Business white paper

# Embracing hybrid cloud by design for the AI future

Here's why some of the world's most innovative organizations are turning to HPE GreenLake

HPE GreenLake

The accelerating adoption of artificial intelligence (AI) is causing a transformational shift in every industry and consumer space, changing the way we work, learn, and share ideas. Despite the many advantages of adopting AI, 76% of enterprises report that their data capabilities cannot keep up with their business demands.[1]

AI processing is hybrid and distributed across locations and data points. For example, many of the most prevalent AI use cases today are realized at the edge—in locations such as hospitals, stores, vehicles, and personal devices—where people and machines connect and act. Like other data-intensive workloads, AI solutions require data control everywhere, data/AI sovereignty, security, low latency (especially during inference), reliable infrastructure performance, and AI and machine learning (ML) lifecycle management.

In an evolving and emerging AI market, business and IT leaders want to avoid lock-in and costly data moves while gaining flexibility and agility. They can benefit greatly from a hybrid cloud strategy that is purposefully designed to make the most of their data and AI.

Hybrid cloud—the combination of at least one type of cloud environment (public and/or private) plus on-premises operations—isn't just an option for the modern enterprise. It has emerged as the prevailing operating model, with a combination of on-premises, private cloud, and public cloud. While 91% of organizations use at least two types of models,[2] most businesses have become hybrid by accident, meaning they have accumulated multigen legacy IT, custom private cloud solutions, and multicloud investments that are siloed and costly to manage and lack a cloud experience everywhere.

In fact, managing hybrid, multicloud environments and modernizing IT while shifting resources toward AI and innovation is the biggest balancing act enterprises face today.

Organizations must overcome three common roadblocks in the hybrid cloud:

1. Lack of control, visibility, and protection of their data and AI
2. Lack of cloud flexibility and agility to innovate and modernize
3. Complex and costly management of hybrid ITOps, AI/ML capabilities, and AI/ML lifecycles

[1] "Being a Data-first Leader Continues to Matter," Hewlett Packard Enterprise, 2023

[2] "From hybrid cloud by accident to hybrid cloud by design," HPE, 2023

## Becoming hybrid by design

A hybrid cloud is more than just using a public cloud, private cloud, or on-premises environment for your workloads. It is about choosing the right operating model that enables an optimized cloud experience everywhere.

Organizations want the agility and flexibility of the public cloud as well as control of their on-prem IT. However, they can't move all their data and applications due to constraints such as migration costs, data control, security, performance, and the need for real-time connectivity. Because of these constraints, a hybrid strategy is key to unlocking the value of data—by establishing a cloud operating model across IT through a single hybrid cloud platform. We call this approach hybrid by design.

Evolving from hybrid by accident to hybrid by design can accomplish four things:

1. Offer governance, protection, and access to data with improved visibility and control across your entire hybrid estate
2. Provide a secure cloud experience with intuitive, self-service access to resources and foundational services such as user/device management and consumption analytics
3. Deliver agility and flexibility to scale up or down as needed, with interoperability between public and private clouds, edge, and multigen IT
4. Manage hybrid cloud operations in a standard, automated, and centralized way, optimizing your environment to run workloads at the right place, at the right time (whether your goal is optimizing performance, costs, or even energy usage)

# Turning hybrid cloud challenges into advantages

While many organizations fear their accidental hybrid cloud environments have become too complex to manage, with careful attention to detail, it is possible to make an intentional shift to hybrid by design. In doing so, you can not only regain control over your operating environment but also take it to new and powerful heights.

HPE is redefining how organizations bring a cloud operating model to applications and data, wherever they live. We make it simple to implement a complete hybrid-by-design strategy powered by a future-ready platform called HPE GreenLake.

HPE GreenLake is a hybrid cloud platform from HPE, designed to help organizations unlock the power of data and AI, where data and models are distributed across hybrid, multigen IT. Its hybrid-by-design approach gives you the freedom to move your data and workloads across locations and deployment models without additional costs or vendor lock-in. You can purchase and implement a broad portfolio of platform-based services, including a modern private cloud. Services include access to HPE's deep expertise as well as our vast partner ecosystem, which can help you deliver unique business outcomes and meet service-level agreements.

Here are five common hybrid cloud challenges—and the ways HPE GreenLake can solve them.

