100% load



80% load



Oracle 90/10 workload

100% load



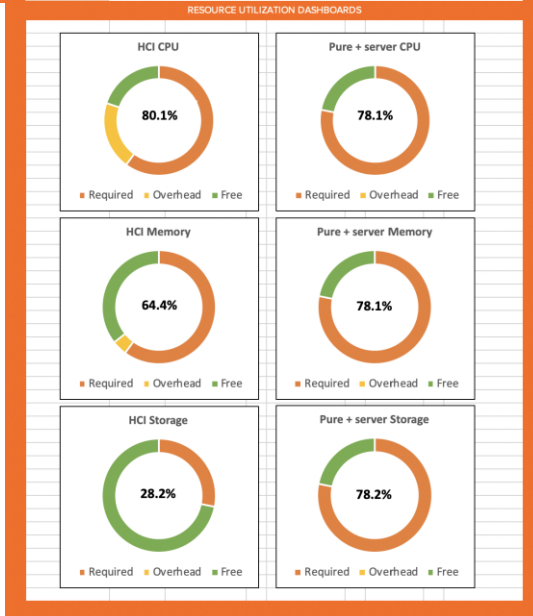
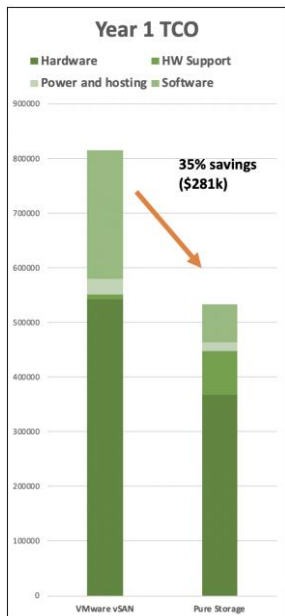
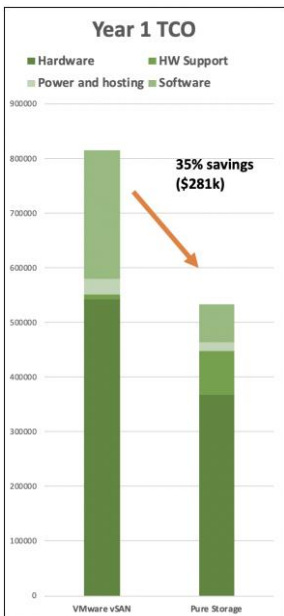
80% load



PURE FLASHSTACK TCO CUSTOMER EXAMPLE

ENSURE OPTIMIZE COSTS & ALIGN TO SCALE OF DEPLOYMENT

Requirements		Results (Output)		Reason for suggested number of nodes	
Number of VMs		1500 VMs		VMware vSAN	Requires 13 nodes to meet cpu requirements
Required usable storage		180 TB		Pure Storage	Requires 10 nodes to meet cpu requirements
Required IOPS		105,000 IOPS			
RAW sizing		VMware vSAN	Pure Storage	Efficiency	
Required nodes		13 nodes	10 nodes	Required Rack Units	28 Us vs 15 Us
Node type		AF-Custom	PS-8-768	Required watts	7,648 w vs 3,990 w
RAW CPU cores		624 cores	480 cores	Required sockets	26 sockets vs 20 sockets
RAW Memory		9,984 GB	7,680 GB	Usable CPU cores	499 cores vs 480 cores
RAW storage		399 TB	38 TB	Usable Memory	9,557 GB vs 7,680 GB
				Effective usable storage	639 TB vs 230 TB
				RAW vs usable storage	62% vs 17%
Year 1 costs		VMware vSAN	Pure Storage		
		\$814,458	\$533,223		
TCO for 6 years		VMware vSAN	Pure Storage		
		\$1,732,251	\$997,384		
		TCO savings over 6 years		\$734,867	



ALIGNING INFRASTRUCTURE TO SUCCESS CRITERIA

CONSOLIDATION

VSI & VDI

LESS STORAGE

LESS COMPUTE

DATA SERVICES AT NO
TRADE OFFS

TIER 1 APPLICATION

CONSISTENT LATENCY

PROVEN 99.9999% UPTIME

REMOTE & BRANCH OFFICES

APPLIANCE BASED
DEPLOYMENT

HOST REPLICATION

CI with FlashArray

CI with FlashArray

HCI

COMMON VIRTUALIZATION, COMPUTE, NETWORK, FULL INTEROPERABILITY





Accelerate Modernization

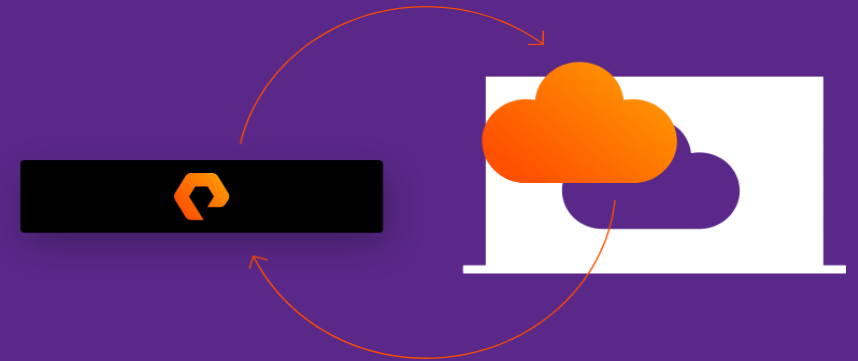
Bring Dev and IT Ops Together
& Modern Data Experience for ALL

