GDT Hybrid Cloud: Cisco + NetApp

Today's Presenters

John Woodall

Vice President & Field
CTO Hybrid Cloud,
GDT

Dan Barber

Solutions Architect,
Hybrid Cloud
Platforms, NetApp

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GDT by the Numbers

26+ Years in Business

750+ Team Members

100+ Countries Supported

450+ Certified Architects and Engineers

$1.2B Annual Sales

75+ Managed Services Engineers

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Today's Agenda

01 **Hybrid Cloud: The New Design Center**
Contextualization & Overview

02 **A Converged Hybrid Cloud Solution**
Benefits & Capabilities

03 **Putting it Together**
Case Studies & Next Steps

04 **Questions & Upcoming Webinars**
GDT Hybrid Cloud

GDT Managed Cloud

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Hybrid Cloud:
The New Design Center

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Hybrid Cloud by the Numbers?

77% According to IBM this is the percentage of enterprise customers that believe hybrid cloud is the preferred architecture

24% Is the estimate of enterprises that are cloud native from Flexera

79%

Currently operate
hybrid cloud

58%

Move workloads
between on and off
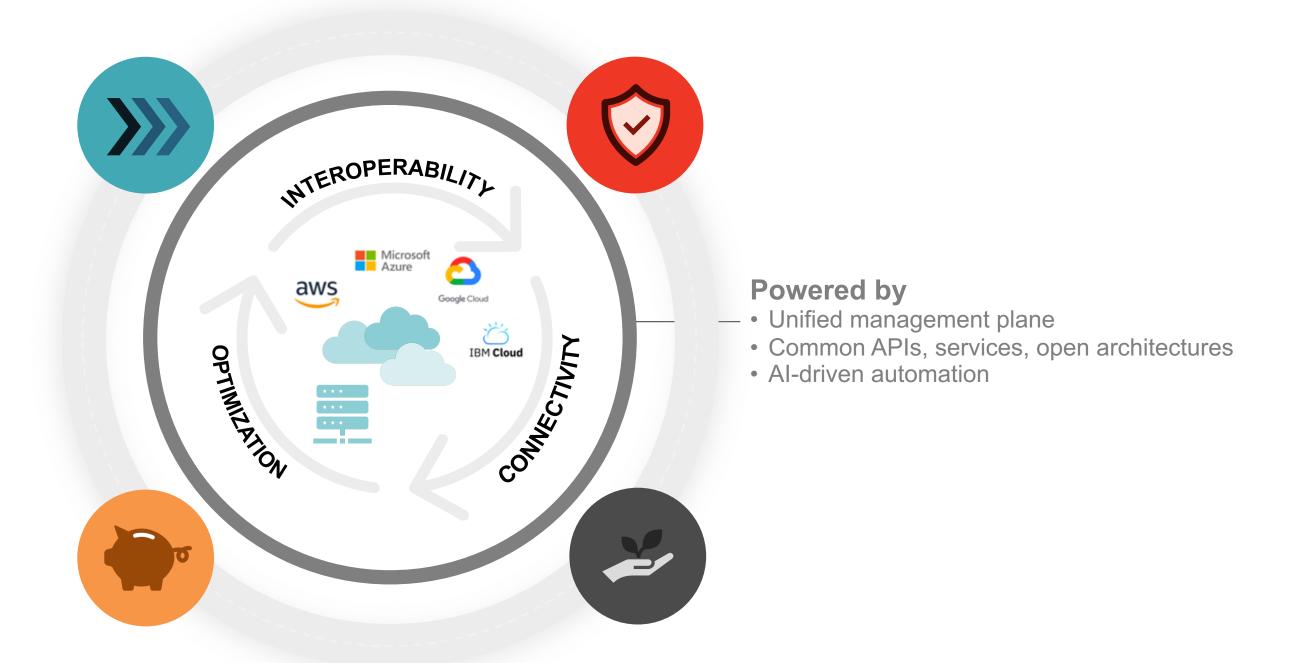prem every week

92%

Work with multiple
platforms

Respondent data from the Cisco Hybrid Cloud Trends Report

We're in a hybrid multicloud world now

It's possible to unify operations, break down silos, create consistency, and get total observability

Powered by
- Unified management plane
- Common APIs, services, open architectures
- AI-driven automation

Simplicity
Unified hybrid multicloud operations and cross-environment consistency

Security
Total observability and cyber resilience across environments

Savings
AI-driven automation to continuously optimize for cost, risk, efficiency, sustainability

Sustainability
More visibility, less waste, and higher efficiency to reduce your carbon footprint

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A Converged
Hybrid Cloud Solution

FlexPod

GDT

Let's ask ChatGPT...

