alkira

WHITEPAPER

Network Infrastructure-as-a-Service

Empowering Enterprises in the Cloud and AI Era

Introduction

In today's rapidly evolving digital landscape, enterprises face unprecedented challenges in managing their network infrastructure. Traditional networking approaches struggle to keep pace with dynamic traffic patterns driven by increasing cloud adoption, evolving business needs, and technological advancements. A significant portion of enterprise WAN traffic is now destined for external clouds (SaaS, IaaS), and the adoption of hybrid and multi-cloud models is on the rise. Gartner predicts that by 2025, over 85% of organizations will adopt a cloud-first principle, further solidifying the trend of increasing cloud-bound traffic. This shift necessitates fundamentally re-evaluating how enterprises deploy and manage their network infrastructure. The network can no longer be an isolated entity but must conform to the cloud-first principle. It must offer elasticity, agility, scalability, and integrated security across diverse environments while being highly available and resilient, providing connectivity from any endpoint to any endpoint regardless of location. Network Infrastructure as-a-Service (NIaaS) emerges as a revolutionary solution, providing a modern paradigm for enterprise networking in the cloud and AI era.

The Limitations of Traditional Enterprise Networking

Traditional enterprise networking typically involves deploying and managing many physical and virtual appliances within data centers and colocation facilities, such as routers, switches, and firewalls. This approach entails significant capital expenditure (CAPEX) on hardware, ongoing operational expenditure (OPEX) for maintenance, power, and space, and considerable time and effort for configuration and management. The complexity of managing disparate devices and the time required for network deployments often hinders business agility and the ability to adopt new cloud services rapidly. Furthermore, ensuring consistent security policies and achieving end-to-end visibility across on-premise and cloud environments presents a significant operational overhead.

Network Infrastructure as-a-Service: A Paradigm Shift

Network Infrastructure as-a-Service represents a fundamental shift in how enterprises consume networking capabilities. It is defined as "all" networking infrastructure available as-a-service in virtual form. With NIaaS, organizations can access and utilize a comprehensive suite of networking and security functionalities without the need to deploy, manage, or maintain any underlying infrastructure nodes. This includes virtual routers, switches, firewalls, load balancers, and management and control plane components, all delivered as a service.

Alkira: Pioneering the NIaaS Revolution

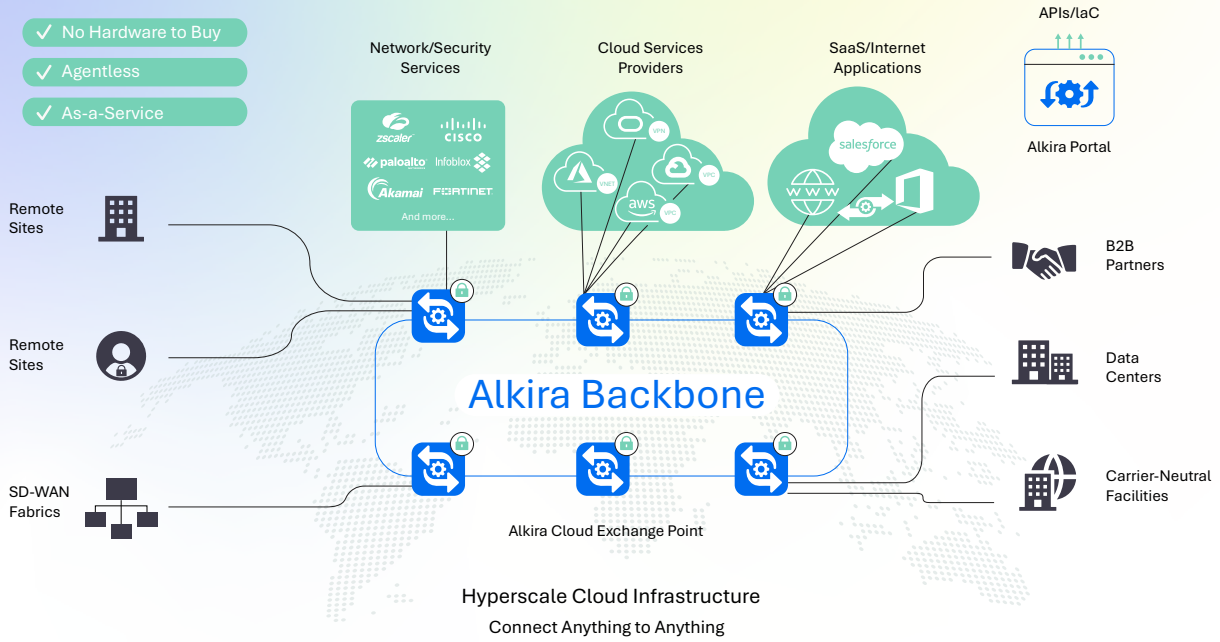
Alkira stands at the forefront of this revolution, providing a global network infrastructure-as-a-service platform that empowers organizations to own and operate their networks with unparalleled agility, integrating security, visibility, and governance – all without the burden of managing the underlying infrastructure. Alkira can be seen as the networking equivalent of cloud hyperscalers, offering a global platform where enterprises can deploy and manage their network in minutes. The underlying global network infrastructure enables enterprises to build end-to-end networks across various locations with integrated security, visibility, policy, and management.

