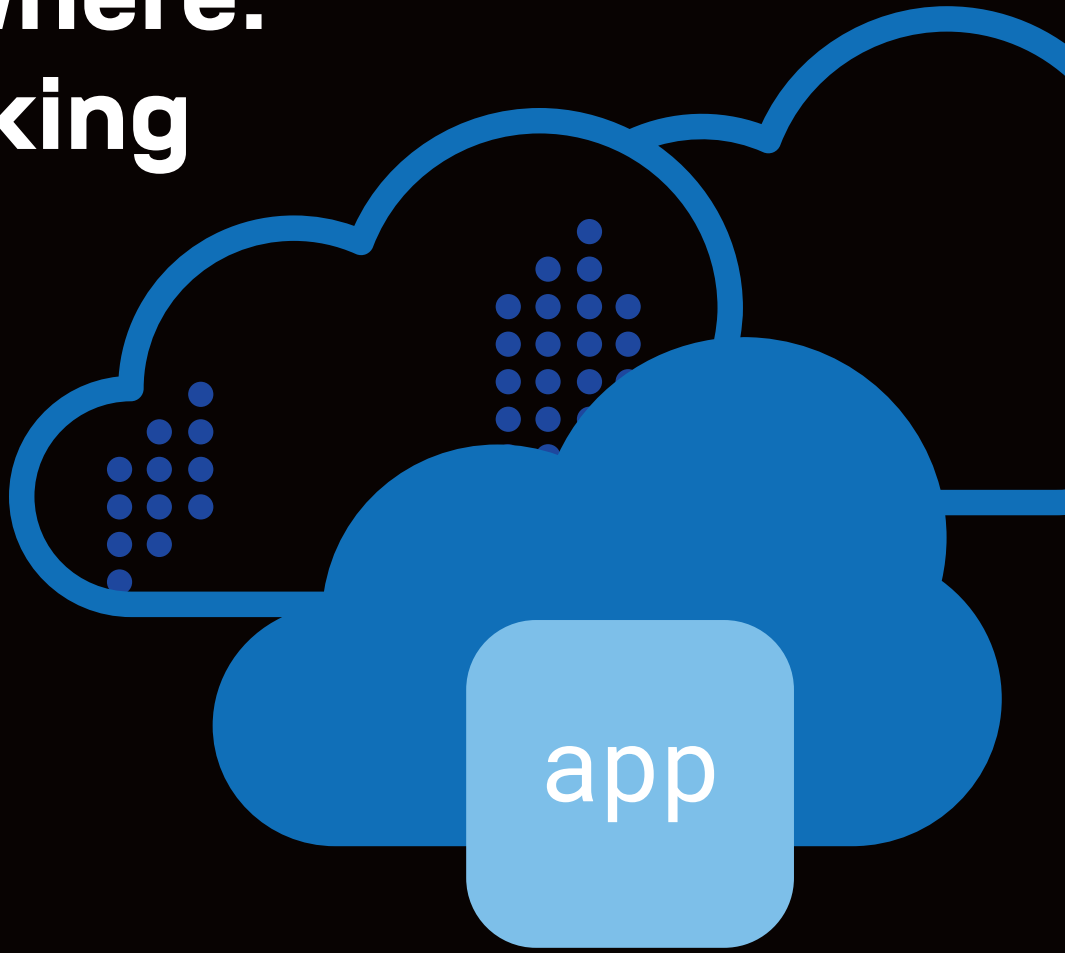
Connected, Available, and Secure Apps Anywhere: Multicloud Networking with AWS and F5

Simplify connectivity for distributed networks, apps, and services in public clouds, on-premises data centers, and remote sites.