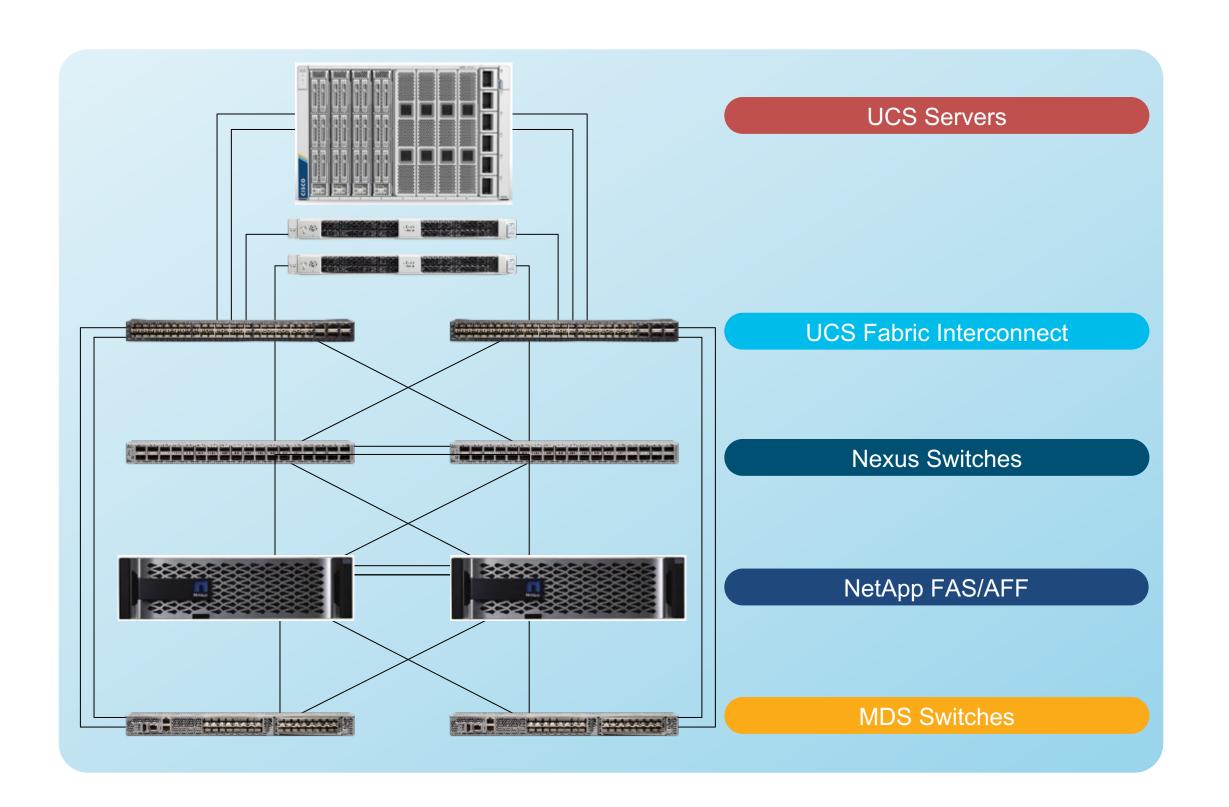describe the characteristics of a modern hybrid cloud platform

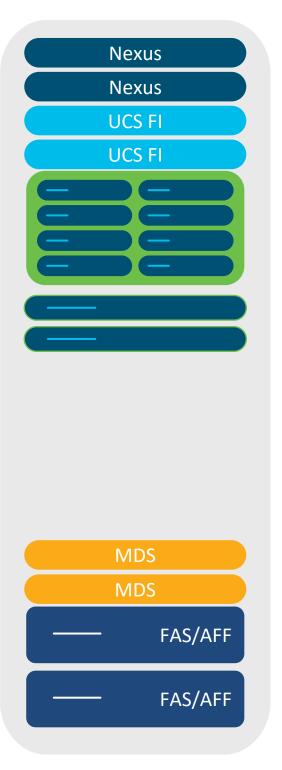A modern hybrid cloud platform typically has the following characteristics:

1. **Flexibility:** It allows organizations to run applications and workloads on-premises, in the public cloud, or in a combination of both, providing the flexibility to choose the right environment for each use case.

2. **Scalability:** It provides the ability to scale resources dynamically and elastically, on demand, to meet changing business needs and handle spikes in demand.

3. **Security:** It implements robust security measures to protect data and applications, including encryption, identity and access management, and network security.

4. **Interoperability:** It supports the seamless integration of different cloud environments and technologies, allowing organizations to move data and workloads between different environments as needed.

5. **Management:** It provides a centralized management platform for all hybrid cloud environments, making it easier for organizations to manage their resources and applications across different environments.

6. **Cost optimization:** It enables organizations to optimize their costs by using the right environment for each use case, taking advantage of the cost benefits of the public cloud when appropriate and using on-premises resources when cost savings are more important than performance or functionality.

7. **Automation:** It provides automated tools and processes to simplify the deployment and management of applications and infrastructure, reducing the effort and time required to manage hybrid cloud environments.

FlexPod Design – One Model

UCS Servers

UCS Fabric Interconnect

Nexus Switches

NetApp FAS/AFF

MDS Switches

FlexPod

Nexus

Nexus

UCS FI

UCS FI

MDS

MDS

FAS/AFF

FAS/AFF

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The most advanced hybrid cloud platform in the world

Bring the simplicity, efficiency, and agility of hybrid cloud to on-premises environment

Intersight Managed

ONTAP Integration

Latest Infrastructure

Cisco UCS M7 gen. platforms and X-Series, 10/25G/40G/100GE, 32G FC
NetApp ONTAP 9.13, Data Fabric, AFF, ASA, FAS

