

E-BOOK

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

How to improve data management and increase
application performance faster, simpler, and with lower
costs than ever before

 **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

“How can I make my day-to-day hybrid cloud operations more powerful (and less painful) in Google Cloud?”



Your cloud strategy is heavy on file storage. And why wouldn't it be? File storage is the fastest-growing storage type in the world. Enterprises depend on it for their most demanding workloads, such as AI, big data, and high-performance computing.

However, without proper cloud data management, the lifeblood of your business can quickly become a jumble of unstructured data that leads to expensive and time-consuming storage complexities, both in and out of cloud, where:

- Resources are underutilized, but continue to eat up budget
- Storage can't scale to meet the performance demands of your enterprise workloads
- Protection against internal and external security incidents across your environment isn't consistent





These complexities are only magnified when working across hybrid environments. As your team struggles to manage siloed data using multiple interfaces, and your palm makes its way to your forehead, you're left wondering, "Where do I start?"

The best cloud data management solutions allow you to easily migrate and manage persistent, scalable, and secure data stores—all within a single control plane. A unified hybrid cloud environment isn't just the dream—it's the waking reality. NetApp® BlueXP™ enables you to deploy, discover, manage, and optimize it all from within a unified control plane with flexible consumption capabilities.

Let's explore how cloud data management can benefit your operations and help you avoid challenges as you move toward a unified model, with NetApp and Google Cloud leading you into the next evolution of cloud.



Let's start with your priorities

 Hybrid cloud multitasking 

 Data center expiration date 

 Functionality beyond on premises 

 Application transformation 

  A fully managed cloud 

  A self-managed cloud 

  Pay as you go, please 



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Hybrid cloud multitasking

You've already got some workloads in the cloud and you're thinking about migrating more. But you need access to cloud capabilities that align to and enhance your applications. The cost of operating and managing these cloud-bound workloads should be clear from the start.

What challenges might I face?

