

CLOUD SERVICES

Breaking Down the Big Three Cloud Service Providers: AWS vs. Azure vs. GCP

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GUIDE



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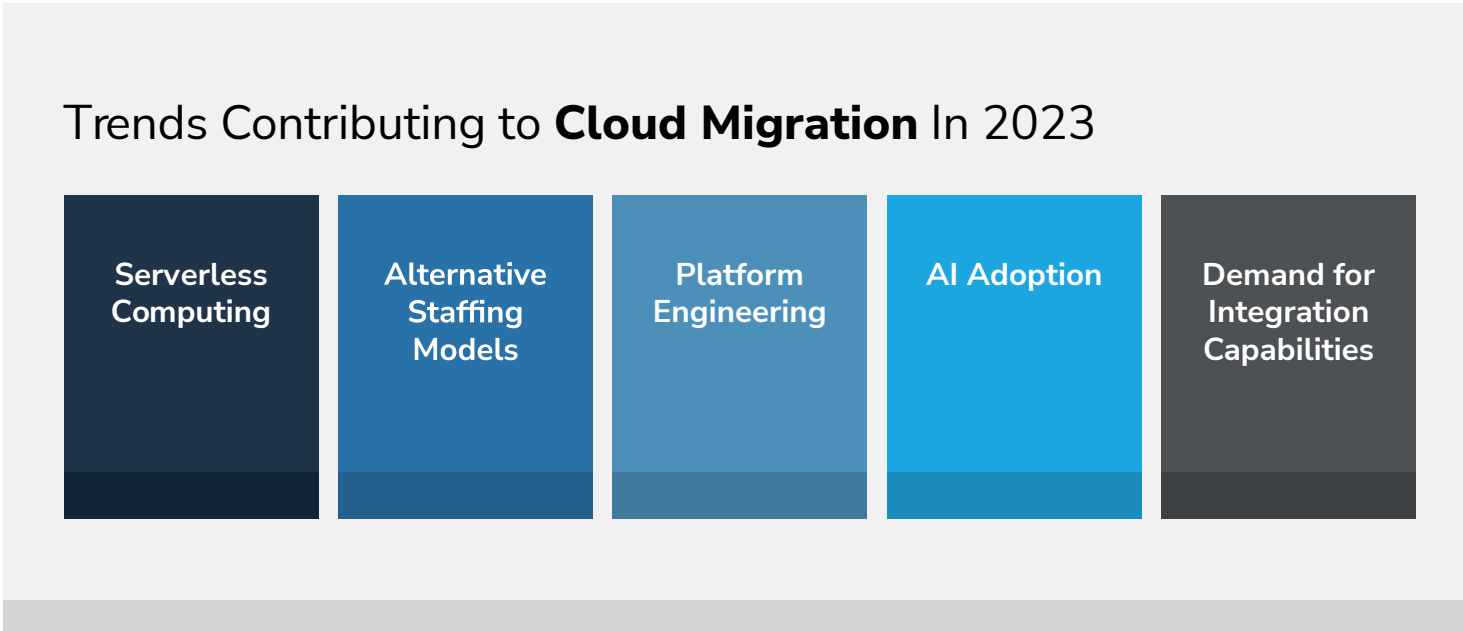
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Introduction

Cloud computing has revolutionized IT in the last decade, with **over 94% of enterprises currently leveraging the benefits of cloud computing for some part of their business**. In 2023, we can expect to see companies continuing to leverage cloud services to access innovative technologies and propel their business operations. On-premise IT is being replaced with cloud-based solutions, making flexible work arrangements possible in our globalized world. Migrating to a **cloud environment** can improve a business' reliability and scalability while sometimes saving money on IT overhead by reducing the number of in-house data centers and infrastructure. Some organizations are also implementing a **hybrid cloud or multicloud approach** to further capitalize on these benefits.

As we look toward the future, the question is no longer whether you should move to the cloud; rather, who should you select as your cloud provider when you do, and what is the best way to optimize your current strategy? Should you embrace a multicloud approach or stick with just one provider? There are dozens of cloud providers to choose from, but let's work towards an answer by taking an in-depth look at the three cloud providers with the largest market share: Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP).

In this guide, we'll also discuss multicloud and hybrid cloud approaches, explain how you can begin creating a cloud roadmap, and offer suggestions to ensure your cloud migration process is successful. By reading the following pages, you'll have the knowledge you need to fortify the right cloud strategy for now and the future.



