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# Cloud computing: Exploring options and choosing the best fit for your business

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## Abstract

Cloud computing has caused a revolution in how companies do business giving them flexibility, scalability, and cost-efficiency like never before. It lets organizations use computing resources through the internet instead of relying on the usual in-house setup making cloud computing a key part of today's IT plans. From new startups to big global companies, businesses are using cloud solutions more and more to boost their ability to adapt cut down on running costs, and come up with new ideas. The cloud ecosystem is big and varied, with different deployment models and service types to suit various business needs. Public, private, and hybrid clouds are the three main deployment models each with its own pros and cons. public clouds, like those from Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform, offer affordable scalability and global reach. Private clouds, on the other hand, are for organizations that have strict security or compliance needs giving them dedicated environments. Hybrid clouds mix the best parts of both letting businesses find a balance between security and scalability by combining private and public cloud resources

**Keywords:** Business Best fit; Cloud Computing; Explore Options; Review; Multiple Cloud Platforms

## 1. Introduction

Along with deployment models, companies need to think about the cloud services that match their business goals. The three main types of services—Infrastructure as a Service (IaaS) Platform as a Service (PaaS), and Software as a Service (SaaS)—cover different parts of IT needs. IaaS gives basic computing resources like virtual machines and storage. PaaS offers a platform to develop applications. SaaS provides ready-to-use software applications over the internet (Nazariy Hazdun 2023).

New trends like AI as a Service (AIaaS) and hybrid/multi-cloud approaches are changing the cloud scene. AIaaS lets companies add smart AI features to their work without building complex AI models from the ground up. Hybrid and multi-cloud setups give businesses strength and flexibility by spreading their work across different cloud providers (Dr. Diane Hamilton 2025; Bernard Marr 2024).

Picking the right cloud solution needs a deep grasp of your company's specific requirements. This includes how much you need to scale, what your budget allows, following regulations, and your team's tech skills. Take companies with changing workloads - they might do well with public clouds that can stretch to fit their needs. On the flip side, businesses dealing with sensitive info might lean towards private or hybrid cloud setups to stay in line with rules like GDPR or HIPAA (Forbes Advisor, 2024).

This report digs into the nuts and bolts of cloud computing. It offers a full guide to help you understand what's out there and choose what works best for your business. By looking at the newest trends, ways to set up clouds, and types of services, this report aims to give decision-makers the know-how to handle the ever-changing cloud scene like pros.

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## 2. Understanding Cloud Computing Options: Public, Private, Hybrid, and aiaas

### 2.1. Public Cloud: Scalability and Cost-Effectiveness

The public cloud is a cloud computing model where third-party providers host services and infrastructure and make them available to users through the internet. AWS, Microsoft Azure, and Google Cloud Platform lead the pack as major providers. Public clouds offer high scalability, cost-effectiveness, and accessibility making them a great fit for businesses looking to boost their agility and flexibility.