Modernize Apps



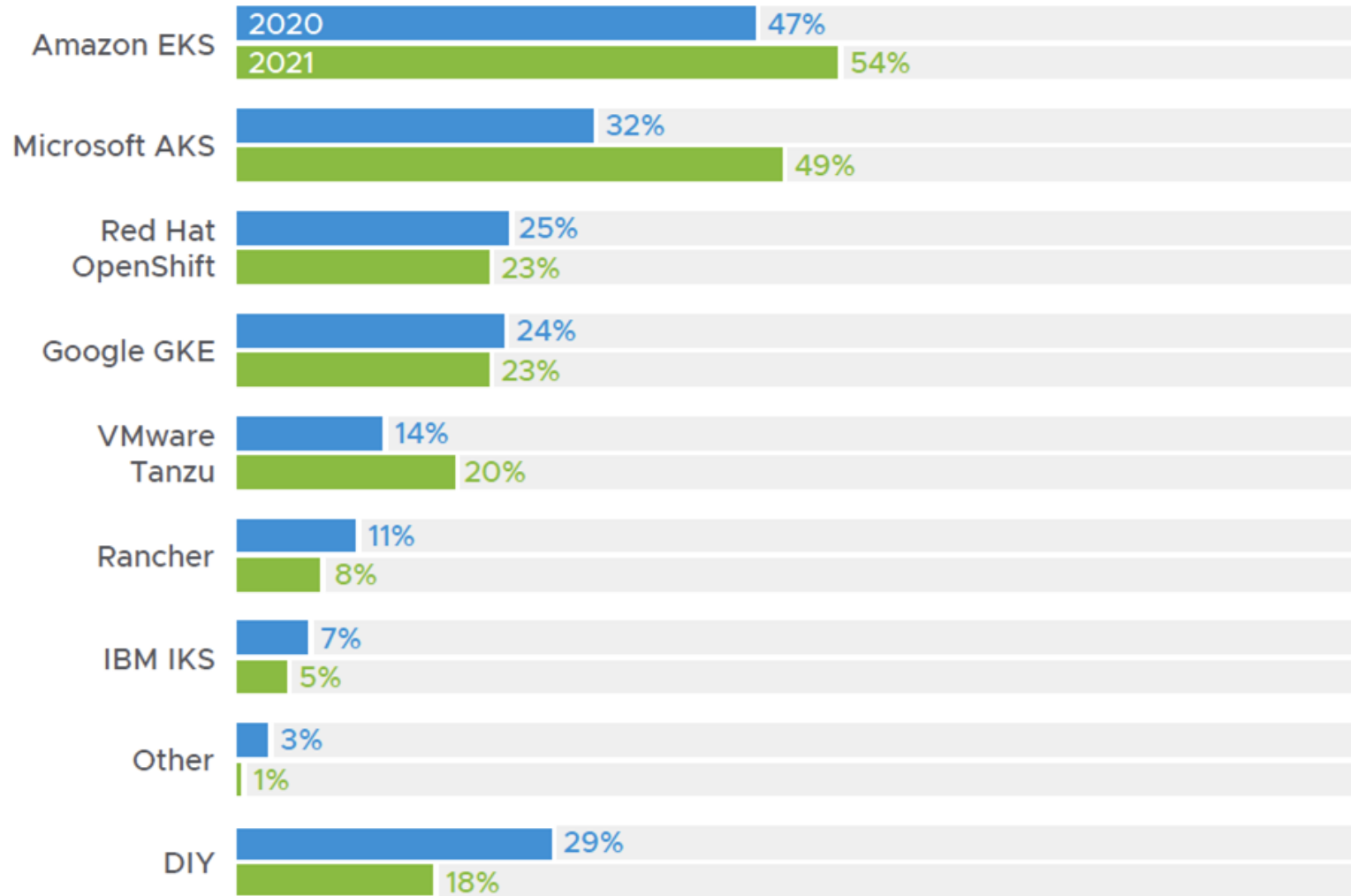
Containerize

Bring Dev and IT Ops Together
on vSphere with Tanzu



Kubernetes Flavours

Everyone's got a K8s offering, so which is the most popular?



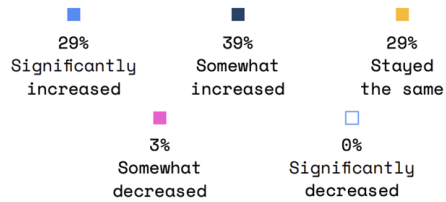
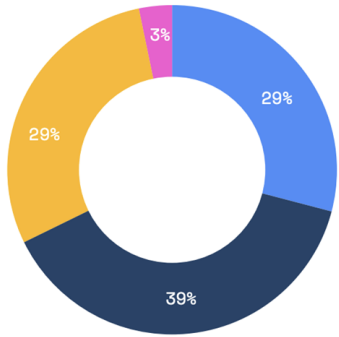
Source: VMware survey of 357 professionals "The State of Kubernetes 2021"



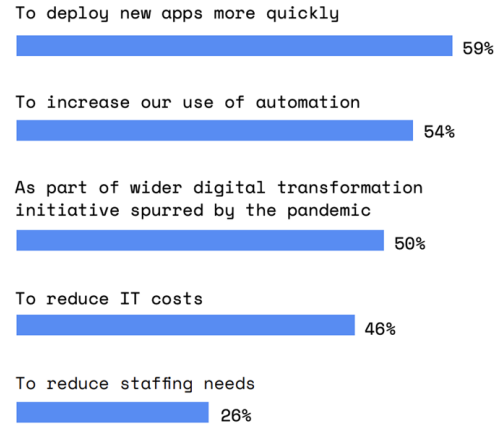
Kubernetes Adoption



How has the pandemic impacted your company's use of Kubernetes?