Source: [5 Cloud & DevOps Trends for 2023 \(Wizeline\)](#)

The Cloud Landscape in 2023



As of Q3 2022, three well-known tech giants – AWS, Azure, and GCP – continue to dominate the public cloud market, capturing a collective 66%, according to [Synergy Research Group](#). AWS leads the pack with more market share than its two largest competitors combined, holding 34% as of Q3 2022. In 2021, the company continued to outperform analysts' predictions with its [accelerated growth](#) in the marketplace – generating close to \$18 billion USD in Q4 of 2021 and resulting in a 39.5% year-over-year increase. However, AWS's Q3 2022 sales of [\\$20.5 billion USD](#) fell short of the projection for the quarter, amounting to 27% year-over-year revenue growth – its lowest since 2014. Organizations' efforts to cut costs amidst rising inflation and economic uncertainty could help to explain this setback.

Trailing behind AWS is Microsoft Azure, holding a steady [21% market share](#) in 2022. Microsoft's cloud service has seen the quickest growth in market share since 2017 when it held 14% of the cloud market, and AWS held 32%. As Microsoft leverages its enterprise connections and decades-long reputation to push Azure, it continues to close the gap and put pressure on AWS.

The race for market share leader in the [public cloud computing](#) industry has remained relatively unchanged in the last few years. Industry leaders are continuously expanding their reach, improving products, and adding to their service offerings to differentiate themselves in a highly competitive market [forecast by Gartner](#) to reach \$591.8 billion USD in 2023.

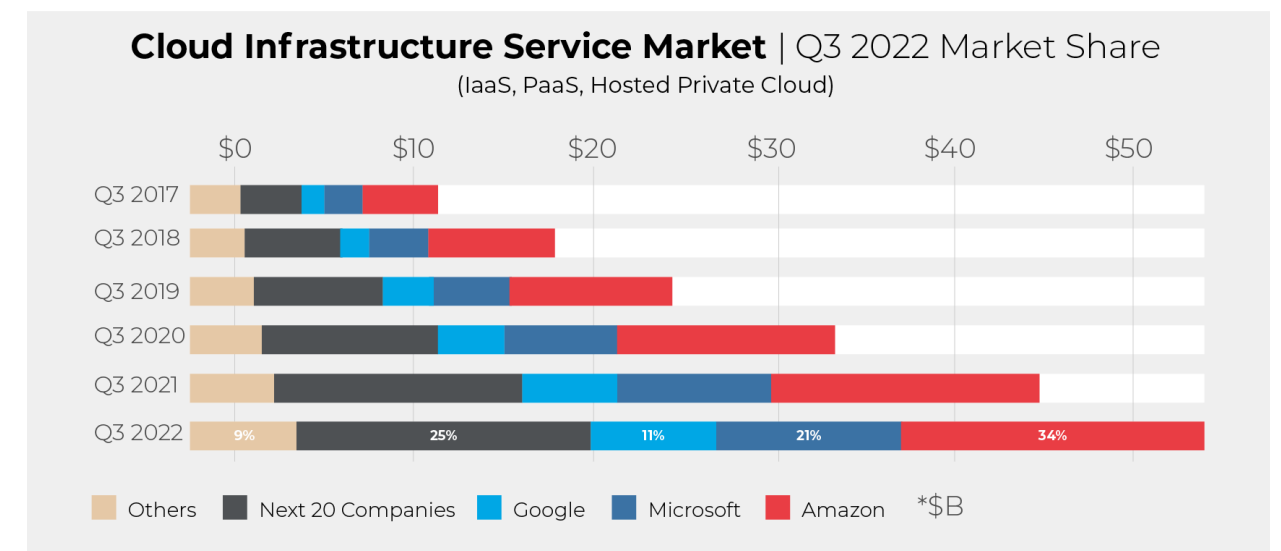
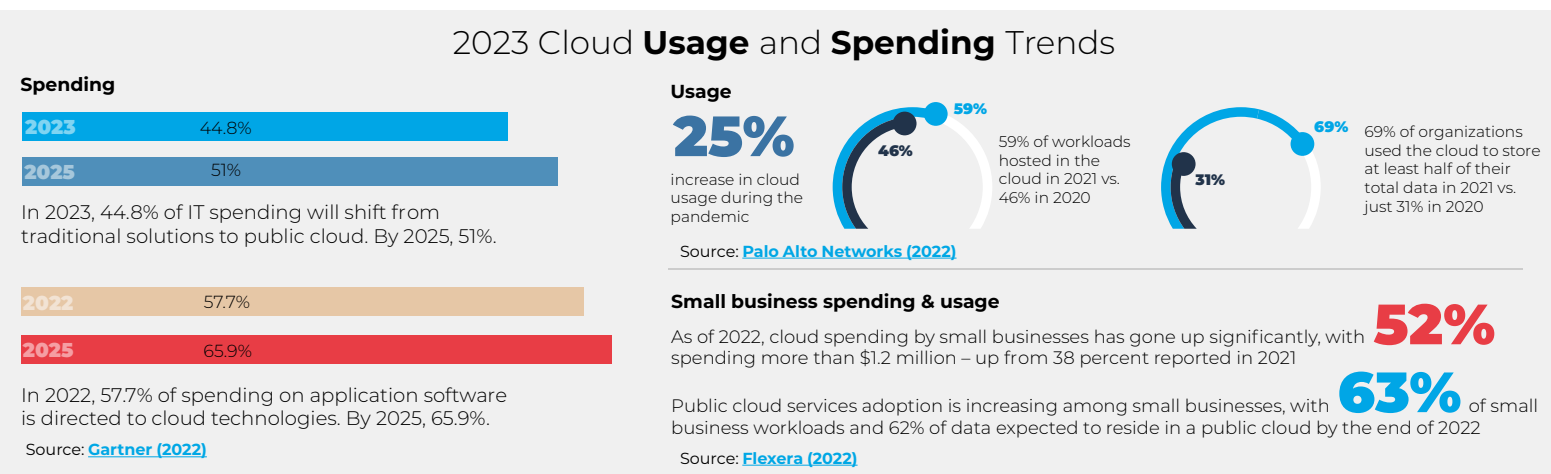
The market's growth was accelerated in 2020 with the onset of COVID-19, which resulted in many companies shifting to a work-from-home environment and adapting to new business models. Keeping in line with the pandemic trend, total revenue and IT spending continue to move from traditional solutions to cloud solutions at a rapid pace. This unprecedented growth is not expected to subside soon and poses an excellent opportunity for cloud computing providers to gain market share and increase revenue as adoption and demand grow.

