



Conference Paper

SUBMITTED BY –

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Abstract

“Multi Cloud an Underrated Essential in Marketing”

Multi-cloud is a method of managing numerous cloud computing services in a cohesive fashion. It allows businesses to create, manage, and deploy applications and services across different cloud environments. This method provides various advantages to enterprises, including more flexibility, improved cost management, and enhanced security.

Increased flexibility is one of the key advantages of multi-cloud computing. Organizations may select the finest cloud services for each unique application, allowing them to capitalize on each service's strengths while limiting its limits. This enables enterprises to optimize their infrastructure and applications, as well as swiftly grow and react to changing business demands. Another significant advantage of multi-cloud computing is improved cost control. Organizations may cut expenses by using numerous cloud services and avoiding vendor lock-in by selecting the most cost-effective services for each application. This also allows businesses to limit their risk and reliance on a single cloud provider.

Finally, multi-cloud can boost security. Organizations may lower their risk of data breaches, outages, and other security events by distributing data and applications across several cloud providers. Furthermore, multi-cloud allows enterprises to adopt more stringent security controls and compliance standards throughout their cloud infrastructure.

Introduction

Multi-cloud management is the collection of tools and procedures that organizations employ to monitor and protect their apps and workloads across different public clouds. The purpose of multi-cloud management is to employ a single management platform to simplify and optimize the management of numerous cloud providers. This platform allows IT teams to manage all of their cloud services from a single interface, supporting many cloud platforms such as AWS and Azure, as well as emerging technologies such as Kubernetes. With enterprises increasingly employing many public cloud service providers, multi-cloud management helps to decrease reliance on a single vendor while using the benefits of each provider. Managing many cloud providers, on the other hand, may become complicated, thus multi-cloud management solutions try to simplify the process by connecting with other tools and offering a centralized administration platform.

Multi Cloud In today's era on a Global Scale

The Multi Cloud Management Market is predicted to be valued USD 4.60 billion in 2021 and USD 50.35 billion by 2030, growing at a compound annual growth rate (CAGR) of 30.85% from 2023 to 2030.

The uncertainty of depending entirely on a single cloud service, the rising flexibility of cloud computing technologies, and the growing demand for tight control and regulations are projected to fuel growth in the Multi Cloud Management Market. The Global Multi Cloud Management Market research provides an in-depth analysis of the market's major segments, trends, drivers, constraints, competitive landscape, and market-influencing factors.

Due to concerns about the stability of single cloud providers and the danger of vendor lock-in, a trend toward cost-conscious cloud deployments, and the need to comply with numerous data security and privacy standards, enterprises are opting for multi-cloud management solutions. The insecurity of single cloud services, as well as the rising demand for strict control and regulations, are likely to drive the Multi-Cloud Management Market during the next several years. Furthermore, technical advances and the growing flexibility of cloud computing technologies are predicted to drive market expansion throughout the forecast period. Another element driving market expansion is the desire to prevent vendor lock-in as well as improved agility and automation. Containerization and microservices for cloud-based applications are projected to propel the multi-cloud management industry forward. However, the market is projected to face obstacles due to security concerns, a lack of experience, and the difficulty of reconfiguring networks for cloud usage. End customers benefit from multi-cloud management because moving between different providers allows them to utilize their negotiating power rather than being trapped into one. End users can get greater flexibility in data distribution and prevent vendor lock-in by spreading workloads over multiple clouds. The COVID-19 pandemic has accelerated the use of multi-cloud management technologies, allowing enterprises that have previously transferred their workloads to the cloud a competitive advantage over their counterparts due to government limitations enforced during the epidemic.

Multi Cloud in Indian Market

The utilization of a multi-cloud approach is fast expanding as businesses utilize digital technologies to improve both customer and employee experiences. Cloud computing has grown in popularity in recent years and is predicted to reach \$10.8 billion in India alone by 2025, growing at a CAGR (Compound Annual Growth Rate) of 24.1% between 2020 and 25. Although multi-cloud provides enterprises with increased efficiency, agility, and scalability, it can also have significant disadvantages. Because of the increasing influence of cloud solutions in the workplace, various misconceptions and erroneous assumptions regarding multi-cloud have become generally accepted. Businesses have realized that depending on a single cloud infrastructure provider for all of their apps and workloads is not the ideal strategy. According to research on public cloud customers, 81% of organizations utilize two or more cloud providers. This enables customers to take advantage of the finest solutions available from each source. The utilization of several cloud providers provides businesses with additional flexibility in meeting their individual demands. According to the report, organizations pick various cloud providers for hybrid deployment and another provider to manage their workloads to prevent constraints.