Let's start with your priorities

🚀 Hybrid cloud multitasking ➔

🚀 Data center expiration date ➔

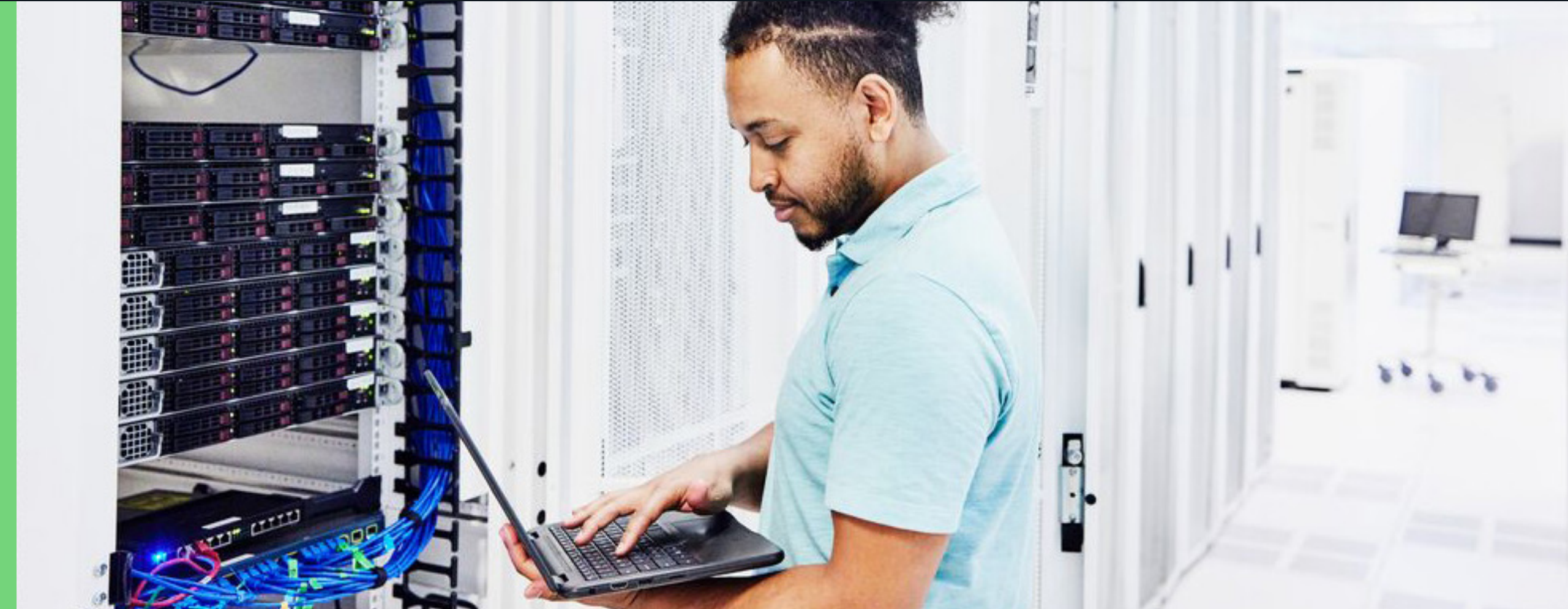
🚀 Functionality beyond on premises ➔

☁ Application transformation ➔

🚀 ☁ A fully managed cloud ➔

🚀 ☁ A self-managed cloud ➔

🚀 ☁ Pay as you go, please ➔



Data center expiration date

Your expensive data center lease is about to expire, and your company's cloud mandate is just waiting to be tackled. As you prepare for the big moving day, you need data protection services that will give you the same level of performance, availability, and control as your data center does; you need services that protect against data loss, prevent downtime, and meet your RTO and RPO objectives.

What challenges might I face?

Let's start with your priorities

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🚀 **Functionality beyond on premises**

☁ Application transformation ➔

🚀 ☁ A fully managed cloud ➔

🚀 ☁ A self-managed cloud ➔

🚀 ☁ Pay as you go, please ➔



Functionality beyond on premises

You're tired of your data center's limitations and point solutions that pile on complexity and technical debt. You want cutting-edge, efficient technologies, but not at the expense of losing the on-premises operational models you've come to depend on.

What challenges might I face?

Let's start with your priorities

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🚀 Data center expiration date →

🚀 Functionality beyond on premises →

☁️ **Application transformation**

🚀 ☁️ A fully managed cloud →

🚀 ☁️ A self-managed cloud →

🚀 ☁️ Pay as you go, please →



Application transformation

Sure, you're in the cloud. But you know better than anyone that you're missing out on key cloud capabilities that can give you and your enterprise a competitive advantage. You've got your heart set on building or buying applications that utilize AI/ML, Kubernetes, and edge computing. And you want them faster, safer, and more efficiently than ever before.

What challenges might I face?

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🚀 ☁ Pay as you go, please ➔



A fully managed cloud

You appreciate the work that goes into managing a cloud environment, but you don't want to do it yourself. When you're modernizing workloads in the cloud, you simply want to turn them on and go. That's why you prefer a managed service.

What challenges might I face?

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🚀 ☁ Pay as you go, please ➔



A self-managed cloud

You're building a new application and will be storing your data in the cloud. You want the freedom to manage it your own way, with all the buttons and levers at your fingertips. A self-managed service gives you full control.

What challenges might I face?