However, in the face of inflationary pressure, possible economic downturns, and other factors, there is a chance that cloud spending at some organizations could [decrease](#) in 2023 if IT budgets are cut. Even so, cloud migration is likely to continue at a steady pace overall as companies seek to modernize their IT in the interest of long-term cost optimization, risk minimization, and other benefits to be gained through a well-planned cloud adoption strategy.

Flexera's 2022 State of the Cloud Report [revealed](#) that in several areas, Azure usage has surpassed AWS usage for the first time. But, with Azure [reporting](#) its lowest revenue growth rate in two years at the end of 2022, there is evidence that the service provider is facing a similar set of obstacles as AWS.

Like Azure, GCP is [increasing](#) its market share year-over-year, from 10% in 2021 to 11% in 2022. However, GCP is the only provider in the top three known to operate at a financial loss – a consistent trend since its launch in 2008. Despite its operating loss, [GCP claims](#) to focus on a longer-term path to profitability by aggressively investing in its services. According to [Forrester's 2023 predictions](#), Google may acquire a reputable technology service provider in the coming year to increase enterprise presence and competitive potential for GCP.

Although Azure and GCP trail behind AWS in terms of market share and revenue, this doesn't mean that AWS is the best option for all businesses. Each business has specific needs and goals, and each cloud provider has particular advantages and disadvantages that set them apart from the rest. This guide will compare and contrast the three largest cloud providers to aid you in making the best decision for your business.



Choosing the Right Cloud Provider: AWS

AWS has grown into the most successful cloud infrastructure company in the world. Since its launch in 2006, the company has become known for its **wide variety of services, security-focused mindset, infrastructure management, maturity in the market, speed of innovation, and geographic reach.**

Companies that use AWS vary from fast-growing startups and SMBs to large enterprises and government agencies. While their customers include big names like Netflix, Expedia, and Verizon, AWS isn't meant for every company, and there are advantages and disadvantages to be familiar with when considering it as your cloud provider.

Migrating to AWS means using the same cloud service as:



Key Advantages of AWS

The biggest strength of AWS comes from its maturity. **Having entered the market before competitors, AWS spent its time building a massive range of services and expanding its global infrastructure to reach 245 countries and territories.** With a larger network and geographic reach, AWS has the lowest latency in the marketplace and more recently [announced plans to add](#) 18 more Availability Zones and six more AWS Regions in Australia, Canada, India, Israel, New Zealand, and Thailand. AWS is likely the best option for companies with extensive and complex cloud needs.

Additionally, AWS invests in customer privacy, data protection, and security. All of the data that flows throughout AWS's datacenters and regions is automatically encrypted at the physical layer before leaving facilities. Customers can encrypt their data, move it, and manage retention at any time from anywhere. Many global banks, military units, and other organizations with highly-sensitive information trust AWS to protect their data and meet their security requirements.

AWS is known for being highly scalable and flexible. Among its many services, [Amazon Elastic Compute Cloud \(EC2\)](#) is the most popular — it allows users to run their applications on AWS's virtual machines (VMs). Developers can resize compute capacity in the cloud with minimal friction, quickly boot new server instances, scale capacity to meet requirements, and isolate applications from common failure scenarios.

