Optimizing with hybrid cloud

A smarter guide to transforming your IT infrastructure

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Embracing a hybrid cloud future

During the past several years, IT leaders across all industries have been challenged to transform their organizations rapidly. The leading edge of this digital transformation was the CIO. With the success of these efforts, IT's role has expanded with responsibilities beyond IT operations. Today, the CIO role has massively transformed, with a renewed focus on building an agile, modern infrastructure designed to grow the business.

IT leaders found that making immediate infrastructure changes prepares their organizations and allows them to respond faster to ever-changing business needs. While many look to public cloud solutions, the reality is that a hybrid cloud provides organizations with a "best of both worlds" solution where critical data and processes are delivered on-premises or at the edge while other tasks like application development and disaster recovery are moved to a public cloud.

This paper guides you through the platforms, options, and services to consider for your migration to a hybrid cloud. As you take your first steps on your transformation journey, we'll delve into the smart questions to ask when selecting a potential hybrid cloud service provider.

Here's a quick preview: If they don't provide a solution that's customized for your unique business needs, you're talking to the wrong cloud partner.

A move to modernization

As organizations move back to the office or implement hybrid work models, IT leaders are now redirecting their attention to modernizing their enterprise architectures. The 2022 State of the CIO survey confirmed this shift in IT priorities, with **85% of IT leaders stating they are currently spending their time on transformational activities** — the top priorities including modernizing infrastructure and applications (40%) followed by aligning IT initiatives with business goals (38%) and cultivating the IT/business partnership (30%).[1]

Innovation vs. operational excellence

Evidence continues to support the ongoing expanding role of the CIO in leading business transformation. 74% of IT leaders report that the CIO role was elevated due to the pandemic, and this visibility within the organization is expected to continue. Coupled with a minimal increase in budget and a lack of skilled resources to implement a transformation strategy, 76% of IT leaders say it's challenging to balance business innovation with operational excellence.[1]

People-first, cloud-first

The human factor also becomes essential as your organization looks to transform, from alleviating stress on IT teams to maximizing critical IT resources and providing customers and employees with world-class digital-first experiences.

The challenges ahead

With increased support from the boardroom, IT leaders are laying the groundwork for developing a hybrid cloud strategy. But what hurdles lie ahead? How do you evaluate potential cloud service providers to help migrate to a hybrid cloud? Will your organization reap the rewards of greater agility and flexibility when you shift from your current on-premises infrastructure?

Let's dive in.

Top transformational priorities of IT leaders
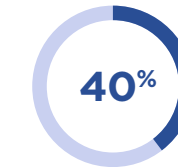
40%
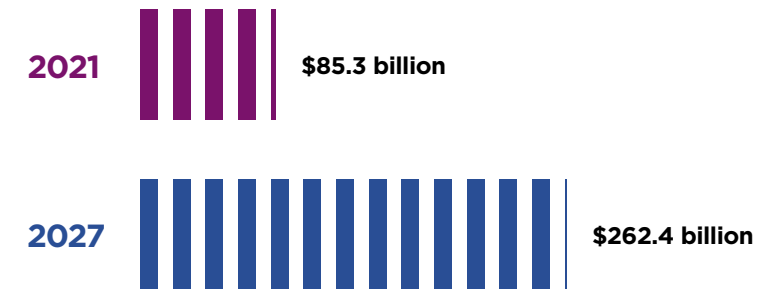Modernizing infrastructure and applications

38%
Aligning IT initiatives with business goals
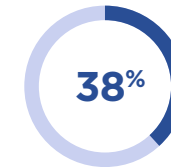
30%
Cultivating the IT/business partnership

The global hybrid cloud market is set to increase to $262.4 billion in 2027.[2]

2021   **$85.3 billion**

2027   **$262.4 billion**

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Driving the hybrid highway: The best of both worlds?

"If someone asks me what cloud computing is, I try not to get bogged down with definitions. I tell them that, simply put, cloud computing is a better way to run your business."

