굿모닝아이텍(주)

제57회
GIT Web Talk

일시 | 2021.11.26 (금) 14:00 ~ 15:00

주최 및 협력 | 굿모닝아이텍(주) PURESTORAGE®

많은 기업들은 하이브리드 클라우드를 선호합니다.

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

IDC
ANALYZE THE FUTURE

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

ESG

GiT 굿모닝아이텍(주) PURESTORAGE®

Modern Infrastructure Challenges

레거시 스토리지 관리는 복잡하고 시간이 많이 소모됩니다.

HCI는 워크로드별 인프라 사일로로 이어져 비용이 증가합니다.

컨테이너화된 애플리케이션에는 Dynamic Persistent 스토리지 요구 사항이 많아지고 있습니다.

가용성 및 데이터 보호 요구 사항이 더욱 엄격해지고 있습니다.

퓨어스토리지를 VMware와 사용하면...

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

Optimize Resources

Reduce infrastructure costs

Eliminate silos with a true disaggregated architecture

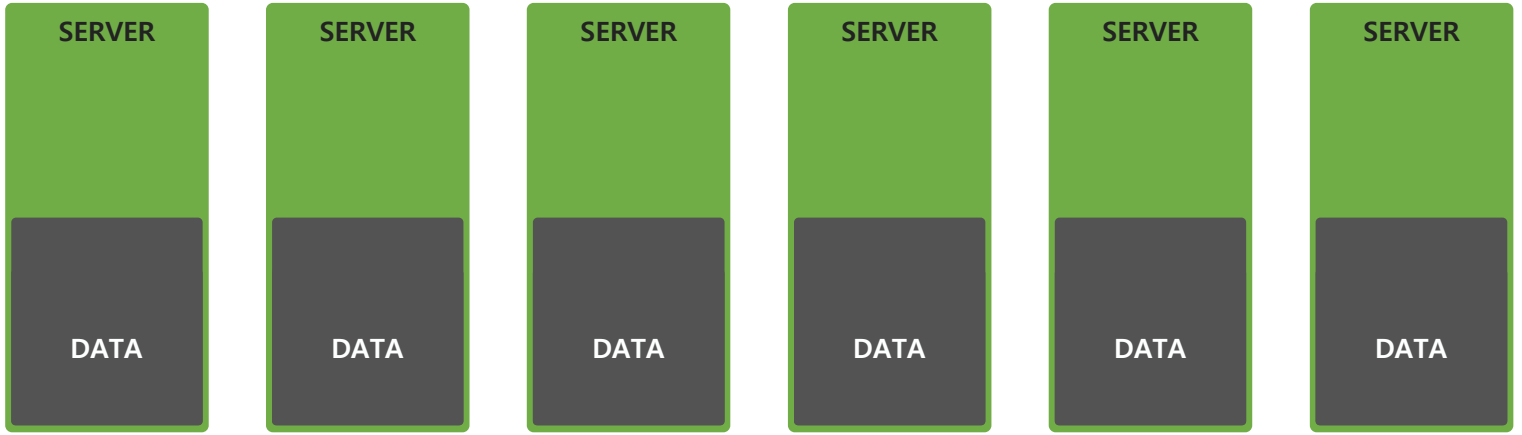
Ready for the future

with choice of fabric and intelligent workload planning

대규모 데이터 관리?

Server Failure or Maintenance
Restore the Server
Simultaneous Data Loss
& Rebalance All Data

Scale Compute or Storage
Rebalance All Data



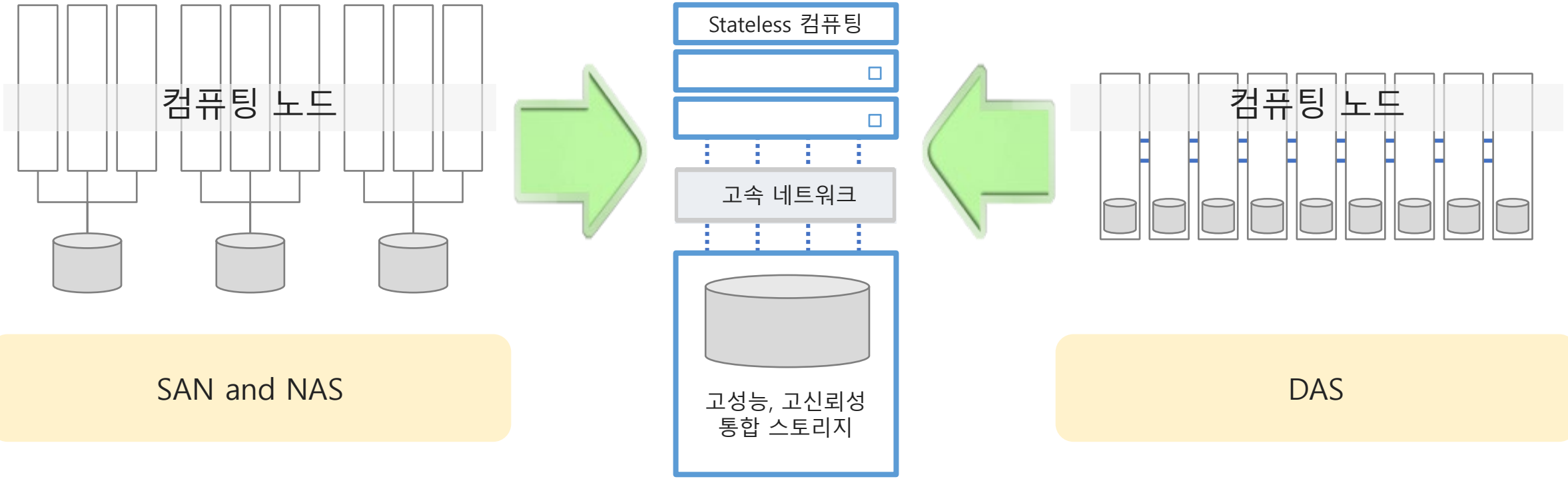
Run with Less Protection
or Rebuild Lost Data???

대규모 데이터 관리?

