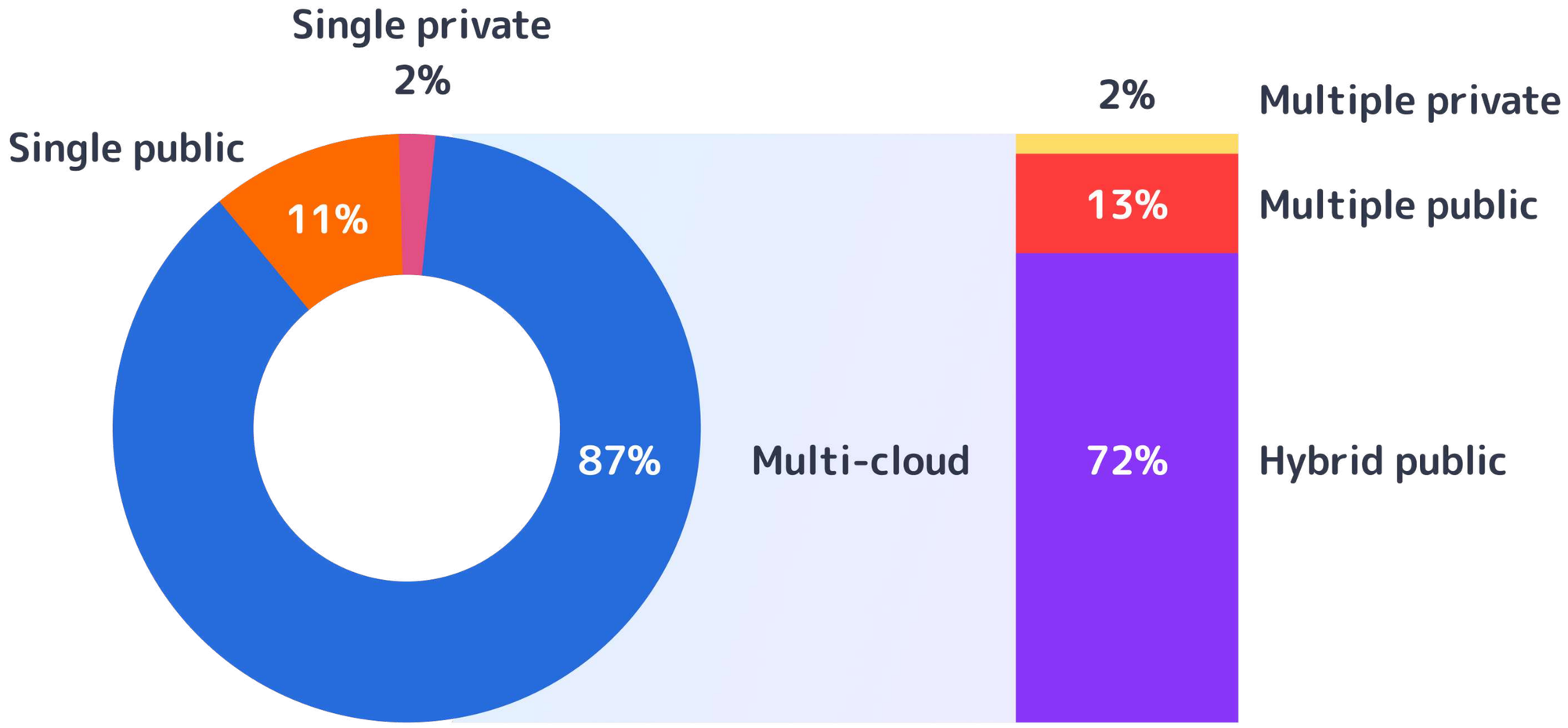
Cloud Native vs Cloud Agnostic: What Powers the Multi-Cloud?