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The Tangled Multicloud Web

For most organizations, the cloud journey has become complicated. The majority (87%)1 deal with multicloud or hybrid environments and getting everything to work together is no simple task. Today's apps are also spread across environments, with 85% of organization using at least two environments.[2]

Connecting data and applications between all of these sites can be incredibly difficult. Each environment has its own toolset, and interconnection can potentially be a messy ad hoc network that's hard to secure. **Common challenges include:**

Incompatibility

The differences between traditional enterprise networking equipment and public cloud networking constructs mean they don't readily work together. These proprietary differences significantly slow down deployments and migrations.

Complexity

Not only are there too many tools and consoles across environments, but IP address collisions and routing issues are also common problems. With no single source of visibility, management and troubleshooting are inefficient.

Risk

Multiple environments expand the attack surface, increasing the risk of gaps and inconsistencies. Complex interconnections and poor visibility compound risk, making it difficult to secure your networks and ensure reliability.

Talent Shortages

Many organizations don't have sufficient in-house skills to build a secure and reliable multicloud network, as 44% of survey respondents say they struggle to find qualified hires to close the gap.[3]

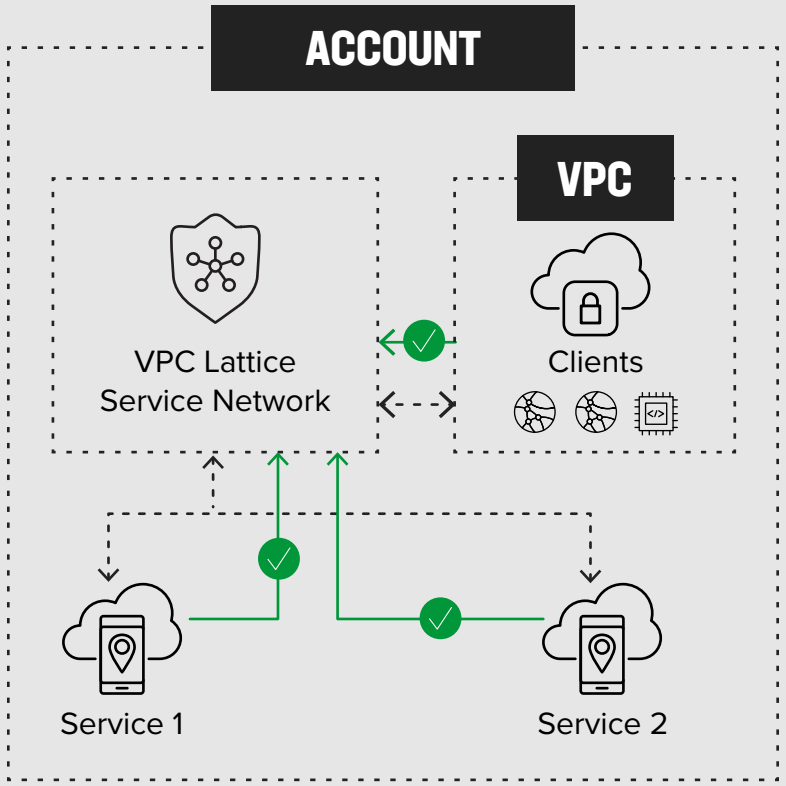
Combined, these issues harm application performance and reliability, while making modern, distributed app architectures incredibly difficult. Network teams simply can't provision new connections and policies fast enough to support DevOps, and networking alone lacks the service discovery, load balancing, and service health needed for successful app-to-app communication.

Building Cloud Connections

Even within the same cloud provider, connectivity can be complicated. Often, different teams work within their own virtual private clouds (VPCs) that host various services. The boundaries of these VPCs don't always align to application boundaries, requiring communication across multiple VPCs and compute services in your cloud environment.

Amazon Web Services (AWS) solves this with Amazon VPC Lattice, a managed service that discovers and securely connects microservices across multiple VPCs and AWS accounts as well as compute types, such as Kubernetes or serverless. It provides visibility, security, and traffic management for thousands of connected services without having to build and maintain a convoluted network.

But with most organizations using hybrid or multicloud environments, you also need a way to connect your apps and services in AWS with other clouds or on-premises environments. As an AWS partner, F5 offers solutions that complement and enhance AWS, ranging from security and application delivery to connectivity.

