fastly®

The edge of the multi-cloud

7 reasons why edge cloud platforms complement a multi-cloud approach

Introduction

The adoption of multi-cloud architecture has evolved from nascent to mainstream in recent years. Most companies started their cloud journey with a single provider that best fit their needs. Yet as specific goals and use cases evolve, it has become increasingly common for companies to adopt several cloud providers in order to avoid vendor lock-in and exploit best-of-breed solutions, among other benefits.

As a result, 84% of enterprises have adopted a multi-cloud strategy according to a recent global study.[1] Cloud providers have largely similar offerings that are widely viewed as commoditized infrastructure, however their APIs, frameworks, and underlying architectures vary greatly. Furthermore, complex use cases may use features in one cloud provider that don't exist in another.

Edge cloud platforms are an effective way to complement a multi-cloud approach. They offer the opportunity to add a uniform layer on top of your cloud infrastructure, as they sit between the core cloud and end-users. They provide the tools to optimize and increase performance while also giving greater visibility over your network. The network edge is also becoming a very powerful ecosystem for modern app development, offering more agility, control, and security to IT teams.

[1] 2019 RightScale State of the Cloud Report survey of 786 respondents across North America (59%), Asia Pacific (19%), Europe (16%) and Rest of World (6%)

The growing appeal of multi-cloud

Organizations have been increasingly using multiple private and public clouds to deploy their applications. Key benefits of this multi-cloud approach to infrastructure include:
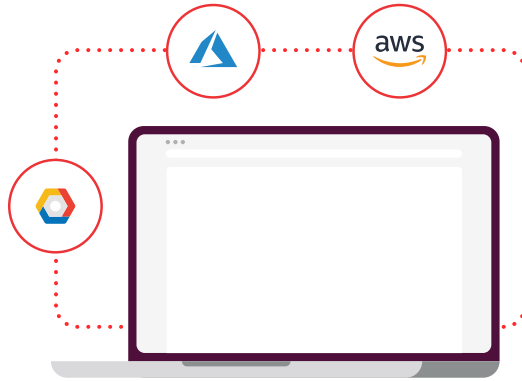
Cost management

Having a multi-cloud approach enables you to spend your money more efficiently, as you can spread your budget according to your needs by leveraging the strength of each cloud. For example, you could choose the low-cost provider for cold storage and allocate more budget for more advanced, differentiated services like machine learning (ML).

Agility

By adopting several cloud platforms, your development team gets the freedom to build and deploy new apps and services where they fit best, without the need for unnecessary trade-offs or compromises. Many cloud-native applications are built on containers and microservices using component services from different cloud providers. This allows modern apps to be broken down and spread across different platforms while still providing the same service but with greater efficiency.

Resilience & security

Distributing your workload and services across various platforms inherently provides greater disaster recovery capabilities, increasing the overall resiliency of your network. If one cloud goes down, traffic can be redirected immediately to another if you have put the right processes in place. Security also becomes less of a concern as cloud providers invest heavily in threat mitigation.

Regional footprint

If your organization spans various countries, a multi-cloud approach can also be used to comply with regional requirements (GDPR in the EU, DPC in India, APPI in Japan, and OAIC in Australia) as well as to improve performance for your end-users by leveraging a cloud provider that has a better local footprint than others.

The benefits of adopting a multi-cloud architecture are clear. However, leveraging multiple cloud platforms can add operational and security complexity as well as additional workload on your development teams, especially when you need to monitor several platforms. It also requires understanding various system environments and rules specific to each provider, and learning how to make them work together.

Adding an additional layer at the edge offers benefits that will offset the complexity of working with various cloud providers.

The rise of the edge

Alongside the rise of the cloud providers, edge cloud platforms have been gaining adoption. Edge cloud platforms sit between end-users and cloud providers, representing the last point of the network where organizations can still be in control of their data. They enable you to move data, applications, and computing power closer to users, and provide efficient solutions to optimize and secure the use of cloud as origins. Edge cloud providers enable you to meet rising customer expectations, deliver secure, competitive online experiences, and bring innovative ideas to life, faster.