[Amazon Simple Storage Service \(S3\)](#) is another widely used service that makes AWS stand out from its competitors. Organizations of all sizes use Amazon S3 as a cost-effective way to store, protect, and manage their data in virtually any form. AWS often wins with the most optimized and mature VMs and storage solutions compared to competitors. In 2014, AWS pioneered the serverless revolution with its [Lambda](#) compute service that allows users to easily run code on virtually any type of application or backend service without having to provision or manage their servers. Also known as [Function-as-a-Service \(FaaS\)](#), serverless computing simplifies deploying applications in the cloud by executing, managing, and allocating functions for you. During the [AWS re:Invent conference in 2022](#), Adam Selipsky, CEO of AWS, continued to double down on serverless services to create modern, cloud-native applications.

In summary, the major advantages of AWS are:

- Feature-rich
- Highly scalable
- Supports organizations of all sizes
- Broad geographic coverage
- Maturity in security
- Pioneer in serverless computing

Key Disadvantages of AWS

While AWS certainly has many proven benefits, it also has a few drawbacks. These lie with its **confusing cost structure, large and complex service offering that requires extra effort to master, and resistance to a multicloud strategy compared to other providers**. [Cloud experts](#) claim that AWS has less of a focus on multicloud strategy because the company cannot profit on licensing as Microsoft can and because it wants to push customers to a single public cloud strategy.

Even though AWS supports hybrid cloud consistency with various [hybrid cloud services](#) like Amazon EKS Anywhere, during the [AWS re:Invent conference in 2021](#) CEO Adam Selipsky downplayed the need for multicloud solutions and emphasized how AWS's capabilities are more than enough to support most cloud needs. For organizations that anticipate needing a multicloud strategy in the future, AWS might not be the best choice.

Additionally, [some customers report](#) being overwhelmed by the technical experience required to understand AWS's solutions. With hundreds of highly complex and specialized services, it becomes difficult for smaller businesses to know how to choose which services they need and effectively optimize AWS's capabilities. This can extend migration and adoption times for traditional or smaller enterprises that must hire a third-party team to advise them during the process. Customers also find AWS's pricing complex, making it difficult to optimize costs when managing high-volume workloads.

Lastly, verified users on [Gartner reviews](#) claim that AWS's customer support is difficult to contact and takes a long time to respond, making it difficult for non-technical staff to resolve essential issues quickly. They also complain about the high cost of AWS's [technical support packages](#). For this reason, AWS is sometimes better suited for organizations that have an on-site technical staff with AWS knowledge to troubleshoot problems internally.

In summary, the major drawbacks of AWS are:

- Resistance to a multicloud strategy
- Less hybrid-cloud friendly
- Overwhelming number of choices
- Difficult to determine price with large variety of services

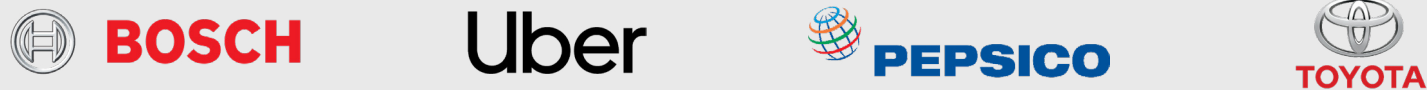


Choosing the Right Cloud Provider: Azure

Azure entered the playing field later than its main competitors but has managed to catch up quickly. Though less mature than AWS, Azure's services are commensurable to its competitors as it expands its global reach and offerings. Its steady growth rate demonstrates the high demand for Azure services and explains why almost 70% of organizations worldwide use Azure as at least one of their chosen cloud providers, according to a [2021 Statista survey](#).

Azure provides all of the traditional cloud offerings like object storage, virtual machines, IoT, and serverless functionality, but its ability to leverage proprietary Microsoft technologies sets it apart from the rest. **In addition to easily integrating into Microsoft-centric organizations, Azure is known for its support for multicloud and hybrid strategies, AI and machine learning capabilities, and for supporting the largest selection of cloud regions.** Thousands of enterprises like Uber, PepsiCo, and Bosch see Azure as the best fit for their needs, yet it's still not a one-size-fits-all solution. Let's explore the pros and cons of Azure.

Migrating to Azure means using the same cloud service as:



Key Advantages of Azure

As long as companies use Microsoft products, Azure will continue to have the edge over its competitors. **Azure's key advantage is quick and easy integration for Microsoft-centric or Windows-enabled enterprises.** Even for companies who haven't considered moving to the cloud yet, Microsoft could already have a strong presence in their IT departments. In these situations, IT teams favor Azure over other cloud providers. [Azure Migrate](#) provides a centralized hub to visualize and track the progress of migrating on-premises virtual machines to Azure. For developers using .NET or working on Windows Server projects, Azure is undoubtedly the cheapest option.

Microsoft is also known for focusing on hybrid and multicloud strategies. [Azure Arc](#) is a management platform that enables users to extend their services into a hybrid or multicloud environment. Users can easily integrate and manage their on-premises environments with Azure and other cloud providers. Azure embraces multicloud strategies and invests in services that enable users to choose whatever approach works best for them.