비즈니스 어플리케이션 &
가상화 어플리케이션

데이터 허브 아키텍처

스케일 아웃
어플리케이션



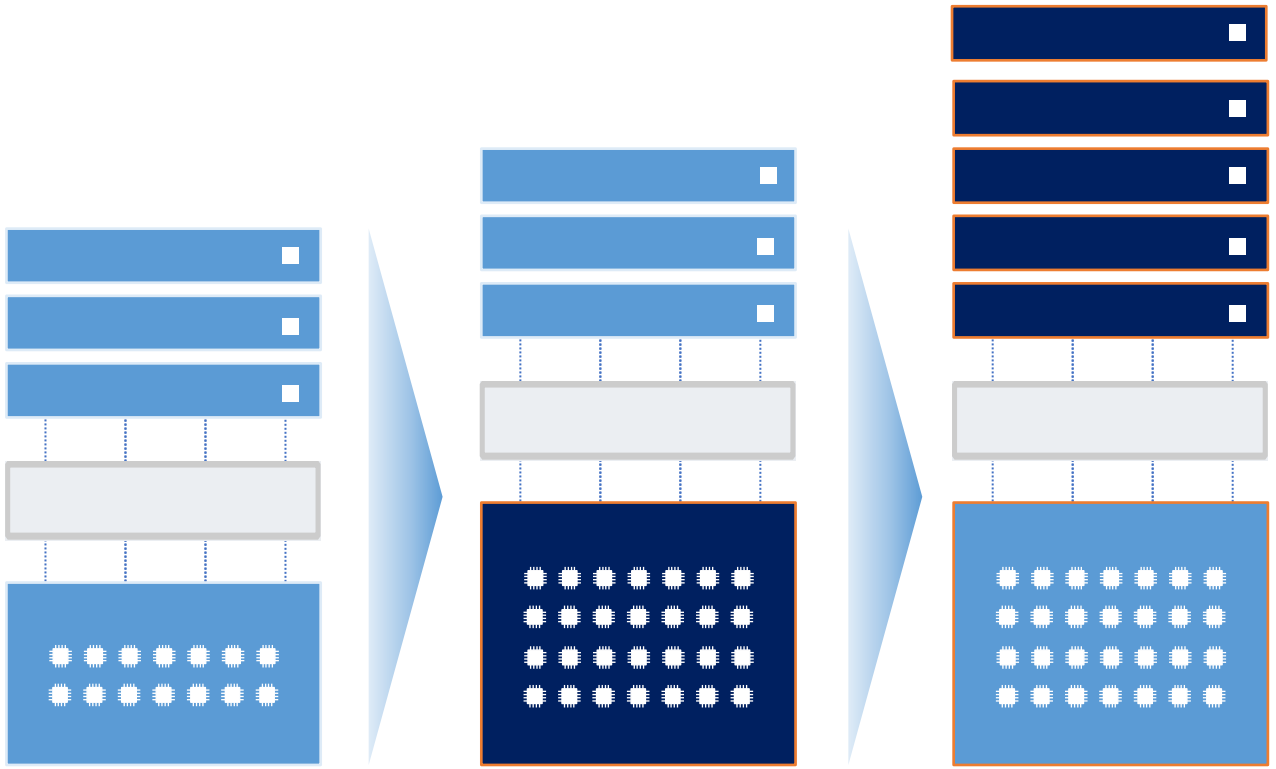
SAN and NAS

**SHARED
ACCELERATED
STORAGE**

DAS

GiT 굿모닝아이텍(주) PURESTORAGE®

Computing과 Storage 분리의 장점



기존 아키텍처를 변경할 필요없이
Computing과 Storage가 분리되어
각각의 필요에 따라 무중단 확장

고속의 네트워킹을 통한
Computing과 Storage 구간의
병목 없는 성능 보장

고성능 병렬 처리 및
고가용성의 신뢰성을 보장하는
데이터 서비스

퓨어스토리지의 NVMe 여정은 계속됩니다.