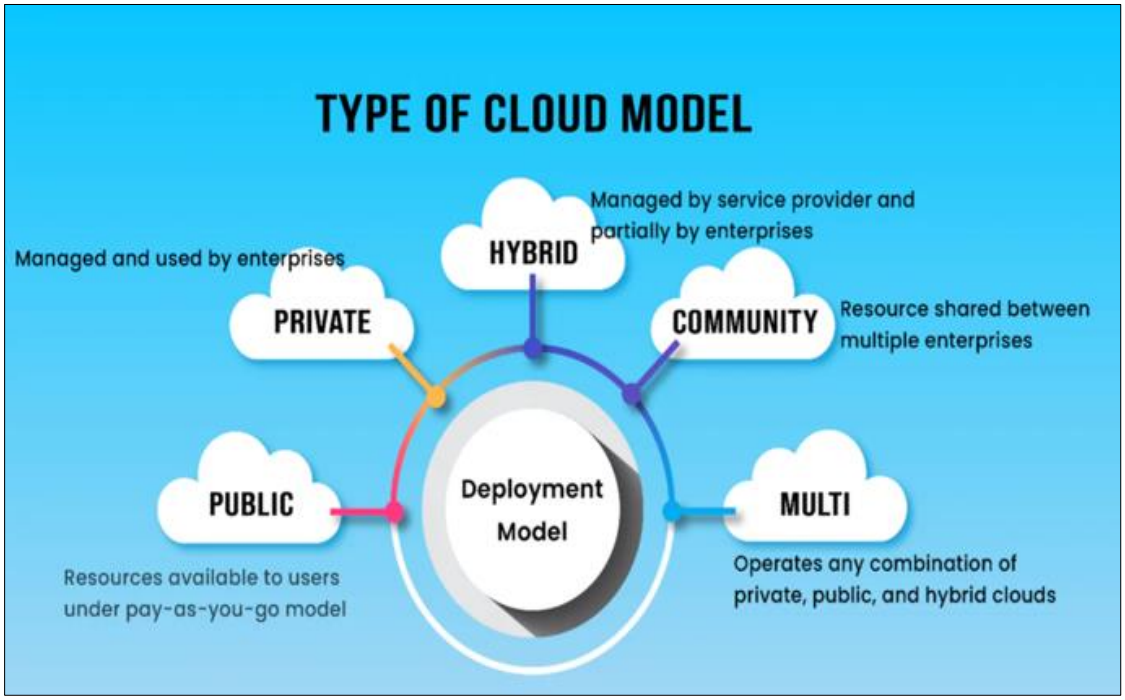


**Figure 1** Type of Cloud Model

*2.1.1. Key Features*

- Pay-as-you-go Model: Public clouds run on a subscription or usage-based pricing model letting organizations shell out cash for the resources they use (Forbes 2021).
- Worldwide Access: Public clouds give companies access to a huge network of data centers around the globe. This allows businesses to launch apps closer to their customers.
- AI Services: Companies like AWS and Azure include AI tools as part of their public cloud packages. These tools cover things like machine learning models and language processing (Forbes Tech Council 2025).

*2.1.2. How It's Used*

- New Companies and Small Businesses: Public clouds help new companies and small-to-medium sized businesses. These companies can grow fast without spending a lot on their own tech setup.
- AI Tasks: Public clouds come with special hardware like GPUs and TPUs. This hardware is key to train and run AI models (Forbes Tech Council, 2025).

*2.1.3. Drawbacks*

- Security Worries: Public clouds being shared spaces, might cause security issues for sensitive info.
- Getting Stuck with One Provider: Companies that rely too much on a single provider could struggle to switch to other platforms.

### 2.2. Private Cloud: Better Safety and Control

A private cloud is a cloud setup that belongs to just one company. It can be kept in-house or managed by another company. Unlike public clouds private clouds give better safety and control making them a good fit for industries that need to follow strict rules.

#### *2.2.1. Key Features*

- Custom-Built Setup: Private clouds let companies shape their setup to fit what their business needs (Forbes Advisor 2025).
- Stronger Safety: By keeping resources separate private clouds cut down the chance of data leaks and unwanted access.
- AI Governance: Companies can put AI governance systems in place to handle data compliance and make sure AI is used (Forbes Tech Council, 2025).

#### *2.2.2. Use Cases*

- Regulated Industries: Fields like healthcare, finance, and government gain from the compliance and security features that private clouds offer.
- Old Systems: Companies with outdated systems that can't move to the public cloud often turn to private clouds.

#### *2.2.3. Limitations*

- Big Expenses: Private clouds need a lot of money for infrastructure and upkeep.
- Growth Problems: Unlike public clouds private clouds might have trouble growing when demand spikes.

### 2.3. Hybrid Cloud: Finding the Right Mix of Flexibility and Security

The hybrid cloud blends public and private cloud settings enabling data and apps to shift between them. This setup has an influence on both realms offering scalability, flexibility, and better security.

#### *2.3.1. Key Features*

- Workload Distribution: Companies can run sensitive workloads on private clouds while using public clouds to handle less critical jobs (Forbes Advisor 2025).
- Regulatory Compliance: Hybrid clouds help businesses to meet compliance rules by storing sensitive data in private settings (Forbes Advisor 2025).
- AI Interoperability: Businesses can make AI models and workflows standard across multiple cloud settings ensuring portability and steering clear of vendor lock-in (Forbes Tech Council, 2025).

#### *2.3.2. Use Cases*

- Disaster Recovery: Hybrid clouds have a strong impact on disaster recovery by copying data across private and public settings.
- High-Performance Computing: Companies can use public clouds for tasks that need a lot of computing power while keeping sensitive data in private clouds (Forbes Advisor 2025).

#### *2.3.3. Limitations*

- Complexity: To manage a hybrid cloud, you need to know a lot about both private and public cloud tech.
- Interoperability Issues: It can be tough to make cloud environments work together (Forbes Advisor 2025).

### 2.4. AIaaS: AI as a Service

AIaaS (AI as a Service) is a cloud-based model that offers AI features as a service. It lets businesses use ready-made AI tools and frameworks without building their own AI setup.

#### *2.4.1. Key Features*

- Pre-Built AI Models: Google Cloud AI, AWS AI, and Microsoft Azure AI offer AI models ready for use. These models can recognize images, process natural language, and make predictions (Forbes 2025).
- Scalability: AIaaS solutions can grow. This allows businesses to handle different workloads well.

- Cost-Effectiveness: AIaaS cuts costs and speeds up market entry. It does this by removing the need to develop AI in-house.

*2.4.2. Use Cases*

- SaaS Companies: SaaS providers can add AI features to their products. This improves how they work and what users experience (Forbes 2025).
- Customer Support Automation: AIaaS can power chatbots and virtual helpers. This makes customer service more efficient.