Let's start with your priorities

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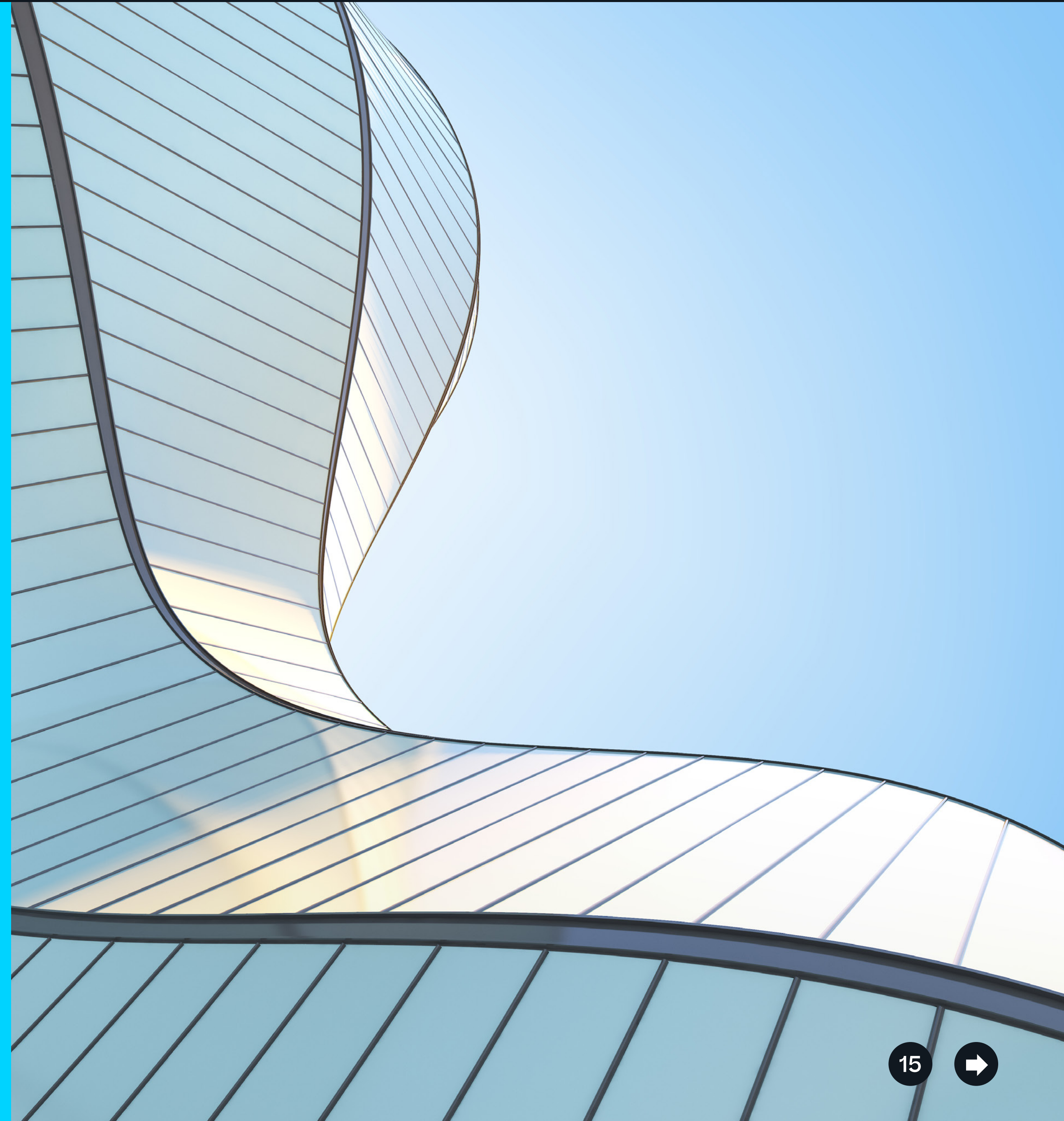
Pay as you go, please

Whether you manage it yourself or choose a managed service, you only want to pay for what you use. When you need more storage, higher performance, or both, you want it on-demand *and* instantaneously.

What challenges might I face?

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- 🚀 New dog, same tricks ➔
- 🚀 Feeling cloud-cautious ➔
- 🚀 ☁ IoT integration ➔
- 🚀 ☁ Overpaying for performance ➔
- 🚀 ☁ Closing the skills gap ➔
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Challenges

Multicloud and multiprotocol?

 New dog, same tricks 

 Feeling cloud-cautious 

  IoT integration 

  Overpaying for performance 

  Closing the skills gap 

  Unstructured and compliant? 

  Cost-ineffective data protection 

  Shine a light on dark data 

  Collaboration as a global workforce 

  Shifting away from manual tasks 

  Can everything be optimized? 

  Getting started is the hard part 



Multicloud and multiprotocol?

