

E-BOOK

# NetApp and Google Cloud: Solving the challenges that will help you get the most from your cloud journey

VMware workloads: How to migrate, modernize,  
and transform VM-based workloads in Google Cloud  
with NetApp

 **NetApp** | Google Cloud



# We can't wait to show you what's in store for you on your Google Cloud journey.

## But first, let's start with a confession.

At NetApp, we're cloud obsessed. That's why one of the things we love to do is solve cloud challenges. It gets our engineering engines revving, satiates our appetite for new possibilities, and paves the way for us to create innovative solutions for problems of any size.

That's why we work so well with Google Cloud. At our core, we are technology engineers that love to solve problems. NetApp's deep expertise in all things data—data management, data protection, data migration—perfectly complements the scale, agility, and analytics of Google Cloud. Our partnership is a testament to the power of working together and listening to each other, to our market, and most importantly, to you – our customers.





From the deployment of key workloads to unplanned outages and big cloud bills, when you run into challenges on your cloud journey, we listen, solve problems, and show you the way forward. Whether you need a solution that's already available (but maybe you didn't know it was out there) or something more customized, our partnership with Google Cloud empowers you to accelerate time-to-market while building better technology.

We know some of you may not be as cloud obsessed as we are. That's okay; it's why we made this guidebook. This is the place where you can get excited about your cloud future while improving your cloud present. Discover new capabilities, find the answers to your cloud conundrums, and get started on the next step in your journey, knowing

that at every point along the way you're supported by the smartest people in the Google Cloud and NetApp universe.

Throughout this guidebook, you'll find unique cloud journeys that feature specific challenges and a recurring theme that can't be overstated:

***Helping you expertly navigate all the things in and around Google Cloud that mean the most to you and your business.***

After going through this guidebook, you'll see the opportunities that arise from having the full weight of NetApp and Google Cloud in your corner – in the hybrid cloud and wherever your journey takes you.

**– The NetApp Google Cloud Team**

# How to navigate this guidebook

## Choose your path

You'll get to choose between two paths up ahead: one for those born in the cloud and one for those who started in the data center. Take the path that best describes your circumstance.

### Born in the cloud

Your business lives in the public cloud and doesn't have a second home on-premises. PaaS, SaaS, IaaS, DaaS—you fully embrace the as-a-service model. Pay-as-you-go (PAYGO) is your bread and butter. At heart, you're looking to build innovative applications with the newest technologies, faster, smarter, and more efficiently than ever before.

### On-premises to the cloud

You set off on your cloud journey only to find it's not as straightforward as you'd hoped. You're facing legacy hardware, expensive third-party software licenses—and you haven't even migrated half of your data to the cloud. To you, "emerging technologies" is a euphemism for "emerging complexities." In this case, what you really want is what you really need: to augment everything you do on-premises with competitive advantages that can only be claimed in the cloud.

## Now you're in control

Watch for the icon that most closely matches your scenario to follow the path that best aligns to your priorities and challenges. This will help you to identify the best solutions for you to consider.

Ready to get started? Let's go!