What is the reason for the increase?
Select all that apply.



78%

use Kubernetes in production.



85%

OF GLOBAL BUSINESSES

will be running containers in production by 2025 (up from 35% in 2019).

Gartner

81%

OF ENTERPRISES

work with 2+ public cloud providers.

Gartner

95%

OF NEW APPS

are developed in containers.

451 Research



What is Tanzu?

vSphere with Tanzu?



Tanzu

A broad portfolio of VMware products and services that allow customers to build, run, and manage their modern applications



vSphere with Tanzu

Transforms vSphere into a platform for running Kubernetes workloads natively on the hypervisor layer.



vSphere Cluster Enabled

When enabled on a vSphere cluster, vSphere with Tanzu, provides the capability to run Kubernetes workloads directly on ESXi hosts and create upstream Kubernetes clusters within dedicated resource pools.

vSphere with Tanzu and FlashArray

Pure Validated Designs provide predictability and cost savings. Leveraging designs to accelerate deployment.

Proven

Implemented with documentation.

Tested

Application and data loaded.



PURE VALIDATED DESIGN

VMware vSphere with Tanzu and FlashArray

FlashArray + VMware Tanzu

Validated Design for Container
and VM Consolidation and
Operation with VMware vSphere
Tanzu

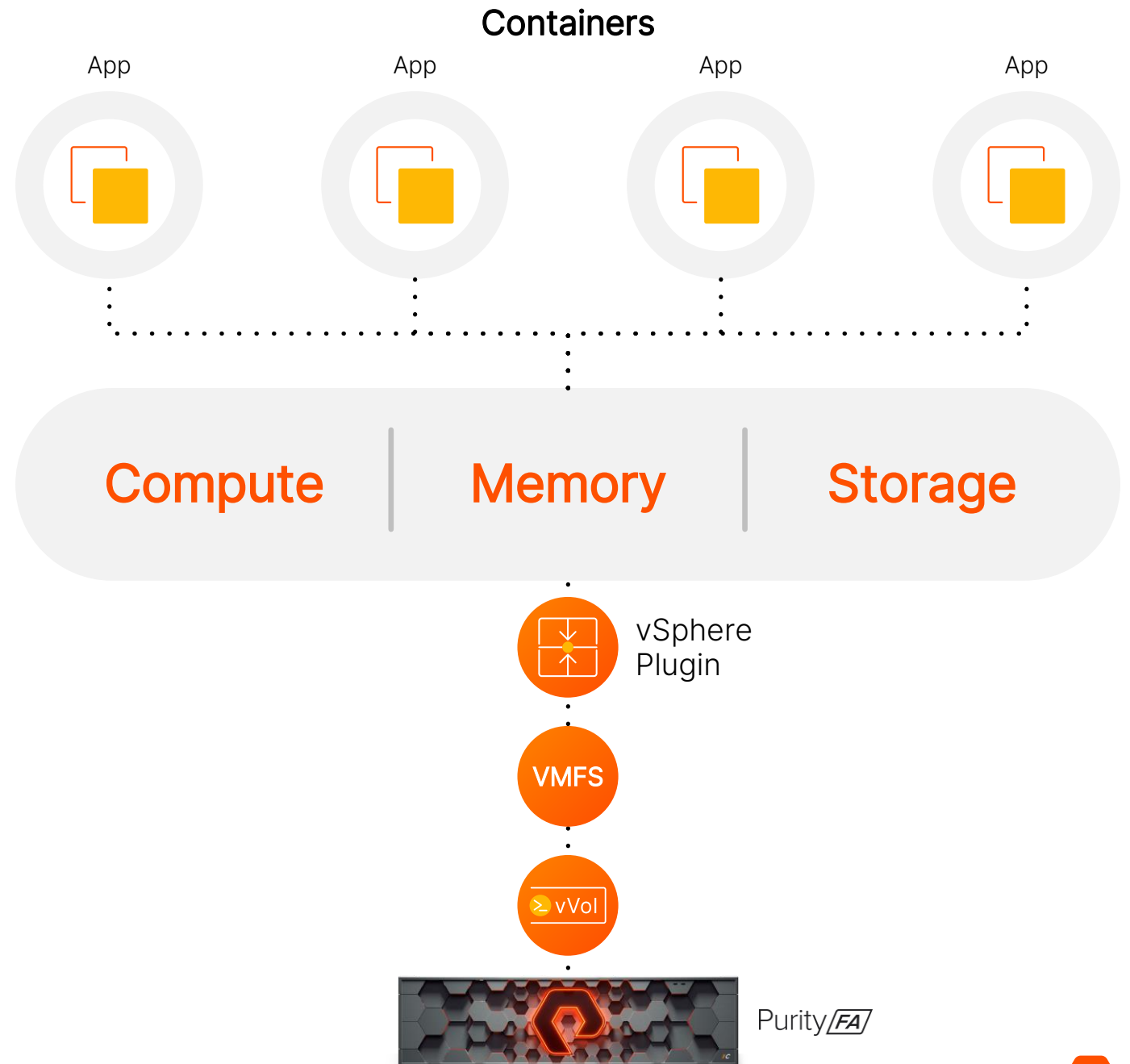
Cloud infrastructure delivered on premises, based
on simplified and proven deployment guidelines

