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WHITEPAPER

Alkira on Azure: Multi-Cloud Networking at Scale

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Glossary of Terms

CXP Cloud Exchange Point: is a fully virtualized point of presence delivering an entire network stack with rich network services

Connector: is a termination point connecting on-prem and cloud networks

CSP Cloud Service Provider: provides a wide range of cloud computing services

MCN Multi-cloud Networking: utilizing multiple CSPs to build, deploy, and manage applications and workloads

The Need for a New Multi-Cloud Network

Enterprises have a wide range of infrastructure to run applications on. Many are choosing the most appropriate environment for each application based on the specific requirements. This can include multiple public and private clouds. The diverse set of environments introduces IT challenges, forcing enterprises to look for a solution to provide a uniform method of networking, security, and operations between various cloud environments.

Network infrastructure has become the roadblock to multi-cloud adoption. CIOs and network engineers worldwide are grappling with a challenge of building a network that can fully enterprise WAN, remote users, on premises data centers and cloud applications. With the explosion of multiple cloud platforms, networking needs to extend its reach to hybrid complexity of connecting a diverse array of networks into the various public cloud is growing as distributed cloud applications deployment is proliferating. And on top of the multi-cloud connectivity needs, network & security engineers also need to worry about inserting network services like firewalls and load balancers at appropriate locations in the network and building out DMZ in the cloud, in addition to the traditional data centers.

In an increasingly virtual and digital world, organizations are accelerating digital transformation projects to ditribute applications, services, and work environments for optimal user experience and cost effectiveness. This requires a significant expansion of the cloud infrastructure, which fuels the digital transformation.

As cloud facilities expand everywhere to accomodate this race to digitize, the networking challenges will only become more acute. New cloud workloads are many times traditionally connected through cloud onramps and colocation facilities. This creates complexity of managing a network inside of a particular cloud, as well as across different clouds. For example, here are some of the environments that need to be addressed:

- **Private cloud:** Private clouds are hosted in the data centers built to run “on-premises” at specific locations owned by the enterprise. They can also be hosted and manged in a data center run by a third party.

- **Hybrid cloud:** Enterprises can build distributed applications that share resources in both private and public clouds, an architecture generally known as hybrid cloud.

- **Multi-cloud:** Organizations can consure services or resources from multiple public clouds, such as AWS, Microsoft Azure, or GCP. This architecture is known as multi-cloud.

Whether cloud applications are built on public cloud “serverless” platforms, virtual machines, microservices, or your neighbor’s computer, applications and data will always need to be connected with networks. As cloud applications get increasingly distributed and complex, the networks need to adapt. Modern networks need to provide a secure and unified network for cloud applications across multiple private and public clouds.

Delivering Multi-Cloud Networking at Scale

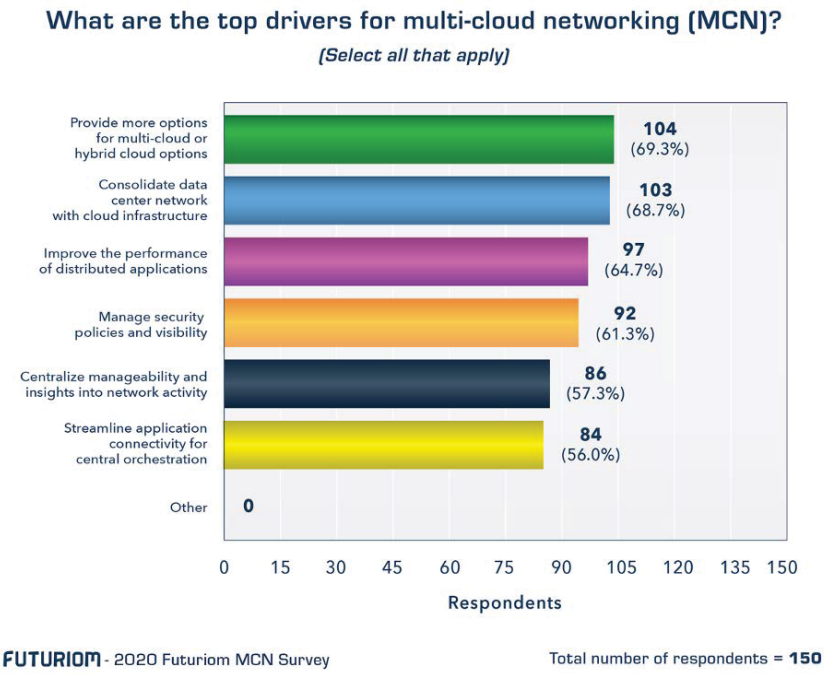
As we move into an era of accelerated digital transformation and multi/hybrid clouds, past networking technologies prove to be highly inefficient. Legacy enterprise networks are built for a different era either the era of client/server computing, when applications resided on servers located in the wiring closet or in the era of the private data center, when applications were monolithic and infrastructure they were deployed on was completely controlled by the enterprise.