Enterprise and Modern Apps

SAP HANA, SQL 2019, Oracle 19c/RAC, Citrix VDI, VMWare VDI, 3D VDI

Microsoft CITRIX ORACLE DATABASE SAP vmware

Private, Hybrid, Multi Cloud

OpenShift, NetApp Private Storage, Data Fabric, Managed Private Cloud

OPENSHIFT

Healthcare

Simplify IT infrastructure with EPIC EHR, Meditech EHR, PACS, Imaging

Epic MEDITECH

AI, ML and DL

NVIDIA and Intel GPUs

intel NVIDIA

End to end NVMe

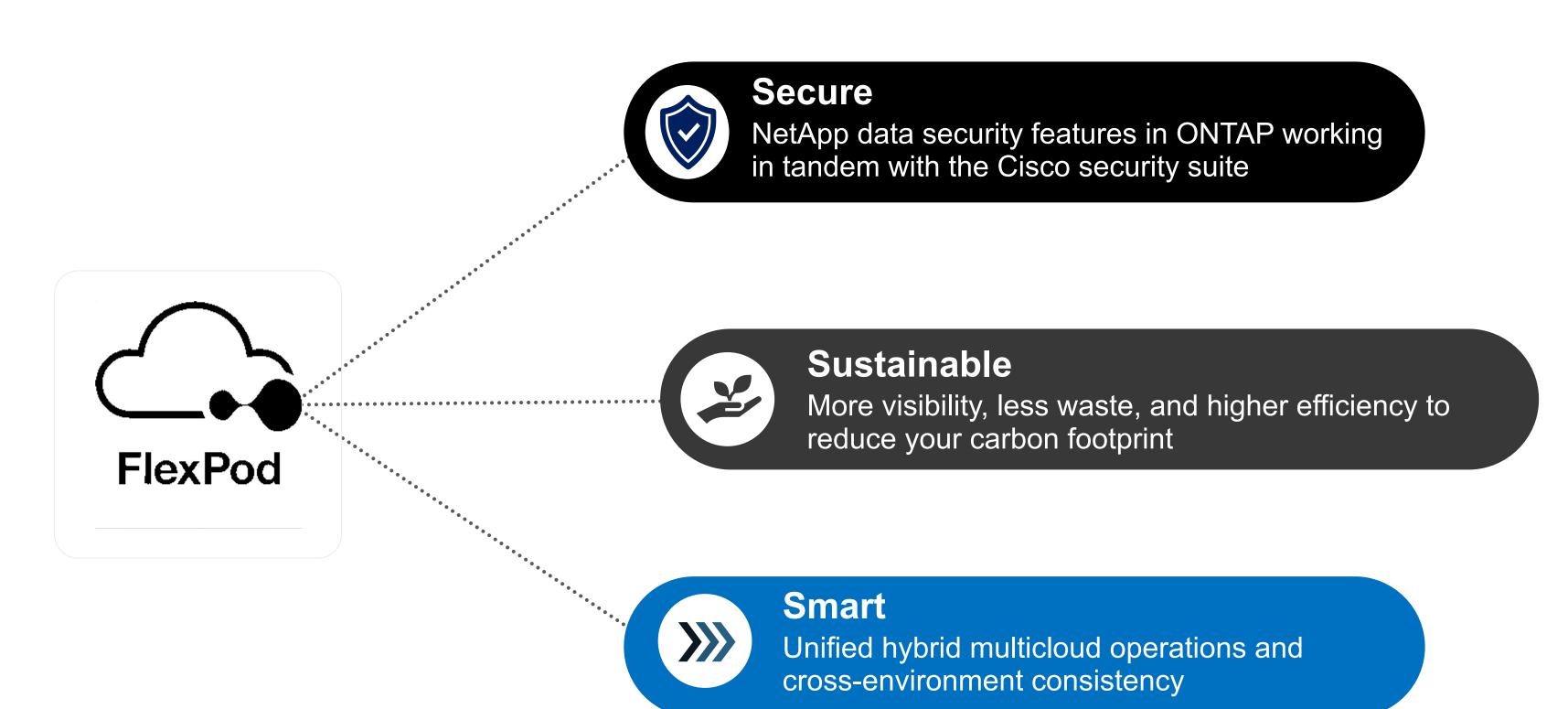NetApp AFF, A-Series, C-Series, ASA; Cisco MDS, Nexus, UCS

Multisite HA

ACI Multi-pod and MetroCluster IP
Continuous availability across sites

GDT

FlexPod capabilities

A platform for innovation that delivers digital transformation and cloud-connection

FlexPod

Secure
NetApp data security features in ONTAP working in tandem with the Cisco security suite

Sustainable
More visibility, less waste, and higher efficiency to reduce your carbon footprint

Smart
Unified hybrid multicloud operations and cross-environment consistency

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Cisco Intersight for FlexPod

Automation

Visibility

Compliance

SaaS or connected appliance

Single Pane Of Glass

SaaS Simplicity

CISCO INTERSIGHT

Global Policies

Actionable Intelligence

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The Simplest Hybrid Cloud Platform

Faster Delivery

Continuous Optimization

Simplified Operations

Cloud Operating Model

Cloud

Workload

Infrastructure

CISCO INTERSIGHT

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Consistent Cloud Operating Model

DevOps

Service Management

Support

Governance and Security

Apps

Traditional

Hybrid

Cloud-native

CISCO INTERSIGHT

Serverless

Containers

Virtual Machines

Bare Metal

Infra

Edge

Branch

Data center

Colo

Public Cloud

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ONTAP and Intersight Integration

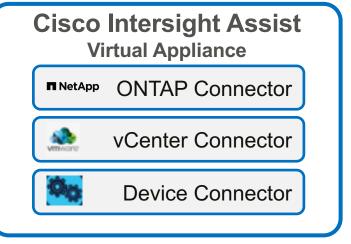|	
NetApp — ONTAP inventory	Intersight Cloud Orchestrator
Virtualization inventory	Intersight Service for HashiCorp Terraform
Device inventory	Intersight Workload Optimizer