You've got applications and workloads that employ a multitude of protocols—SMB/CIFS, NFS, iSCSI—and you're ready to move them to the cloud. But you're struggling to find a way to bring your applications—each with its own protocol—together into this new cloud world. Above all, you want to move into the cloud without refactoring.

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New dog, same tricks

You're ready for the move to the cloud; you're even excited about it. What you're not thrilled about is diverging from your familiar on-premises tools and processes. You dream of a consistent operating model across your hybrid environment—one where the same enterprise-grade services you rely on today in your on-premises infrastructure—that is available in the cloud. You may want to lift and shift your environments into the cloud, or even extend them, but you're worried about losing block storage if you move to a hybrid model.

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Feeling cloud-cautious

A good proof-of-concept is not proof-of-execution. You need some quick wins before you start moving your mission-critical workloads to the cloud. Downtime from a failed migration isn't something you're prepared to accept. Is there a low-risk, worry-free path?

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IoT integration

Your competitive position relies on the ability to connect all edge endpoints to your main infrastructure. You need access to the brains (and brawn) of your cloud environment to make use of, for example, the millions of files of IoT sensor data lying around. Does your environment provide you with the capabilities you need to create bold business opportunities built on even the most unstructured of data?

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Overpaying for performance

You have workloads that need high-performance storage—some permanently, others only during peak times. Procuring new hardware can take weeks, but you need it now, and you're months away from next year's budget requests. Can you balance your performance needs with your budget realities? If only you could easily scale your performance levels up and down on demand.

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Closing the skills gap

Whether you're building your first or your fiftieth application, the cloud doesn't discriminate. Odds are you will end up discovering a gap in your resource pool or their skillsets. From DevOps and SecOps to FinOps and beyond, your teams need support as they build skillsets around cloud and cloud data management.

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Unstructured and compliant?

Enterprises are collecting more privacy-related data than ever before, and you're legally responsible for keeping it safe. When you don't know what kind of data you have, or where it lives, you can't be sure that it's secure and compliant. You need a way to discover and classify your sensitive data while automating as much as possible to reduce the risk of human error.

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Cost-ineffective data protection

You want a resilient infrastructure that can withstand outages of any kind—natural, unnatural, external, or internal. You’ve been told you need to have replicas of your volumes across regions. But every time you run a backup, you’re copying every little byte of data. That results in increased storage costs, negative impacts on performance, and a decreasing bottom line. You need a way to make your backup operation more space-efficient.

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Shine a light on dark data

You can't extract solid gold from siloed data. The level of insight you have into your data is limited by varying formats and interfaces, while also being buried so deep that it's become a textbook example of "dark data." You just want to be able to easily manage your cloud data in one place. If only it were possible to gain a comprehensive understanding of your data and manage it all from a unified control plane.

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Collaboration as a global workforce

Fast and efficient access to resources on a global scale, in real time; that's all you're asking for. Instead, you're managing islands of data in branch offices and have more document versions than you can keep track of. Every time you try and open a spreadsheet, that pesky, perpetual 'loading' icon makes its move.

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Shifting away from manual tasks

You've got complex deployments and loads of manual tasks. Your developers are tired of running repetitive tests, your storage efficiency reports haven't been done in two months, and you've had to pivot your best employees to focus on a low-value, time-intensive data cleanup. You're thinking, "Shouldn't we be able to automate this stuff by now?"

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Can everything be optimized?

You know there are cost efficiencies in the cloud or you wouldn't be there. But you want more. You would love a continuous integration, a continuous deployment (CI/CD) methodology, to give time back to developers. Or the ability to move cold data off high-performance storage tiers to save on costs. You want to take advantage of every cloud optimization opportunity available to you.

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Getting started is the hard part

You don't know what workloads to migrate next. You may not even know where to start, when it comes to prioritizing or understanding what those workloads would look like in the cloud. Will they need to be refactored? Do you have the resources and skillsets to support the workload once it's in the cloud?