Contents

Introduction

The modern business landscape is defined by rapid technological evolution powered by the agility, scalability, and connectivity of the cloud. From its inception in the early 2000s to its current status as a standard, the cloud has undergone a remarkable journey, revolutionizing how businesses operate, innovate, and connect. Today, cloud adoption is no longer up for debate; it's an undeniable imperative for enterprises. The focus has shifted entirely from whether to embrace the cloud to determining how best to approach and architect a successful cloud strategy.



According to the latest "2023 State of the Cloud" report, 87% of businesses now pursue a multi-cloud strategy. With so many cloud service providers (CSPs) competing in the cloud market, each with a distinct portfolio of powerful capabilities with varying pricing, presence, support, and security, organizations feel compelled to distribute their applications between multiple CSPs to achieve cost-savings and best-of-breed capabilities in a multi-cloud setup.

The benefits of multi-cloud architecture range from cost-savings, speed, resiliency, and flexibility to compliance, security, and independence. However, the extent of these benefits hinges on the underlying philosophy behind the multi-cloud strategy, be it a cloud native, cloud agnostic, or a hybrid of the two approaches. Each approach has its own unique benefits and restraints, and ultimately, it depends on the organizations to decide which approach aligns best with their workloads, the overall business strategy, and the available resources.

What is Cloud Native?

Cloud native is an approach to designing, developing, and deploying software specifically to run in and capitalize on the cloud. As such, it requires developers and engineers to use cloud tools, technologies, and principles, such as microservices, containerization, and DevOps methodology. This approach allows applications to fully harness the inherent benefits and capabilities of cloud environments, including elastic scalability, rapid deployment, self-healing capabilities, and resiliency.

According to CNCF (Cloud Native Computing Foundation), the open-source, vendor-neutral hub of cloud native computing, cloud native techniques and technologies aim to empower organizations to build and run scalable applications in modern, dynamic environments such as public, private, and hybrid clouds...

These techniques enable loosely coupled systems that are resilient, manageable, and observable.

Cloud Native Attributes

Modularity

Cloud native systems and applications are designed as small, independent components.

Dynamic Scalability

Applications can scale up or down automatically, at a granular level, as demands change.

Resiliency and Fault Tolerance

Cloud native includes redundancy, failover, and self-healing to ensure high availability and graceful failures.

Agility and Flexibility

Cloud native allows quick release cycles to adapt and innovate faster.

Vendor Neutrality

Cloud native approach encourages standardized practices and tools to enable portability across cloud environments.

Interoperability

Cloud native ensures seamless communication between systems and modules through standardized APIs and protocols.

Statelessness

Cloud native applications are designed to store data externally instead of locally, making them easier to scale, update, and replace.

Loose Coupling

Cloud native aims to reduce dependencies between components to ensure smoother updates, debugging, and reusability.

Key Enablers of the Cloud Native Attributes

Below are the principles, practices, tools, and technologies that are core to enabling a cloud native ecosystem.

Microservices Architecture

Microservices break applications into smaller, independent services that can be developed, deployed, and scaled individually. This promotes modularity, scalability, and agility — key attributes in any cloud native application.

Containerization

Containers are independent, lightweight environments that package applications or services along with their dependencies, so they can run smoothly in any cloud environment. Containers have become a standard approach in cloud native application development, aligning well with the principles of modularity, scalability, resource optimization, and portability.

Orchestration

Container orchestration is the automated management and coordination of containerized applications across a cluster of machines or nodes within a distributed environment, like the cloud. Orchestration tools, like Kubernetes, enable dynamic allocation of resources, load balancing, and self-healing capabilities, to ensure resilience, high availability, and efficient resource utilization in large-scale cloud native applications.

Continuous Integration/Continuous Deployment (CI/CD)

A CI/CD pipeline, integral to the DevOps and cloud native practices, is an automated workflow enabling frequent code integration, testing, and quality checks. By reducing manual intervention and ensuring consistent testing and deployment practices, CI/CD pipelines allow rapid development cycles, maintain reliability, and ensure agility in responding to market changes.