**Born in the cloud**



**On-premises to the cloud**

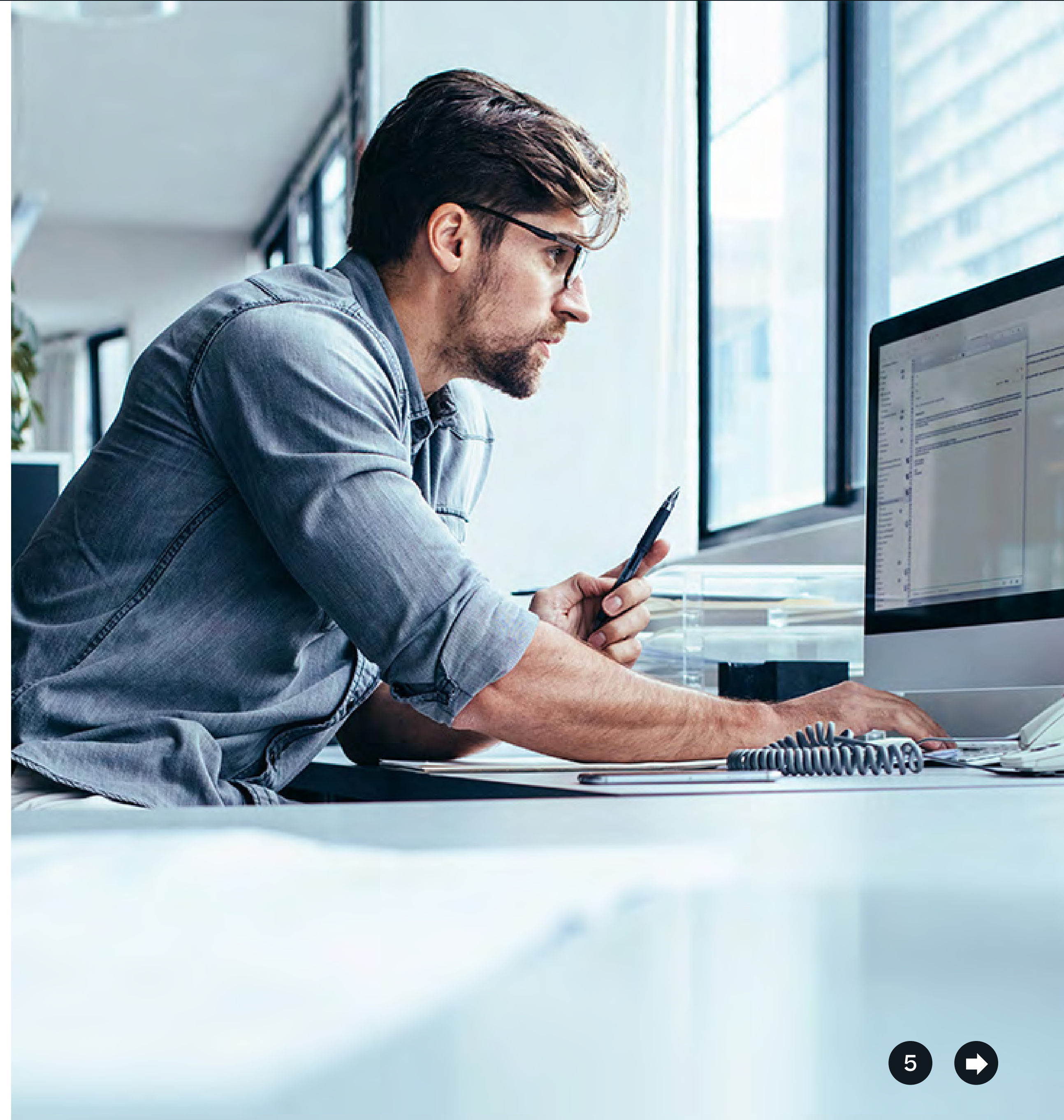
# Move, modernize, and manage your VMware workloads in Google Cloud



Ask infrastructure decision makers if their organization is moving VMware workloads to the cloud, and 65% will say “yes.”<sup>1</sup> You’re in the same boat, but every time you think about migrating data-intensive VMware workloads to the cloud, it’s enough to make you second-guess your cloud-first policy.

Enterprises want nothing more than to use the cloud like their on-premises. Yet, storage-intensive workload migrations can put a wrench in those plans because they’re costly endeavors—both financially and functionally:

- **Compressed time frame.** With expiring contracts and cloud mandates, the timeline for completing your migration is as slim as your margin for error.
- **Accruing solution costs.** Spending money on compute when you only need storage; managing patches, upgrades, and maintenance—the line items just keep growing.
- **Downtime to cutover.** If you aren’t careful, you’ll be giving your customers plenty of time to discover that “extended downtime” isn’t always a good thing.



These challenges make it difficult to achieve what the cloud promised: speed, flexibility, simpler management, and rock-solid data protection and security.

At this point, you're left wondering, "How can I achieve the benefits of the cloud while accelerating my VMware migrations?"

Answer: NetApp and Google Cloud have built an easy on-ramp for enterprises migrating VMware workloads to the evolved cloud. Here you can decouple storage from compute, take advantage of cloud-native technologies, simplify performance and data management, and gain total visibility into your entire data estate—VMware included.

Let's explore the reasons why your enterprise needs dependable VMware migration and management services. We'll look at the challenges you might run into along the way. And we'll discuss how—together—NetApp and Google Cloud can lead you into the next evolution of cloud.