### 1. Making data and AI work in hybrid cloud

Organizations can gain a competitive advantage by selecting a partner that makes hybrid storage and AI a top priority on your technology road map. Data has boundless potential to drive business, scientific, and technological advancement. But how do you effectively manage all your data while operationalizing AI in hybrid cloud? Research shows 73% of organizations[3] are now prioritizing AI over all other digital investments, yet 60% say they are either new to AI or are still in the pilot stages.[4] Common last-mile challenges can compromise AI training, tuning, and deployment. As data proliferates and AI workloads expand from edge to cloud, developing an agile and reliable AI-ready hybrid cloud foundation becomes critical.

The HPE GreenLake edge-to-cloud platform, which we'll delve into in more detail in a moment, helps eliminate these roadblocks by delivering a cloud experience to your AI infrastructure, applications, and underlying data without AI lock-in. You benefit from a broad portfolio of software-as-a-service (SaaS) offerings for storage, data fabric, and the entire AI/ML lifecycle, as well as support for open-source and proprietary AI models.

Whatever your data and AI needs, HPE GreenLake helps you succeed:

- Store, manage, and protect your data for AI
- Build a data control plane (data fabric) that provides a complete view of data assets via a single global namespace
- Empower teams with standard, supported, open analytics
- Scale AI pilots with AI-optimized infrastructure, management and development tools, and a tested partner ecosystem

[3] "Among C-suite Leaders, AI is Top Digital Priority in the Path to Operational Resilience, Finds Accenture Study," Accenture, May 2, 2023

[4] "The artificial intelligence journey," HPE, 2023

## 2. Extending the capabilities of the cloud

Private clouds have existed for years, having emerged from grid-type computing as a way to turn internal IT teams into a shared service organization. Early private clouds often were more difficult and costlier to build and operate than expected. They were customer integrated or delivered as inflexible appliances, generally VM based and self-managed, and required up-front purchases that offered minimal showback. Today, a shift is occurring in the tech industry as many organizations give fresh attention to the private cloud. They are rethinking their cloud strategy and diversifying their cloud portfolios with a modern private cloud to achieve real cost savings and benefits.

According to a recent HPE survey, organizations that operate using both on-premises and private cloud (but not public cloud) infrastructures reported the highest levels of success at controlling and harnessing data instantly, with an overall 51% success rate.[5] In a separate study, Constellation Research interviewed CIOs and IT leaders and found that private cloud computing has emerged as a strategic solution for organizations seeking greater control, security, performance, and customization of their IT infrastructure, as shown in Figure 1.

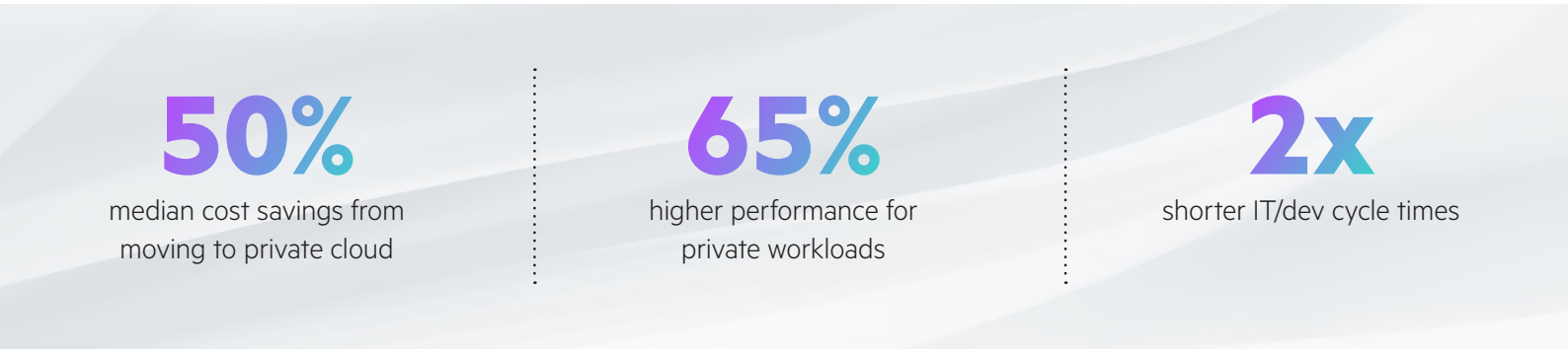


**Figure 1.** Specific benefits of adopting private cloud[6]

It's time for a modern private cloud. It must be easy to adopt, ready to deploy on any application, and reliably fast. It should be modular, scalable, and managed like the public cloud with transparent pricing and the security of dedicated hardware. Effectively, this type of model should allow developers to work on-premises with the same agility, DevOps approaches, and toolsets they use in the public cloud.