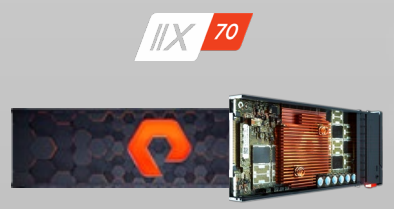
2015

FIRST NVMe NVRAM

NVMe NVRAM

2017

FIRST 100% NVMe ALL FLASH ARRAY



DirectFlash MODULE DirectFlash SOFTWARE

2018

FIRST NVMe-oF SHELF

DirectFlash SHELF

2019

FIRST NVMe-oF (RoCE) WITH DATA SERVICES

DirectFlash FABRIC

2021

NVMe-oF (FC) STORAGE CLASS MEMORY QLC OPTIMIZED AFA

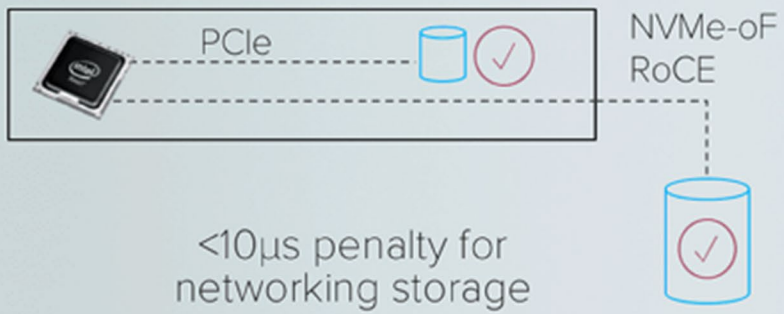
DirectMemory CACHE FlashArray //C

DirectFlash FABRIC

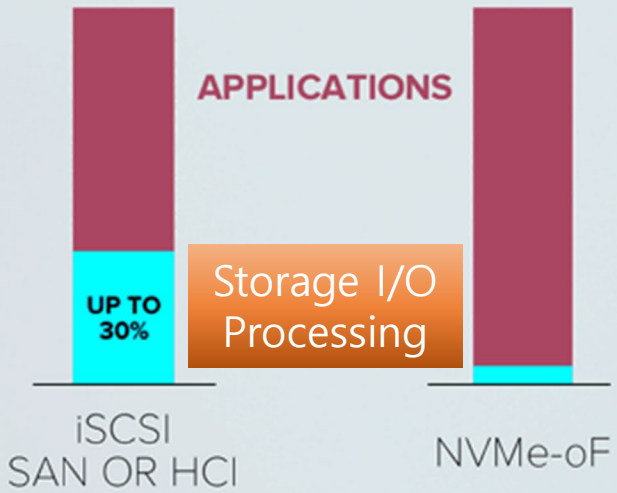
GiT 굿모닝아이텍(주) PURESTORAGE®

초고속 네트워킹이 모든 것을 바꿀 수 있는 이유

ELIMINATES THE "OUTSIDE THE BOX" PENALTY

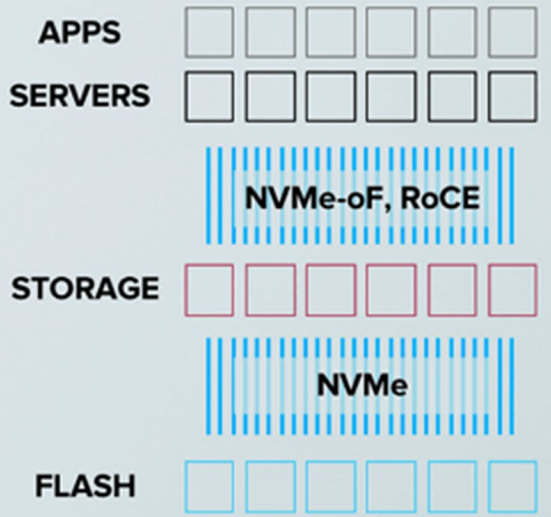


GETS CPUs TOTALLY FOCUSED ON APPLICATIONS*

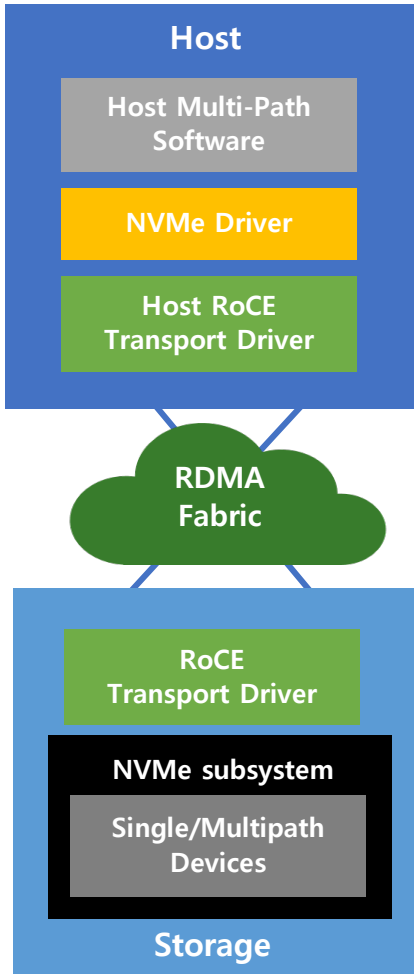


*** AND GETS STORAGE ARRAY CPUs TOTALLY FOCUSED ON STORAGE**

MAKES THE ENTIRE ARCHITECTURE PARALLEL



vSphere 7 부터 NVMe-oF 지원



Storage Adapters

Add Software Adapter | Refresh | Rescan Storage... | Rescan Adapter | Remove

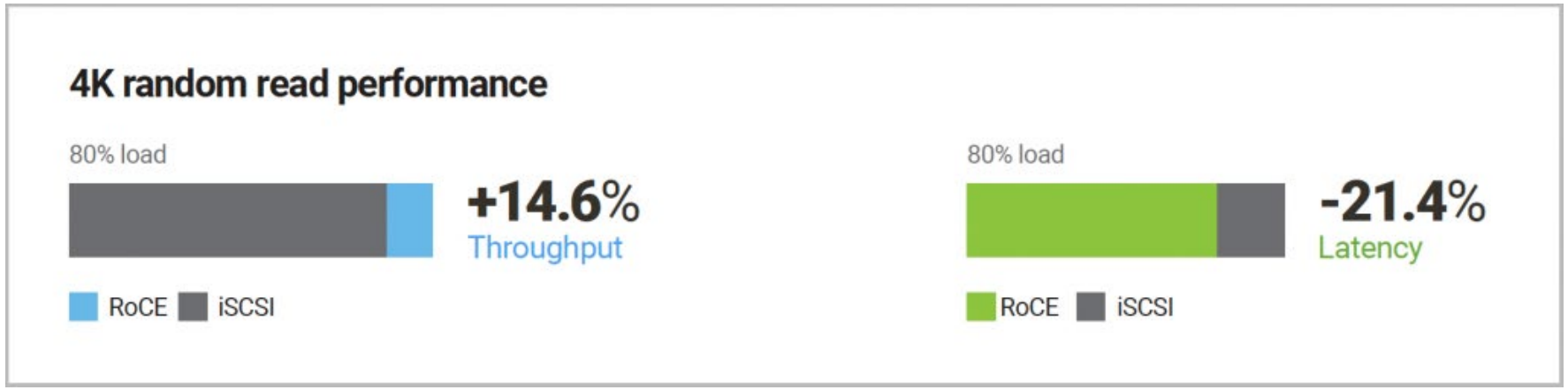
Adapter	Type	Status	Identifier
Model: 2600 Series 16Gb Fibre Channel to PCI Express HBA			
vmhba0	Fibre Channel	Online	20:00:00:0e:1e:25:9
vmhba1	Fibre Channel	Online	20:00:00:0e:1e:25:9
Model: USB Storage Controller			
vmhba32	Block SCSI	Unknown	--
Model: VMware NVME over RDMA Storage Adapter			
vmhba64	RDMA	Unknown	--
vmhba65	RDMA	Unknown	--

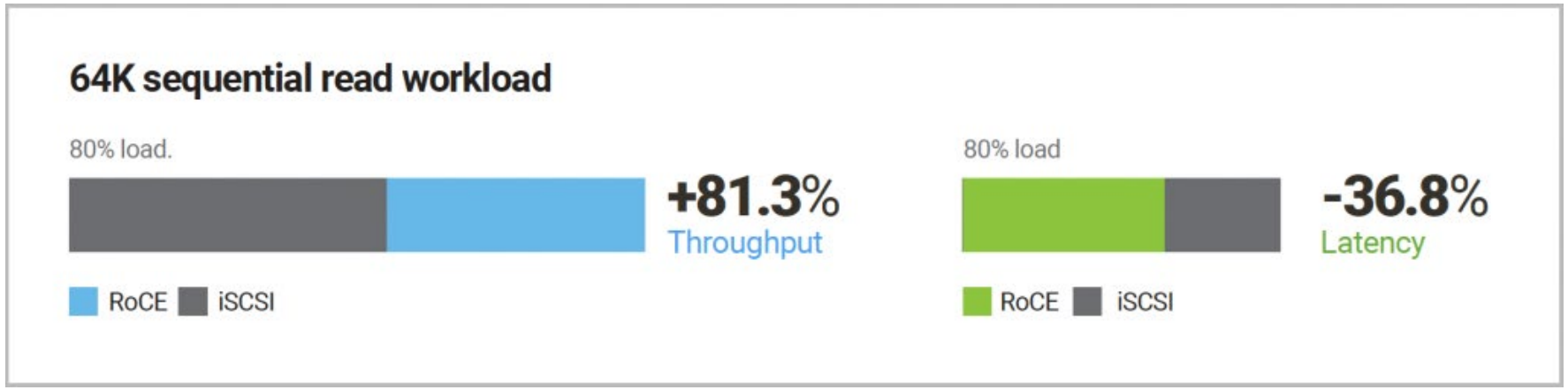
Properties | Devices | Paths | Namespaces | Controllers

Refresh | Attach | Detach | Rename...

Name	LUN	Type	Capacity	Datastore
NVMe RDMA Disk (eui.003b7b308d98f94224a9375e00019034)	102451	disk	54.00 GB	nsidc
NVMe RDMA Disk (eui.003b7b308d98f94224a9375e00018819)	100376	disk	500.00 GB	nvme

성능 비교 - VMware vSphere





성능 비교 - SQL & Oracle on vSphere

업무 유형과 규모에 따른 인프라 선정

CONSOLIDATION	TIER 1 APPLICATION	REMOTE & BRANCH OFFICES
VSI & VDI		
LESS STORAGE	CONSISTENT LATENCY	APPLIANCE BASED DEPLOYMENT
LESS COMPUTE	PROVEN 99.9999% UPTIME	HOST REPLICATION
DATA SERVICES AT NO TRADE OFFS		
CI with FlashArray	**CI with FlashArray**	**HCI**