Consistent solution with increased reliability,
portability, and agility for operators and developers

Reduced application delivery
times with a highly available platform

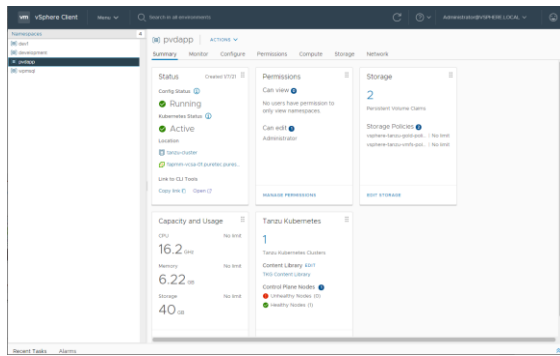
Container management,
automation, and orchestration

Integrated data and application
services with service discovery



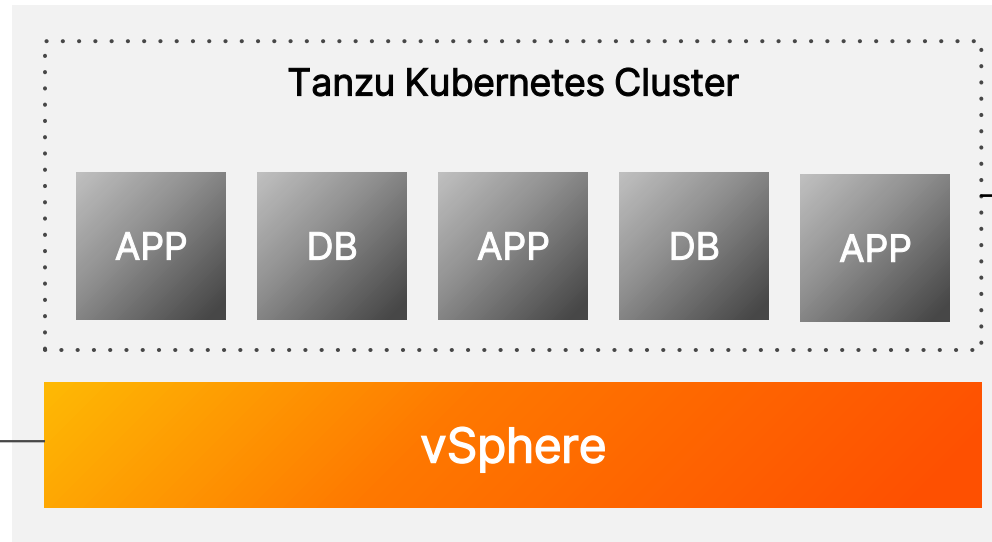
Extend VMware Investments to Kubernetes

vSphere Client

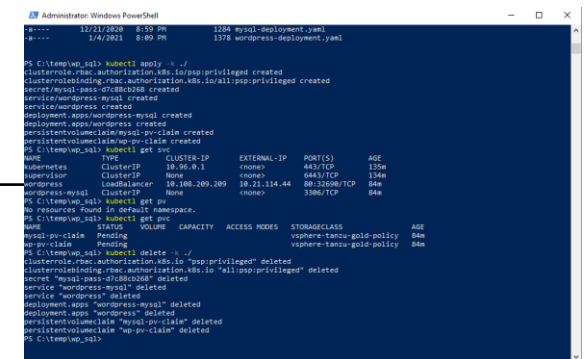


Manage and create namespaces
Distribute and control resources

vSphere with Tanzu and FlashArray



kubectl CLI



Self-service provisioning
Deploy clusters and workloads



Deep vSphere integration
High performance shared storage

Key Technologies



vCenter Server



**vSphere
with Tanzu**



Virtual Volumes



**Pure Storage
FlashArray**

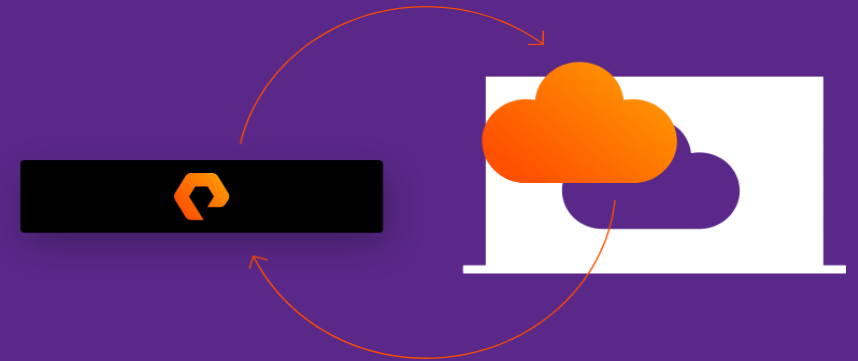


Mobilize Persistent Apps