HPE GreenLake reimagines the private cloud experience for different types of users, from enterprises to small businesses.

The enterprise version is a scalable, pay-per-use,[7] enterprise-grade solution delivered to you as a managed service across your locations. Built for both cloud-native and traditional applications, it supports the self-service deployment of bare metal, VM, and container services. Its design leverages open standards and open systems, with the ability to place your workloads in the environment of your choice based on cost and performance. You get the full advantage of modern DevOps and automation with infrastructure-as-code configuration management, REST APIs, and cloud command shell. These capabilities streamline infrastructure provisioning and integration with existing DevOps/CI toolchains to accelerate time to value for your cloud admins and developers.

The business version delivers VMs across hybrid cloud on demand, helping to eliminate complexity with a unified cloud service for VM and infrastructure management (including public cloud VMs). Self-service capabilities enable global unified management and monitoring of VMs and infrastructure deployed at any location as well as one-click, multisite upgrades. The solution is highly resilient, with 99.9999% data availability guaranteed.[8]

[5] "From hybrid cloud by accident to hybrid cloud by design," HPE, 2023

[6] "The New 2023 Cloud Reality: A Rebalancing Between Private and Public," Constellation Research, June 15, 2023

[7] May be subject to minimums or reserve capacity may apply

[8] "HPE Storage substantiation," HPE, 2023

### 3. Simplifying hybrid cloud operations

Hybrid cloud is not a technology. It is an operating model that involves technology, processes, policies, and people across locations, vendors, and IT groups. Operating a hybrid cloud environment efficiently and securely, while pursuing business innovation, is one of the most complex challenges of hybrid cloud. Without the right operating model, technology alone can't solve the most common roadblocks, including:

- Learning to configure, manage, and operate separate environments
- Minimizing security issues and business disruptions while enforcing data policies
- Meeting sustainability goals and requirements
- Gaining visibility into AI/ML environments regarding the availability and performance of resources, service usage, and operational costs
- Managing the utilization challenges of multiple cloud providers with different service offerings, pricing models, and billing structures

HPE GreenLake can help overcome the operational challenges of hybrid cloud. Our AIOps-powered platform delivers a growing number of services and features designed to enable autonomous hybrid operations. The process starts with automated discovery, monitoring, and full-stack observability from infrastructure to cloud. AI/ML engines power event management to rapidly identify, detect, and resolve issues while reducing alert noise. Intelligent automation with business context improves IT service quality, increases IT efficiency, and helps ensure audit and compliance policies. The HPE GreenLake platform applies more than 2200 separate security controls to protect organizations and their data in real time.

### 4. Advancing sustainability initiatives

Sustainability is top of mind in virtually every industry. HPE has a unique perspective based on more than three decades of proven leadership in developing energy- and cost-efficient technologies that remain future-proof for years. We see sustainability as a catalyst for modern business, a force for good and game-changing optimization and smarter economics. As a company committed to being a net-zero enterprise by 2040, with science-based targets along the way, HPE helps organizations advance sustainability agendas with a holistic approach to carbon footprints across the IT estate, edge to cloud.

HPE GreenLake offers hybrid cloud solutions to empower sustainable transformation, including capabilities and resources that optimize every workload with less energy and smaller footprints. It also helps maximize value with greater operational efficiency and visibility across your operations. With HPE GreenLake, organizations can optionally gain access to a sustainability dashboard, which provides comprehensive analytics and insights on IT energy consumption, carbon emissions, and electricity costs. You can easily rightsize and adapt IT while funding future innovation with the HPE GreenLake platform in your data center or at an energy-efficient colocation provider.