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Solutions

  Step 1. Store your data the smart way 

  Step 2. Set managing and protecting data to autopilot 

  Step 3. Get the most from your data 



  You've got an enterprise-ready friend in NetApp 



Solutions



Step 1. Store your data the smart way



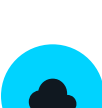

Step 2. Set managing and protecting data to autopilot





Step 3. Get the most from your data





You've got an enterprise-ready friend in NetApp



Step 1

Store your data the smart way

Whether you're migrating to the cloud or already there and aiming to optimize, choose the cloud storage solution that checks all the boxes for you.

Google Cloud
NetApp Volumes



Cloud Volumes ONTAP
for Google Cloud





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Solutions





Step 1. Store your data the smart way





Step 2. Set managing and protecting data to autopilot

➔



Step 3. Get the most from your data

➔



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➔

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Google Cloud
NetApp Volumes

Cloud Volumes ONTAP
for Google Cloud

➔

Google Cloud NetApp Volumes

You're ready to dive head-first into a fully managed file storage service. Google Cloud NetApp Volumes combines enterprise performance and security with the simplicity and speed of integrated file services. With Google Cloud NetApp Volumes, you put your key in the ignition, turn it on, and go. Some benefits you can expect include:



- Support for multiple protocols, including SMB, within a single volume, with zero rearchitcting
- Reduced overhead management with RESTful APIs
- Pre-integrated configurations
- Pay-as-you-go consumption model
- Scalable performance tiers you can adjust as needed
- Additional features for protection and optimization with the click of a button

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Solutions





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Google Cloud
NetApp Volumes



Cloud Volumes ONTAP
for Google Cloud

Cloud Volumes ONTAP for Google Cloud

You want to do more than steer the ship; you want access to every button, dial, and lever at the helm. Cloud Volumes ONTAP was built to give you full control without losing the optimization benefits of a fully managed service. With Cloud Volumes ONTAP, you get access to:


- Multiprotocol volume support, including SMB, with zero rearchitecting
- Familiar tooling and operational experience
- Block and file services complemented by thin provisioning, deduplication, compression, and compaction
- Multiple migration methods—extend or lift-and-shift workloads to the cloud
- Pay-as-you-go consumption model
- Value-added security, protection, and optimization features

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Solutions



Step 1. Store your data the smart way





Step 2. Set managing and protecting data to autopilot



Step 3. Get the most from your data





You've got an enterprise-ready friend in NetApp



Step 2

Set managing and protecting data to autopilot

Manage and protect all your data across hybrid Google Cloud.

In step one, you identified the cloud-based storage solution that best aligned to your specific needs. In step two, we'll layer on security, protection, and space efficiency (read: cost savings).

NetApp and Google Cloud



NetApp BlueXP





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Solutions

 **Step 1.** Store your data the smart way 

 **Step 2.** Set managing and protecting data to autopilot

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NetApp and Google Cloud

NetApp BlueXP

NetApp and Google Cloud have placed over 30 AI-based and advanced data security features at your fingertips:

- Replicate to a remote location for backup and disaster recovery
- Protect your data with indelible snapshot copies and instant recovery
- Access files rapidly and realize the benefits of global collaboration within them
- Prevent unwanted access with inline and data-at-rest encryption
- Address strict data retention needs with write-once-read-many (WORM) file locking
- Full and incremental-forever replication that keeps the amount of data you're replicating across regions to a minimum (while maximizing data availability)
- Efficient data reduction and cold data tiering for significant cloud storage savings
- Space-efficient Snapshot copies of production environments to accelerate application development and QA testing

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Solutions



Step 1. Store your data the smart way





Step 2. Set managing and protecting data to autopilot



Step 3. Get the most from your data





You've got an enterprise-ready friend in NetApp



Step 2

Set managing and protecting data to autopilot

Manage and protect all your data across hybrid Google Cloud.

In step one, you identified the cloud-based storage solution that best aligned to your specific needs. In step two, we'll layer on security, protection, and space efficiency (read: cost savings).