Today's reality is that applications can run anywhere and everywhere, oftentimes using data and connections to multiple clouds or data centers at once. The modern network needs to be built from the ground-up in software that can adapt to hybrid or multi-cloud reality with ease.

Here are a few reasons why a new networking solution is needed to help scale the cloud:

- Provide a flexible way to easily configure network access to multiple clouds, hybrid clouds, and private data center environments, as well as support a brown- eld environment at the same time by integrating with legacy networking infrastructure.
- Facilitate important use cases such as wide area networking (WAN), next generation firewall security, zero trust remote access, network segmentation, network visibility and devops toolset.
- Intuitive web interface that allows administrators to configure and adjust networks on-the-fly, in minutes rather than weeks or months.

Independent research has verified this need. For example, in a recent survey of 150 cloud and enterprise network managers by independent research firm Futuriom, the top needs named by users (multiple responses allowed) included providing more options for multi-cloud or hybrid cloud (69%), consolidating data center with public cloud infrastructure (69%), improving the performance of distributed applications (65%), and managing security policy and visibility (61%).



Futuriom concluded that the new phase of accelerated cloud growth will drive demand for networking solutions providing high-performance, secure networking technology, which will be needed to provide intelligent network connectivity to applications regardless of where they reside.

Cloud networks are changing all of the time. If the network cannot be quickly adapted or recon gured to securely connect a variety of cloud workloads, it becomes a bottleneck delaying business-critical cloud initiatives. Seamless multi-cloud networking and operations are needed to uniformly and securely connect enterprise networks, private data centers, and the public cloud providers.

If you are a public cloud or private cloud customer looking to build or expand applications to run in multiple clouds, you are likely to encounter the following challenges:

- The public cloud providers each have their own cloud-specific networking capabilities, which vary from cloud to cloud. These capabilities are oftentimes insufficient for enterprise needs. They also typically support only a single cloud deployment, unless additional software is added, which further complicates deployment and operation.

- Enterprises become vulnerable to security threats and compliance risks resulting from the lack of uniform security policy enforcement and deep network and application insights.

- Network capacity, connection topology, and bandwidth demand may change frequently for cloud services, requiring a more agile way to manage network connectivity. The network infrastructure needs ways to handle global presence, auto-scaling, and resiliency.

The point of cloud networking limitations can, in fact, be one of the most significant roadblocks on the journey to accelerated cloud adoption. For example, enterprises deploying networking in Amazon Web Services (AWS) might encounter the following challenges:

- Using enterprise-grade routing technologies that can consistently connect workloads across single or multiple AWS cloud regions, as well as to and from on-premises environments

- Segmenting end-to-end network connectivity between the AWS cloud workloads, as well as to and from on-premises workloads

- Inserting security services, such as next generation virtual rewalls, and providing consistent security policy enforcement controls

- Maintaining uniform level of network visibility across AWS cloud networking and on-premise networking environments

That's not to say that enterprises cannot achieve their goals, however, they are likely to require significant efforts and time-consuming manual configurations and integrations. What's needed is a consistent, highly performing and secure cloud networking platform that can uniformly address all enterprise networking needs of the cloud era.

That is why Alkira and Microsoft are joining forces to accelerate cloud adoption and digital transformation via Alkira Networking-as-a-Service, which simplifies the cloud journey and operations for the modern enterprises.