A multi-cloud strategy may necessitate the administration of numerous cloud providers. Microsoft Azure, AWS, and GCP (Google Cloud Platform) are popular in India, but businesses may have difficulty deciding between them. According to John Hernandez, Executive Vice President and General Manager of Genesys Multicloud Solutions, the choice of cloud providers is influenced not just by workload but also by the company's total investment and strategy. A strategic agreement with a certain provider or regional cloud service availability may also play a role in the decision-making process.

Organizations that have used a multi-cloud strategy have seen considerable benefits, including:

1. Improved customer experience and revenue growth - by being able to provide contemporary apps more quickly, some firms have experienced a 35% increase in revenue.

2. Increased efficiency and innovation - the introduction of a multi-cloud approach has resulted in a 41% reduction in expenses and a reduction in time spent managing IT infrastructure, allowing firms to focus on product and service innovation.
3. Improved employee productivity - Organizations using multi-cloud architectures have enabled employees to work more efficiently, regardless of their location, with a 35% improvement in productivity savings across a remote workforce.

As enterprises transfer more workloads to the cloud, the complexity of multi-cloud infrastructures grows, possibly spanning numerous providers. Managing numerous clouds has grown difficult with the introduction of new cloud options from 5G telecom providers, an increase in the number of edge clouds, and a greater emphasis on security and cost control. Each cloud provider's tools are confined to their own cloud, resulting in many teams maintaining various clouds, diminishing efficiency and increasing cost and complexity. Because of the many cloud options available and the requirement for multiple teams to administer particular clouds, managing a multi-cloud system may be complicated. Having stability and visibility across different clouds, on the other hand, might give a competitive edge. A considerable amount of CEOs want to increase consistency in their public cloud environment, and many Indian businesses aim to use unified virtual machines, Kubernetes, and multi-cloud management procedures to offer comprehensive management and governance across on-premises and public clouds.

Multi Cloud in Depth

1. By means of Application:

- Compliance Management
- Lifecycle Management
- Metering and Billing
- Provisioning
- Others

Compliance Management, Lifecycle Management, Metering & Billing, Provisioning, and Others are some of the applications that make up the multi-cloud management industry. Lifecycle Management is predicted to have the biggest market share due to its potential to accelerate innovation via automated procedures for managing accessible cloud resources and services.

2. By means of Services:

- Reporting and Analytics
- Monitoring and Access Management
- Migration and Integration

- Data Security and Risk Management
- Cloud Management
- Others

Cloud Automation, Monitoring & Access Management, Migration & Integration, Data Security & Risk Management, and Others are among the service kinds available in the industry. The Migration & Integration category is predicted to expand at the fastest compound annual growth rate (CAGR) in the near future. Migration and integration services are classified according to deployment type, which includes private cloud, public cloud, and hybrid cloud.

3. By means of Vertical

- Travel and Hospitality
- Telecommunications and IT-enabled Services (ITES)
- Retail and Consumer Goods
- Media and Entertainment
- BFSI
- Others

Vertical categories of the market include travel and hospitality, telecommunications and IT-enabled services (ITES), retail and consumer goods, media and entertainment, business and financial services (BFSI), and others. The BFSI industry is expected to account for the largest market share. Multi-cloud management offers a wide range of applications, which will most likely drive market growth.

4. By means of Geography

- North America
- Europe

- Asia Pacific
- Latin America
- Middle East & Africa

Because of the region's rapid transition from isolated infrastructure to cloud, as well as its high rate of internet use, North America is expected to have the greatest market share in the Global Multi Cloud Management Market. For geographical analysis, the market is additionally divided into Europe, Asia Pacific, Latin America, and the Middle East and Africa.

Need of Multi Cloud in an Organisation

Organizations use multi-cloud solutions for a variety of reasons, one of which is to reduce financial risk by not depending entirely on one cloud provider. Being linked to a single vendor might limit an organization's strategy flexibility. Another rationale is to limit the potential of a localized hardware failure in an on-site data center producing an enterprise-wide outage, since multi-cloud considerably reduces the possibility of catastrophic failure. Implementing multi-cloud solutions is an efficient method to address the issue of shadow IT, in which employees utilize unapproved apps that are not monitored by IT. When an organization's IT rules do not completely fulfill its goals, a multi-cloud arrangement can provide a solution by allowing users to access specified cloud technologies while still complying to security regulations. IT decision makers may manage their multi-cloud architecture using the tools supplied by cloud service providers, or they can use a multi-cloud management platform to ease the process. Because each company has different needs, there is no one-size-fits-all solution for managing a multi-cloud environment.