NetApp Storage Management

- **Visibility** from NetApp Clusters – alarms, faults, performance, capacity usage
- **Automation and Orchestration** on Clusters via Intersight Orchestrator
- **NetApp Active IQ Unified Manager** delivers deep analytics and insights for ONTAP AFF and FAS data storage
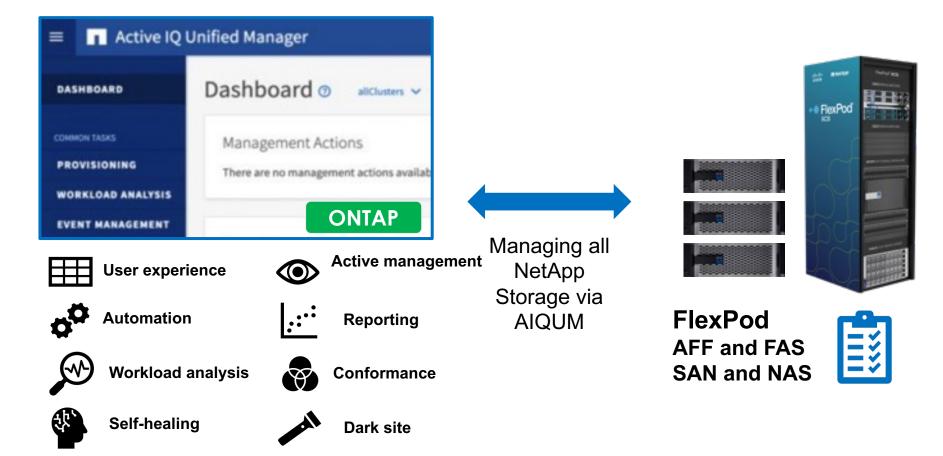
On-Premises

- Automation & Orchestration Operations
- Alarms & notifications
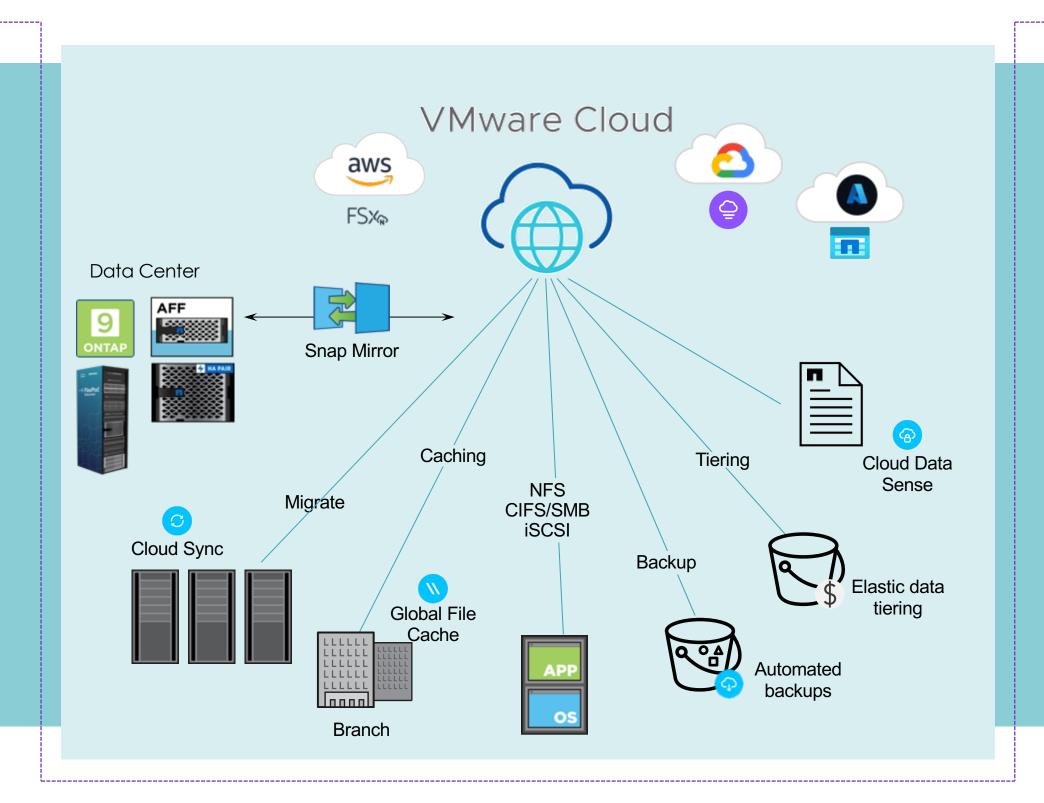
NetApp Active IQ® Unified Manager

Cisco Intersight Assist
Virtual Appliance

- NetApp — ONTAP Connector
- vCenter Connector
- Device Connector

AIQUM integration

Active IQ Unified Manager

Dashboard ⊘   allClusters ⌄

DASHBOARD
COMMON TASKS
PROVISIONING
WORKLOAD ANALYSIS
EVENT MANAGEMENT

Management Actions
There are no management actions availab

ONTAP

- User experience
- Automation
- Workload analysis
- Self-healing
- Active management
- Reporting
- Conformance
- Dark site

Managing all NetApp Storage via AIQUM

FlexPod
AFF and FAS
SAN and NAS

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Hybrid Cloud with VMware

Drive cloud migrations, improved flexibly and optimization

Cloud Storage with hyperscaler 1st Party Services

VMware Cloud

Data Center

Snap Mirror

Caching

Migrate

Cloud Sync

Global File Cache

Branch

NFS CIFS/SMB iSCSI

APP OS

Tiering

Backup

Cloud Data Sense

Elastic data tiering

Automated backups

Use Case
Smoothly and securely perform large-scale data migrations to AWS, Azure, Google with NetApp's proven data management tools, native to the hyperscaler cloud of your customer's choice.

