White paper

Innovate anywhere with Microsoft Azure

Microsoft Azure Arc brings cloud benefits to your on-premises, multicloud, and edge workloads.

Microsoft Azure

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A hybrid and multicloud strategy is critical to your success

A hybrid solution is one that combines your on-premises, multicloud (multiple private and public clouds), and edge environments to provide the right solution to unlock business value through innovation, cost optimization, and security. A survey conducted by The Harris Poll and sponsored by Microsoft found compelling trends among the enterprises surveyed across all industries and geographies concerning their hybrid and multicloud strategies:

93 percent of enterprises are committed to a hybrid and multicloud strategy.[1]

86 percent of enterprises plan to increase investment in hybrid or multicloud environments.[1]

95 percent of enterprises report that hybrid and multicloud technologies are already critical to their success.[1]

Organizations like yours are already embracing both hybrid and multicloud strategies. Flexera reports that 89 percent of organizations it surveyed use multiple clouds, and 80 percent of organizations surveyed use a hybrid cloud (Figure 1).[2] Dividing the survey results a different way, only 16 percent of organizations exclusively use public clouds, while only 4 percent use a private cloud exclusively (Figure 1).[2]

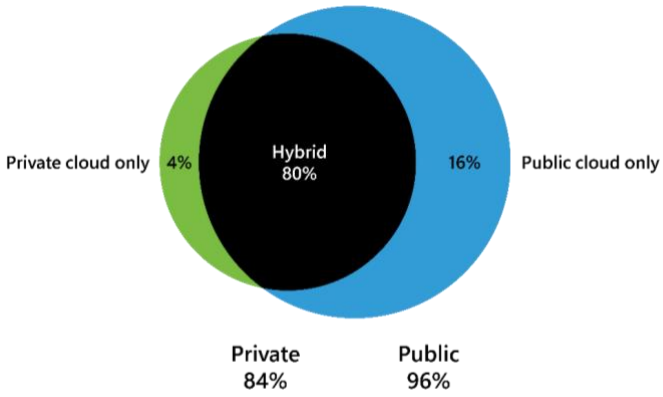

Figure 1. Breakdown of organizational cloud use: public, private, and hybrid [2]

Here are some of the top reasons that businesses like yours are investing in a hybrid strategy:

1. **Faster time to market**—You can accelerate innovation and bring products to market faster than your competitors to add market value, enable global outreach, and enhance product capabilities at scale.[3]
2. **Cost optimization**—You can achieve cost savings by optimizing your compute and IT resources, multiple licenses, and single-purpose tools.[4]
3. **Enhanced productivity**—Collaboration and management tools in the cloud can empower your IT team to be productive from different locations.[5]
4. **Security and compliance**—You can comply with security and federal regulations to deter security breaches, fines, downtime, and loss of trust.[6]

Hybrid cloud generates **2.5x** greater business value than a single cloud platform approach.[3]

Why your IT team cares about a hybrid and multicloud strategy

The ever-changing and organic nature of IT investments to manage the distributed digital estate has led to incompatible tools and processes. Hybrid cloud has introduced a new set of requirements for the public cloud that pushes the way we think about cloud technology. With a plethora of IT tools, an ever-expanding set of responsibilities, and limited IT resources, IT teams are struggling to keep up with the variety of tasks that they must manage, and they are looking for tools to streamline innovation, secure assets, and simplify management.

Below are some of the top reasons IT teams need a hybrid and multicloud strategy:

1. **Secure and govern the distributed digital estate**—Organizations need to secure their distributed digital assets, get control over their sensitive assets and intellectual properties, and reduce their risk profiles.
2. **Accelerate and scale innovation using cloud-native practices**—Organizations want to enable the developers and line of business (LOB) units to build cloud-native apps and solutions to meet their business needs in a quick and safe manner.
3. **Transform data insights into new products and services**—Organizations want to connect different data sources to drive insights and automate future actions through artificial intelligence (AI) and machine-learning (ML) technologies.
4. **Meet latency, regulatory, data residency, and data sovereignty requirements**—Organizations require low latency for certain applications, while complying with data residency and sovereignty requirements per local regulations.

With customers' everchanging needs and environments, we at Microsoft firmly believe that customers need to have the flexibility, the consistency, and a comprehensive set of capabilities that they want to innovate without compromise to react to changing business scenarios like mergers and acquisitions, a global incident, or just to get ahead of the competition. This translates to enabling customers to take advantage of their existing investments, and reusing their investments where they can, while enabling them to take advantage of the latest and greatest cloud innovation—all without compromising security, ease of management, and operations, and without the fear of vendor or platform lock-in.