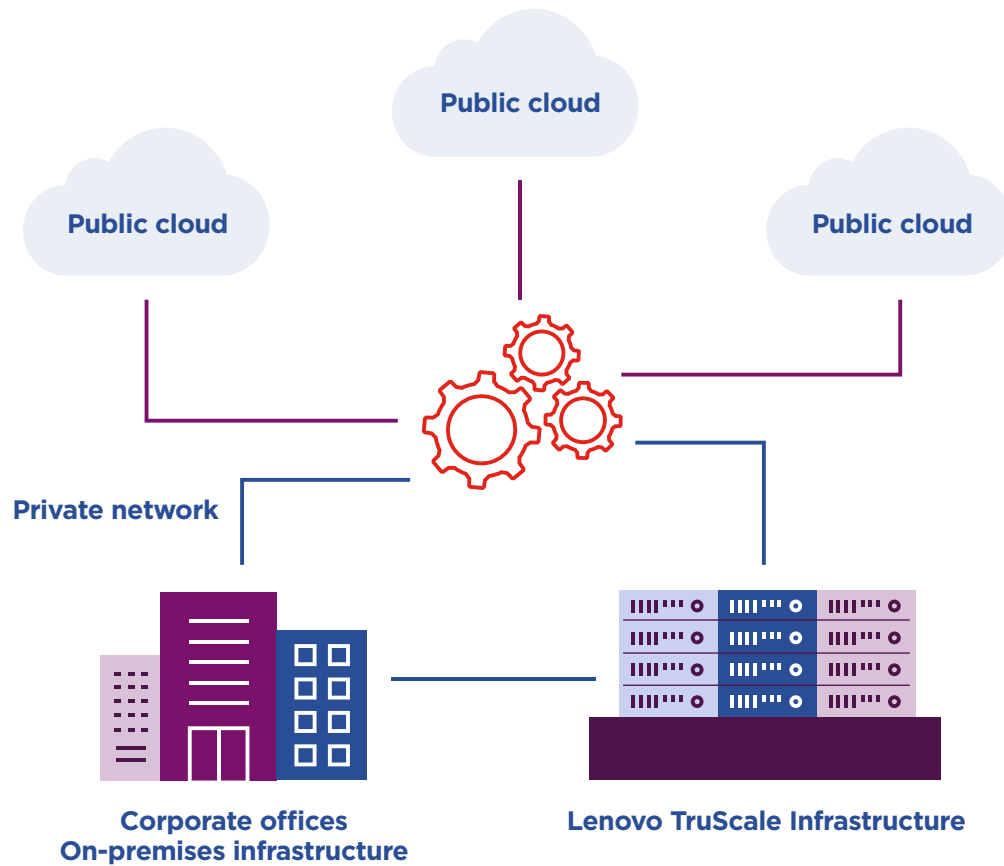**Mark Benioff, founder, CEO, and chairman, Salesforce**

A hybrid cloud provides organizations with greater flexibility, more deployment options, security, and compliance — in effect, getting more value from their existing infrastructure. Essentially, a custom hybrid cloud solution allows organizations to seamlessly scale where application demands fluctuate while taking advantage of on-premises or private clouds where necessary.

Organizations gain the flexibility and scalability of the public cloud while running other mission-critical workloads for better control, performance, compliance, or security demands with an on-premises or private cloud platform. The hybrid cloud allows for combining OpEx and CapEx models while maximizing existing infrastructure investments.

According to Foundry's 2022 cloud computing study, 60% of IT leaders agree that cloud capabilities helped them achieve increased and sustainable revenue in the last year. It's no surprise that organizations plan to allocate an average of 32% of their IT budgets to cloud strategy next year.[3]

As the evidence suggests, this migration to the hybrid cloud shows no signs of slowing down, but transformational success depends on both the model type and the cloud service partner you choose to deploy your hybrid cloud.

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Public cloud

Public cloud

Public cloud

Private network

Corporate offices
On-premises infrastructure

Lenovo TruScale Infrastructure

Benefits of migrating to a hybrid cloud environment

Effective application governance

You decide where your application sits and where hybrid computing happens, helping improve privacy and ensuring compliance for your regulated applications.

Improved performance and reduced latency

Sometimes distributed applications at remote locations benefit from a hybrid cloud solution like Lenovo ThinkAgile™ hyperconverged solutions, powered by Intel® Xeon® Scalable processors. Hybrid computing happens close to the end users for applications with low latency demands.