일반적인 환경의 가상화, 컴퓨팅, 네트워크 환경에서 완벽한 상호 운용성 검증

Modernize Apps

Modernize Apps

Containerize

Bring Dev and IT Ops Together on vSphere with Tanzu

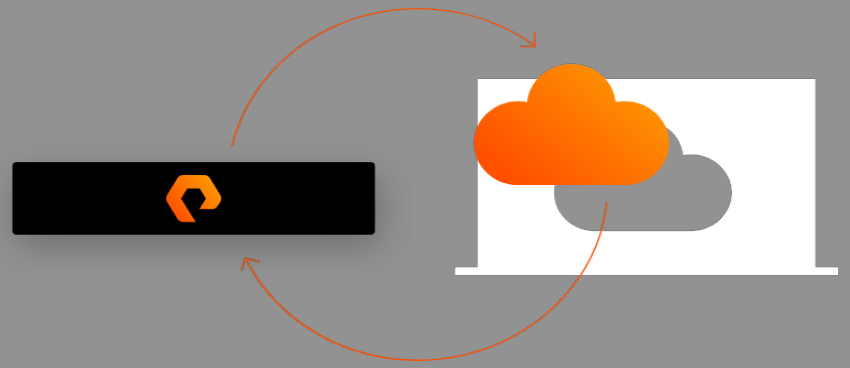
Simplify data mgmt

with the most complete K8s Data Services platform and Tanzu integration

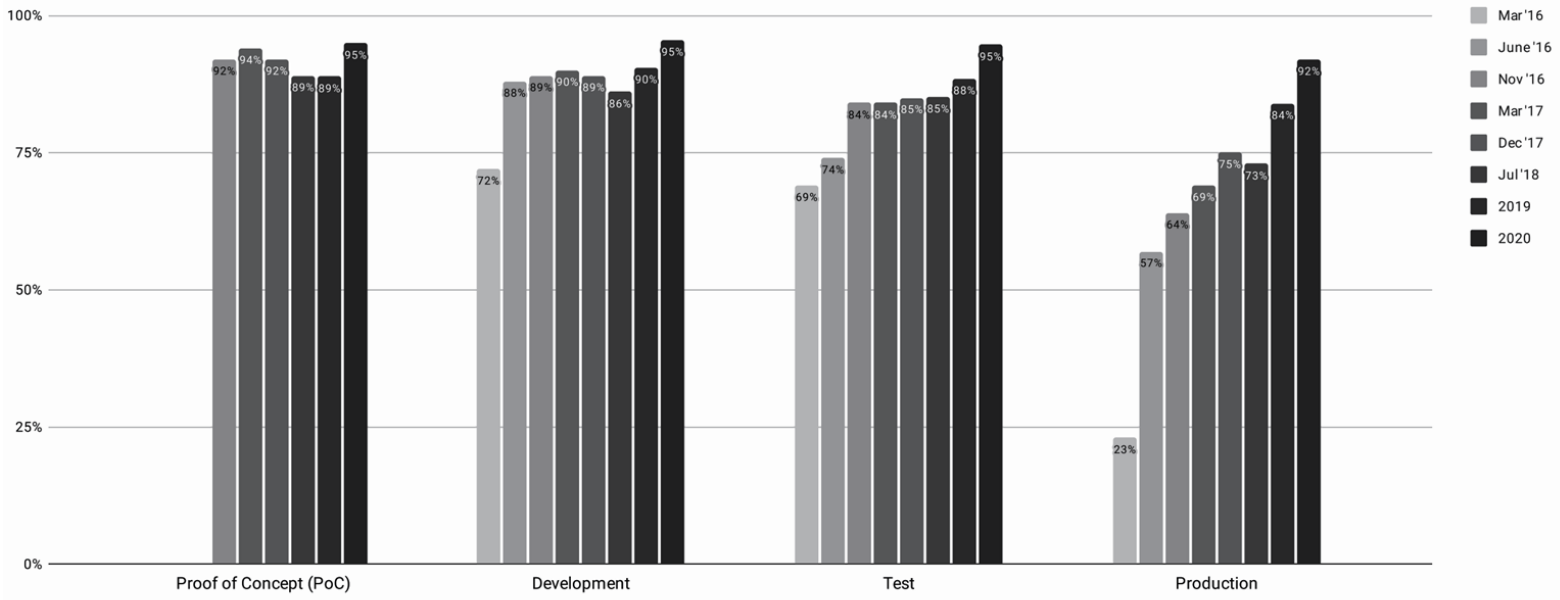
kubernetes

VMware Tanzu

portworx by Pure Storage



Kubernetes Adoption Trends



95%
OF NEW APPS
are developed
in containers.

451 Research

81%
OF ENTERPRISES
work with 2+
public cloud providers.

Gartner

78%
OF CNCF MEMBERS
use Kubernetes
in production.

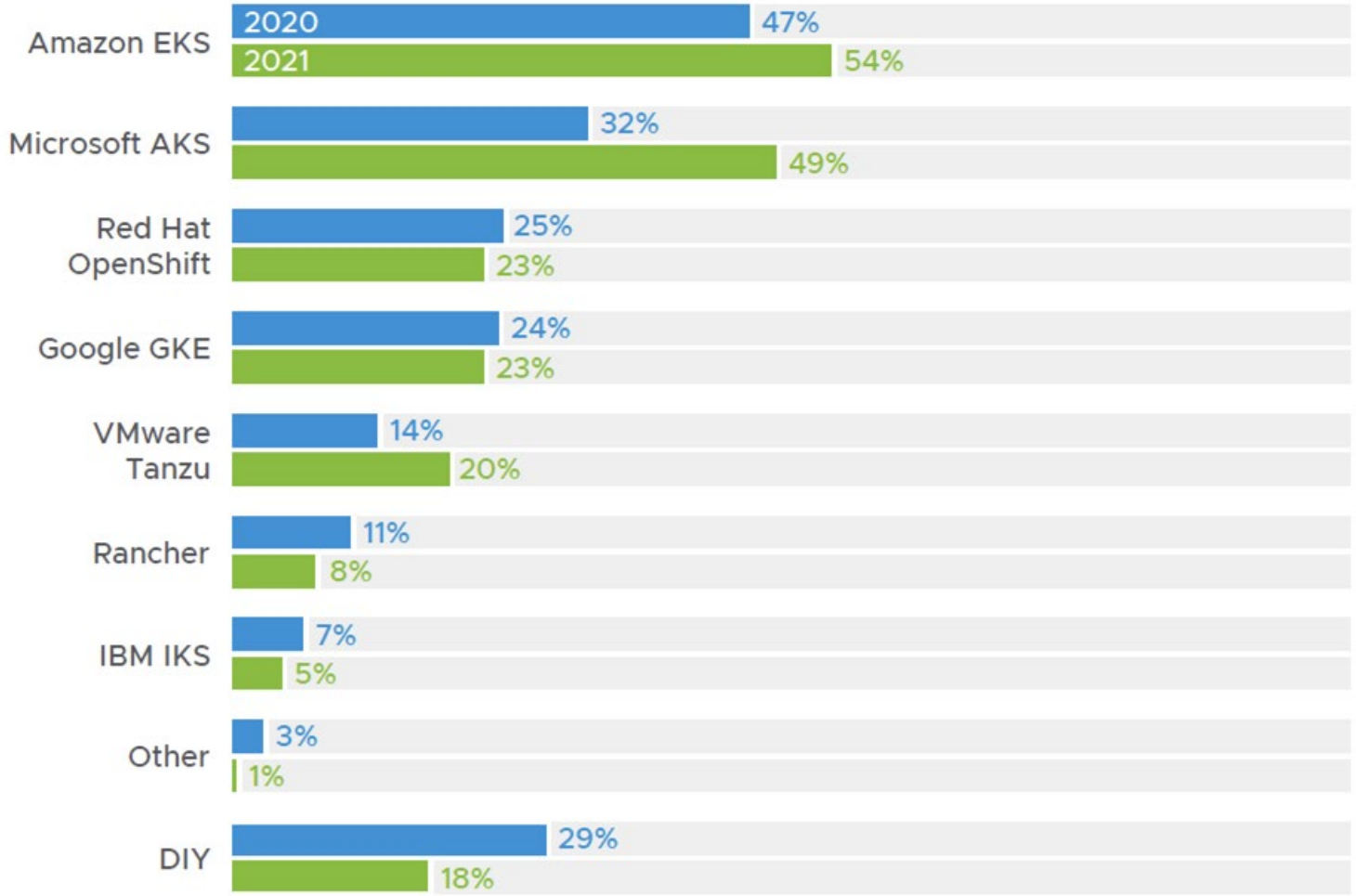
CLOUD NATIVE COMPUTING FOUNDATION

85%
OF GLOBAL BIZ
will be running
containers
in production by 2025
(up from 35% in 2019).

Gartner

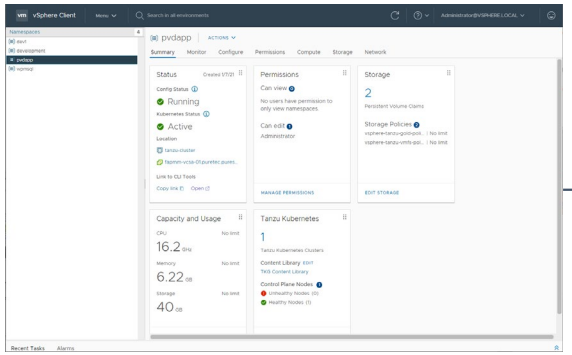
GiT 굿모닝아이텍(주) PURESTORAGE®

많은 곳에서 K8S 제품을 가지고 있는데, 가장 인기있는 것은 무엇일까요?