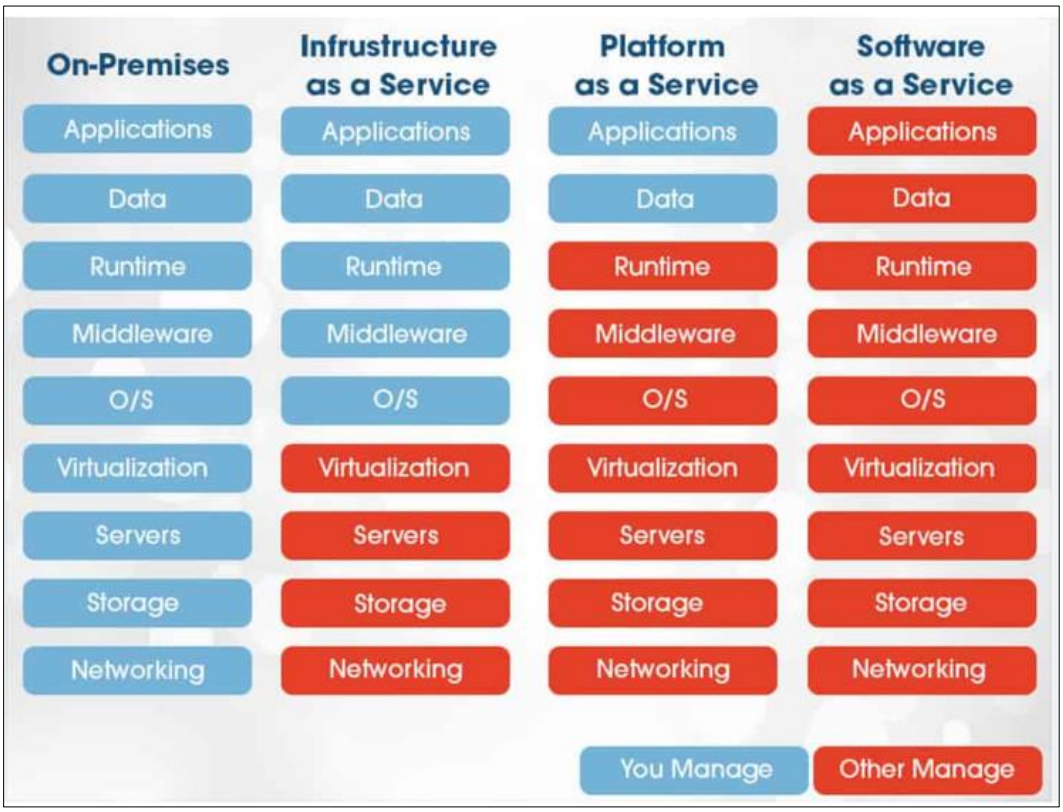


**Figure 2** Infrastructure Options

*2.4.3. Limitations*

- Dependence on Providers: Companies that use AIaaS might struggle to tailor solutions to their specific needs.
- Data Privacy Concerns: Keeping sensitive information on platforms owned by others can create privacy risks.

*2.4.4. Choosing the Right Cloud Model*

Picking the most suitable cloud model hinges on several aspects such as company requirements financial resources, and technical know-how. Here's a comparison to help make decisions:

*2.4.5. Factors to Consider*

- Budget: Public clouds save money for new businesses, while private clouds need substantial investment.
- Security: Private and hybrid clouds suit industries that have strict security rules.
- Scalability: Public clouds and AIaaS offer unmatched growth potential for changing workloads.
- Compliance: Hybrid clouds strike a balance in meeting regulatory demands.
- AI Integration: AIaaS and public clouds help businesses use AI without building their own infrastructure.

By looking at these factors, companies can match their cloud plans with their business goals and future growth.