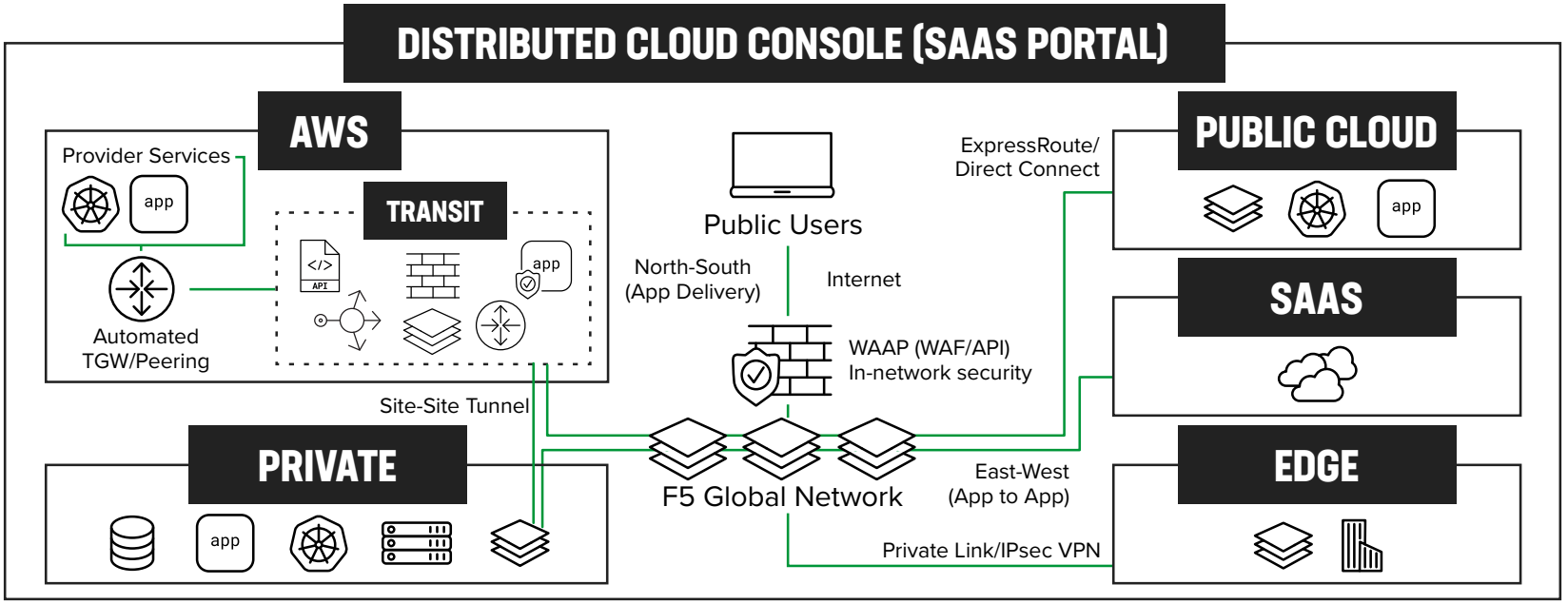


Amazon VPC Lattice creates a network to connect clients and services across multiple VPCs.

According to GigaOm, connecting another public cloud environment should feel like just another instance to connect rather than a whole architecture overhaul.[4]

Forge Connections Beyond AWS

By using F5® Distributed Cloud Multicloud Networking, you can securely connect your AWS apps and services with the rest of your environment, including other public clouds, private clouds, data centers, and the edge. The solution consists of two products: F5® Distributed Cloud App Connect, which enables app-to-app communication, and F5® Distributed Cloud Network Connect, which creates a network mesh between sites. These solutions abstract complex networking constructs into an orchestration solution that requires minimal configuration to simplify connectivity.



F5 Distributed Cloud Multicloud Networking and the F5 Global Network connect apps and services in AWS with other clouds and edge sites.