Outcomes
- Improve operational flexibility
- Control cloud costs
- Accelerate migration

Hyperscaler 1st party Cloud Services
- AWS with FSxN
- Azure NetApp Files
- NetApp Cloud Volumes Service for Google

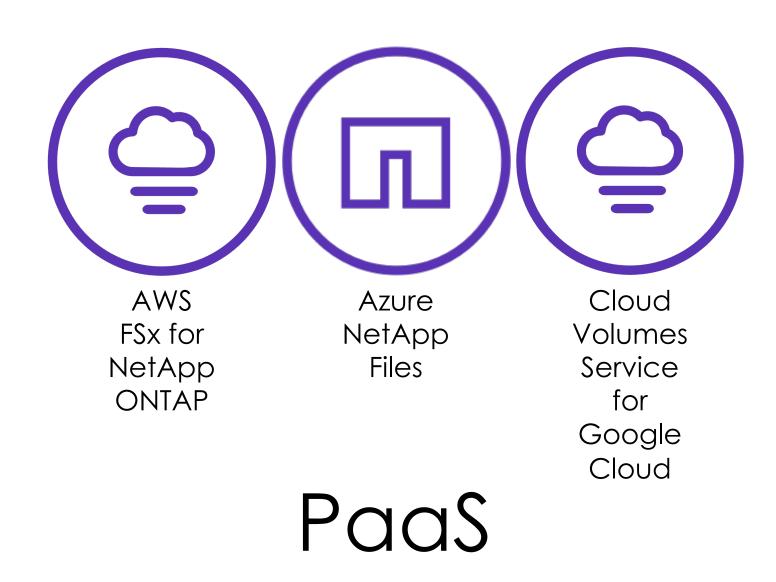- CVD: Cisco Validated Design: FlexPod with NetApp

Flexible Enterprise Storage Options in the Cloud
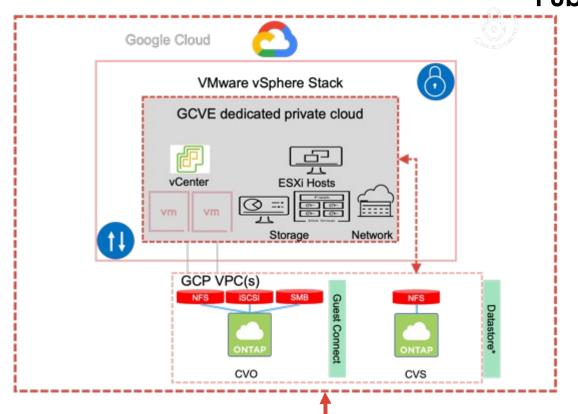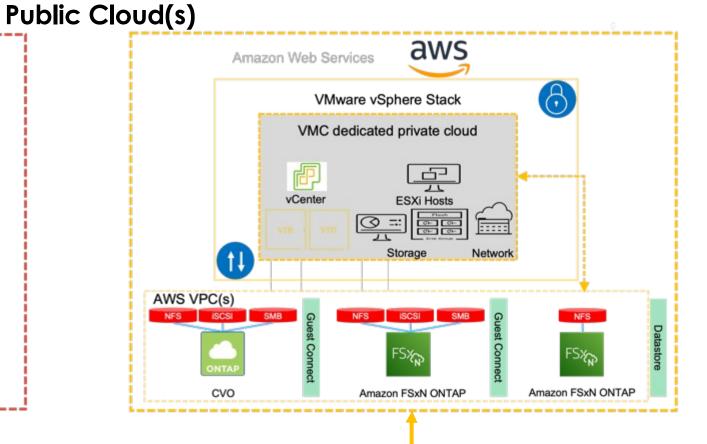Choose the solution best for you

Cloud Volumes ONTAP

AWS FSx for NetApp ONTAP

Azure NetApp Files

Cloud Volumes Service for Google Cloud

IaaS

PaaS

NetApp + VMware Multicloud Architecture

Solutions for Guest Connect and Datastore use cases

DR accomplished through combination of 3rd party and native tools, ensuring optimal flexibility

*Consult your NetApp team regarding availability

Hybrid Cloud Security

NetApp Security Certifications

Commercial Solutions for Classified (CSfC) Component List
- First enterprise storage vendor validated to host NSA top-secret data

Department of Defense Approved Product List (DoDIN APL)
- Achieved necessary security posture and configuration to be an approved product for purchase by U.S. Department of Defense

FIPS 140-2
- Approved U.S. government standard for cryptography and NIST-certified algorithms

Common Criteria
- International standard for security controls and capabilities

https://security.netapp.com
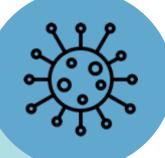
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Ransomware costs businesses millions annually

$9.44M

Average cost
to remediate a ransomware attack in 2022[1]

$4.8B

Insurance Premiums
74% YoY growth (2020-2021)[2]