# Let's start with your priorities

 Meet my cloud mandate 

 Improve backup and DR 

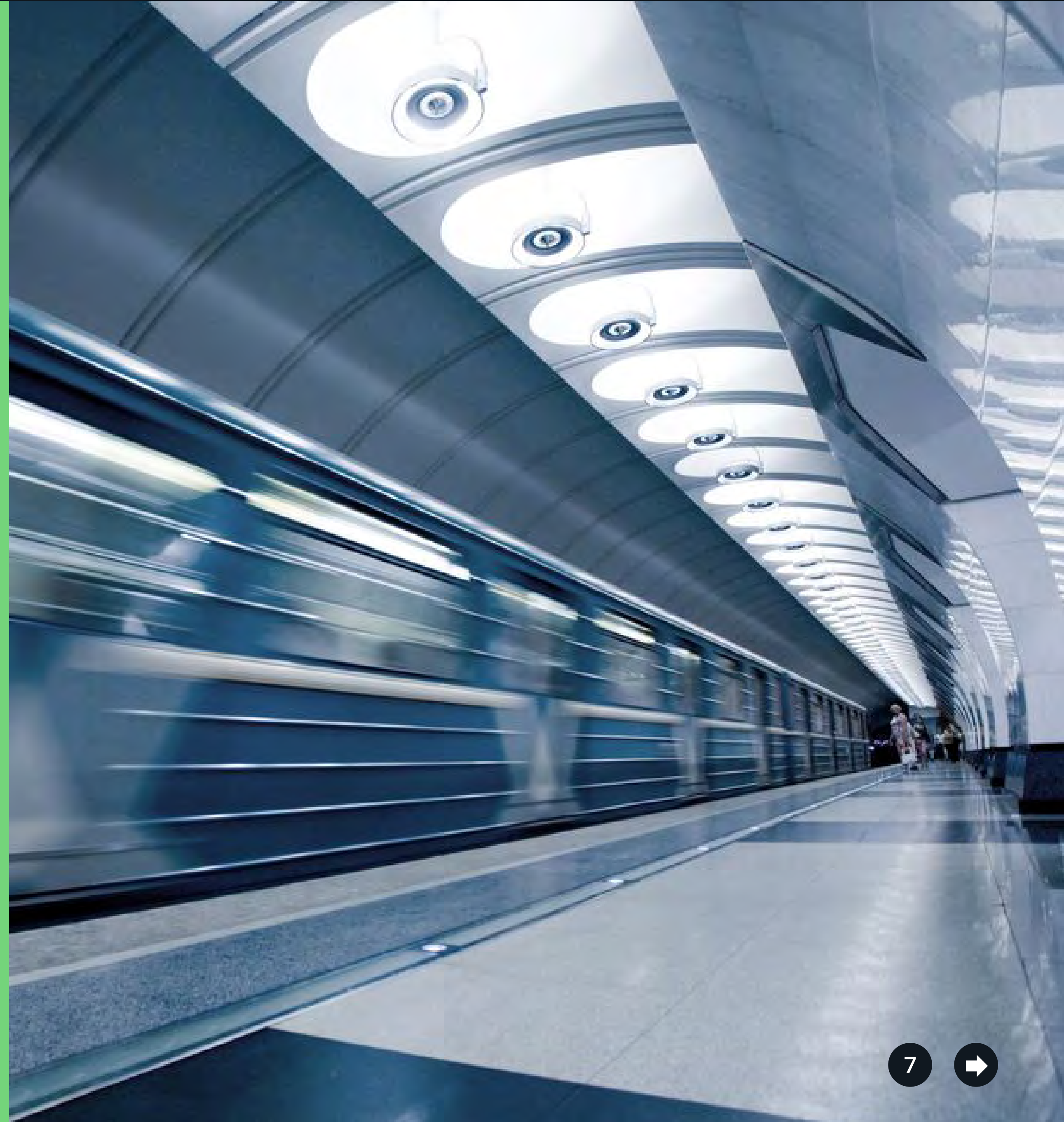
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  Modernize my VM-based apps 

  Cut overhead costs 

  Meet Google Cloud commit 

  Migrate storage-heavy workloads 



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## Meet my cloud mandate

Expiring contracts, cloud mandates, mergers and acquisitions—whatever the case, you're “cloud-first” now. It's critical to make sure that the environment you move into is the right one for your VMware workloads. It's equally important to have all the capabilities you need to succeed—such as moving applications “as is” without changing your current on-premises VMware apps.