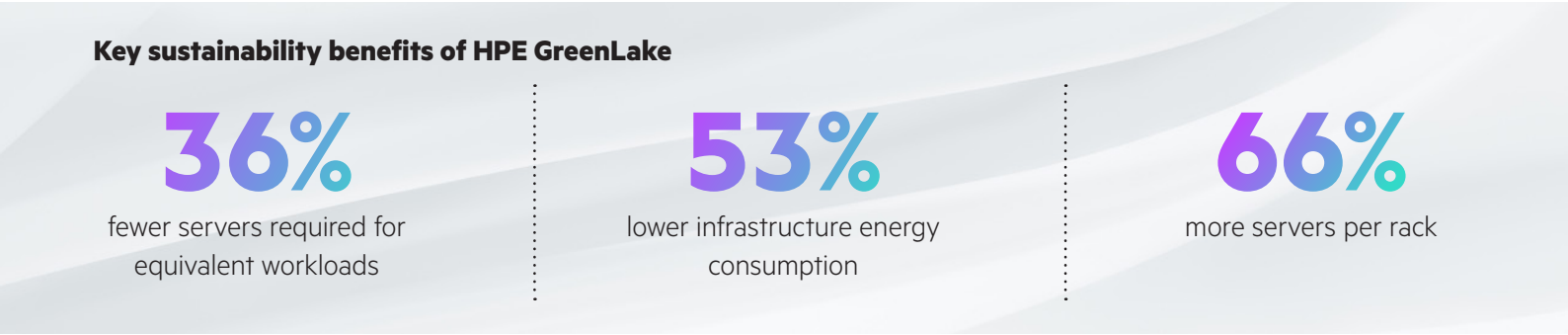


**Figure 2.** Key sustainability benefits[9]

[9] "Business Value of HPE GreenLake: Sustainability Benefits," IDC, 2024

### 5. Securing the hybrid cloud environment

Data sovereignty and security are top of mind for today's decision-makers. Digital transformation can create vulnerabilities, as cloud services and microservices architectures work in tandem with legacy systems and connected devices collect and send high-value data from insecure locations at the edge. Organizations must pay more attention to the people and systems that have access to different data streams.

Escalating cybercrime has put organizations under immense pressure to protect their sensitive data from theft and avoid loss or downtime in their critical business operations. Emerging data regulations increasingly prioritize data protection, transparency, and accountability. In a hybrid environment, your security policies must evolve to adapt to new requirements as well as the modern operating models and technologies in use across your organization.

Security and risk management in hybrid cloud are key use cases for HPE GreenLake. HPE believes that, for organizations to maintain a resilient and evolving IT environment for critical data systems, trust must be built in rather than bolted on. We build security into everything we do to protect your digital supply chain, embedding security technologies into HPE GreenLake to automatically enable the integrity of your data infrastructure—including your hardware, operating systems, virtualization systems, and workloads.

Organizations use HPE GreenLake to protect their sensitive data and workloads with Zero Trust Security architecture spanning everything from the supply chain to the applications layer. Instead of trusting the users and devices connecting to your network by default, a Zero Trust approach assumes no user or device should be automatically trusted, regardless of their location or what resource they are attempting to access. This strategy uses strict policies and permissions as well as advanced technologies, including AI, to help ensure authorized users can access only the resources they need to perform their role. These capabilities, which include automated hybrid cloud management and data protection services, give organizations broader coverage across hybrid cloud environments.

## What makes HPE GreenLake unique?

As discussed earlier, HPE GreenLake provides a common functionality for business, IT, and data teams by helping eliminate the need to build custom private clouds for each application or service. It connects data silos and IT operations across data centers, colos, and clouds. Multiple teams can access data while ITOps teams take control of managing hybrid and multicloud environments.

This complete hybrid cloud platform offers important capabilities:

- **Makes data and AI work in hybrid cloud:** Connect and unify your data, operationalize AI/ML across hybrid landscapes, securely utilize data/AI, and control the costs of managing and storing data
- **Brings cloud agility everywhere:** Stand up a modern private cloud that connects to your public clouds and brings the hallmarks of a cloud experience across your IT environments
- **Simplifies hybrid cloud operations:** Deliver AIOps-powered observability, energy efficiency, governance, security, compliance, and faster performance at a lower cost

Unlike competitive offerings, HPE GreenLake enables multivendor, hybrid, and multicloud visibility and management. The platform is software-based and features a common set of self-service capabilities including user authentication, role-based access control, quoting and ordering of services, managed service provider workflows, metering and billing, tagging, inventory management, notifications, API and CLI standards, a sustainability insight center, and more. Cloud services don't have to recreate capabilities you already have. They are designed to dramatically simplify initial operations, allowing ITOps to focus on more valuable activities.