Flexible operations

Flexible operations provide the flexibility to operate in the environment best for the application or use case. For example, by building containers, you can create portable applications and quickly move between public and private clouds.

Improved total cost of ownership

Managed services free valuable IT resources and maximize investments, delivering favorable TCO. You can manage resources more efficiently by applying private and public cloud solutions to your existing on-premises infrastructure. A "pay as you go" approach, like Lenovo TruScale, is fast becoming the preferred model for IT leaders seeking greater agility and flexibility as workload demands ebb and flow.

Is hybrid on your horizon?

Evaluating the various platforms and applications to shape your hybrid cloud migration can be daunting. Every company's business model, goals, mission, and profit drivers are unique, compounded by business units with competing priorities and needs.

Rather than immediately migrating a single application, working with a trusted hybrid cloud provider is key. These experts explore the entire infrastructure to help guide where workload migrations will deliver the best outcomes and provide an infrastructure roadmap for your organization.

The following typical use cases can help you decide if hybrid cloud is right for your environment.

> "Cloud is about how you do computing, not where you do computing."

Paul Maritz, CEO, VMware

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Digital transformation

Companies often want to modernize their IT infrastructure through public cloud adoption, but strategic applications or compliance factors may preclude a business from shutting down a private data center entirely. With a hybrid cloud, companies can mix data and application types to migrate parts of their IT infrastructure to the cloud and retain some applications on-premises.

Disaster recovery

A hybrid cloud helps organizations replicate on-premises workloads and back up data in the cloud. If there's a data center disruption, workloads fail over in the cloud environment and operate properly via on-demand cloud resources. This helps the business avoid unplanned downtime and ensures the availability of the applications and information employees rely on and customers expect.

Development and testing

It's more cost-effective and faster to develop and test applications in the public cloud because there's no need to purchase and set up on-premises physical hardware. This provides organizations the freedom to fail fast and learn fast before they go to market.

Data processing

A hybrid cloud allows a company to use complete public cloud services to run periodic analytical queries on locally stored data. This helps organizations better shape future business decisions to aid growth.

Dynamic workloads

Hybrid cloud is particularly valuable for workloads. For example, a transactional order entry system that experiences significant seasonal demand spikes is a good hybrid cloud candidate. In addition, common web apps, web servers, distributed data stores, and containerized microservices are well suited for dynamic workloads.

Exploring a public cloud provider

Some organizations use a hybrid approach to evaluate a potential public cloud migration. An IT team can experiment with cloud tools on a small scale and learn how to work with the cloud service provider before committing to a full public cloud adoption.

How to hybrid

Using one or more public clouds in addition to your on-premises servers can simplify the management of your application and help you get more from the cloud. When switching to a cloud environment, you have several choices in how to set up your hybrid cloud. Your transformation partner should have the experience and skills to guide you depending on your unique business needs. These are the three basic setups:

Lift and shift

Migrate an app from a private computing environment to the public cloud without significant changes. Commercial applications with easily defined components are the obvious choice for lift-and-shift migration. Lift-and-shift migration also simplifies setting up VMs in the cloud by directly migrating data center workloads to dedicated VMs. The lift-and-shift migration provides a simple security and compliance management process. You can now map the requirements to controls they want to implement in storage, network, and compute resources.

Improve and move

An improve-and-move cloud migration strategy is similar to lift-and-shift migrations. The most significant difference is that the improve-and-move migration allows your organization to modify the workloads to take advantage of cloud-native capabilities while the migration is taking place. For instance, you can enhance each workload for performance, features, cost, or user experience. If a significant update to the workload is necessary in addition to the updates needed to migrate, an improve-and-move approach is critical.

Rip and replace

A rip-and-replace cloud migration strategy is perfect if the current app is not meeting your organization's goals. For example, a company may choose this approach if they have siloed or web applications that don't require complex configurations. Of course, rip-and-replace migrations do require extra time and effort to implement successfully.

When choosing the right approach for your organization, the application will often dictate the approach, and it's common to apply all three options when delivering a broader transformation. That's why it's imperative to partner with a trusted hybrid cloud provider who can help assess the demands and guide your migration decisions to ensure a successful migration.