Our approach to meet your hybrid and multicloud needs is through Azure as the comprehensive cloud platform and Azure Arc as the enabler of the cloud platform in hybrid, multicloud, and edge environments.

Microsoft Azure Arc

Azure is the world's computer that customers can use to innovate anywhere by building apps and services with the flexibility to run across edge, on premises, and multicloud environments.

Azure Arc is a bridge that extends the Azure platform and provides a consistent development, data, operations, and security model for both new and existing applications to run anywhere. Azure Arc helps you to:

1. Develop cloud-native and operate anywhere
2. Harness data insights from edge to cloud
3. Secure and govern across environments
4. Flexibly meet regulatory requirements and connectivity needs

Azure Arc provides a consistent development, operations, and security model for both new and existing applications. Azure Arc runs on both new and existing hardware, virtualization, and Kubernetes platforms, on Internet of Things (IoT) devices, and in integrated systems.

Infrastructure that is deployed anywhere and that can be managed, secured, and governed centrally from Azure is referred to as Azure Arc–enabled infrastructure.

Azure services that can deployed and run anywhere on any infrastructure—in on-premises datacenters, at the edge, or in the multicloud—are referred to as Azure Arc–enabled services.

Table 1 shows the infrastructure and services that are Azure Arc–enabled today. We are continuing to expand on this to enable customers to truly innovate anywhere on their own terms.

Table 1. Current Azure Arc–enabled infrastructure and services

Azure Arc–enabled infrastructure	Azure Arc–enabled services
Azure Arc works for both **Linux and Windows**, with virtual machines (VMs), bare-metal servers, and other clouds. **Azure Arc works with VMware.** Azure Arc works on **Azure Stack HCI**, a hyperconverged infrastructure (HCI) operating system delivered as an Azure service. **Azure Kubernetes Service (AKS) enabled by Azure Arc and AKS on Windows Server** provide out-of-the-box support for most **Cloud Native Computing Foundation (CNCF)–certified** Kubernetes distributions.	**Azure SQL Managed Instance:** Modernize your existing apps at scale with familiar tools, skills, and resources. **Azure Database for PostgreSQL:** Scale your workloads with a fully managed and intelligent Azure Database for PostgreSQL. **Azure Machine Learning:** Train and inference data models in your infrastructure across on-premises deployments or in multiple clouds. **Azure App Service:** Quickly build, deploy, and manage web apps and APIs in any environment. **Azure Functions:** Build event-driven apps with built-in bindings and deploy the same code anywhere. **Azure Logic Apps:** Connect apps, data, and devices anywhere. **Azure API Management:** Manage APIs across all environments. **Azure Event Grid:** Manage routing of all events from any source to any destination.

78 percent of Fortune 500 companies use Microsoft hybrid cloud offerings.[1]

Azure Arc customer scenarios

In order to illustrate the needs for security, governance, and advanced capabilities across hybrid, multicloud, and edge environments, consider the following use-case scenarios.

Develop cloud native, operate anywhere

A retailer with hundreds of stores wanted to move all in-store applications to containers running on Kubernetes clusters. However, the company faced the challenge of how to uniformly deploy, configure, and manage its containerized applications across multiple locations.

Building cloud-native apps for its stores enabled the retailer to bootstrap a new store to fully run with the applications and configuration that a given store requires. With Azure Arc, the retailer's IT team got a unified view across all locations for asset organization and inventory. Additionally, they applied and monitored governance at scale across all stores.

With Azure Arc and a cloud-native app approach, they were able to monitor the state of applications and their configurations in all stores. A GitOps-based model for deploying configurations as code to one or many clusters enables application deployment and updating at scale. And integration with DevOps enables source control–based safe deployment practices when rolling new applications and configurations to stores, while developers can continue to use the development tools they want.

Harness data insights from edge to cloud

A manufacturer wanted to reinvent the way it did business, with a particular focus on data-driven manufacturing. The company had a mix of public cloud, private cloud, and on-premises resources, but it didn't have a unified way of gathering insights from its entire cloud-to-edge landscape to drive innovation and new digital experiences.