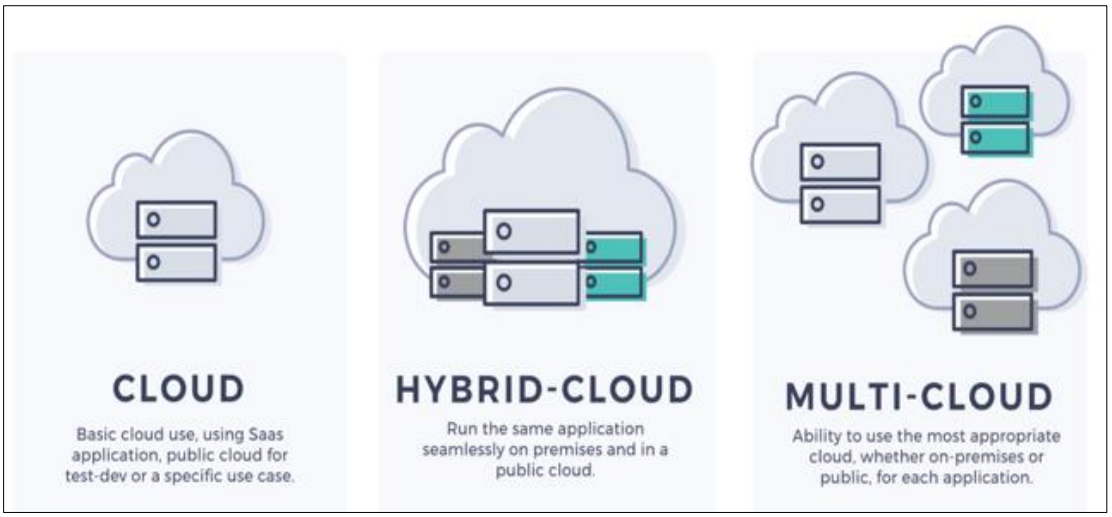


**Figure 3** Cloud Options

## 3. Looking at Business Needs and Use Cases for Cloud Deployment

### 3.1. Checking Company Needs and Goals

Each company has its own needs that shape its cloud plan. The first key step is to find out why the business wants to use the cloud. These reasons often include cutting costs, growing working better, and coming up with new ideas. For example, companies with changing workloads might focus on easy growth, while those in strict industries might care more about following rules and staying safe (Forbes, 2023).

*3.1.1. To make cloud plans fit business goals, companies should look at:*

- Workload Traits: Figure out if workloads need lots of computing power, storage space, or quick response times. Take IoT or self-driving cars as an example. These apps need fast responses, so they might work better with edge computing linked to private clouds (Forbes, 2023).
- Money Limits: Companies need to check how much they can spend on cloud systems. Public clouds often save money for new businesses. But for big companies with steady workloads private clouds might make costs easier to predict (Forbes 2023).
- Following Rules: Some industries like healthcare or banking have to follow strict rules such as GDPR or HIPAA. In these cases, companies often choose private or mixed cloud setups to keep data safe and follow the rules (Forbes 2023).
- Growth Projections: Companies expecting quick growth should think about scalable cloud options like public or hybrid clouds. These can handle rising demand without buying too much (Forbes, 2024).
- Technical Expertise: Companies without much in-house IT know-how might do better with managed services or SaaS. This cuts down the need to manage complex tech stuff (Forbes 2025).

*3.1.2. Looking at Deployment Models for Specific Uses*

The current content talks about public private, and hybrid cloud models. This part digs deeper into how certain deployment models fit with different business needs

### 3.2. Public Cloud to Achieve Cost-Effective Scalability

Public clouds work great for companies looking to cut initial expenses and scale as needed. Here's where they shine:

- E-commerce Websites: Online shops often see big jumps in traffic during certain seasons. Public clouds let these businesses add or remove resources as needed during busy times keeping customers happy (Forbes 2023).
- New and Small Companies: Smaller firms like the pay-for-what-you-use approach of public clouds. This means they don't have to spend a ton of money upfront on IT equipment (Forbes 2025).

### 3.3. Private Cloud to Boost Security and Meet Rules

Private clouds make sense for groups that deal with sensitive info or have to follow strict industry rules. Here are some examples:

- Healthcare Providers: Hospitals and clinics can use private clouds to store patient records making sure they follow HIPAA rules (Forbes 2023).
- Financial Institutions: Banks and financial companies can use private clouds to protect customer data and stick to tough regulatory rules (Forbes 2023).

### *3.4 Hybrid Cloud to Boost Flexibility and Performance*

Hybrid clouds mix the good parts of public and private clouds giving flexibility for different workloads. Here are some ways to use them:

- Media and Entertainment: Companies can keep valuable intellectual property on private clouds while using public clouds to render and distribute content (Forbes 2023).
- Retail Chains: Store owners can run in-store operations on private clouds while using public clouds for online shopping platforms (Forbes 2024).

### 3.4. Using AI and Automation to Deploy Clouds

AI and automation are changing how companies make their cloud environments better. This part talks about AI improvements in all cloud types, not just AIaaS like the other content did.

- Smart Scaling: AI looks at how work happens to guess when more resources are needed. This lets the system grow on its own and save money (Forbes 2025).
- AI-Enhanced Security: Cloud companies are putting AI in their safety systems to spot and stop threats right away (Forbes 2025).
- Resource Optimization Tools: AI software can spot unused resources and suggest right-sizing plans boosting cost-effectiveness (Forbes 2025).
- AI for Compliance: AI systems can run automatic compliance checks making sure cloud setups follow regulatory rules (Forbes 2025).

### 3.5. Steering Clear of Common Cloud Setup Mistakes

Moving to the cloud isn't always smooth sailing. Companies need to tackle potential problems head-on to get the most out of their cloud plans.