NetApp and Google Cloud



NetApp BlueXP

NetApp BlueXP enables you to build, protect, and govern your hybrid cloud data estate from a single control plane. Its data management services allow you to:

- Ensure enterprise-grade protection, security, and governance for all data, no matter where it resides
 - Operate your entire data estate systematically and across on-premises storage and Google Cloud
 - Actively monitor your energy and sustainability goals
 - Accelerate automation at scale with complete APIs for savings of time, human effort, and overall costs
 - Move data between different storage systems and services across on-premises and cloud deployments
- Move infrequently used data to cost-effective object storage, either on premises or in the cloud
 - Create copies of frequently used data from a central location and cache them closer to globally dispersed locations (such as remote offices) for rapid access and collaboration
 - Pay-as-you-go consumption model
 - Value-added security, protection, and optimization features

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 NetApp

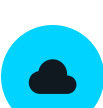



Solutions




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Step 3. Get the most from your data



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Step 3

Get the most from your data

Optimize your data, workloads, and applications continually—from here on out.

Hybrid cloud clarity comes in a package of two:

There’s data discovery



And there’s hybrid cloud visibility














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Step 3

Get the most from your data

Optimize your data, workloads, and applications continually—from here on out.

Hybrid cloud clarity comes in a package of two:

- There’s data discovery
- And there’s hybrid cloud visibility 

There’s data discovery

NetApp gives you the power to scan and classify data across your hybrid cloud environment to ensure compliance, detect security vulnerabilities, optimize costs, and accelerate migration. Finally, you can breathe easy, knowing there’s no IP leaving the environment, nothing falling through the local and federal regulation cracks, and that your data is wrapped up in a cozy security blanket.

Our classification capabilities give you visibility into the contents of your data, providing insights that address compliance regulations, detect security

vulnerabilities, and optimize costs. You’ll know exactly where your sensitive data is stored, who has access to it, and how you can increase your storage efficiency across your environment—hybrid or not.

The right data governance services paired with the proper infrastructure monitoring service can streamline this process from start to finish. You’ll be able to discover, map, and classify your data, no matter where it lives, ensuring compliance, efficiency, and optimization.

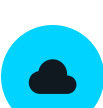

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And there’s hybrid cloud visibility

NetApp enables you to automate the discovery of unusual activity which could signal that a cyberattack is on the horizon.

Before it becomes a reality, NetApp BlueXP observability services alert you to even the most subtle anomalous user behavior:

- Are files being accessed at unusual times?
- Are individual documents being encrypted or deleted?
- Is user access being modified?

By monitoring your infrastructure and application layer data, NetApp provides insights to address misconfigurations, fix performance issues, and protect against ransomware.

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Solutions

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The pressure of designing and building your cloud environment to live up to the resilience, security, and performance needs of your enterprise workloads (so you can make the next big industry breakthrough) is a big ask. With NetApp, you never have to go it alone. Not only do we provide webinars, case studies, whitepapers, technical reports, and an abundance of digital resources online, but we also have cloud architects who specialize in cloud security, storage, automation, and infrastructure who are available to you for one-on-one meetings. Whether you prefer to learn independently before reaching out to the experts or you're willing to jump right into a workload analysis for service-level designs, NetApp provides the support you need. Check out the "Next steps" section to see all the ways we can help you on your cloud journey.

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Next steps

We’ve explored the priorities that put you on this cloud adventure.

We’ve outlined some challenges you already have or may encounter along the way.

And we’ve given you a few options to consider on your path forward, as well as information about the benefits waiting for you on the other side.

All that’s left now is to show you how NetApp and Google Cloud deliver the performance, scale, data protection, and ease of management that you need for cloud data management success.

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

Page: Google Cloud NetApp Volumes →	Page: NetApp Cloud Volumes ONTAP for Google Cloud →
Guide: Five reasons to use Google Cloud NetApp Volumes →	Guide: Why NetApp Cloud Volumes ONTAP for Google Cloud? →
Solution brief: Google Cloud NetApp Volumes →	Video: 3 reasons why you should start now →

Get started

Meet with a cloud architect and build confidence in your cloud file service solutions.

Meet with a Google Cloud 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.