Infrastructure as Code (IaC)

IaC is a pivotal cloud native practice that abstracts infrastructure by representing it through code and automation scripts. Developers and operations teams can automate the provisioning, configuration, and management of infrastructure resources using code. This makes it easier to define and manage complex infrastructure setups in a consistent and repeatable manner, thus reducing manual errors, promoting agility, and optimizing cloud management.

Serverless Computing

Serverless is an emerging paradigm that allocates resources only when needed, in response to specific triggers or events. It offloads infrastructure provisioning and management to the cloud provider. Since resources are allocated dynamically, based on demand, serverless computing enables highly granular scalability and resource optimization within the cloud's pay-as-you-go pricing model.

Declarative APIs

Declarative APIs simplify interactions between different application components or services. Developers can use standardized declarations to express the desired outcomes, and the underlying infrastructure automatically adjusts to fulfill those. Declarative APIs abstract complex implementation details, enhance interoperability and support efficient, standardized interactions across cloud environments.

Service Meshes

Service meshes simplify and manage communication between microservices within complex cloud native applications. They abstract networking complexities, like service-to-service communication, load balancing, traffic management, security, and observability, from application code. This allows developers to focus on business logic and fosters agility, modularity, scalability, and resiliency in cloud native environments.

These techniques and technologies collectively contribute to achieving various cloud native characteristics, fostering efficiency, resiliency, and agility in cloud environments.

What is Cloud Agnostic?

Cloud agnostic is a strategy that allows organizations to shift seamlessly across various cloud environments, without being tightly coupled to any specific provider's services. It requires developers and engineers to use open standards, open-source technologies, and containerization techniques such as Docker and Kubernetes, instead of platform-specific technologies. Cloud agnostic allows organizations to avoid vendor lock-in and leverage best-of-breed cloud technologies, as needed.

Cloud agnostic is a concept that aligns with and is often a part of the broader "cloud native" approach. While cloud native organizations can choose to take advantage of a complete, platform-specific toolchain, they can also use abstractions to decouple their cloud native systems from the underlying platform, effectively blending into the boundaries of cloud agnostic.

Cloud Agnostic Attributes

Below are the principles, practices, tools, and technologies that are core to enabling a cloud native ecosystem.

Vendor Neutrality

Cloud agnostic principles promote open-source and standardized tools to ensure flexibility in technology choices.

Decoupling

Cloud agnostic design not only minimizes dependencies within application components but also on the cloud components interacting with the applications.

Service Abstraction

Cloud agnostic design focuses on abstracting services from the underlying infrastructure via standardized APIs. This abstraction shields applications from platform-specific details.

Portability

Cloud agnosticism aims for compatibility and seamless portability across different cloud platforms and even on-premises environments.

Independence

Cloud agnostic practices emphasize autonomy, reducing the risk of being tied to a specific technology stack or pricing model.

Key Enablers of the Cloud Agnostic Approach

Cloud agnostic encourages open standards and vendor neutral tools and platforms for implementing cloud native technologies and practices like containerization, orchestration, and IaC. Additionally, it uses abstraction layers to decouple applications from specific cloud providers.

Open-source, Standardized Solutions

Open standard organizations play a pivotal role in enabling the cloud agnostic approach. For instance, The Cloud Native Computing Foundation (CNCF) offers a vendor-neutral ecosystem of tools and technologies, including Kubernetes, for developing applications that operate seamlessly across cloud platforms. Similarly, Cloud Foundry, an open-source PaaS (Platform-as-a-Service), abstracts the underlying infrastructure differences, ensuring uniform deployment and management of applications across various clouds.

Containerization

Containers are inherently portable packages of code. However, in order to maintain complete agnosticism, organizations need to rely on open-source Kubernetes distributions or self-managed solutions, instead of platform-specific alternatives like Amazon Elastic Container Service (ECS) or Azure Kubernetes Service (AKS). Open-source options allow organizations to deploy and manage their Kubernetes clusters on any cloud or on-premises environment that supports Kubernetes.