10X

The downtime and recovery time
cost to remediate is 10 times the average ransomware payment[3]
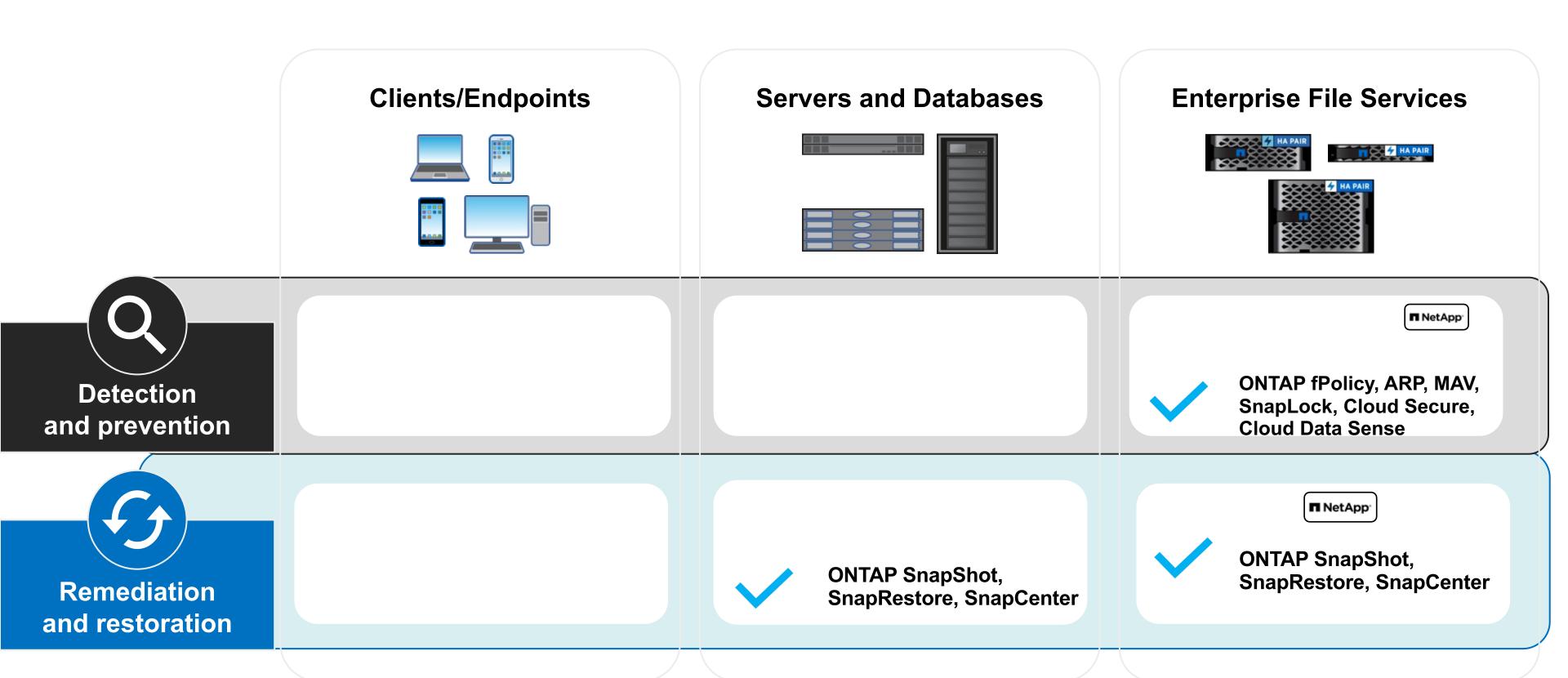
[1] IBM, Cost of a Data Breach 2022 Report
[2] S&P, Global Market Intelligence Analysis
[3] Sophos, The State of Ransomware 2021

Secure data everywhere

How Cisco and NetApp deliver a complete security solution

	Clients/Endpoints	Servers and Databases	Enterprise File Services
Detection and prevention			✔ **ONTAP fPolicy, ARP, MAV, SnapLock, Cloud Secure, Cloud Data Sense**
Remediation and restoration		✔ **ONTAP SnapShot, SnapRestore, SnapCenter**	✔ **ONTAP SnapShot, SnapRestore, SnapCenter**

*Remember that no ransomware detection and prevention solution is a 100% full proof guarantee.

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Secure data everywhere

How Cisco and NetApp deliver a complete security solution

	Clients/Endpoints	Servers and Databases	Enterprise File Services
Detection and prevention	✓ Secure Endpoint (CISCO)	✓ Secure Workload (CISCO)	✓ Secure Firewall (CISCO / NetApp) ✓ ONTAP fPolicy, ARP, MAV, SnapLock, Cloud Data Sense
Remediation and restoration	✓ Secure Endpoint (CISCO)	✓ UCS Service Profile (CISCO / NetApp) ✓ ONTAP SnapShot, SnapRestore, SnapCenter	✓ ONTAP SnapShot, SnapRestore, SnapCenter (NetApp)

*Remember that no ransomware detection and prevention solution is a 100% full proof guarantee.

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Secure Multi-Factor Authentication with Cisco Duo
Cisco and NetApp deliver a complete security solution

Tested IdPs

- Identity Provider currently only for **administrator access** to **OCSM** and **AIQUM**

- Security Assertion Markup Language (SAML) 2.0 is the industry standard for web authentication

- Can consider other identity providers (IdPs) on a case-by-case basis
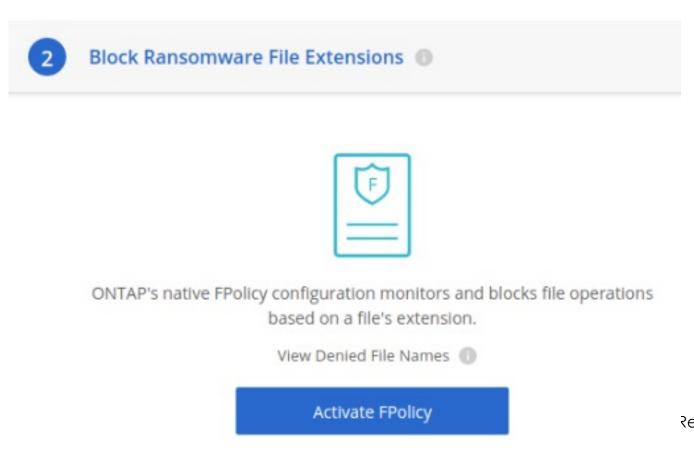
*Remember that no ransomware detection and prevention solution is a 100% full proof guarantee.
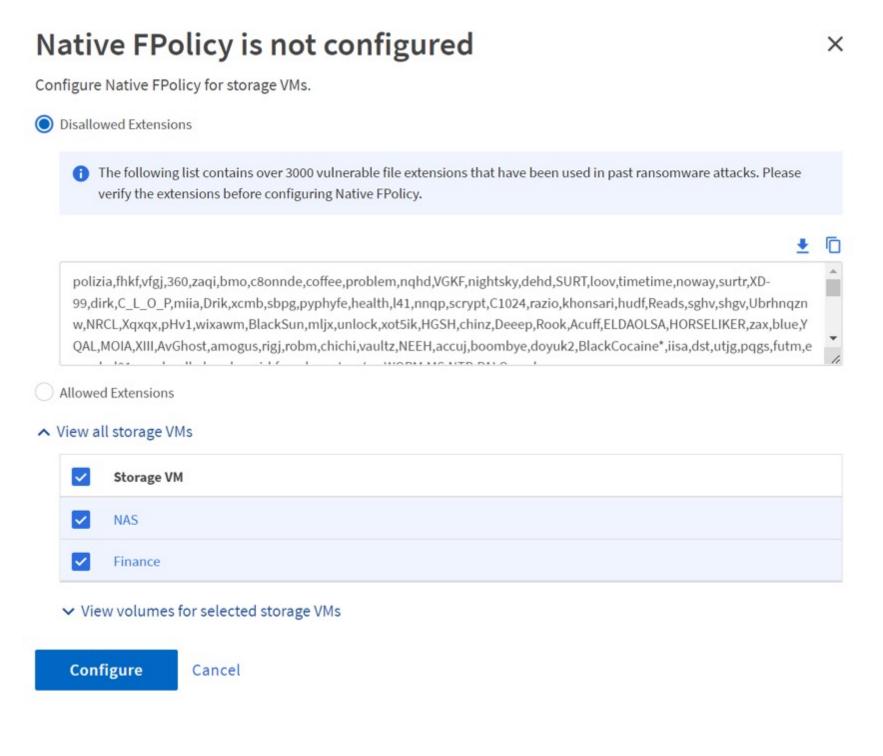
Protect Against Known Ransomware