Distributed Cloud Multicloud Networking can quickly and securely connect AWS with other clouds. **Let's examine four use cases to see how F5 and AWS work together to simplify connectivity.**

Connect applications and services

Create networks between clouds

Secure apps and connections

Improve visibility and performance

Connect Apps and Services

To connect users, apps and microservices in AWS with other clouds or on-premises environments, you need a way to extend the environment. This extension also needs to be able to integrate with cutting edge features like VPC Lattice, discover and advertise services across Kubernetes clusters and clouds for effective app-to-app networking.

F5® Distributed Cloud Includes two solutions delivered as a SaaS:

F5® Distributed Cloud App Connect	F5® Distributed Cloud Network Connect
	
App Connect securely connects distributed apps, services, and users anywhere. When installed in an AWS instance, it can connect VPC Lattice services with apps or users on other clouds or on premises. Distributed Cloud App Connect offers service discovery, load balancing, visibility, and security. Granular policies and segmentation control access and where services are advertised to protect both apps and the underlying network.	Network Connect allows you to connect any environment anywhere across Data Centers, Clouds and Edge compute deployments. Distributed Cloud Network Connect provides routing flexibility across a multicloud fabric, manages how client-side and server-side connections are handled, and can inject L4-L7 and security services into a proxy architecture. This solution provides not just multicloud networking, but also application delivery and security.

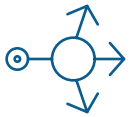
With F5 Distributed Cloud, you can now streamline your network-centric and application-centric architectures. The result? Agility and efficiency when tackling the challenges of hybrid and multi-cloud networking and distributed applications at scale. This intent-based, automated, and self-maintaining platform can be managed via a centralized control plane, the F5 Distributed Cloud Console. This console provides configuration management and observability across both on-premises and cloud deployments, integrating connectivity, security, DNS, and CDN capabilities into a single platform. Choose F5 Distributed Cloud and experience the power of a single platform that combines the best of both worlds, making your network more secure, efficient and effective.

Did you know? F5® BIG-IP® and F5® NGINX Plus® can both also link Amazon VPC Lattice to other parts of your IT environment. These solutions can proxy requests from non-lattice environments to your VPC Lattice, as well as integrate security features.

Network Across Clouds

Seamless and secure networking across clouds, data centers, and edge sites needs full visibility and unified operations to be successful. F5 Distributed Cloud Network Connect can link your AWS instances to other parts of your IT environment without the complexity or interoperability challenges of point-to-point solutions.

Easily connect clouds and other sites over a private backbone or the F5 Global Network. The network-centric approach creates an L3 VPN fabric to simplify connectivity between AWS and other locations. Distributed Cloud Network Connect offers a feature set that simplifies multicloud networking without sacrificing security.

Automated provisioning	Granular traffic control	End-to-end private connectivity
		
With one click, you can establish connectivity between clouds, data centers, and edge locations.	Define routing and segmentation policies at the individual location level and across multiple sites and clouds.	Provide high-speed connectivity without the risk of using public internet.

With Distributed Cloud Network Connect, you can link AWS Transit Gateway-connected VPCs with other public or private clouds using hub-and-spoke orchestration that's secure and easy to use.

Secure Apps and Connections

Security is a common concern for connecting apps and services across clouds. Using the public internet for transit puts data at risk, as does the expanded attack surface of distributed environments. Some organizations have built convoluted systems that route traffic through local data centers in order to maintain security, but it doesn't have to be so complicated.

F5 Distributed Cloud Services secure both the connections between apps and clouds as well as the apps themselves. Native network and application security, API discovery, and control over data ingress and egress, along with the F5 Global Network as a private backbone, ensure your data is kept secure. End-to-end TLS encryption also protects workloads in transit.