IaC

IaC is one of the core cloud native enablers and plays an equally important role in cloud agnostic deployments. Instead of platform-specific tools like AWS CloudFormation or Azure Resource Manager (ARM) Templates, cloud agnostic adopts industry standard tools like Terraform and Ansible to create infrastructure and orchestrate resources consistently across diverse cloud environments.

Standardized APIs

Standardized APIs like RESTful APIs, GraphQL, and container registry APIs adhere to universally accepted protocols and formats and allow applications to be abstracted from specific cloud APIs and services, enabling consistent and seamless interactions across different clouds.

Open-Source Storage/Storage Abstraction

Rather than relying on proprietary data storage solutions from cloud providers, cloud agnostic utilizes open-source databases like PostgreSQL or, preferably, managed database services, like ElephantSQL, that are supported by all major cloud vendors. Alternatively, developers can utilize cloud storage abstraction libraries such as Apache Libcloud or JClouds for standardized interactions regardless of the underlying cloud storage service.

Cloud Agnostic Management Tools

Cloud-specific management tools work optimally with their respective platforms. Whereas, cloud agnostic environments require cloud agnostic management, monitoring, and observability tools that can be integrated across all major cloud providers. Without these tools, it is near impossible to manage, monitor, provision, deploy, and optimize multi-cloud infrastructure and services.

Collectively, these attributes and enabling approaches and technologies contribute to a cloud agnostic strategy. However, going strictly cloud agnostic across the enterprise requires higher investment in tools, organizational and staff preparedness, and abstraction levels.

Cloud Native and Cloud Agnostic Need Not be at Odds

Companies typically start their cloud journeys with a single cloud provider and end up embracing its native services gradually. It makes sense, because tools and services native to a cloud offer convenience and synergies within that environment. However, too much reliance on a single cloud can result in vendor lock-in.

Most organizations prefer to have the flexibility to switch their providers or leverage the most suitable platforms and services across CSPs for their different workloads. But sometimes, in their quest to achieve portability and flexibility, organizations avoid platform-specific functionalities to an extent that they forgo the convenience, speed, and cost-savings of the cloud.

As such, they need to strike a balance between these two approaches. They can choose which applications can benefit from platform-specific services and which are more suited for a cloud agnostic approach.

With a hybrid approach to cloud agnosticism, organizations need a single, cloud agnostic multi-cloud management solution for deploying, logging, monitoring and managing their workloads across disparate environments. Cloud-specific tools will not provide the cross-cloud visibility needed to ensure that all apps are working in a resource-efficient and cost-effective manner across all platforms.

Cloud Native vs Cloud Agnostic: What Enables Multi-Cloud?

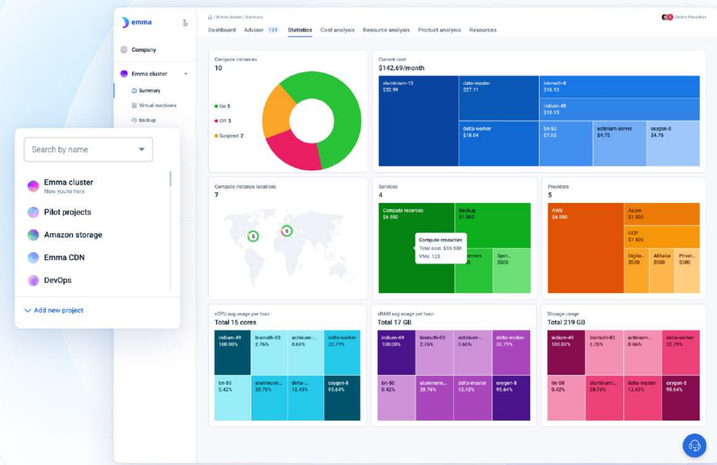
Cloud native vs cloud agnostic is not a matter of single vs multi cloud. It is a common misunderstanding that cloud native is inherently devout. Contrary to this, the CNCF's definition of cloud native includes vendor-neutrality as a core attribute. However, the cloud native approach does not restrict organizations from leveraging cutting-edge, vendor-specific tools and platforms either. So ultimately, many cloud native organizations choose to become devout to maximize on all of the strengths of their chosen provider.