HPE GreenLake provides a clear advantage for your IT:

- Unified cloud experience for your business and ITOps, DevOps, and FinOps teams
- Data protection and business resiliency with a Zero Trust platform architecture and shared responsibility model
- Seamless integration with ISV solutions and partner offerings
- Fully managed options to secure, automate, and centralize your operations

You can implement IT solutions in flexible ways either through a CapEx model from HPE or by consuming services flexibly on a pay-per-use or subscription basis to best fit your requirements.

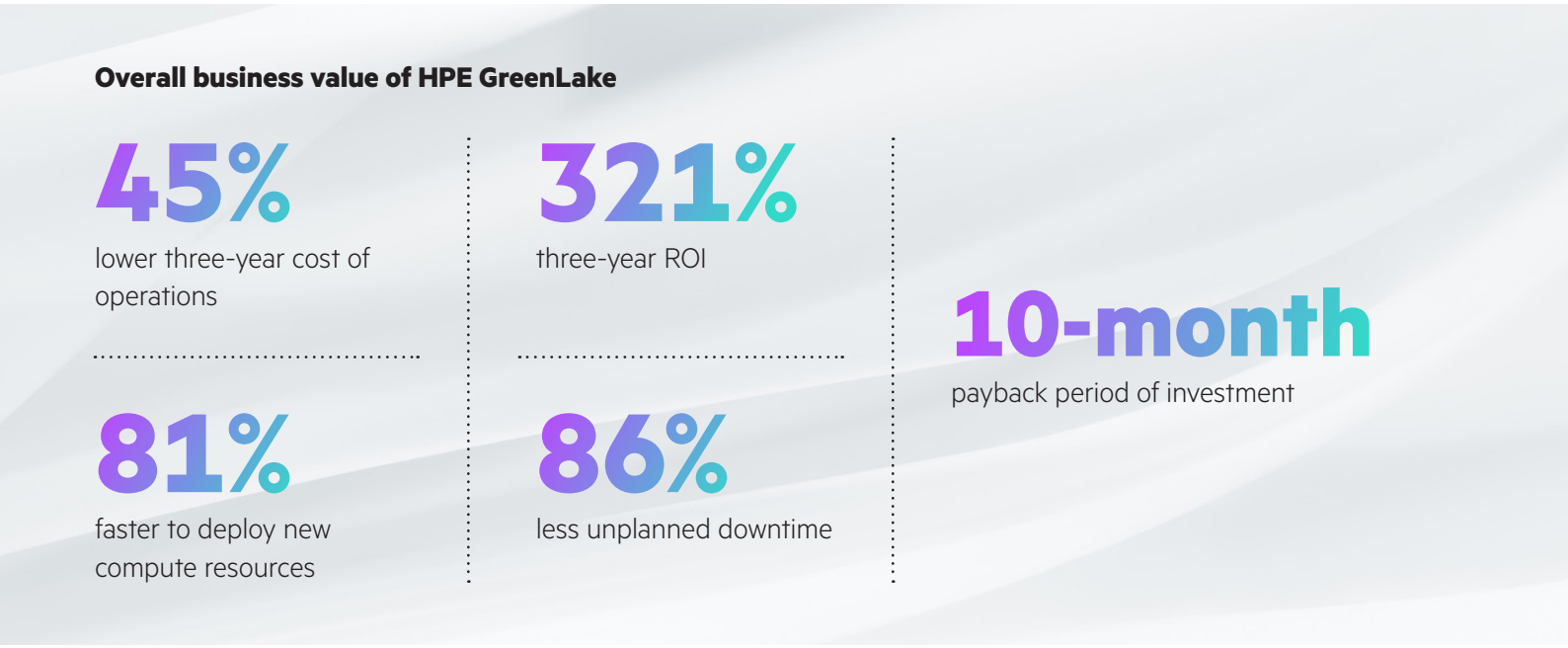


**Figure 3.** Business value of HPE GreenLake: Sustainability benefits[10]

[10] "Business Value of HPE GreenLake: Sustainability Benefits," IDC, 2024

# Hybrid cloud use cases across industries

Organizations with hybrid cloud environments report higher success rates at effectively utilizing edge-to-cloud data than organizations with only private cloud (33% success rate[11]) or public cloud (26% success rate[12]) environments. Having some level of on-premises control is key to enabling reliable access to data, shortening time to insight, and accelerating timely action based on the data. HPE GreenLake is transforming important use cases spanning edge, AI, and more with the capabilities of hybrid cloud.