Use Built-in Fpolicy templates to Block Known, Common Ransomware File Types

- FPolicy is included with every ONTAP system and offers defense against basic ransomware attacks

- Commonly used encryption extensions can be blocked from ONTAP NAS exports

- System Manager and Cloud Manager now offer simple enablement of this feature with a predefined list of common ransomware file extensions

Native FPolicy is not configured ✕

Configure Native FPolicy for storage VMs.

🔘 Disallowed Extensions

ℹ️ The following list contains over 3000 vulnerable file extensions that have been used in past ransomware attacks. Please verify the extensions before configuring Native FPolicy.

```
polizia,fhkf,vfgj,360,zaqi,bmo,c8onnde,coffee,problem,nqhd,VGKF,nightsky,dehd,SURT,loov,timetime,noway,surtr,XD-
99,dirk,C_L_O_P,miia,Drik,xcmb,sbpg,pyphyfe,health,l41,nnqp,scrypt,C1024,razio,khonsari,hudf,Reads,sghv,shgv,Ubrhnqzn
w,NRCL,Xqxqx,pHv1,wixawm,BlackSun,mljx,unlock,xot5ik,HGSH,chinz,Deeep,Rook,Acuff,ELDAOLSA,HORSELIKER,zax,blue,Y
QAL,MOIA,XIII,AvGhost,amogus,rigj,robm,chichi,vaultz,NEEH,accuj,boombye,doyuk2,BlackCocaine*,iisa,dst,utjg,pqgs,futm,e
```

⬜ Allowed Extensions

⌃ View all storage VMs

☑️ **Storage VM**

☑️ NAS

☑️ Finance

⌄ View volumes for selected storage VMs

Configure   Cancel

Remember that no ransomware detection and prevention solution is a 100% full proof guarantee.

Ransomware Recovery Guarantee

NetApp will warrant snapshot
data recovery in the event of a ransomware attack.

If you can't recover your data copies with help from NetApp or partner assistance, NetApp will offer compensation.

The NetApp Ransomware Recovery Guarantee

FOR ENTERPRISE PRIMARY STORAGE

Deployed NetApp AFF C-Series 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.

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Hybrid Cloud Economics

A modernized FlexPod results in lower costs

With FlexPod and Cisco UCS X-Series you can do more with less

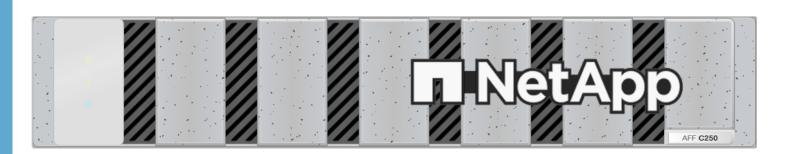|	
Better Performance	**Power, Cooling, Cabling**
More Density	**Lower Software $**
More Reliable	**Greater Uptime**
Easy to Manage	**Future Ready**

Lower TCO

FlexPod

- ↓ **4X** Consolidation **Savings**
- ↓ **56%** Reduction in **energy costs**
- ↓ **28MT** **Carbon Dioxide** Savings
- ↓ **60%** Reduced **time to deploy VMs**

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Introducing the NetApp C-Series
Capacity-optimized QLC Flash

Sustainable

QLC

C250, C400, C800

A Modernized FlexPod reduces storage costs

HYBRID FLASH ARRAY

↑ 1.5 PB effective in 2U

AFF C-SERIES SYSTEM

↓6x less power/cooling   ↓20x smaller footprint

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FlexPod with UCS-X

With lower UCS software licensing costs through consolidation

Cisco X-Series UCS Servers

4:1
Over M4 Servers

>4:1
Over M3 Servers

More processing power
Lower power consumption
Small footprint

28% less software/hardware acquisition*

61% less power & cooling*

51% Reduced Admin Cost*

64% Maintenance Reduction*

*Case study: modernizing workloads to the new X-Series platform from M4 servers

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Solving Real-World Business Problems

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GDT Hybrid Cloud Modernization & Migration

Example Use Cases From Our Customers

MANAGE
- Cloud & Data center management
- Collaborative Troubleshooting
- Hardware & Software Inventory
- Security Audit & Compliance
- Change management

TRANSFORM
- Cloud Migration
- Data center migration
- Data center consolidation
- Capacity planning

MODERNIZE
- IT Agility & Automation
- Enable AIOps
- DevOps practice

GDT Data Center Modernization & Migration

We seamlessly wrap multi-cloud and data center services into one secure architecture to deliver the scalability, speed and accessibility you need. Our unique approach makes it easy for you to make decisions faster, accelerate innovation and drive profitable growth.