Alkira and Microsoft Jointly Eliminate Cloud Complexity

Any new networking platform needs to enable quick and easy, secure connectivity to hybrid cloud and multi-cloud environments. It must also overcome the chief limitations of current enterprise and cloud networks - it has to remove the network roadblock.

Alkira Network Infrastructure-as-a-Service provides enterprises the same extensive power and control over the cloud network as they have been enjoying in their own private networks. Networks are more powerful when they are delivered in the cloud. This means extending enterprise networking capabilities inside the public cloud infrastructure, so that they can easily connect remote users on-premises sites and cloud workloads residing, for example, in Microsoft Azure VNets.

Software as-a-sercie (SaaS) apps have become popular because they scale easily and can run on top of standadized cloud infrastructure. The infrastructure can be provisioned by using Application Driven Interfaces that configure hardware to meet the software's needs. This approach of using software that can define and orchestrate the underlying computing services and infrastructure is known as abstraction.

An abstraction takes software and makes configurations as easy as clicking buttons. Imagine a plug-and-play network that's as easy to operate as an online collaboration app. Users should be able to simply fire up their browser and connect all of their applications to a secure, high-performance multi-cloud network – in minutes, not weeks or months. In the current environment, that's not possible using either legacy networking tools or the opaque, proprietary networking tools provided by the public cloud providers themselves. What's needed is Network Infrastructure-as-a-Service.

Using a Network Infrastrucure-as-a-Service approach, organizations can extend more powerful networking technology into public cloud services, extending their own networks and controlling everything. Microsoft recognizes that businesses are increasingly using multiple public and private clouds and sees Alkira as the best multi-cloud network and security solution.

Alkira simplifies a customer's use of Azure by providing advanced MCN features that simplify the operations of the entire cloud network. Alkira Network Infrastructure-as-a-Service can reduce the time to add Azure from months or years to hours.

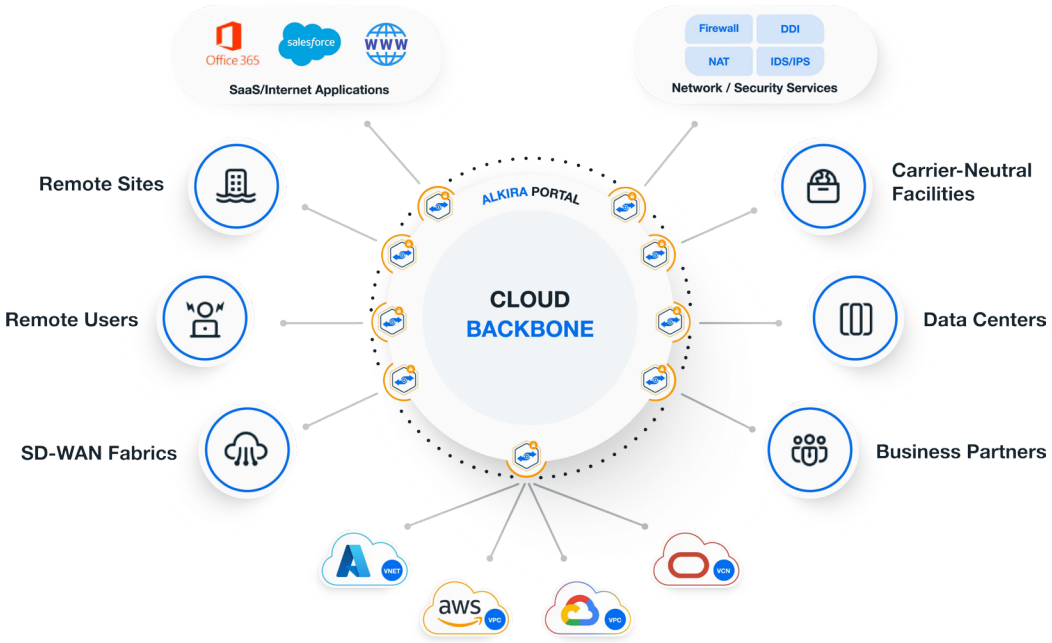
Imagine an entire networking platform, with world-class routing and security, that can connect remote users, branches, data centers, the Internet, and the cloud - using a simple point-and-click interface. That is the power of Alkira Network Infrastructure-as-a-Service which extends key enterprise networking capabilities inside the cloud and unifies network resources under one platform, with full visibility and governance.