Further secure your apps with F5 Distributed Cloud Web App and API Protection (WAAP). SaaS-based defense against threats, malicious bots, and DDoS attacks works seamlessly with multicloud networking and is managed from the same F5 Distributed Cloud Console. Extend consistent security to your AWS deployments—as well as other clouds and on premises—to reduce complexity and increase efficiency.

Did you know? Distributed Cloud Network Connect also allows you to seamlessly insert third-party services like network firewalls into your clouds to enhance security and compliance.

Improve Visibility and Performance

Routing, load balancing, and observability are all key to ensuring top performance of your connected apps. Networking alone doesn't provide application delivery services, and often the telemetry that can be used for troubleshooting is trapped in silos of various cloud tools.

Application delivery

F5 Distributed Cloud App Connect not only enables communication between apps and microservices, but it also automates app deployments. By using Infrastructure as Code (IaC), it can efficiently provision resources and maintain uniform policies across sites. Support for AWS, Azure, Google Cloud, IBM Cloud, Red Hat OpenShift, and VMware means you can connect and deploy apps virtually anywhere with ease.

App-to-app networking also includes load balancing for TCP, UDP, and HTTP/S requests to improve app delivery performance, while the F5 Global Network provides reliable, high-speed connections.

Observability

F5 offers unified observability to keep applications operating at peak performance with increased uptime and reliability. Simplify management with the ability to monitor apps on AWS or any other platform from a single console.

End-to-end visibility of applications lets you quickly identify performance issues before they cause disruption with the dashboards and insights you need for a fast time to resolution. You can also integrate with DevOps and SecOps tools for alerting and event management.

Connectivity without Complexity

F5 Distributed Cloud Multicloud Networking lets you easily connect your AWS apps and services with users and environments anywhere you need to. Built-in security and observability ensure apps are not only connected but are fast, reliable, and protected.

Simplified networking

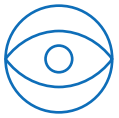
Deliver apps and connect clouds anywhere without needing to modify the underlying networking.

Improved security

Insert consistent security controls and encrypt traffic to defend apps, APIs, and networks against threats.

Increased reliability

Identify app or service performance issues before they cause an outage with end-to-end observability and performance metrics.



End-to-end visibility

Gain centralized network visibility across all sites and cloud providers for faster troubleshooting and issue resolution.

Repeatable deployments

Use infrastructure as code to provision resources faster and apply uniform policies so you can build once and use everywhere.

Lower cost and complexity

Simplify operations with centralized management and an integrated service stack for uniform services and policies.

Modern Multicloud Connectivity with F5 and AWS

F5 offers application delivery, security, and networking across the entire hybrid cloud estate to provide reliable and secure apps and services in AWS or anywhere else you need them. The long-standing partnership between F5 and AWS means you can expect solutions that work together seamlessly to help you meet your cloud goals faster while simplifying multicloud complexity.

Ensure your clouds, apps, and services are always:

Connected

Available

Secure

The F5 and AWS Partnership:

- 10+ years of collaboration
- Over 1,000 joint customers
- Competencies for containers, networking, and security
- Service validations for AWS WAF, Amazon CloudFront, AWS Outposts, and Linux
- Over 20 AWS certifications

[1] Flexera, 2023 State of the Cloud Report

[2] F5, 2023 State of Application Strategy Report

[3] S&P Global Market Intelligence, Closing the cloud skills gap: A perennial problem for businesses, March 2023

[4] GigaOm, Radar for Cloud Networking v2.0, March 2023

ABOUT F5

BRINGING A BETTER DIGITAL WORLD TO LIFE

F5 is a multicloud application services and security company committed to bringing a better digital world to life. F5 partners with the world's largest, most advanced organizations to secure and optimize apps and APIs anywhere—on premises, in the cloud, or at the edge. F5 enables organizations to provide exceptional, secure digital experiences for their customers and continuously stay ahead of threats. For more information, go to f5.com. (NASDAQ: FFIV).

Learn more about F5 Distributed Cloud Multicloud Networking at f5.com/solutions/use-cases/multi-cloud-networking.