Questions to ask before migrating to a hybrid cloud

- Is your team clear on the goals, priorities, and desired outcomes of your cloud migration? Clarity ensures migrations are focused on the solutions that will deliver the most value.

- Which applications are showing growth in resource demands? These are good candidates for a public cloud.

- What virtualization or container tools are already deployed? Understanding the tools will determine the migration approach and the need for outside expertise.

- What do you already have in play that could make for an easy lift-and-shift approach? Consider opportunities where you can "containerize" apps that can accelerate migrations.

- What will the new paradigm bring to the business? IT leaders need to take a holistic and long-term view of the architecture and the flexibility needed to address future needs.

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Ready for the challenge of hybrid?

Migrating to a hybrid cloud delivers significant flexibility, allowing you to manage data and workloads while enabling shifts in capacity as needed. This digital transformation optimizes the tools and data employees rely on, especially as work life becomes more distributed. Whether it's solving remote demands related to hybrid work, applications reliability, or information availability, the hybrid cloud delivers a better customer experience, enables employees to do their best work, and helps organizations meet their goals.

This stable technology backbone removes workloads, freeing valuable IT resources to focus on delivering transformative business solutions from AI/analytics, high-performance computing, edge computing, and hosted desktops (VDIs).

However, the digital transformation of your organization comes with its own set of challenges and frustrations. In Foundry's 2022 cloud computing study, 96% of IT leaders said they experienced significant challenges to implementing their cloud strategy, with cost control reported as one of the most pressing issues.[3] But knowledge is power, and if you're aware of the key challenges up front, your organization will be better armed to address the issues.

Let's run through the top 6 challenges you'll face as you switch to a hybrid cloud and how to work with your cloud service partner to solve them.
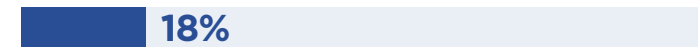
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Hybrid cloud and multicloud intentions[3]
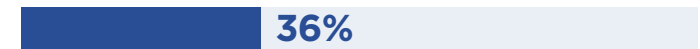
36%
Currently evaluating or researching one or the other

29%
In the process of deploying or have already deployed hybrid cloud

18%
In the process of deploying or have already deployed a multicloud architecture

18%
Do not plan to deploy either a hybrid or multicloud architecture approach

Top 6 challenges of moving to a hybrid cloud and how to solve them

Considering the complexity and expertise required for a successful digital transformation project, it's no surprise IT leaders often turn to partners to help them navigate the choppy waters of setting up, migrating to, and deploying a hybrid cloud. Companies now look to their technology partners to significantly advance their cloud strategy over the next year.

Given the challenges of cloud migration, choosing the right partner can alleviate the stress and uncertainly of your transformation and ensure success.

IT leaders' top needs from current and future cloud providers[3]
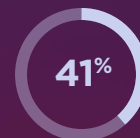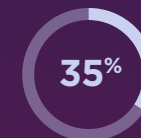
41%
Security expertise

40%
Better cloud management capabilities
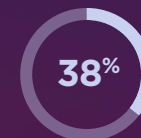
38%
Cost management capabilities

35%
Guidance on overall cloud strategy

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6 challenges of moving to a hybrid cloud and how to solve them

1

CHALLENGE

Flexibility and security

The benefits of flexibility and control often come with additional security challenges. Mixing public and private clouds or infrastructure can sharply increase complexity and heighten risk. The complexity of hybrid cloud also makes it more difficult to establish and maintain effective compliance protocols. This means weighing the benefits of flexibility and control against the potential security risk and falling out of compliance.

SOLUTION

Optimize your cloud strategy

Having a partner who can help assess and guide where migrations are most appropriate can ensure the public cloud is optimized. The partner should be able to provide private Cloud as a Service options to enable cloud scalability and a pay-as-you-go model, shifting from CapEx to OpEx. Choosing a hybrid cloud partner with a deep understanding of the different workload types (operational, analytic, secure) and integrated platform options (on-premises, off-premises, co-located) will ensure your cloud is optimized for efficiency, resilience, and scalability.

2

CHALLENGE

Managing multiple vendors and platforms

Operating a hybrid cloud means keeping track of multiple vendors and platforms and managing them between computing environments. Developing clear workflows and processes and a solid team of managers and administrators to coordinate vendors and services is a significant burden. Additionally, uncovering regulatory and privacy concerns like GDPR limits where your data and workloads can be located.