As part of Microsoft's program to advance its multi-cloud networking features, Alkira has been specially selected out of a group of emerging businesses hand-picked by Microsoft for the benefits they offers to Azure customers. In a growing partnership with Microsoft, Azure customers can now get increased performance, manageability and security when deploying Windows workloads in the Azure cloud.

Alkira users on Azure also have access to a full suite of cloud networking services, including next-generation firewalls, applications delivery controllers (ADCs), network address translation (NAT), IDS/IDP, etc. It can also be used to deliver better customer experience for specific cloud SaaS services, such as Microsoft Office 365 or Salesforce through geographically distributed Internet exit points. It can connect directly to Azure using ExpressRoute and other public cloud on-ramps, as well as integrate with IPSec and Software-Defined Wide Area Networking (SD-WAN) solutions.

> **Our program gives new businesses access to the incredible resources of Microsoft and helps to bring the benefits of exciting new technologies like Alkira's Network Infrastructure-as-a-Service platform to Microsoft's Azure customers. Alkira's platform provides a powerful and flexible set of capabilities to leverage the power of Azure to deploy fully featured cloud networks.**

Jeff Ma
General Manager of
Microsoft for Startups



Alkira Network Infrastructure-as-a-Service creates a fully secure, end-to-end network, from inside Azure to any point in the network,including remote end users. Here are some of the many features delivered by Alkira:

- Inserting Full platform for MCN: Standardize methods for all networking and security capabilities across multi-region, multi-cloud environments.
- End-to-end network segmentation: Build network segments, or micro-segments, for applications extending from within a public cloud service to any other private or public network.
- Enterprise-grade routing in the cloud: The capability to manage and scale routing features such as BGP inside of any cloud service.
- Security services and firewall insertion: The flexibility to insert a firewall, symmetrically steer traffic and enforce uniform zone-based security policy for any application traffic of interest traversing the Alkira network.
- Universal visibility and Day2 operations: Provide visibility, governance, and troubleshooting – inside and outside of the public cloud service.
- Simple consumption and billing: Easily consumed as a SaaS application in the Azure Marketplace. Consolidated billing for many di erent cloud-based services.
- Lower Total Cost of Ownership: Lower capital spending (capex) costs and reduced cost via streamlined operations.

Network Infrastructure-as-a-Service — A Way Forward

As organizations struggle worldwide to digitize their enterprises and adapt to a fast-changing economy and digital society, the network has often become the roadblock to progress. The modern enterprise can no longer rely on networking tools built for the different era.

Alkira and Microsoft have jointly recognized the need for a cloud-delivered networking architecture as a strategic imperative to facilitate Azure adoption. Alkira Network Infrastructure-as-a-Service helps customers realize their multi-cloud vision. Businesses who are not currently using Azure or who are using it minimally can now instantly integrate Azure into their corporate and/or multi-cloud network, without having to learn cloud specific networking constructs. Azure customers can consume Alkira via the Azure marketplace and as a result get a consolidated invoice for their multi-cloud initiatives.

Major Fortune 500 customers are seeing the benefit of using Alkira by reducing deployment times, managing security and operations, and lowering the costs of network ownership. A recent study by Koch Industries found that the customer reduced the cost of operating a network footprint by 40% by moving most network functions to Alkira Network Infrastructure-as-a-Service.

Alkira breaks through some of the more difficult multi-cloud roadblocks by introducing an agile, as-a-service approach to enterprise networks. It will help thousands of customers accelerate their digital transformation by configuring, managing, and securing multi-cloud networking on demand. The move to cloud applications and workloads is no longer blocked by complex and expensive multi-cloud network architectures.

Alkira Highlights for Microsoft Azure Customers

Months to Hours[1]	Deployment Agility
Standardized	Network and Security
Simplified	Operations and Provisioning
Consolidated[2]	Billing for Cloud
40%[3]	Lower TCO

(1) DIY cloud networking vs Alkira (2) Alkira on Azure SaaS Marketplace (3) Physical colocation vs Alkira