Cloud native organizations can very well take steps to abstract away from their cloud provider while still utilizing its unique functionalities. Several cloud native practices can enable organizations to achieve this abstraction:

- Containers
- Standardized APIs
- Open Source orchestration platforms
- Cloud agnostic management and monitoring tools
- Third-party IaC tools

These practices allow cloud native organizations to shift or distribute their workloads between multiple clouds and create a best-of-breed toolchain for their organizations within a functionally agnostic multi-cloud setup.

Similarly, cloud agnostic also does not necessarily imply multi-cloud. It also doesn't mean instant migration to another cloud provider as needed. Cloud agnostic primarily enables organizations to switch providers in a reasonable amount of time with minimal disruption and effort. Instead of going strictly cloud agnostic in the literal sense, it is more feasible for most organizations to manage abstractions to continue being able to utilize the functionalities and services they need from particular cloud providers. Simply put, multi-cloud matters, and organizations don't need complete agnosticism to become multi-cloud.



The emma Platform: Unified Management for Any Cloud Environment

The emma — enterprise multi-cloud management application — platform is designed to answer the need of organizations to manage their resources — applications, workloads and services — across multiple cloud providers. The emma platform provides a single management console enabling them to create a consistent virtual environment across all cloud environments — on-prem, private, public, and edge — and to simplify cloud management.

The emma platform is cloud agnostic — it integrates seamlessly with both cloud native and cloud agnostic applications, allowing SMBs and enterprises, no matter where they are in their multi-cloud journey, to leverage the full benefits of multi-cloud. Here's how:

Seamless deployment

The emma platform's cloud agnostic approach allows development teams to deploy applications across different cloud environments without needing platform-specific configurations.

Standardized workflows

The emma platform's unified dashboard allows IT teams to use consistent workflows across CSPs, simplifying their CI/CD pipelines.

Resource optimization

Single-pane-of-glass visibility and reporting allows IT to monitor resource utilization across diverse cloud environments and choose the most resource-efficient cloud services for specific workloads.

Portability and scalability

By abstracting configurations and deployment across multiple clouds, the emma platform allows developers to design applications that are portable and scalable across the organization's multi-cloud landscape.

Risk mitigation

The emma platform enables IT to distribute and manage applications across diverse computing environments, mitigating any platform-specific risks through redundancy and failover mechanisms.

Leveraging best-of-breed

Cloud native ensures seamless communication between systems and modules through standardized APIs and protocols.

Future-proofing

Being cloud agnostic, the emma platform is always prepared for whatever's next in the cloud landscape.

About emma

At emma, we believe that cloud resources should be as accessible as electricity or the internet. That's why we created the emma platform — the world's first end-to-end, no-code cloud management platform that enables organizations to unlock all the benefits of multi-cloud (on-premises, private, public, and edge) without the usual complexities and security risks associated with multi-cloud operations.

Discover the emma platform's unique features:

1. **A unified dashboard for monitoring performance, resources, security, and compliance across all clouds.**
2. **A truly cloud agnostic platform for managing infrastructure and applications no matter where they are hosted.**
3. **No-code approach to enable infrastructure provisioning and configurations in just a few clicks.**
4. **Global networking backbone for high-performance connectivity to cloud services in 50+ regions and 150+ cloud locations.**
5. **An all-in-one, end-to-end cloud management solution, providing comprehensive cloud management, cost management, network management, and governance capabilities**

With the emma platform, businesses can maximize their cloud environments, drive innovation faster, and gain a decisive edge in a rapidly evolving business landscape, regardless of how they approach their multi-cloud strategy.