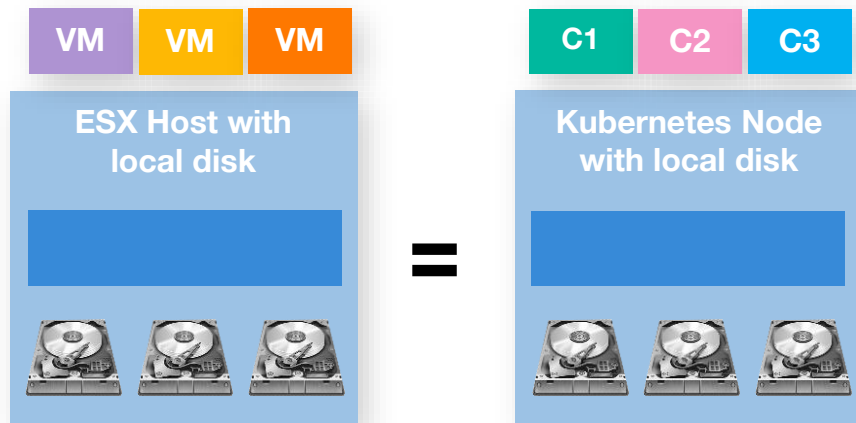


Simplify data mgmt

with the most complete K8s
Data Services platform and
Tanzu integration



What Are the Challenges With Kubernetes for Persistent Data?



Data becomes locked inside a single host or node

- No ability to move persistent data outside of the disk it is located upon
- No ability to move VM / Container outside the current node or cluster
- No RAID, high-availability or replication capabilities
- No topology awareness (racks, zones or regions) for persistent data
- No data tiering or cost optimisation capabilities
- No mobility between different platforms (Tanzu, OpenShift, Rancher, GKE, EKS or AKS)

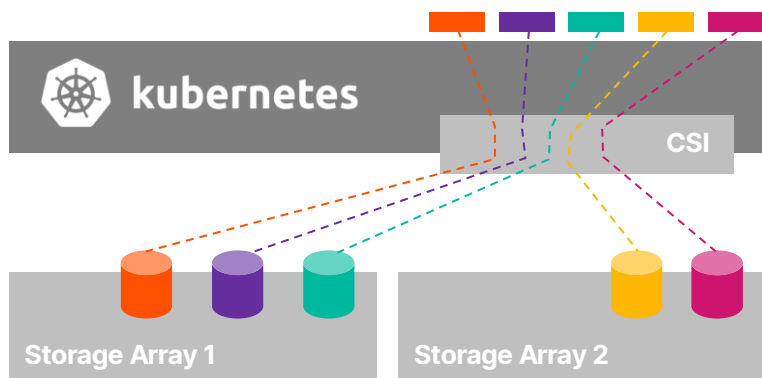
K8s without Portworx, is like VMware without Shared VMFS



Connector vs Container-Native Approach

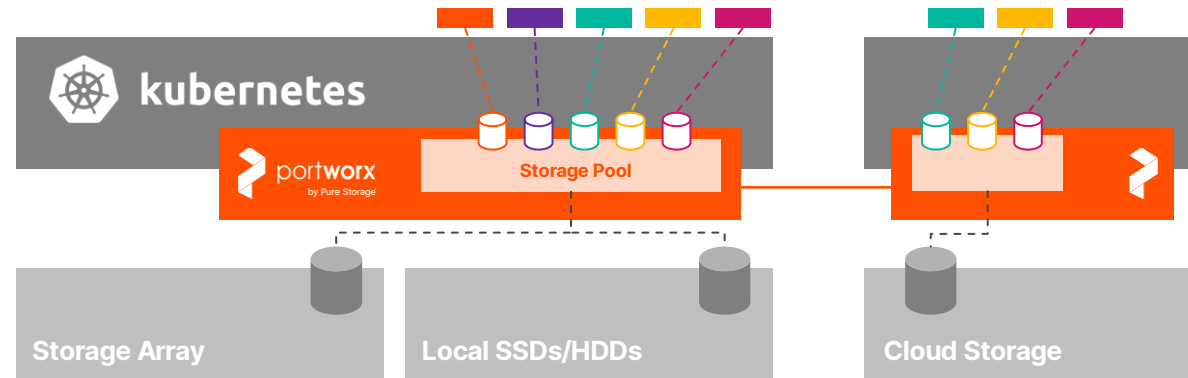
Two approaches common in the industry today...