SOLUTION

Partner with experience

The technology partner you choose should have an extensive global services infrastructure, providing access to leading cloud providers. Your partner should also have the ability and experience to navigate and manage these complex relationships. They should be able to deliver an integrated solution that makes it easy to monitor and manage all your environments. Look to partners with technology and solutions that work across a variety of leading brands including Microsoft Server, Microsoft Azure, VMware, Microsoft SQL/AI Analytics, Veeam, Nutanix, and SAP.

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6 challenges of moving to a hybrid cloud and how to solve them

3

CHALLENGE

Increased complexity, decreased visibility

As companies deploy more public cloud services and add private cloud capabilities, their IT environments become much more complex. Without taking steps to monitor usage of the services, they lose visibility of what's going on in this environment, often resulting in infrastructure sprawl and potential security gaps. The Cloud Security Alliance (CSA) — an organization that defines standards, certifications, and best practices for secure cloud computing environments — cited misconfiguration, inadequate change control, and limited cloud usage visibility as being among the top threats to cloud computing.

SOLUTION

A technology partner who offers a hybrid cloud solution with an open software ecosystem

IT teams can implement best-of-breed automation and orchestration tools that work across platforms and reduce monitoring and management effort while improving resilience. Evaluating legacy systems and updating to hyperconverged infrastructure (HCI) solutions can offer a simple, proven path to realizing hybrid cloud strategies while minimizing space demands.

4

CHALLENGE

Controlling costs

IT teams need to be prepared for anything with the agility to move quickly — whether because of a shift to remote work or new business models created by digital transformation. On-premises solutions that require up-to-date technology and scale with changing demands can drive capital expenditures. Public cloud solutions require constant monitoring since subscription resources can become idle.

SOLUTION

Infrastructure as a Service

In this environment, an as-a-service on-premises or private cloud model offers tremendous flexibility and agility, just like a public cloud. Make sure your potential partner has management expertise and as-a-service options that include no lock-in and 24/7 remote monitoring and management without accessing your customer data. Also make sure they monitor your power consumption for actual storage use, not for the storage space assigned, so you only pay for what you use. They should have competitive upfront costs for installation, ability to scale up as needed, offer predictable pay-as-you-go billing, and provide the professional support and services you need.

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6 challenges of moving to a hybrid cloud and how to solve them

5

CHALLENGE

Shifting security and compliance responsibilities

The responsibility of implementing controls around network security, infrastructure, and virtualization incrementally shifts to cloud providers in a public cloud ecosystem. Understanding the changing security shared responsibility model can be challenging. Additionally, with government or industrial regulations requiring certain types of applications or data to be stored in specific ways, your company will be responsible for ensuring that the software configuration works properly with on-premises systems and that your site is secure.

SOLUTION

Clarity and certification

Your cloud transformation partner should deliver a clearly defined responsibility assignments matrix and operating model in a hybrid cloud ecosystem. With 72% of enterprises describing their cloud strategy as hybrid-first rather than cloud-first, this can lead to major security gaps in the infrastructure if not addressed.[4] When storing data and apps that are sensitive or fall under regulatory control, make sure your service provider has the necessary certifications and global coverage to comply with government regulations and policies.

6

CHALLENGE

Sourcing valuable IT resources

Hybrid cloud requires unique skills that are particularly difficult to fill — cloud architects, data engineers, and solution architects. According to the 2022 Foundry study, 33% of IT leaders say they struggle to hire talent with cloud management skills or expertise. Even with 90% of CIOs expecting their organization's overall IT budgets to either increase or remain the same, they still predict a struggle to secure good talent.[3]

SOLUTION

Free your teams

When you shift your data management to using a partner cloud service, you free up valuable IT resources that you can train. Your brightest talents can now work on the organization's new initiatives. Focusing on trusted partners with credentialed experts and global coverage is key.

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Emerging transformations

Hybrid cloud frees IT teams to work and deliver on the next innovation.