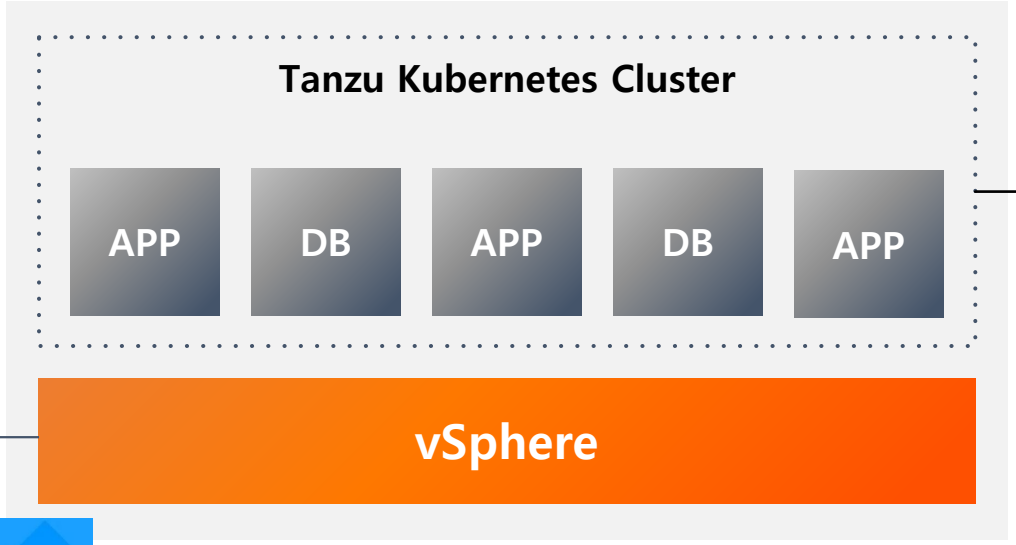
VMware Tanzu with FlashArray

vSphere Client

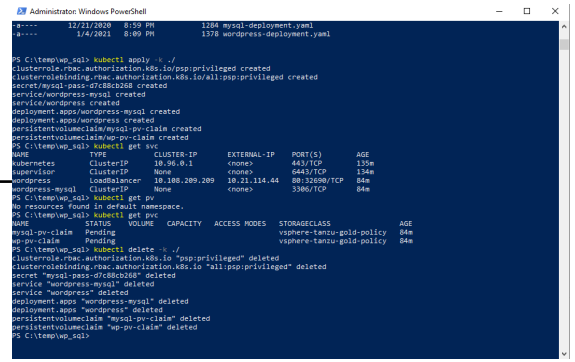


Manage and create namespaces
Distribute and control resources

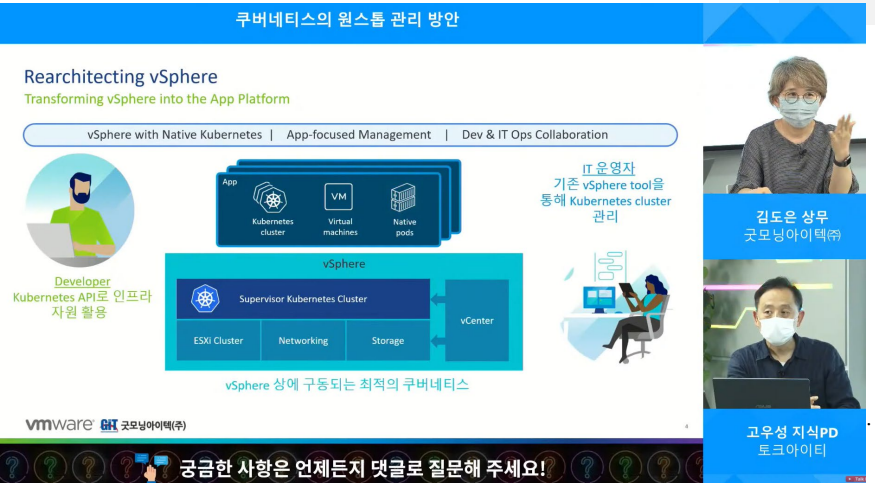
vSphere with Tanzu and FlashArray



kubectl CLI



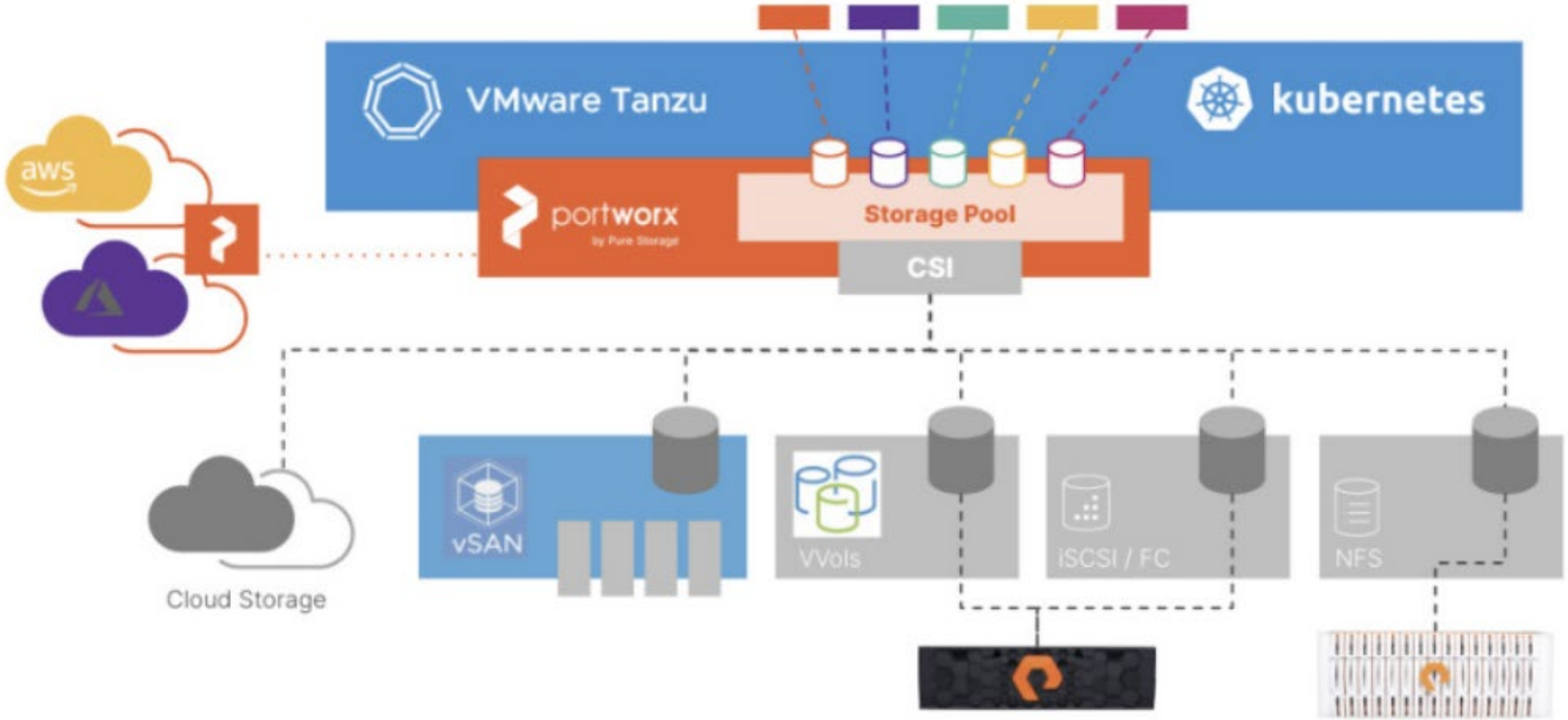
Self-service provisioning
Deploy clusters and workloads