- Overreliance on One Provider: Businesses that depend too much on a single cloud company might lose wiggle room and bargaining power. Using multiple cloud providers can help avoid this issue (Forbes 2025).
- Overprovisioning: Companies often buy more resources than they need, which leads to extra costs. Regular checks and smart AI tools can help fix this problem (Forbes 2025).
- Data Silos: When cloud services don't work well together, it can create isolated pockets of data making things less efficient. Using unified management systems, like superclouds, can solve this issue (Forbes 2024).
- Technical Debt: Companies that adopted cloud often struggle with outdated systems. Updating these systems, like redesigning apps to use serverless computing, can boost how well they work and grow (Forbes 2025).

### 3.6. Matching Cloud Plans with Future Trends

To stay ahead, companies need to make sure their cloud plans fit with new trends. Key things to think about include:

- Sustainability: Cloud providers now focus more on green infrastructure. Companies should choose providers committed to eco-friendly practices (Forbes 2024).
- Edge Computing: Setting up private clouds at the edge can help with fast-response applications, like smart cities and self-driving cars (Forbes 2023).
- Generative AI: The growth of generative AI is changing cloud development making it possible to create code and tailor user experiences (Forbes 2025).

When companies assess their needs and keep an eye on future trends, they can develop cloud plans that boost innovation, cut costs, and make operations more effective.

## 4. Picking the Best Cloud Provider and Plan for Your Company

### 4.1. Comparing Cloud Providers Based on What They Offer

When picking a cloud provider, companies need to take a close look at the services they offer to make sure they match their business needs. Cloud providers often stand out by offering special services, like AI tools, edge computing, or advanced data analysis. For example, Amazon Web Services (AWS) has a full set of AI tools, including SageMaker to develop machine learning models, while Microsoft Azure focuses on tools for big businesses such as Power BI and Dynamics 365 (Forbes 2025).

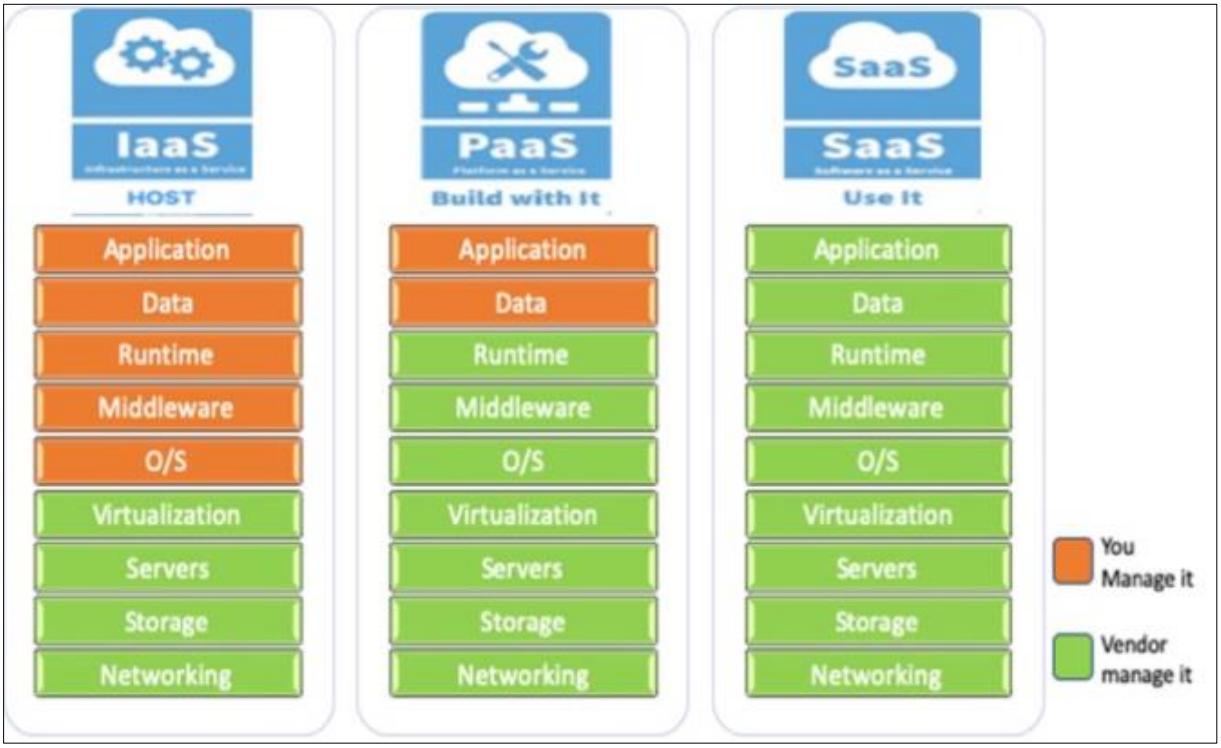


**Figure 4** Comparing Options

*4.1.1. Key things to think about when looking at service offerings include:*

- AI and Machine Learning Tools: Providers like Google Cloud are good at AI-driven improvements offering TensorFlow and Vertex AI to scale up machine learning work (Forbes 2025).
- Edge Computing: Companies that need quick response times, like those working with IoT or self-driving systems, should focus on providers with strong edge computing options such as AWS Outposts or Azure Stack (Forbes, 2024).
- Industry-Specific Solutions: Some providers create custom solutions for certain industries. For instance, IBM Cloud excels in hybrid cloud solutions for controlled industries like finance and healthcare (Forbes Advisor 2025).