To create new opportunities across the value chain, the organization went with a "cloud-orchestrated, locally executed" topology by deploying Azure Arc and Azure Arc–enabled data services. With an intelligent edge, the organization is bringing the cloud across all of its factories. Azure Stack HCI provides an onramp to cloud services, while Azure Arc–enabled SQL Managed Instance helps gather and analyze data on the factory floor for predicative maintenance. With Azure Arc–enabled data services, the organization has powered a faster app pipeline and was able to bring Azure data services to its on-premises, cloud, and edge locations with consistency.

The organization has opened the doors to automated provisioning and management by bringing fully operationalized ML to its on-premises, multicloud, and edge environments. It takes teams less time to add and manage infrastructure, and the pay-as-you-go billing model lets them clearly manage usage and costs in a way they couldn't before. By standardizing and automating operations across hundreds of factories, the organization has reduced its hardware and operations costs, and it has realized new savings on reduction of operational technology (OT)-related downtime of machinery, freeing up valuable resources to innovate at the edge, and delivering value for its customers.

Secure and govern multiple environments

A large financial institution had a sprawling server-based IT system deployed in corporate datacenters, cloud hosters, and the multicloud. However, the sprawl was overwhelming for the organization. It was impossible for the organization to manage and apply consistent governance and security across its environment and meet compliance needs. Moreover, the company used DevOps practices, and it thus had an unknown number of servers that were connected to the corporate networks but that did not conform to the identity and governance requirements of the network.

Azure Arc empowers the financial institution to manage its security posture and threat protection across on-premises and multicloud resources. Azure Arc–enabled services such as Microsoft Defender for Cloud provide a unified view of the organization's security posture, and Microsoft Sentinel helps detect and resolve threats with prioritized security alerts across all of the organization's resources.

A hybrid approach with Azure Arc has helped the financial institution's IT organization to apply governance and security policies at scale across all servers, multicloud deployments, and apps. Azure Arc–enabled services, such as Azure Policy, have unlocked universal governance anywhere through built-in server-compliance rules in any environment from cloud to edge. Azure Arc provides a centralized view of policy-compliance and self-remediation across all servers while simplifying management of the organization's multicloud-based and bare-metal Windows and Linux servers across locations.

Flexibly meet regulatory and connectivity needs

A healthcare customer has hospitals and clinics across multiple countries. The customer was struggling to ensure all its data meets local regulations regarding data handling and management, like the General Data Protection Regulation (GDPR), and improve patient care in its clinics in remote areas with inconsistent connectivity. The IT team needed to keep apps and data on-premises due to regulatory requirements while managing a breadth of devices that support patient care—like sensors and monitors for real-time patient care, which need to remain compliant. The constant interruptions in connectivity and dependency on on-premises latency performance requirements forced the company to maintain legacy infrastructure and localized apps, which exposed the company to risks of noncompliance and security breaches due to a lack of consistent management.

With Azure Arc, the healthcare IT team can connect its distributed clinics and IT systems with a single management interface, and it can apply policies to ensure compliance with local regulations on a regional basis. The company is able to retain its on-premises infrastructure and connect its diverse assets by installing Azure Arc on the edge while getting the desired connectivity and latency performance for localized apps and containers.

The ability to manage, secure, and implement compliance across the company's local and cloud environments has empowered the customer to securely expand its modernization in the cloud to improve patient care, IT operations, and compliance across multiple geographic regions with Azure Arc.

Harness evolving technologies with the Azure hybrid cloud

With the right tools, organizations like yours can harness rapidly evolving technologies such as AI, IoT, and the cloud to transform their businesses and realize new opportunities. Azure Arc enables organizations of all sizes to simplify management and provide additional capabilities for their hybrid deployments: on-premises, across multiple cloud providers, and at the edge.

See what you can do right away with Azure Arc:

- Visit the Azure Arc homepage: **https://aka.ms/arc**
- See customer stories: **https://aka.ms/arccustomerstories**
- Read the Forrester Consulting Total Economic Impact (TEI) study: **https://aka.ms/arc-forrester-security**
- Try Azure Arc for free by visiting the pricing page and signing up for a $200 credit to explore Microsoft Azure: **https://azure.microsoft.com/pricing/details/azure-arc/**
- Learn more about Azure Arc scenarios: **https://aka.ms/AzureArcJumpstart**

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[4] Lucidchart. "Benefits of switching to a hybrid cloud infrastructure." **www.lucidchart.com/blog/hybrid-cloud-benefits**.
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