Deep vSphere integration
High performance shared storage

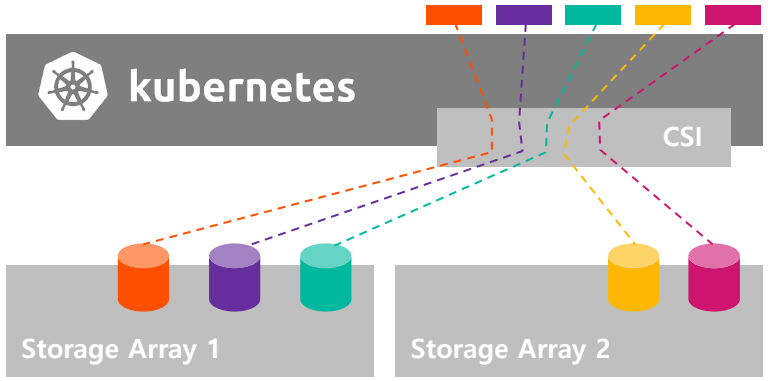
GIT 굿모닝아이텍(주) PURESTORAGE®

VMware Tanzu with Portworx



Connector vs Container-Native

"Connector" Approach



CONTAINER STORAGE INTERFACE

Pure PSO

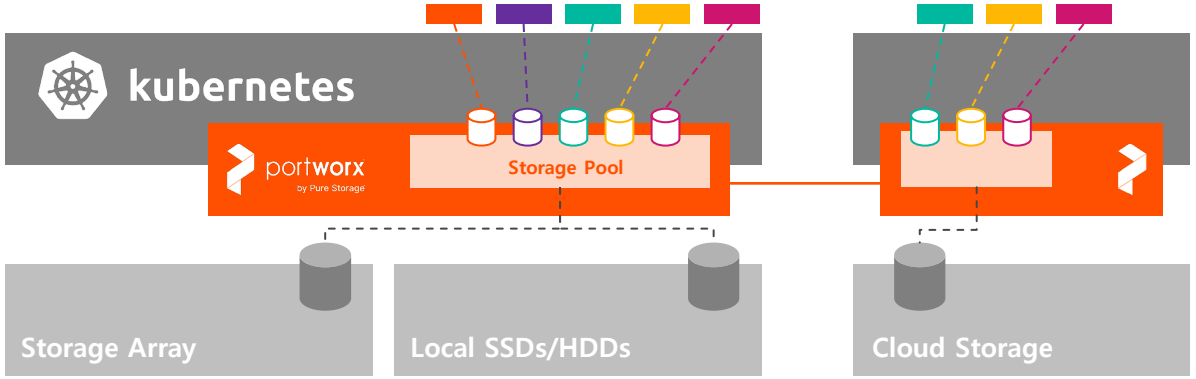
NetApp TRIDENT

Dell EMC CSI Operator Dell

vVols PURE STORAGE

- 1:1 컨테이너 볼륨 매핑
- 컨테이너 기능은 기본 어레이의 기능에 따라 다름
- 스토리지 어레이는 객체 수 제한 및 변경률(10,000번 변경/일)로 인해 문제가 발생할 수 있음
- Open CSI 사양의 기능으로 혁신 제한
- K8S와 독립적으로 관리되는 스토리지 어레이

Container-Native Storage Approach



- 다(수천 이상):1 컨테이너 볼륨 매핑
- 하루 수만번 이상의 작업으로 확장할 수 있도록 설계
- 모든 인프라에서 일관된 스토리지 서비스 보장
- 스토리지 서비스 컨테이너 세분화 및 애플리케이션 일관성
- 컨테이너와 함께 자유롭게 이동할 수 있는 컨테이너 네이티브 가상 볼륨에 " 캡슐화 " 된 스토리지
- K8S의 기본 내장된 부분으로 관리

GiT 굿모닝아이텍(주) PURESTORAGE®

셀프 서비스 엔터프라이즈급 데이터 서비스

Any App

DATABASE: cassandra, MySQL, Couchbase
ANALYTICS: Spark, CLOUDERA
STREAMING: kafka, RabbitMQ
SEARCH/LOG: elastic, Solr, splunk>
5G/IoT
AI/ML: TensorFlow, PyTorch

Any kubernetes Distribution

OPENSHIFT, Amazon EKS, GKE, AKS, Tanzu

portworx by Pure Storage — The Kubernetes Data Services Platform

- PX-Store
- PX-Backup
- PX-DR
- PX-Migrate
- PX-Secure
- PX-Autopilot

Any Cloud

aws

Any Infrastructure

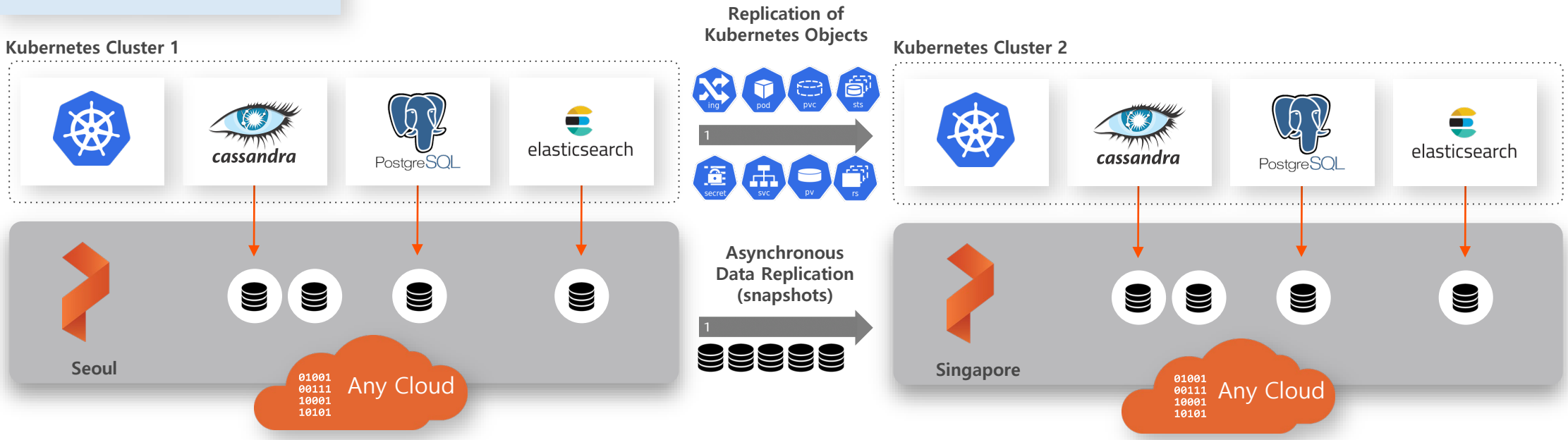
Bare Metal, vmware, IBM, DELL, Hewlett Packard Enterprise, NetApp, PURE STORAGE

Every Stage

Pilot, Test/ Dev, Go Live, Global CaaS

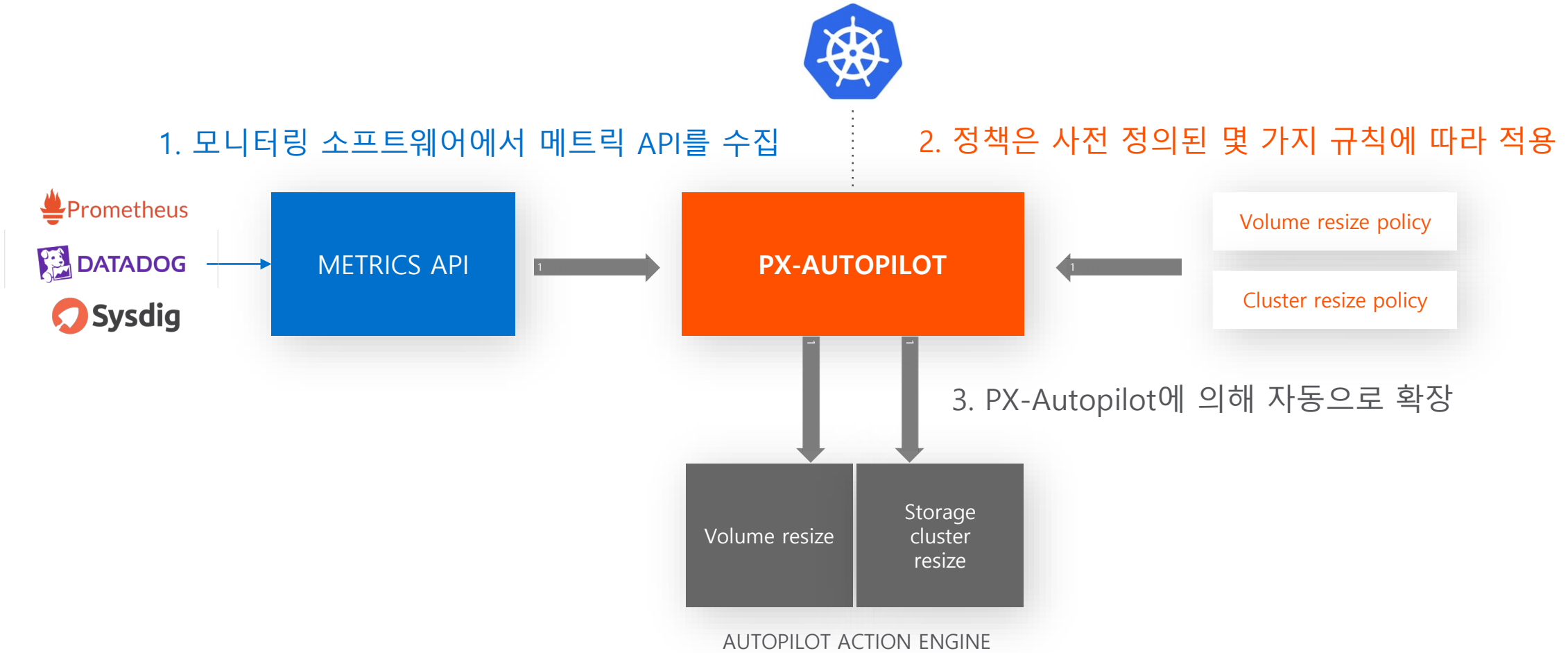
애플리케이션의 데이터의 마이그레이션 및 DR, 클라우드간 증분 백업 및 복구