"Connector" Approach



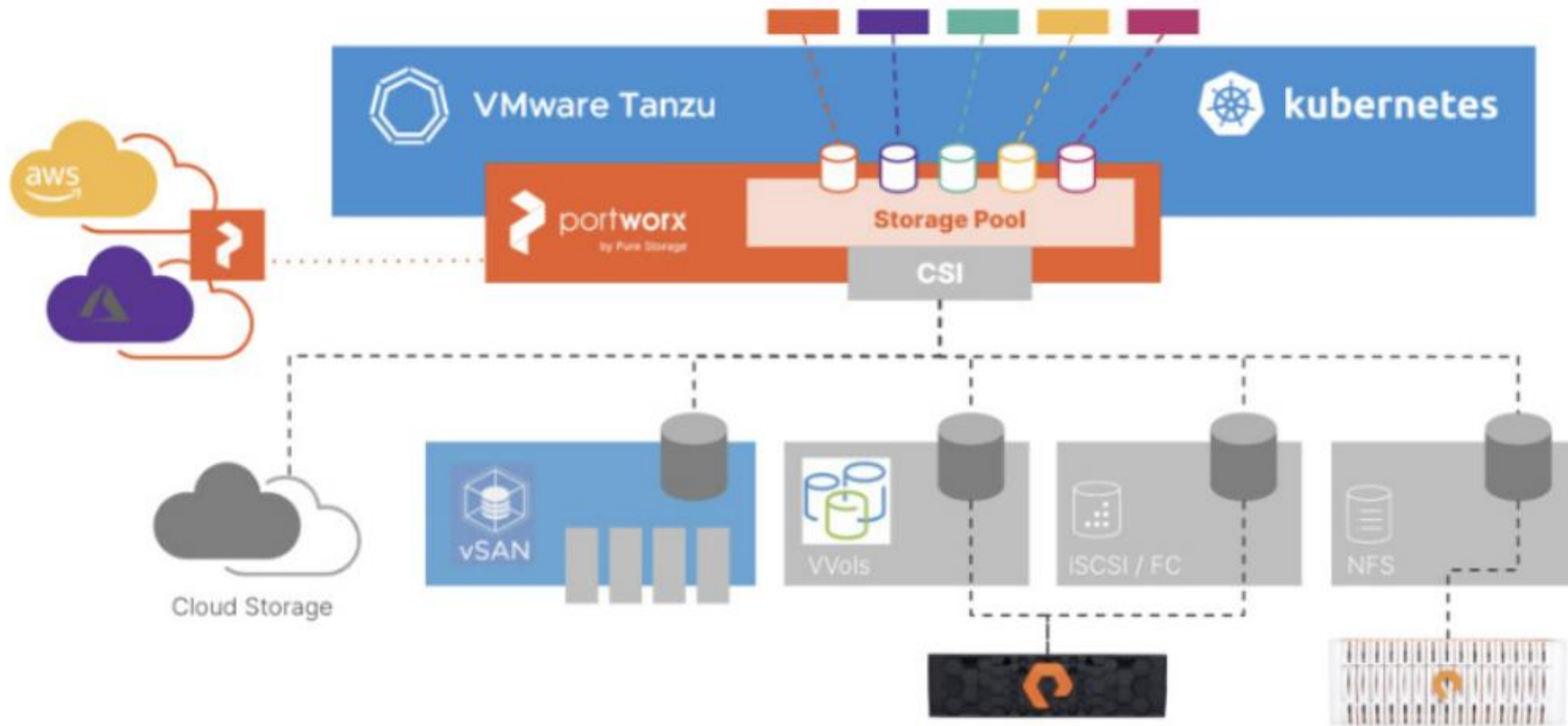
- 1:1 container <> volume mapping
- Container capabilities vary depending on the capabilities of the underlying array
- Storage arrays often are challenged by the object count (# volumes, connections) and change rate (10,000s changes/day)
- Innovation limited to the features in the open CSI specification
- Storage arrays managed independently from K8s

Container-Native Storage Approach



- Many (1,000s):1 container <> volume mapping
- Designed to scale to 10,000s operations/day
- Ensures consistent storage services across ANY infrastructure
- Storage services container-granular and application consistent
- Storage "encapsulated" in a container-native virtual volume that is free to move with the container
- Managed as a native part of K8s


