It's important to mention the number of regions and availability zones that Azure occupies. With more regions than any other provider and at least three availability zones per region, Azure backs up its claims of being a reliable and resilient cloud solution for businesses anywhere in the world.

In summary, the major advantages of Azure are:

- Experience working with large enterprises
- Firm cloud region foothold
- Integration with Microsoft and Windows-based tools
- Focus on hybrid cloud and multicloud strategy
- Cheaper for organizations who want to keep paying for Microsoft licenses
- Simple migration for organizations already using Microsoft software

Key Disadvantages of Azure

Even for Microsoft-centric organizations where Azure is assumed to be a clear choice, there are specific drawbacks that steer companies away. **The most common complaints involve Azure's poor track record in security, integration issues with non-Microsoft-centric organizations, poor customer service, and outdated documentation.**

Verified [reviews on TrustRadius](#) provide more context into these issues, specifically highlighting how Azure customer support tickets take weeks to resolve, leaving customers scrambling to troubleshoot problems themselves. There is a similar trend with billing, phone, and technical support. They also highlight how Azure's technical documentation is outdated and lacks mapping capabilities. If your IT department lacks Azure technical expertise, expect delays in resolving tickets or fixing issues.

If your main concern with moving to the cloud is security, then you may want to think twice before choosing Azure as your cloud provider. Just in the last few years, Microsoft was subjected to dozens of critical attacks – a [Brazilian hacking group](#) claims to have breached Microsoft stealing troves of code, there was a [bug in Azure Container Instances \(ACI\)](#) that could have leaked data, [a vulnerability in Azure Cosmos DB](#) enabled attackers to read, change, and delete users' databases, and Azure users were [given full access to other users' accounts](#) following a flaw in its Automation Service.

This list only scratches the surface of Azure and Microsoft's reported security flaws. Some of these vulnerabilities were exploitable for months or even years before they were noticed by researchers, posing huge concerns for large enterprises that rely on the cloud provider to protect their own customer's data. Azure works diligently to patch vulnerabilities promptly, but its preventative measures don't seem to be holding up.

As mentioned previously, Microsoft Azure works great with solutions of a similar nature, but if you plan to integrate with non-Microsoft products, you may experience serious issues. Azure is not as versatile or flexible when customizing the infrastructure for companies not already operating in the Microsoft ecosystem.

In summary, the most common pitfalls of Azure are:

- Worst track record in security
- Poor documentation
- Inadequate customer support
- Required expertise to manage services
- Limited flexibility with non-Microsoft products



Choosing the Right Cloud Provider: GCP

Google Cloud Platform (GCP) is a suite of public cloud computing services offered by and run on the same infrastructure as Google. GCP has proven to be a tough competitor in the industry primarily due to its focus on **hybrid and multicloud, data analytics, machine learning, and open-source technologies**. It pitches scale, reliability, and brand familiarity as its value proposition in the competitive marketplace while making an effort to adapt its services to a less tech-savvy audience.

Some may argue that GCP is best suited for smaller startups or SMBs, but many large enterprises like PayPal, Twitter, and Etsy trust GCP with their cloud computing needs. GCP's market share has fluctuated since its launch in 2008, but its revenue continues to grow. In Q3 of 2022, GCP got a market share boost thanks to a [growth rate increase of 48%](#), indicating significant progress. The future is hopeful for GCP as innovations like AI and machine learning, which GCP heavily invests in, become more prominent in the marketplace.

Migrating to GCP means using the same cloud service as:



Key Advantages of GCP

GCP touts an innovative business plan, focusing on big data. **Its [big data analytics solutions](#) that enable businesses to obtain powerful data insights with the click of a button are key differentiators in the market.** GCP also outshines its competitors regarding open-source integration and its development of the widely accepted [Kubernetes](#) standard used even by AWS and Azure.

GCP is the industry leader in AI and machine learning development, specifically credited to the [TensorFlow](#) service. TensorFlow provides an end-to-end, open-source library for developers to build and deploy machine learning applications. **GCP enables freethinking, open-source enthusiasts and developers to fully customize their space and workloads**, an important differentiating factor compared to AWS and Azure.

GCP is committed to an [open cloud approach](#), investing early in offerings like Google Kubernetes Engine (GKE), Anthos, Looker, and BigQuery Omni. These services support hybrid and multicloud environments and integrate with other public clouds, like AWS and Azure. For example, developers can create one multicloud management layer with Anthos, analyze data across clouds with BigQuery Onmi, and use Looker to create a dashboard to visualize behavior and trends. Optimizing and managing multiple clouds is made simple with GCP.