Tottenham Hotspur Football Club[13] wanted to give its 62,000 fans the most compelling experience possible. The club partnered with HPE to build one of the most intelligent stadiums in the world. Every fan touchpoint is enhanced by the latest technologies, including contactless payment, mobile ticketing, dynamic digital signage, customizable lighting and temperature, and Wi-Fi everywhere. HPE enables these capabilities by helping Tottenham Hotspur capture data at the edge to act on fan needs in real time. Hybrid cloud solutions accelerate innovation while giving Tottenham Hotspur an operational backbone for the future. With the goal of being net zero by 2040, the club has also implemented HPE GreenLake in its offices to reduce energy usage and manage its IT environment all through a single pane of glass.

Trinchero Family Estates[14] is the largest family-owned vineyard in the world, producing over 20 million cases of wine each year. The winery deployed HPE GreenLake to enhance its operations with data collected at the edge (via sensors in vineyards) and boost sales with predictive analytics. The HPE GreenLake platform enabled Trinchero to expand with a new infrastructure in a cost-effective way.

Saskatchewan Polytechnic[15] is a postsecondary institute that equips students with real-world skills they can apply in the workplace. The school wanted to build a resilient learning environment that empowers students and faculty to learn and work from anywhere, with seamless access to the technologies and resources they need to succeed. Saskatchewan Polytechnic developed a hybrid cloud environment with HPE GreenLake to be more prepared for disaster recovery with high availability, reliability, and scalability. Now, the institute has visibility into all its workloads, wherever they are, to ensure that education never stops.

NovoServe[16] envisions a future where service providers share power savings with the residential areas surrounding data centers. The company's goal is to globally expand its infrastructure-as-a-service business model without compromising sustainable business practices and efficiency research. NovoServe aims to reduce its power footprint by 20% to 30% while supporting an ever-increasing demand for compute power. To make all this possible, NovoServe engaged HPE, a like-minded and strategic partner, to support its sustainability benchmarks. HPE GreenLake is the basis of the company's new sustainable IT solution, offering a new provisioning model and custom server preconfigurations to support its rapid business growth. With modern technology provisioning in seconds vs. days, the HPE GreenLake solution helped NovoServe realize 99.98% faster server provisioning potential, reduce power usage by up to 30%, and increase profits with reduced CapEx and OpEx.

As part of a contract, the National Security Agency adopted the HPE GreenLake platform,[17] a new collaboration that allows the NSA to efficiently manage its growing AI and data needs with our as-a-service high-performance computing solutions. The platform provides industry-leading performance through flexible and secure cloud services, fully managed by HPE.

[11], [12] "Using hybrid cloud to control and harness data," HPE, 2023

[13] "Tottenham Hotspur Football Club," HPE

[14] "A wine empire built on inspiration and innovation," HPE, 2023

[15] "Saskatchewan Polytechnic," HPE

[16] "Innovative IaaS provider addresses sustainability," HPE, 2022

[17] "Hewlett Packard Enterprise wins $2B HPE GreenLake contract with the National Security Agency," HPE Press Release, 2021

# Getting started with HPE GreenLake

As organizations enter the next wave of transformation, HPE can assist at each stage of their journey. We support your diverse business initiatives—whether your mission is to complete your hybrid cloud, connect your edge, turn data into intelligence with AI, or secure vast amounts of data. A broad portfolio of solutions is available to help modernize your enterprise compute environments and maximize the value of your data.

**Make data and AI work in hybrid cloud**

Manage the AI/ML lifecycle and protect, unify, and govern data wherever it resides

**Bring cloud agility everywhere**

Create a modern private cloud that brings cloud agility and economics across your organization

**Simplify hybrid cloud operations**

Deliver AIOps-powered hybrid and multicloud IT operations

## Opening up opportunities from edge to cloud

Explore HPE GreenLake with an interactive demo experience or hosted trial. You can also engage with our experts for an advisory session to make the transition to hybrid cloud.

Let's rethink your hybrid cloud design.

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