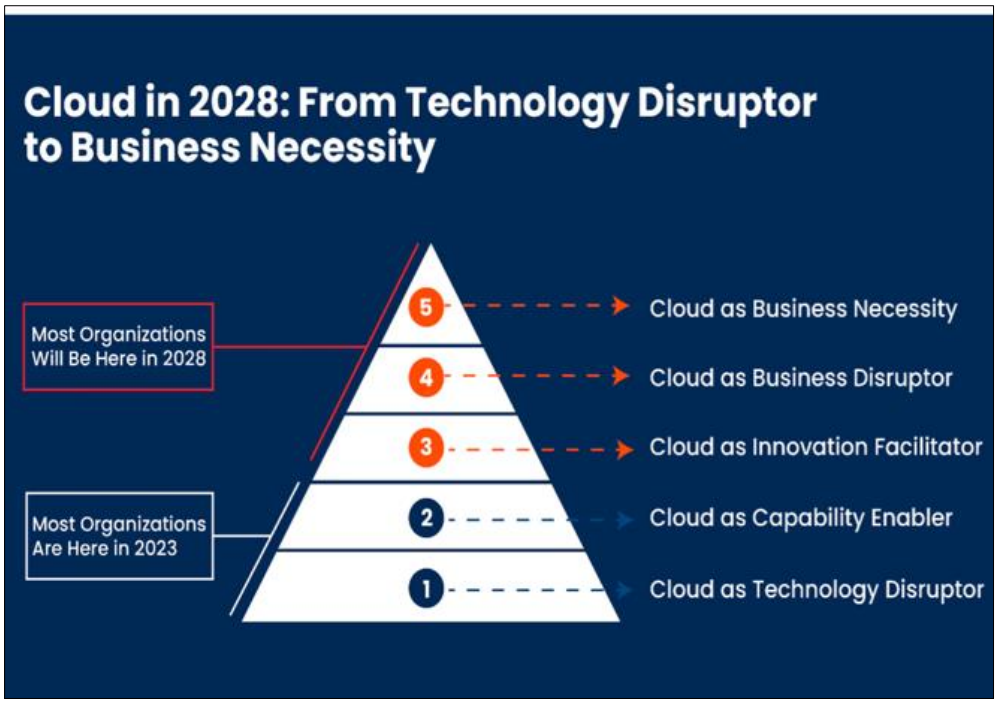


**Figure 5** Cloud Pyramid

This part is different from other content because it looks at how specific cloud provider services match unique business needs instead of comparing general cloud models.

### 4.2. Ways to Save Money When Adopting Cloud Services

Cost efficiency plays a key role when picking a cloud provider and strategy. Public clouds like AWS Azure, and Google Cloud let you pay as you go, but companies need to watch out for hidden costs too. These can include fees for moving data out buying more than needed, and not using all resources (TechCrunch 2023).

*4.2.1. To keep costs down:*

- Predictive Scaling: Use AI-powered tools to predict and match resources to demand. AWS Auto Scaling and Google Cloud's Recommender can help cut costs by making sure resources are used well (Forbes 2025).
- Cloud Cost Control: Use tools like Apptio or CloudHealth to watch and cut spending across different cloud providers (Forbes 2021).
- Discounted Cloud Plans: AWS and Azure give price cuts for long-term deals through reserved instances or savings plans. These can lower costs by up to 75% compared to regular pricing (Forbes 2025).

This part adds more details about ways to save money on cloud services. It brings in specific tools and plans to manage cloud costs, which weren't covered before.

### 4.3. Keeping Cloud Systems Safe and Following Rules

Security and compliance stay crucial to companies moving to cloud platforms. Public clouds come with built-in safety features, but firms in regulated sectors often need to use hybrid or private cloud setups to meet strict compliance rules (Forbes Advisor 2025).

*4.3.1. Key approaches to ensure security and compliance include:*

- AI-Powered Threat Spotting: Providers like AWS and Google Cloud offer AI-based tools to spot and react to threats in real-time such as Amazon GuardDuty and Chronicle Security Operations (Forbes 2025).
- Data Location Control: Companies working in areas with tough data location laws, like GDPR in the EU, should think about providers with local data centers or use hybrid cloud setups (Forbes 2025).
- Compliance Automation: Use compliance automation tools such as Azure Policy or AWS Config to make it easier to follow rules like HIPAA or CCPA (Forbes 2025).