Like the other cloud providers, GCP's pricing is flexible – but GCP outshines its competition regarding its free tier and long-term cost savings options. If you are willing to make an extended up-front commitment to the cloud platform, you can achieve even greater savings than with the pay-as-you-go model. Referred to as [committed use discounts](#), GCP users can receive up to a 70% discount on VM usage when committing to using and paying for those resources for 1 or 3 years. Though it is difficult to directly compare prices because each company charges differently for block storage, instances, and objects, some IT professionals see GCP as the less expensive, more customer-friendly option compared to AWS or Azure. However, the cost ultimately depends on your company's setup and the services you require.

Google Cloud has spared no expense in investing in new technologies and expanding its geographic reach. As of 2022, the company has [released plans to continue expanding](#) into the following regions: Doha (Qatar), Turin (Italy), Berlin (Germany), Dammam (Kingdom of Saudi Arabia), Mexico, Malaysia, Thailand, New Zealand, Greece, Norway, South Africa, Austria, and Sweden. A top priority for Google Cloud is supporting its customers' reinventions and [focusing on digital transformation](#).

In summary, the main benefits of GCP are:

- Integration with Google technologies
- Open-source and DevOps-centric
- Advanced AI, machine learning, and data analytics solutions
- Long-term cost savings
- Developer-friendly
- Focus on multicloud and hybrid cloud

Key Disadvantages of GCP

Like the other two cloud providers, GCP has its drawbacks. Having less experience and time in the cloud market, GCP struggles to keep up with the other cloud providers' larger service offerings and infrastructure. [GCP's available services](#) are enough to run almost any business, but **AWS and Azure have double the amount available to customers.** Specialized services and features may not be developed yet or available to GCP customers, requiring them to integrate with other products to satisfy needs. The lack of services is often a deciding factor for many larger companies that assume they will need to use more than the 100 or so services currently available from GCP.

GCP also struggles to keep up with AWS's number of [data centers](#), trailing **behind AWS's 38 with only 29**. In terms of availability zones and regions, **GCP has less than half the number of regions as Azure.** Consequently, GCP's availability, resiliency, and speed cannot compare to that of AWS and Azure. This can be a limitation for large-scale global enterprises that plan to host their data and perform operations worldwide and is essential to consider if you fall into that category.

The last noted drawback is GCP's documentation and training. Multiple [peer reviews on Gartner](#) point out that Google Cloud's documentation is outdated and uses technical jargon that is difficult to understand, even for IT professionals. Like Azure, many users find it difficult to solve technical issues or find answers to even simple questions using the provided help material.

In summary, the major drawbacks of GCP are:

- Limited features and services
- Fewer global data centers
- Regional restrictions for data storage
- Outdated documentation
- Limitations for large-scale enterprises



The Bottom Line



So, which cloud provider is best? The short answer is that it depends on your business. All three cloud providers deliver reliable and practical functionalities. Your ultimate decision will depend more on your business’s budget, timeline, and needs than on one solution being hands-down “better” than the other. Let’s briefly summarize the three choices:

“The AWS Choice”

AWS is most appropriate if your business needs require broad reach and a deep feature portfolio. AWS has the necessary services to scale up or down quickly for organizations requiring flexibility and scalability. If you have cloud experts on staff or aren’t planning to implement a multicloud strategy, then you likely won’t experience any of the potential pitfalls of AWS.

“The Azure Choice”

Azure is a sound choice for organizations already operating with Microsoft Suite products or delivering Windows-based applications or services. If your company is working with .NET, Windows Servers, Microsoft Teams, or Office365, Azure is likely your best choice. However, it’s essential to remember that security is a significant concern for Azure users.

“The GCP Choice”

GCP is best suited for organizations that leverage open-source technologies, integrate with third-party software, and require AI and ML capabilities. It is also a great solution if you’re operating on a low budget or are planning to implement a multicloud strategy. However, if you anticipate needing to leverage many features or support a broad geographic area, you may want to consider AWS or Azure instead.

	AWS	Azure	GCP
Available Services	Over 200	Over 200	Over 100
Availability Zones	87	180+*	106
Geographic Regions	27	60+	35
Countries and Territories Served	245 countries/ territories	140 countries	200+ countries/ territories
Pricing	Pay-as-you-go (Free Tier option, short-term free trials, and 12-months free for newcomers)	Pay-as-you-go (40+ services always free, select services free for first 12 months, plus \$200 free credit)	Pay-as-you-go (20+ services always free, free trial available, plus \$300 free credit)

*Azure zones/regions are not measured on the same scale as AWS or GCP regions

Migrating to the Cloud

You may be surprised to learn that cloud migration requires much more than simply moving data or workloads. Any migration requires careful planning and collaboration between teams, and building a cloud roadmap can help guide the process. Before making your roadmap, ask yourself the following questions:

- Why are we moving to the cloud, and what benefits will impact my company?
- What is our budget for the project?
- Do we have the technical skills and resources to perform the migration internally?
- What [cloud migration approach](#) is most suitable for our situation?
- What data, assets, applications, etc., will we migrate to the cloud?
- Which cloud provider (AWS, Azure, GCP) and cloud approach (single, hybrid, multicloud, or cloud-native) is appropriate for my company?