Advantages of Multi Cloud Strategy

There are several advantages to implementing a multi-cloud approach. Some of the primary benefits of a multi-cloud strategy include:

- **Ability to opt:** Organizations that employ a multi-cloud approach can pick and use services from numerous cloud providers rather of being confined to the options of a single provider. This enables businesses to customise their use of cloud services to their unique requirements and preferences. The adaptability of a multi-cloud strategy encourages enterprises to experiment with new and varied cloud services and generate new and innovative concepts. A multi-cloud strategy, rather than being confined to a preset set of services, allows enterprises to pursue their goals in a more customizable and efficient manner.
- **Innovation:** The key advantage of employing a multi-cloud strategy is the flexibility to swiftly develop and take advantage of the specialized or top-performing services supplied by each cloud provider. Instead of being constrained by the limits of a single cloud vendor, this enables developers to emphasize innovation. This is comparable to how conventional corporate applications were designed in the past, when the vendor affected the architecture of the program through its features. As a result, the capacity to innovate by using the proper services is the primary benefit of a multi-cloud approach.
- **Cost Efficiency:** One of the key benefits of a multi-cloud approach is the potential cost reductions. While it is not always less expensive than a single-cloud solution, it can be more cost-effective. Choosing a single cloud provider involves paying for services that aren't necessary, resulting in money wasted. The budget, on the other hand, is spent on more productive services from several providers in a multi-cloud approach. As a result, while multi-cloud is more expensive, the services it provides are more aligned with a company's business model, making it more cost-effective.
- **Risk Mitigation:** A multi-cloud approach can aid in the avoidance of significant IT catastrophes by lowering the risk of total service disruption caused by outages in a single cloud provider's infrastructure.

All cloud providers have several data centers in various geographic areas, and having a duplicate of your application on the infrastructure of a separate cloud provider means that you have a backup plan in case one vendor's services go down. This strategy can assist you in avoiding over-reliance on a single source and reducing the effect of a catastrophic failure.

- **Negotiating Power:** The competitiveness element is substantial, particularly for large organizations with heavy consumption and spending. Using various cloud suppliers for your IT firm might help you negotiate better terms. This allows you to evaluate and exploit numerous price alternatives from providers in order to choose the solution that gives the greatest value for your company.

Disadvantages of Multi Cloud Strategy

- **Talent Management:** Hiring cloud engineers and architects with experience in a single cloud provider might be difficult due to the strong demand for these people. It is much more difficult to find developers, engineers, and security specialists who are familiar with several cloud providers. Organizations must recruit personnel with the requisite talents to create, protect, manage, and operate across different cloud platforms to successfully operate a multi-cloud system.
- **Cost Optimization:** Utilizing numerous cloud suppliers might save money, but monitoring charges, chargeback, and cost estimation can become more difficult. Cloud companies charge varying prices for their services, so understanding their pricing structure is essential. Cost and billing management necessitates the use of cross-account cost reporting and optimization technologies. Furthermore, the cost of transferring data from one cloud to another might raise the cost of moving data across clouds.
- **Security Risk:** When you utilize a single cloud provider, you can take use of their experience and resources to protect your app's data, access rights, and compliance needs. As you deploy applications across different clouds, their complexity grows and their attack surface expands, increasing the risk of security breaches. Protecting a network for a single cloud that comprises IDS/IPS, firewalls, WAF, virus protection, and incident response is already a difficult task. Companies that use various clouds must devise a strategy for configuring, managing, alerting, logging, and responding to security problems. They must also address key management, identity and access restrictions, SSL/TLS encryption, secrets management, and resource policies across numerous cloud providers. While third-party technologies can assist in reducing some security concerns, protecting a multi-cloud system is far more difficult than securing a single cloud provider.
- **Operational Overhead:** From an operational standpoint, managing a multi-cloud system may be difficult. Patching operating systems, monitoring applications and services, and responding to events become more difficult when infrastructure is distributed over many clouds. Each cloud provider provides integrated operational management services, but there are tradeoffs between ease, timeliness, and value. To boost efficiency, you can employ their integrated services or abstract any or all of them.

Conclusion

Using numerous cloud providers can give benefits such as decreasing the risk of relying on a single provider, selecting the finest services, enhancing the speed and robustness of your application, and even cutting expenses. Nevertheless, developing and administering multi-cloud apps may be tough for your development, operations, and security teams, and effectively staffing them can be problematic. This may initially impede your rate of innovation, and predicting and managing expenses across several clouds becomes more difficult. The decision to implement a multi-cloud system is determined by your company's IT philosophy, maturity, and capacity to make it work. It is critical to thoroughly weigh the benefits and drawbacks before committing to effectively architecting, managing, and executing in a multi-cloud landscape.

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