7 benefits of using an edge cloud platform in front of your multi-cloud infrastructure

Edge cloud platforms enable organizations to leverage an additional layer of delivery, security, and compute power by sitting in front of your multi-cloud architecture and getting you closer to your end users. They can also help you take an infrastructure-agnostic approach to your cloud strategy. But their key value lies in providing a number of tools and solutions designed to empower your development teams. Edge cloud platforms give you the agility to monitor your network health and deploy services at the edge that were traditionally managed on-premise or within each cloud provider individually. They offer enhanced performance, speed and security, while lowering the workload on your origins.
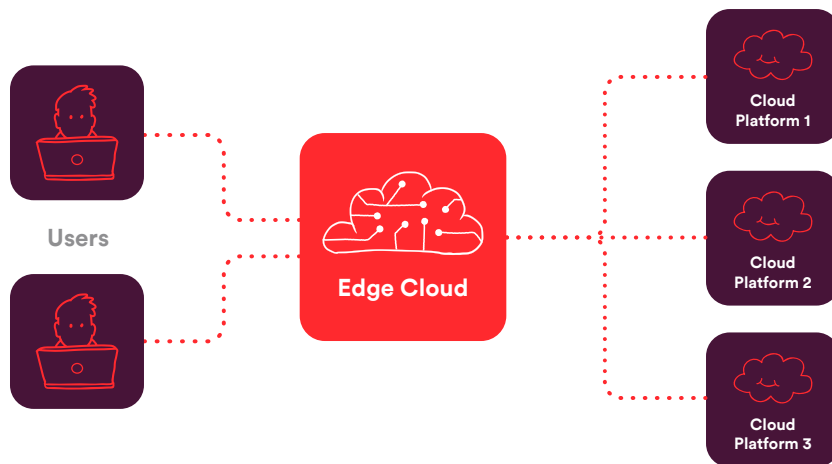
Key capabilities of edge cloud platforms in multi-cloud environments include the following:

## Infrastructure-agnostic request routing (load balancing)

Load balancing is the ability to seamlessly route requests to the appropriate backend, regardless of cloud provider or region, and is critical to the successful adoption of a multi-cloud strategy. Because most cloud-based load balancers are built on top of the DNS, they are subject to time-to-live (TTL) dependencies which limit their ability to route traffic only by IP address. **With an advanced edge cloud platform, load balancing decisions are made at Layer 7 rather than at the DNS layer,** allowing you to create custom rules to intelligently route traffic using various request aspects such as client location, user logged-in status, device type, cookies, URL path, and HTTP headers. This allows you to better support your multi-cloud application architecture and optimize client responses before delivery.

You can also use advanced routing rules to easily run A/B testing or blue/green deployment solutions at the edge to safely test out new features or services by routing only a fraction of the production traffic to your newly deployed multi-cloud site or service via a simple application programming interface (API) call.
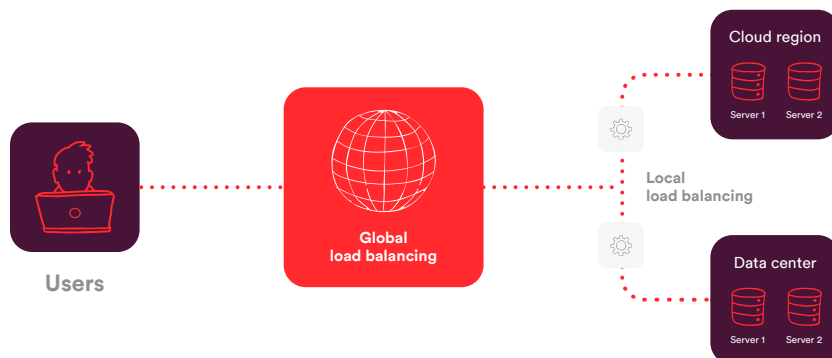
Failover & redundancy