Once you answer those questions, it's time to begin building your cloud strategy roadmap. Based on research by [Gartner](#), there are five stages that organizations should follow to prepare for cloud migration adequately:

Stage 1: Establish Goals and Objectives

Document use cases for cloud migration and assess goals, readiness, and priorities. Conduct a survey and analyze existing data to define KPIs for a successful migration.

Stage 2: Develop a Cloud Strategy Plan

Select which cloud service provider meets your business requirements and identify viable investments in your organization's network infrastructure, security, and tools. Negotiate contracts with the service provider.

Stage 3: Deploy and Optimize

Identify, segment, deploy, and optimize workloads in the cloud while adopting best practices for implementation. Establish a cloud management workflow and communicate with stakeholders and those involved.

Stage 4: Establish Governance and Minimize Disruptions

Prioritize sensitive data, monitoring, and analytics. Security is essential when operating in the cloud, so be sure to research and establish a vital security control plan. You should also include governance feedback in your workflow.

Stage 5: Evaluate, Optimize, and Scale

Continuously assess your cloud footprint and identify opportunities to evolve and optimize. Cloud migration is not a "set it and forget it" project — constantly review progress and plan what steps to take next to realize all benefits.

If you're feeling overwhelmed, don't worry – you're not alone. Deciding which cloud provider is right for your business and ultimately migrating your assets can be a time-consuming and complex process that most companies aren't prepared to pursue. We recommend leveraging a [certified cloud partner](#) to ensure you're making the best decision for your business and reducing implementation time.

Is Two Better Than One?

With migration complete, it's time to identify ways you can optimize your cloud strategy. In a fast-paced and ever-changing marketplace, organizations struggle to keep up with new technologies, meet business needs, and improve their digital infrastructure. Adopting a hybrid or multicloud approach could be your answer. Let's take a look at both approaches and other cloud optimization best practices next.

This topic is worthy of a whole discussion on its own, so we encourage you to [visit our blog](#) for a more detailed comparison of the two. For now, let's briefly define both strategies and explore their benefits and drawbacks.

Hybrid Cloud

A hybrid cloud approach combines two or more different types of clouds, such as on-premise infrastructure, private cloud services, and public clouds (like AWS, GCP, or Azure). Hybrid clouds enable organizations to move away from legacy infrastructure and work together to [solve many critical digital business challenges](#). Utilizing a hybrid cloud allows organizations to increase business agility, modernize their applications, and improve user experience. Here are some more examples of [why organizations are moving to a hybrid platform](#):

- Improved security and risk management by providing business-critical control over data and minimizing potential data exposure
- Even more scalable and flexible than single cloud environments
- Improved developer experience
- Overcome regional requirements by connecting your existing infrastructure to available cloud infrastructure in other countries while solving compliance challenges with data localization
- Increased business agility by enabling more dynamic workloads for business intelligence through high availability and 24/7 operations

Like many other cloud solutions, a hybrid cloud approach comes with its own shortcomings. Though the cost of operations may be lower, hybrid cloud solutions require a substantial capital investment to build and implement the enterprise cloud and hire cloud architects or IT professionals to maintain it. It's also important to keep in mind that applications and files used in a hybrid cloud will need to be compatible with the on-premises, private, and public cloud environments to avoid issues with sharing resources or workloads between them.

Multicloud

Multicloud is a cloud approach utilizing different clouds of the same type (e.g. public or private) to enable the distribution of apps, assets, and software – [IaaS, PaaS, and SaaS](#) – across numerous environments to support business needs. These cloud services are often from different providers and do not intermingle. They may include utilizing more than one public cloud or more than one private cloud. Here are some key benefits of a multicloud strategy:

- Ability to adopt “best-of-breed” technologies from any vendor
- Improve flexibility to choose from different cloud provider’s services, pricing, performance, and location
- Leverage innovative technologies by quickly and easily adopting or changing cloud vendor’s products
- More resilient to outages and downtime – if one cloud provider fails the other will still be available
- Avoid vendor lock-in and reduce the dependency on one cloud provider

Aside from the benefits, there are also challenges with a multicloud strategy that you should consider before adopting it. Managing multiple cloud providers can become a complex and difficult task, especially if your team is small and does not have a deep understanding of each cloud’s processes, services, and applications. More clouds also mean more possibilities for security and compliance issues. Companies pursuing a multicloud strategy need to adequately plan and prepare a multi-layered security approach and closely monitor their resources.