Self-Service Enterprise-Grade Data Services






Any App






DATABASE **ANALYTICS** **STREAMING** **SEARCH/LOG** **5G/IoT** **AI/ML**











Any  Kubernetes Distribution



















The Kubernetes Data Services Platform



PX-Store


PX-Backup


PX-DR


PX-Migrate


PX-Secure


PX-Autopilot

Any Cloud






Any Infrastructure

 Bare Metal
 





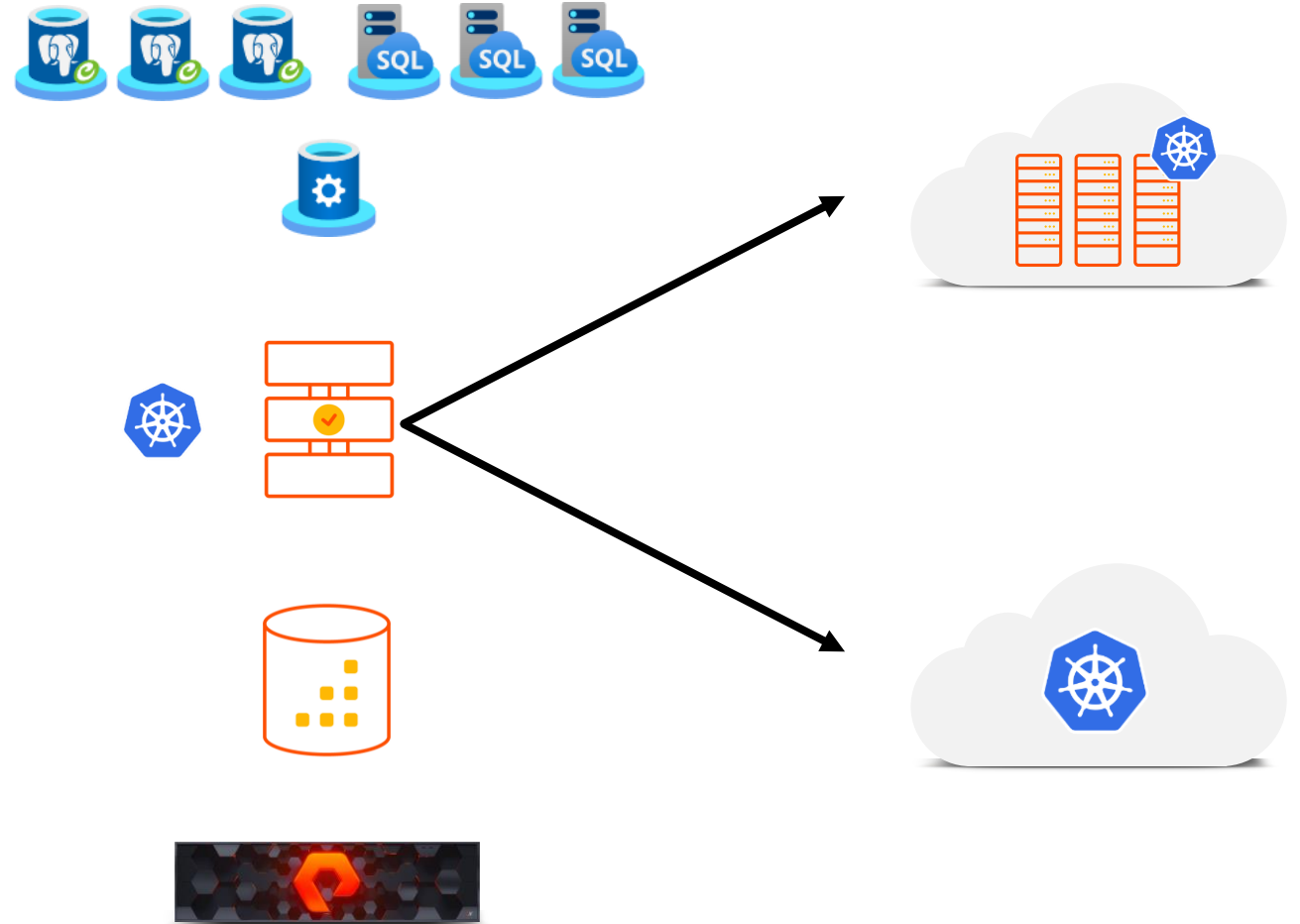


Every Stage

 Pilot
  Test/Dev
  Go Live
  Global CaaS

Seamlessly Migrate Applications with PX-Migrate

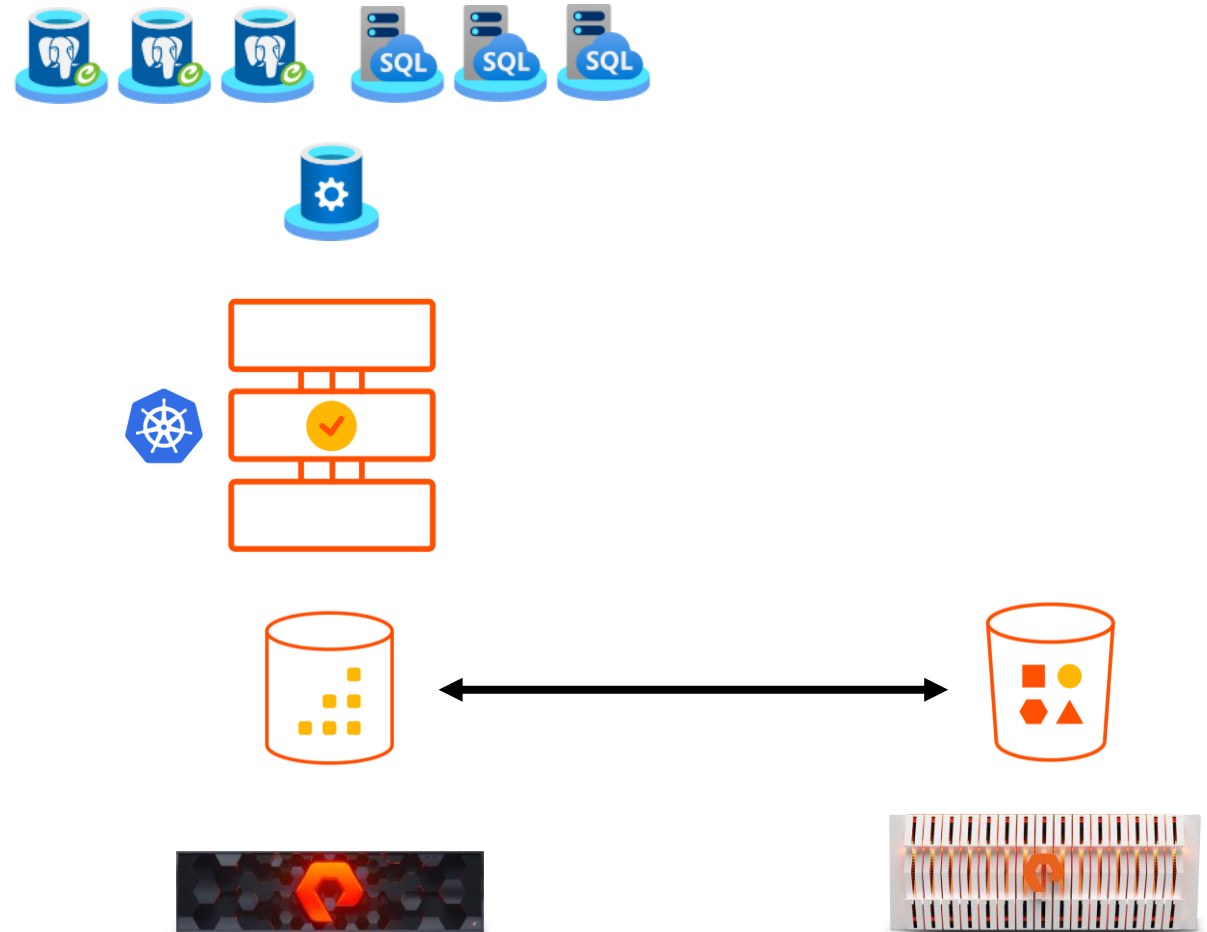
Migrate objects from any cluster on premises or in the public cloud to any target Kubernetes cluster