This part adds to earlier talks about compliance by showing specific tools and ways to automate and boost security in cloud settings.

## 5. Making the Most of Multicloud and Hybrid Plans for Adaptability

Multicloud and hybrid cloud plans are now common as companies try to avoid getting stuck with one vendor and to improve how well they can bounce back from problems. A Flexera study shows that 92% of big businesses use multicloud plans, and 82% mix public and private clouds (Forbes 2021).

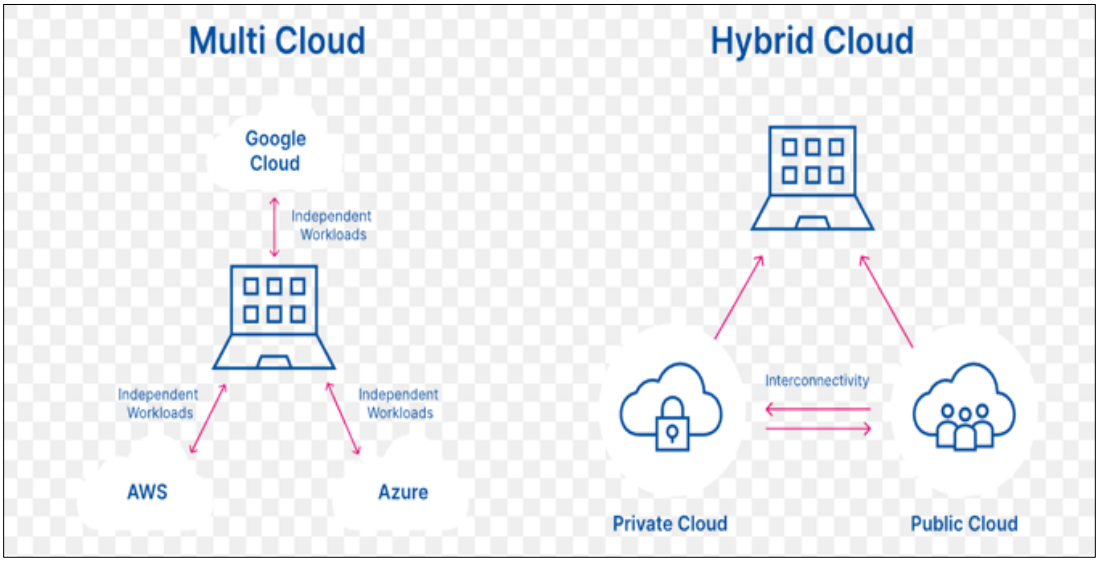


**Figure 6** Difference : Multi Cloud and Hybrid Cloud

### 5.1. Main perks and things to think about include:

- Steering Clear of Vendor Lock-In: Multicloud approaches let companies tap into top-notch services from several providers. For instance, they might use AWS for tasks that need lots of computing power and Azure for business software (Forbes 2025).
- Centralized Control Layers: Systems like VMware Tanzu and Red Hat OpenShift make it easy to handle workloads across different cloud setups cutting down on complications (Forbes 2024).
- AI Compatibility: Making AI processes the same across providers ensures you can move them around and rely less on brand-specific platforms (Forbes 2025).

This part adds to existing material by highlighting the practical benefits of using multiple clouds and mixed strategies as well as tools to handle complexity.

### 5.2. Putting Green Practices First in Cloud Plans

Green thinking is becoming a big deal in cloud use. Cloud companies are putting more money into clean energy and buildings that use less power. They're doing this because customers want greener options (Forbes 2024).