What challenges might I face?



# Let's start with your priorities

🚀 Meet my cloud mandate →

🚀 Improve backup and DR

☁️ Boost performance and cut costs →

🚀 ☁️ Modernize my VM-based apps →

🚀 ☁️ Cut overhead costs →

🚀 ☁️ Meet Google Cloud commit →

🚀 ☁️ Migrate storage-heavy workloads →



## Improve backup and DR

You prefer to keep your on-premises data center or virtual desktop infrastructure (VDI) and add capacity for disaster recovery and backup with Google Cloud. Being able to replicate volumes across regions and use snapshots for routine VMware data protection are musts. As for the requirements to procure, deploy, maintain, and manage physical disaster recovery and backup infrastructures... those can go.

What challenges might I face?

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## Boost performance and cut costs

You're all in on the cloud. Migrating VMware-based applications isn't your main concern. You are, however, looking to get your storage costs under control and improve application performance.

What challenges might I face?

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## Modernize my VM-based apps

You want to modernize your applications. That means using Google Cloud services for cloud-native applications, such as AI and machine learning. To claim those solutions, you need to first build and manage your VMware estate in the cloud.

What challenges might I face?

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## Cut overhead costs

Managing your VMware environment's networking, storage, compute, and back-end infrastructure has become a full-time job. What you need is a centralized management service that can give you back the time—and IT energy—spent on making changes to apps, tools, and processes.

What challenges might I face?

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## Meet Google Cloud commit

There's no shortage of choices in cloud services. But your VMware-based applications requirements are clear. You need services that contribute to your Google Cloud spending commitment and satisfy the unique needs of individual applications and workloads.

What challenges might I face?

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## Migrate storage-heavy workloads

Imaging repositories, document archives, monitoring or logging applications—you want all your storage-intensive workloads to realize the scalability, agility, security, and accessibility promised by the cloud.

What challenges might I face?

# Challenges

 Inconsistent operations 

 Tight deadlines and tough bottom lines 

  Limitations of vSAN 

  Inadequate performance 

  VDI management complexity 

  Widening skills gaps 

# Challenges

## Inconsistent operations

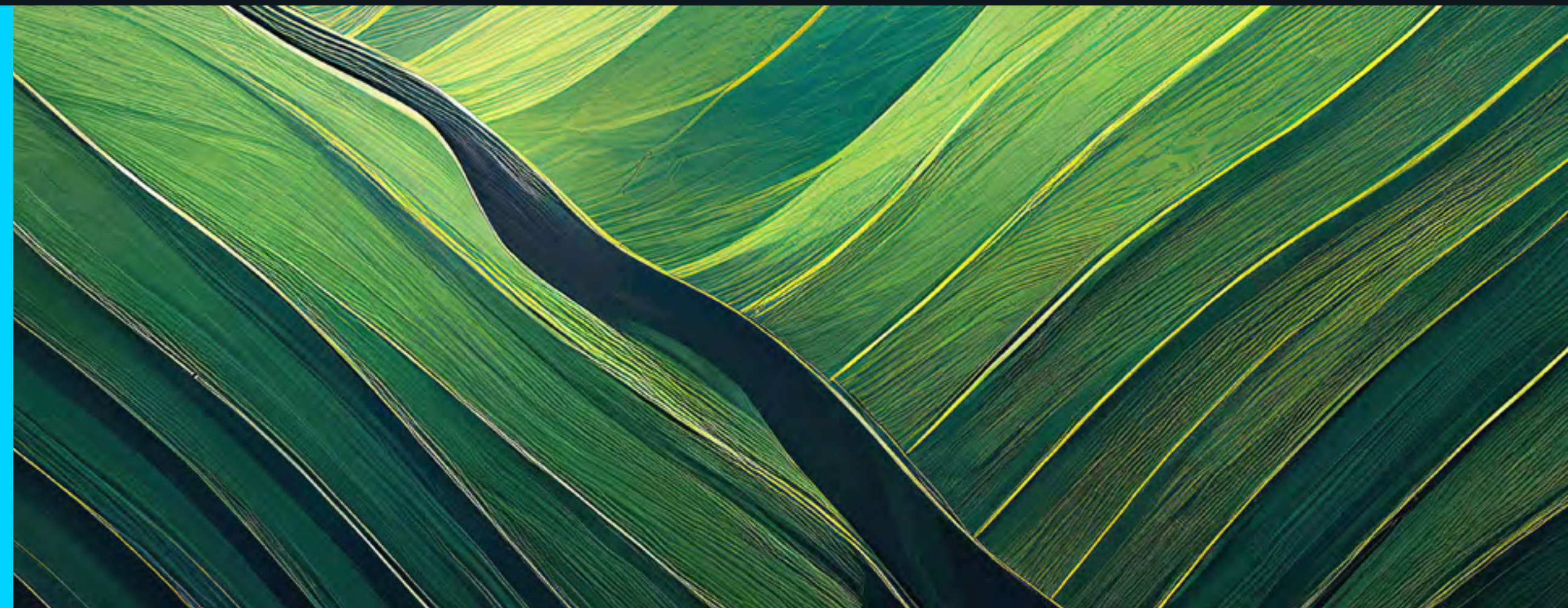
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## Inconsistent operations