Back Up and Restore with PX-Backup

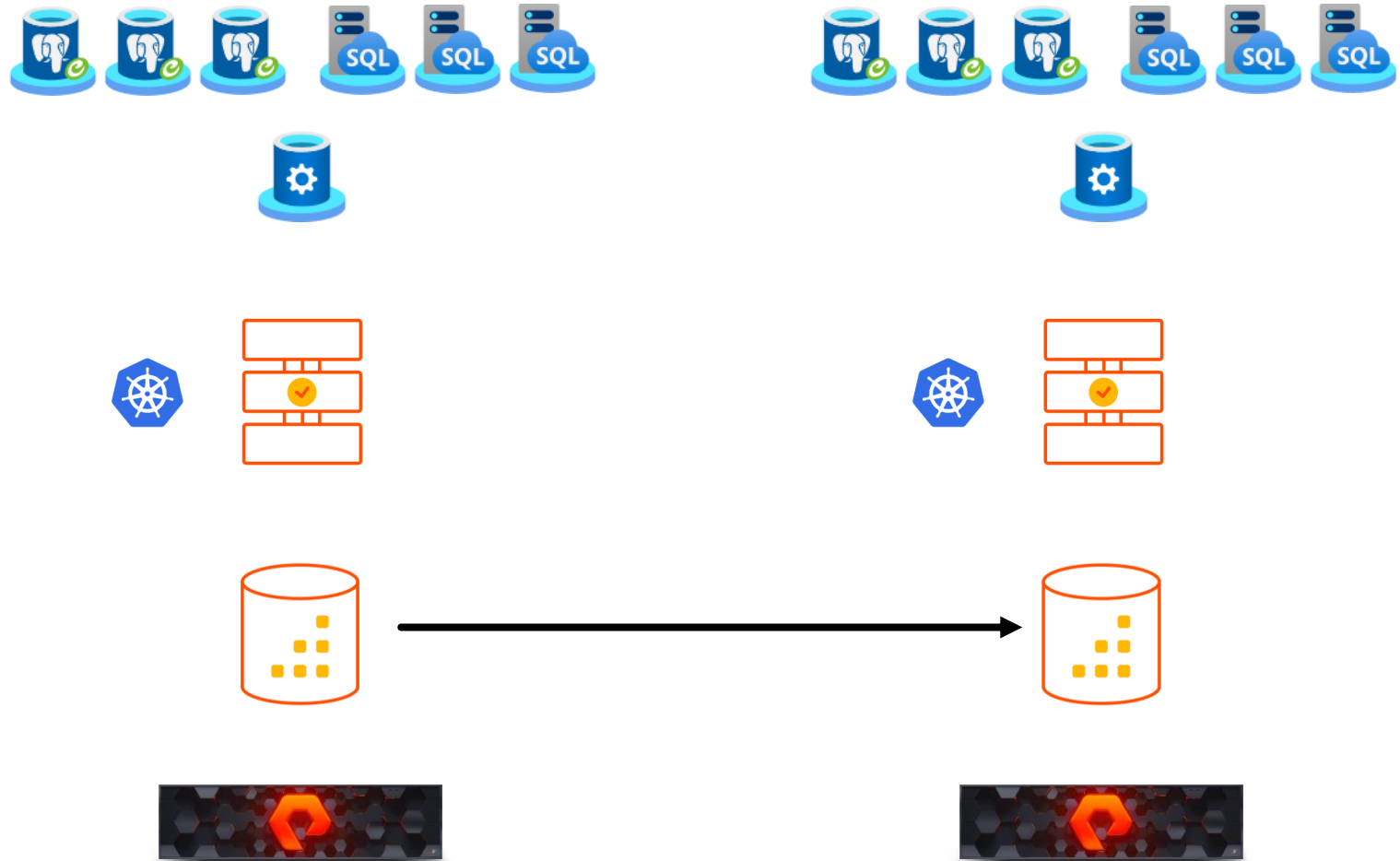
Data can be backed up and restored at object-level granularity.

Leverage popular object stores as backup targets, including high performance S3 on FlashBlade.



Metro Area Disaster Recovery with PX-DR

Use PX-DR synchronous replication when network round-trip latency between the primary and DR sites is 10ms or less



Take-aways

- Tanzu on vSphere is a quick way to bring Dev and IT OPs together
- Pure's ease of use extend into Tanzu
- Portworx also makes persistent data mobile for a true multi-cloud environment
- Pure Storage customers can access Portworx Essentials to get started



VMware on Pure

Delivering a modern data experience on VMware, complemented with Portworx



**Simplify
Management**



**Protect
Everywhere**



**Accelerate
Modernization**



**Optimize Data
Center Resources**



Learn more @

www.purestorage.com/VMware

[VMware Platform Guide](#)

Have any questions, reach out to us at
vmware@purestorage.com