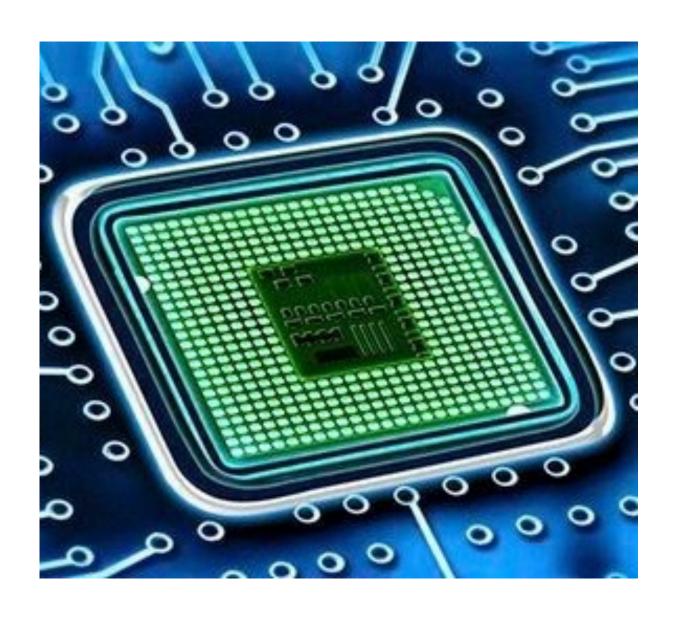Advisory, Professional & Managed Services

1 CX Level Advisory

2 Professional Services

3 Managed Services

4 Staffing Services

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Case Study: Semiconductor Company

Goal

- Simplify workflows
- Accelerate front-end verification

Solution

Standardization of chips design and development on the hybrid cloud platform converged infrastructure to leverage NetApp® ONTAP® and Cisco Intersight capabilities across their programs worldwide.

Results

10% increase in engineering productivity

★★★ Higher quality designs with fewer re-spins

Faster time-to-market for products

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Case Study: US Government Agency

Goal

- Migrate backup operations to Azure hybrid cloud
- Improve backup and disaster recovery

Solution

Using Cloud Volumes ONTAP with Azure, the agency quickly migrated the backup to Azure hybrid cloud without disrupting production. They are also using Cloud Volumes ONTAP for disaster recovery to provide fast failover with no data loss and minimal downtime.

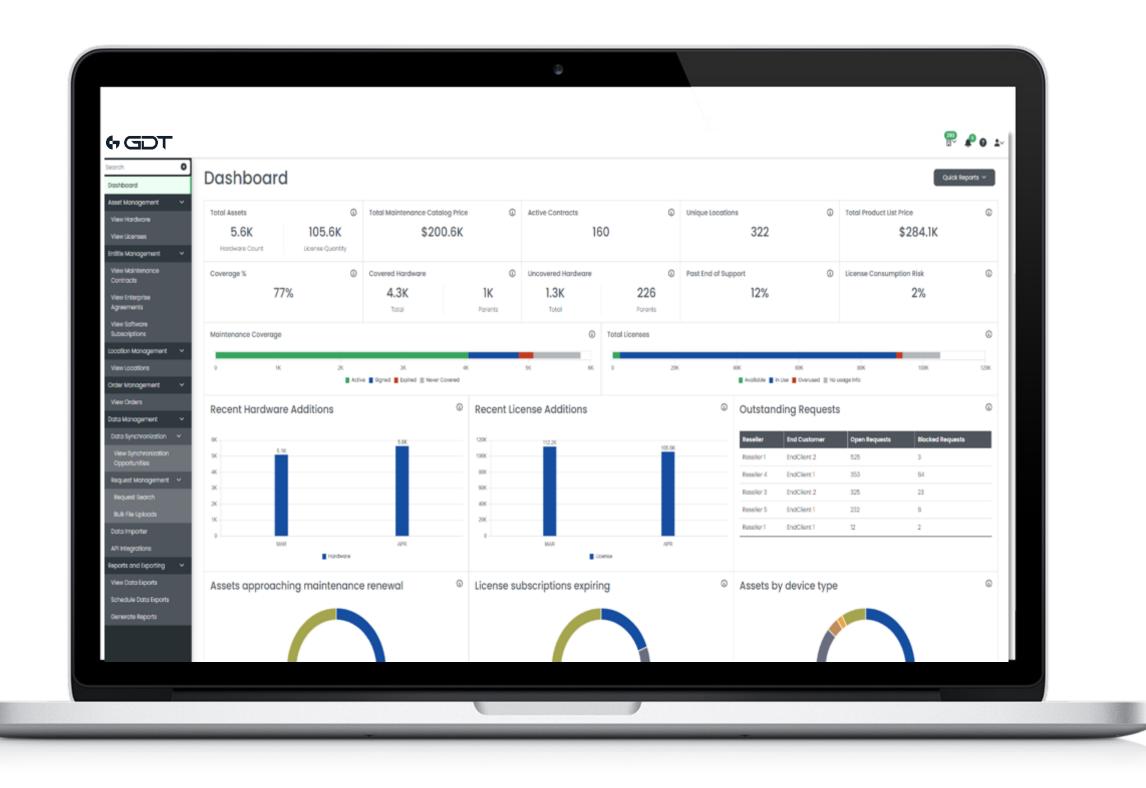## Results

No disruption to production environment

Improved DR through fast failover

Consistent data management experience

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Optimize Your Investments with GDTamp

Questions

999 Metromedia Place
Dallas, TX 75247 |
214.857.6100