They say that consistency is key, but your data services are as disharmonious as your management is decentralized. Accessing data services with a unified approach is the dream. That's why you're constantly changing your apps, tools, and processes. And yet, inconsistent management of operations across your data estate is your reality.

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# Challenges

 Inconsistent operations 

 Tight deadlines and tough bottom lines

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## Tight deadlines and tough bottom lines

Those expiring contracts and cloud mandates driving you into the cloud are also driving you up the wall. They usually come with limited time to complete your migration, a solution cost that has more line items than expected, and a cutover time frame that leaves you and your customers in the dark for way too long.

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# Challenges

 Inconsistent operations 

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## Limitations of vSAN

“Not all workloads scale uniformly” is the lesson you’ve learned from the financial and functional limitations of VMware vSAN. When you need more storage capacity, you’ve got to add more compute resources. Having storage tied to compute is the big cost-prohibitive problem. You need a solution that can scale storage without adding to your collection of pricey compute nodes.

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# Challenges

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  **Inadequate performance**

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## Inadequate performance

Your critical VMware workloads need best-in-enterprise-class performance. You're not sure if a cloud solution can deliver the speed you need, and you've heard about cloud costs getting out of control. You'd rather pay for performance only when you need it. That means having the flexibility to select the performance level that fits the size of your workloads.

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# Challenges

-  Inconsistent operations 
-  Tight deadlines and tough bottom lines 
-   Limitations of vSAN 
-   Inadequate performance 
-   **VDI management complexity**
-   Widening skills gaps 



## VDI management complexity

Virtual desktop infrastructure (VDI) software typically uses file shares to manage profiles for each user. Managing the VDI solution stack across users, environments, applications, systems, and policy changes isn't easy. Reducing the risk of migration errors and downtime is even harder.

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# Challenges

 Inconsistent operations 

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  Widening skills gaps



## Widening skills gaps

You're running virtualized Windows/Linux file servers and managing patching, upgrades, maintenance, and a ton of unplanned manual tasks. Who's going to take care of all that in the cloud? The worry is a reality: skills gaps may appear larger than expected as you move into the cloud.

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# Solutions



**Step 1. Save money: Scale storage, not compute**



**Step 2. Run as fast as your business needs**



**Step 3. Simplify and streamline data management**



# Solutions



**Step 1. Save money: Scale storage, not compute**



**Step 2. Run as fast as your business needs**



**Step 3. Simplify and streamline data management**



## Step 1

### Save money: Scale storage, not compute

*Scale capacity without adding a single vSphere node.*

#### Google Cloud NetApp Volumes datastore support for Google Cloud VMware Engine

You can dynamically resize storage capacity and performance by deploying VMs in Google Cloud VMware Engine with Google Cloud NetApp Volumes datastore support.

Never before have you been able to independently scale storage capacity from the VMware software-defined data center (SDCC) compute infrastructure. Now you can lower your TCO through:

- Running VMware workloads for significant savings on Google Cloud by decoupling storage and expensive compute nodes.
- Expanding your datastore capacity without adding more VMware Engine nodes through the use of CVS-Performance NFSv3 volumes.
- Deploying Google Cloud NetApp Volumes to prevent overprovisioning without affecting vSphere resources or VM performance.
- Using [Google Cloud NetApp Volumes](#) as a datastore to support storage-intensive VM applications such as imaging, archives, or geographic information systems (GIS).
- Offloading storage from virtualized Windows and Linux file servers. No patching or upgrades, alongside simplified data management, means a TCO you're in control of.