Analytics and AI

Most businesses have an AI or analytics goal, whether it's to get started, scale up a project, or accelerate to real-time insight. An experienced cloud partner has solutions that are pre-tested and pre-configured, with 24/7 access to experts who can guide you in AI and analytic projects. Look for ultra-reliable technologies that deliver insights that drive business growth and help you better understand your organization's processes as well as your customer needs.

High-performance computing

Finance and research laboratories are typical industries where low latency and high-performance processing are necessary to manage the vast amounts of transactions and data. However, many other organizations are using data engines to create competitive advantage by dramatically reducing data-intensive development cycles, like feature animation or gaming design. Any process where speed is mission-critical should be explored. Look for partners with technology credentials like TOP500 to guide you.

Edge computing

Like remote work devices, applications are moving out to the edge. From the factory floor to retail stores to even cattle ranches, data processing is happening everywhere. Edge computing expands the perimeter that the hybrid cloud can reach. Make sure your cloud service partner has the innovative technology and expertise to extend your perimeter and deliver applications where they're needed most.

Disaster recovery and data availability

Preventing data loss from growing internal and external threats and risks, such as cyberattacks, ransomware, malicious or accidental activities, and disasters, is a continuous challenge for many organizations. Unexpected downtime has the potential for severe business disruption and data loss, costing millions in lost revenue. Both disaster recovery solutions and now data availability solutions can help solve for any unexpected downtime. Your technology partner should provide a best-in-class infrastructure platform that offers rapid failover to a secondary site in the event of a disruption.

Sustainability

Today's customers prefer sustainable businesses. 57% would change buying habits to reduce environmental impact.[5] At the same time, most employees (65% according to a Unily survey)[6] said they were more likely to work for a company with a robust sustainability policy. Ask your potential cloud partner about their sustainability goals. Do they offer simple carbon cost offsets for all hardware at the point of purchase? Will they help you achieve compliance targets with clear and detailed data and provide the ability to track and confirm carbon offset contribution via device IDs? Giving time and attention to sustainability as you transform to a hybrid cloud can make a real difference for both your employees and your customers.

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Aspiring to a hybrid cloud future

Hybrid cloud is the smart choice for many organizations looking to compete in today's global economy. But the hybrid cloud is more than just the promise of a more efficient, agile, flexible digital business. The hybrid cloud provides a more stable and resilient foundation for your employees who, more than ever, rely on information to do their best work. Customer expectations have also risen and they choose companies that can deliver world-class experiences and solve the emerging challenges facing all of us.

Hybrid cloud frees valuable resources to fuel innovation and supports solutions that drive global change and social impact. Your organization may even develop the next amazing application or uncover insights that propel good in the world and unlock the limitless potential of your data.

Make the smarter hybrid cloud move with Lenovo TruScale IaaS

Lenovo is your trusted cloud partner and the only company with true end-to-end capabilities for your hybrid cloud solution. We'll help you plan, design, build, and deploy worldwide with solutions customized to your needs.

Lenovo TruScale Infrastructure as a Service provides a cloud-like experience with on-premises security and control, giving you the all the power and strategic advantage of the latest data center hardware through a pay-as-you-go business model.

Easily scale without incremental capital investments and focus more on the next strategic initiative — thanks to included 24/7 proactive monitoring, management, services, and a customized customer portal for transparency into your storage consumption.

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How will your organization harness the power of the hybrid cloud?

At the end of the day, a successful cloud strategy involves thinking about the whole lifecycle, from rapid migration to data management, while ensuring the ecosystem grows with you. This end-to-end cloud clarity requires a partner that can build a seamless IT environment with security, scalability, and agility.

Learn more about Lenovo hybrid cloud solutions. Speak with your Lenovo Infrastructure Solutions salesperson or Lenovo Authorized Reseller of choice today!

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Sources

1   Foundry, "2022 State of the CIO Executive Summary," February 2022
2   Research and Markets, "Hybrid Cloud Market: Global Industry Trends, Share, Size, Growth, Opportunity and Forecast 2022–2027," July 2022
3   MarketsandMarkets, "Hybrid Cloud Market — Global Forecast to 2023," August 2018
4   Foundry, Cloud computing study 2022, April 2022
5   IBM Institute for Business Value, Global Survey, March 2021
6   Unily, "Future of the sustainable workplace in the age of COVID-19 and climate change," October 2020

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