Edge cloud platforms can instantly redirect your traffic or failover to a secondary cloud or region if the primary origin goes down, enabling you for instance to turn on new services whenever you want while always having a backup plan for continuity. The platform constantly monitors the status of the hosts by performing health checks on the origin servers based on the frequency setting defined by your team, so you can always be aware of how the network is performing.
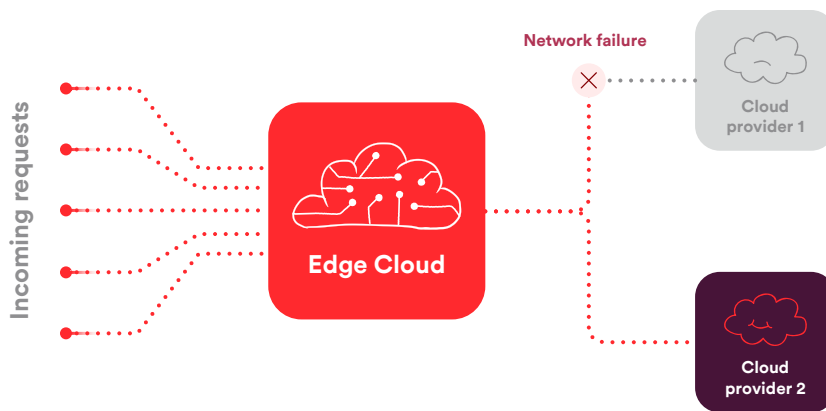
Reduce the number of requests to your cloud providers

Infrastructure-as-a-service (IaaS) models are highly elastic, however their request-based model translates to high egress and compute costs. Edge cloud platforms use request collapsing to reduce the number of requests that reach your origin; some can ensure only a single **request is passed to origin regardless of how many simultaneous requests you receive at the edge for a single object**. It will immediately reduce your egress and compute costs, while improving resiliency. This also improves your cache hit ratio by only fetching content from the origin once.

Real-time monitoring & troubleshooting

Having visibility over your entire system is key to your business, but the task becomes significantly more challenging when working across a multi-cloud ecosystem with various providers and services. An advanced edge cloud platform that sits on top of all your cloud providers should let you **stream logs from the edge in real-time** to a provider of your choosing, allowing you to dig into any aspect of a request or response. This visibility enables you to diagnose problems anywhere in your network and understand how your customers are engaging with your apps and services. Visibility should also be tied to real-time configuration changes: once you have the data, you should be able to resolve an issue quickly.

Modern app development & microservices at the edge

Microservices enable developers to break application logic into smaller functional services so they can be spread across various locations and serve more than one purpose. Development teams can take advantage of a multi-cloud architecture by deploying these services close to their end-users or on the platform where they will be the most efficient. However, the reality of deploying them on different cloud platforms with each their own requirements can result in more complexity and increase the inefficiency in maintaining them over time.

Today, advanced edge cloud platforms enable you to **move your global microservice logic to the edge** to avoid repeating the complexity in each service. You can use the **preflight pattern** to decorate inbound requests with edge logic decisions (such as authentication, user group bucketing, A/B testing, and geolocation information) before sending to the origin. An edge cloud load balancer can act as a service mesh to route client requests to the right service or authenticate service-to-service communication, ultimately making your services safe, fast, and reliable.

An additional layer of security at the edge

One of the challenges with a multi-cloud architecture is how to provide a uniform security layer over your various origins with minimal impact on performance. Edge cloud platforms enable you to provide an 'umbrella' of security regardless of how many origins or clouds you are using to run your applications. **By running web application firewall (WAF), bot or distributed denial of service (DDoS) mitigation solutions at the edge of your network, you can capture the majority of the noise before it reaches your cloud infrastructure.** Edge cloud platforms will also enable you to secure transport layer security (TLS) connections at the network edge, closer to users, offloading encrypted

traffic from servers on any of your cloud platforms for better performance. You also attain full visibility by using an edge cloud as a single ingress point, enabling you to audit all of your applications and APIs.

Migrate your data with zero downtime between your origins

Adopting new infrastructure can be a daunting task. Efficient edge solutions will allow you to **migrate data across infrastructure with ease by simply configuring the edge cloud platform to look for content in multiple locations**, thereby maintaining a high quality of experience for your users. This service enables you to migrate data, apps, and services to new locations without any downtime, while traffic will be automatically directed to where your services are currently up and running until the new location is production ready

Fastly — the leading edge cloud platform

No matter where you are in your multi-cloud journey, adding an edge cloud platform to your stack provides a uniform layer on top of your cloud infrastructure that can greatly reduce complexity while providing significant improvements to visibility, performance, and security.

Fastly's leading edge cloud platform sets the standard for optimizing multi-cloud architectures. To learn more about how we can help support your multi-cloud strategy, contact Fastly at sales@fastly.com.