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# Solutions



**Step 1. Save money: Scale storage, not compute**



**Step 2. Run as fast as your business needs**



**Step 3. Simplify and streamline data management**



## Step 2

### Run as fast as your business needs

*Combine easy-to-manage performance with availability at speed.*

You've reduced your costs by decoupling storage from compute. Now let's see how you can address those supply chain, deployment, networking, patching, and maintenance hassles without lifting a finger. Everything needed to run VMware Engine with Google Cloud NetApp Volumes—infrastructure, networking, storage, compute—is managed for you.

**How will Google Cloud NetApp Volumes with Google Cloud VMware Engine change your workload's speed and performance? Let's count the ways:**

- Get your VMware private cloud up and running in 30 to 60 minutes.
- Improve time to production with simplified workload migrations and multiple protocol support for in-guest storage connectivity requirements such as NFS or SMB.
- Take advantage of high-performance infrastructure with fully managed, built-in failure protection and dedicated 100Gbps networking that provides up to 99.99% availability for your critical workloads.
- Use Google Cloud NetApp Volumes for VM application DevTest. Test, deliver, and deploy code more rapidly and reliably using storage-efficient and scalable code and binary repositories.
- Easily adjust performance as needed to meet customer expectations and application needs.

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# Solutions



**Step 1. Save money: Scale storage, not compute**



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**Step 3. Simplify and streamline data management**

## Step 3

### Simplify and streamline data management

*Take your VMware environment to new heights with flexible and consistent data management.*

**The last step is to enjoy unified data services that deliver a consistent operational experience on-premises and in the cloud.**

In doing so you:

- Streamline IT operations with custom application integration and control cloud costs with policy-based automation
- Enable users to securely share infrastructure with affordable support for home directories and VDI profiles for SMB and NFS
- Experience consistent data management that's NFSv3-certified by VMware
- Use familiar tools for disaster recovery and backup, such as NetApp Snapshot™ copies and cross-region replication, to fortify your on-premises infrastructure and fight against ransomware
- Encrypt volumes to meet FIPS 140-2 compliance requirements and protect critical data in transit with NFSv4.1 Kerberos encryption
- Get SLA of up to 99.99% in a single zone and continuous protection from downtime by replicating storage volumes from one Google Cloud region to another
- Use Snapshot copies to create fast clones or checkpoints when making major changes to your application for DevTest without touching the original volume data

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# Next steps

We've explored the drivers that put you on this cloud adventure.

We've outlined some challenges that you can expect to encounter—or maybe already have encountered—along the way.

And we've given you options to consider on your path forward, as well as the benefits waiting for you on the other side.

All that's left is to show how NetApp and Google Cloud deliver the performance, speed, cost savings, and consistent operational experience that you need to run VMware workloads in the cloud.

**To learn more about the products and services discussed on this cloud adventure, visit:**

**Blog:** Migrating to the cloud?  
Enable a fast, safe trip.



**Blog:** Running NetApp and VMware?  
It's time to get ready for cloud.



**Solutions guide:** NetApp and Google Cloud  
solutions for VMware workloads



**Solution brief:** Migrate your VMware  
workloads to Google Cloud



**Webpage:** NetApp flexibility for VMware  
on Google Cloud



<sup>1</sup> Forrester, [VMware Workloads Are Moving to the Cloud](#), September 2022.



## Get started

Want to engage in a more detailed discussion about your VMware environment? Get in touch with your sales representative or talk about decoupling with a NetApp Google Cloud expert.

[Speak to an expert](#)

### About NetApp

In a world full of generalists, NetApp is a specialist. We're focused on one thing, helping your business get the most out of your data. NetApp brings the enterprise-grade data services you rely on into the cloud, and the simple flexibility of cloud into the data center. Our industry-leading solutions work across diverse customer environments and the world's biggest public clouds.

As a cloud-led, data-centric software company, only NetApp can help build your unique data fabric, simplify and connect your cloud, and securely deliver the right data, services, and applications to the right people—anytime, anywhere.