kubectl apply -f **clusterpair.yaml**
kubectl apply -f **backup-sched.yaml**
kubectl apply -f **restore-sched.yaml**
kubectl apply -f **migration.yaml**

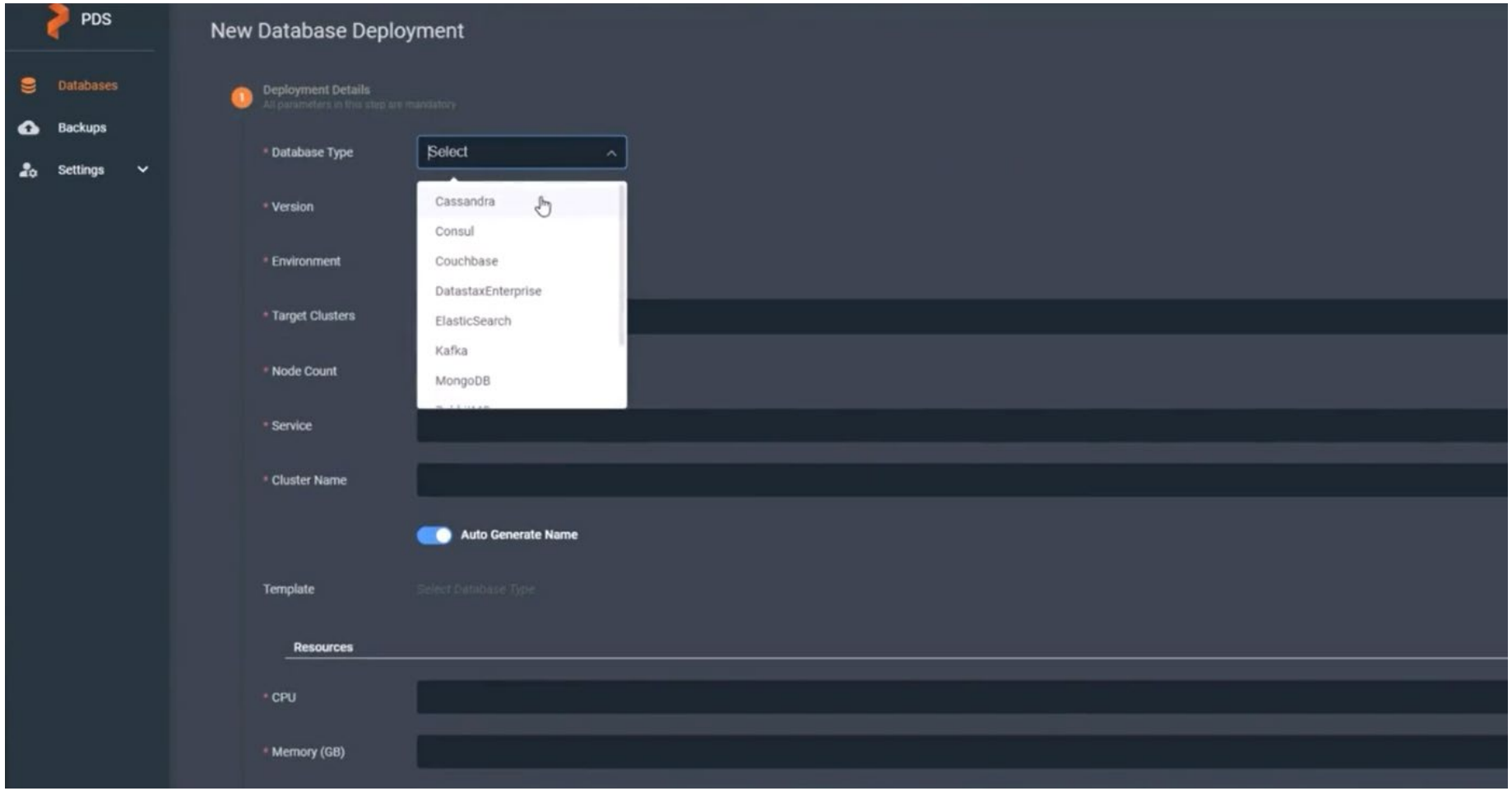


REPLICATION TYPE	RPO/RTO
▶ Incremental Backup/Restorer	▶ 5-15 minutes

완벽하게 자동화된 볼륨 및 클러스터 확장



클릭 한번으로 광범위한 데이터베이스 즉시 사용



Coming soon...

Pure Fusion

On-Prem 혹은 Private Cloud환경에서
Public Cloud와 같은 민첩성과 확장성 뿐만 아니라
자동화된 관리 편의성까지 제공

새로운 모델의 FlashArray

기존 3U의 FlashArray에서 5U로 훨씬 더 강력한
성능과 확장성 뿐만 아니라 보다 더 안정적인
가용성을 가진 최상위 모델 출시 예정

스토리지 클래스, 보호정책으로 서비스 사전 정의

Fusion | Provider Administration

Dashboard | Storage Services | Service Architecture | Tenancy Management

STORAGE CLASSES

Ultra

Performance

General performance storage for low-latency workloads

Capacity 1 TiB

Max IOPS 32K

Max Bandwidth 0.5 G/s

+ Storage Class

PROTECTION POLICIES

Gold

Redundant protection for your Tier 1 applications with high throughput and fast data recovery