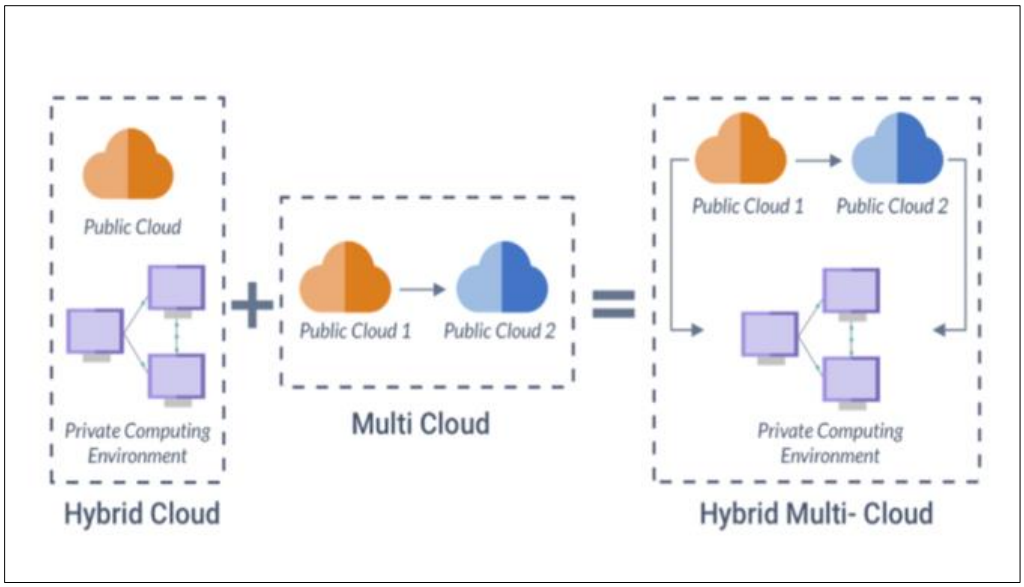


**Figure 7** Comparison: Multi Cloud and Hybrid Cloud

*5.2.1. Main green efforts include*

- Eco-Friendly Data Centers: Big names like Google Cloud and AWS are leading the way. Their data centers run on clean energy helping them reach zero carbon goals (Forbes 2024).
- Power-Smart Computing: New tech like TPUs and GPUs boosted by AI, uses less energy but still works well (Forbes 2025).
- Sustainability Metrics: Companies need to assess cloud providers using green metrics like Power Usage Effectiveness (PUE) and how much they cut carbon emissions (Forbes 2024).

This part brings up the idea of sustainability in cloud plans, which older reports didn't talk about. It shows how this topic will become more critical in 2025 and later years.

## 6. Conclusion

This study sheds light on the range of cloud computing choices out there—public, private, hybrid, and AIaaS—and offers a way to pick the best fit based on what an organization needs. Public clouds, like AWS Azure, and Google Cloud, can't be beat when it comes to scaling up saving money, and blending in AI. This makes them great for new companies' smaller businesses, and AI-heavy tasks. But they do come with some risks, like security issues and getting stuck with one vendor Private clouds, on the flip side, put security and following rules first. This makes them popular in industries with strict regulations such as healthcare and finance. The downside? They cost a lot to set up and might not grow as with your needs Hybrid clouds try to give you the best of both worlds. They let businesses keep sensitive stuff on private clouds while using public clouds to grow. But they can be tricky to set up and get everything working together AIaaS takes things a step further by giving businesses ready-made AI tools and systems. This helps cut costs and speed up new ideas, but it might raise some eyebrows when it comes to keeping data private and making things fit just right

## Compliance with ethical standards

*Disclosure of conflict of interest*

No conflict of interest to be disclosed.

## References

[1] Akash Lomas, "How to Choose the Right Cloud Service Provider?", *Net Solutions*, Jan. 2023, [online] Available: https://www.netsolutions.com/insights/how-tochoose-cloud-service-provider/.

[2] A. Lin and N. C. Chen, "Cloud computing as an innovation: Percepetion attitude and adoption", *Int. J. Inf. Manage.*, vol. 32.

[3] Do D. T., Van Nguyen M. S., Nguyen T. N., Li X., and Choi K., Enabling multiple power beacons for uplink of NOMA-enabled mobile edge computing in wirelessly powered IoT, IEEE Access. (2020) 8, 148892–148905, https://doi.org/10.1109/ACCESS.2020.3015741.

[4] M. Arora, S. Verma, Kavita and S. Chopra, "A systematic literature review of machine learning estimation approaches in scrum projects", Cognitive Informatics and Soft Computing, vol. 1040, pp. 573-586, 2020.

[5] Glossary - Cybersecurity Key Terms & Definitions, May 2023, [online] Available: https://fr.tenable.com/glossary.

[6] Devesh Kumar, HarshVardhan Samalia, Piyush Verma - https://www.emerald.com/insight/content/doi/10.1108/jsbed-01-2017-0002/full/html

[7] Subashini S, Kavitha V (2010) A survey on security issues in service delivery models of cloud computing. Journal of Network and Computing Applications, doi: IO.1 016/j.jncs.2010.07.006

[8] Iin A, Chen N-C (2012) Cloud computing as an innovation: Perception, attitude, and adoption. International Journal ofInfonnation Management http://dx.doi. org/l 0.10 16zj.ij infomgt.20 12. 04.001. (2012)

[9] FREDERICKS E (2005) Infusing Flexibility into Business-ToBusiness Finns: A Contingency Theory and Resource-Based View Perspective and Practical Implications. Industrial Marketing Management, 34(6): 555-65.

[10] Michael Schwind, Oliver Hinz, Roman Beck, A cost-based multi-unit resource auction for service-oriented grid computing, in: Proceedings of the 8th IEEE/ACM International Conference on Grid Computing, 2007.