Optimize Your Cloud

If you’ve already migrated to the cloud then you probably know that manually optimizing and managing costs can be a complex and difficult task. Whether you’re using a single cloud provider or running a multicloud or hybrid cloud environment, you are likely paying for resources that you’re not using.

According to [Flexera’s 2022 State of the Cloud Report](#), respondents estimated that their organizations waste 32% of their cloud spending, and optimizing existing cloud usage is the top initiative reported. Cloud optimization is the process of selecting, analyzing, and scaling the allocation of resources, adjusting systems to better architectures, and improving governance to eliminate waste and maximize performance. The good news is that there are many best practices and tools out there to help you optimize your cloud.

Best practices for cloud optimization

1. Collect and track cloud usage and cost data over time

Utilize built-in tools like [AWS’s Cost and Usage report](#) (AWS CUR) to understand your costs and track them over time. Understanding what products during what times are using more data than others can help you in the following steps.

2. Identify and remove unused resources

One of the easiest ways to reduce cloud costs is to ensure you only pay for what you are actually using. Some common situations to look out for are temporary servers that were never turned off or storage that is still attached to instances that are terminated.

3. Automate policies to shut down workloads after hours

When you’re not working, there’s no need for all of your workloads to be running. You should automate developer and test instances to shut down when they aren’t being used.

4. Consolidate computing jobs to fewer instances

Be on the lookout for idle computing instances running at a low CPU utilization level. Even instances running at less than 10% can result in 100% of charges. Identify which instances are running at low levels and consolidate them together.

5. Use heat maps

Heat maps provide a visual picture of when your cloud services are being used and at what levels. These maps will help you in the previous steps to determine underutilized resources and schedule times for automated shut-down during off-hours.

6. Capitalize on discount VM instances

Reserved and spot instances are highly discounted compute instances best suited for fault-tolerant and batch jobs, because they can easily be interrupted on short notice. Each cloud provider has its own version of this – GCP calls them [Preemptible VM](#) instances, Azure has [Spot Virtual Machines](#), and AWS uses [EC2 Spot Instances](#). They allow users to quickly purchase unused computing capacity for a fraction of the cost of regular on-demand prices, playing a huge role in saving money for organizations.

Tools for cloud optimization

- For AWS: AWS Cost Explorer & CloudWatch
- For Azure: Azure Cost Management + Billing
- For GCP: GCP Billing & Cost Management
- Research and utilize third-party tools
- Hire a certified cloud partner, like Wizeline

Case Studies in Cloud Migration & Optimization

Migrating to the cloud and optimizing your workloads can have a tremendous impact on reducing your infrastructure costs, increasing development velocity, and accelerating product development. Here are some examples of how Wizeline works in the cloud to address client needs and improve operations:

- Working with resources in GCP, Wizeline leveraged machine learning and artificial intelligence technologies to build a knowledge graph for a global media firm, improving users' access to timely and relevant information. [Read more](#)
- The Wizeline team helped a leading US media and journalism company migrate its existing data warehouse from AWS Redshift to GCP BigQuery while cutting cloud computing costs by 50%. [Read more](#)
- AirAsia chose Wizeline to build two new applications using Agile methodologies and leveraging our extensive experience with the GCP. The industry-leading super app increased revenue with bundled flights and hotels. [Read more](#)
- Wizeline brought an innovative customer-facing digital commerce platform to life and helped the customer achieve 100% ROI in 12 weeks. The end result was a commerce platform that is a cloud-native application built on GCP. [Read more](#)
- A media publishing company partnered with AWS and Wizeline to create a web platform to interpret user questions about electoral candidates. The end result was a natural language processing (NLP) that kept U.S. voters informed of presidential candidates' stances on trending topics. [Read more](#)
- Wizeline partnered with a leading U.S. media company to modernize their aging infrastructure with a headless Content Management System (CMS) and AWS technologies. Deploying the new and improved technology helped the company achieve its business-technology goals. [Read more](#)
- The Wizeline team helped Etsy migrate their data warehouse from on-premises Vertica to Google Cloud Platform (GCP) with zero business impact. [Read More](#)

How Wizeline Can Help



AWS Advanced Consulting Partner
150+ certified engineers
Sample services: DevOps Transformation, Data & Analytics, Migrations



Azure Gold Partner
200+ Azure and .NET engineers
Sample services: Data Analytics, Application Modernization, Hybrid/Multi-Cloud, Migration



Google Partner Advantage
100+ certified engineers
Sample services: Agile Product Development, DevOps & Digital Transformation, Data Analytics, Product Evolution

Wizeline takes a vendor-agnostic approach to cloud solutions and provides custom cloud strategies tailored to each client's business and technology needs. We have [experience working with all three leading cloud providers](#), as well as the resources and expertise necessary to make every partnership successful. You don't need to allocate extra time and human capital to train a new team member on the ins and outs of the cloud. We as partners have a pool of 300+ certified engineers to support your cloud adoption plan



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