	Local	Remote
RPO	10m	30m
Retention	30d	30d
CyberRecovery	✓	

Silver

Redundant protection for your top tier applications with frequent snapshots

	Local	Remote
RPO	30m	60m
Retention	15d	15d
CyberRecovery	⊘	

Bronze

Local protection ideal for general data snapshot creation and retention

	Local	Remote
RPO	1h	—
Retention	7d	—
CyberRecovery	⊘	

+ Policy Template

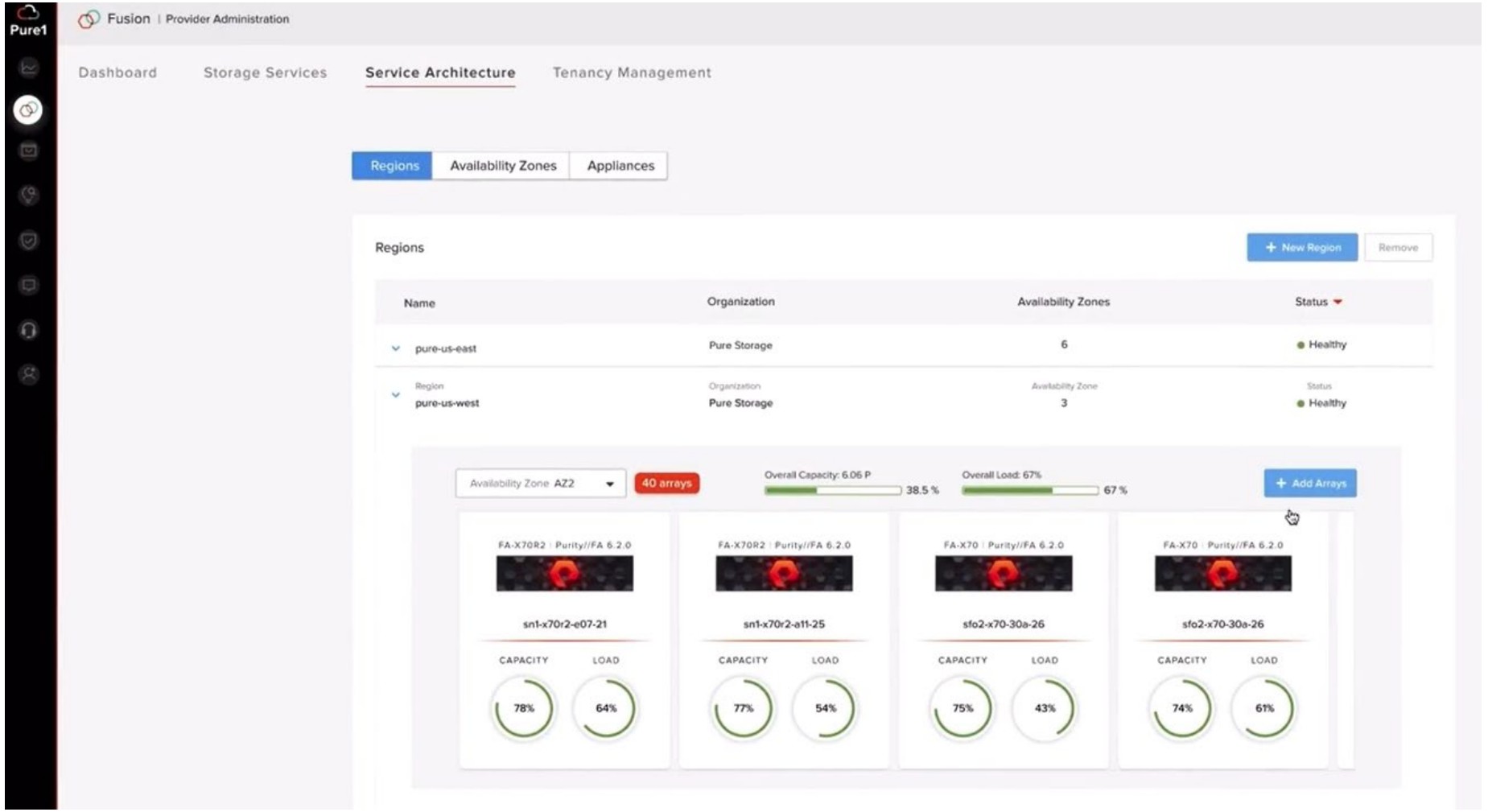
New Storage Class

Pure Fusion

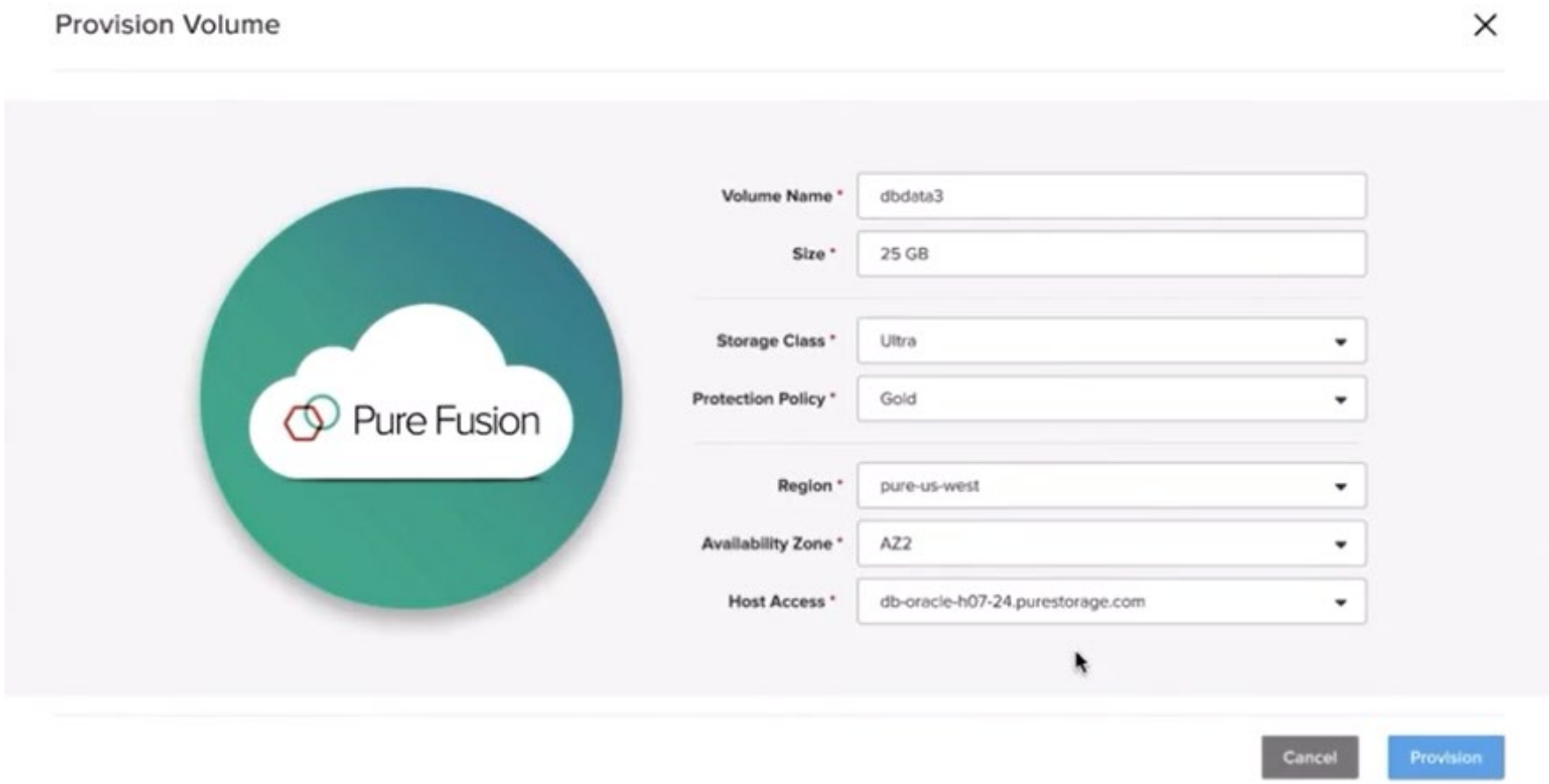
Class Name *	Ultra
Description	Highest-performance storage for mission-critical, I/O intensive, very-low-latency workloads.
Template Color *	
Capacity *	2 TiB
Max IOPs *	100K
Max Bandwidth *	4.0 G/s
Hardware Type *	FlashArray//X

Cancel | Create

워크로드에 따른 다양한 유형의 스토리지 정의 및 확장



최종사용자는 Public Cloud 처럼 쉽게 스토리지 할당



감사합니다 GIT