What Makes Alkira Different?

Alkira is not merely an orchestration layer for existing networks; it is a **comprehensive, entirely virtual network infrastructure delivered as-a-service**. This eliminates the need for hardware procurement, software downloads, and extensive cloud learning. Key differentiators that set Alkira apart include:

- **Global Network Infrastructure as-a-Service**: Alkira is highlighted as the **only vendor** providing a complete network infrastructure as-a-service, enabling customers to deploy and manage global networks on-demand. This infrastructure spans all major Cloud Service Providers (CSPs) regions and extends to private Points of Presence (PoPs).
- **Global Connectivity**: Alkira connects geographically dispersed users and applications across cloud, data center, and WAN environments **without deploying any physical infrastructure, agents, complex overlays, or configurations**.
- **Unparalleled Agility**: Alkira drastically reduces network deployment times from months to minutes, offering the **fastest time-to-capability**. Users can draw their entire network on an intuitive digital design canvas and deploy it with a single click.
- **Integrated Security**: Alkira provides **full-stack networking and security** capabilities, allowing enterprises to standardize security policies across all environments.
- **Cloud-Like Consumption**: Alkira adopts a **SaaS-like pay-for-what-you-deploy model with zero CAPEX**.
- **Seamless Integration**: Alkira allows enterprises to leverage their existing investments by seamlessly integrating with WAN, SD-WAN, IPSec, and VPN technologies. It also offers the flexibility to choose preferred SD-WAN and next-generation firewall providers.

Alkira Network Infrastructure-as-a-Service



This entire process can be completed in hours instead of the days or months typically required with traditional networking approaches.

Key Use Cases for NIaaS

NIaaS, particularly through platforms like Alkira, enables a wide range of critical use cases:

- **Single, hybrid, and multi-cloud networking**: Building optimized, secure, scalable, resilient, and highly available networks to seamlessly connect users, sites, and private data centers to single, hybrid, and multi-cloud environments, as well as facilitating cloud-to-cloud and intra-cloud region connectivity.
- **Network and security services**: Standardizing security policies, reducing firewall footprint, and deploying essential network services like IPAM/DDI, load balancing, NAT, and segmentation/micro-segmentation across the entire network.
- **Backbone-as-a-service**: Achieving secure, high-availability, low-latency connectivity across geographic regions, offering a compelling alternative to traditional MPLS circuits.
- **SDWAN/SASE**: Seamlessly connecting sites and users to public and private clouds, integrating with existing SD-WAN deployments or enabling a full Secure Access Service Edge (SASE) architecture.
- **Extranet-as-a-service**: Providing secure and segmented access to business partners for various collaborations, such as vendor onboarding
- **Mergers and Acquisitions**
- **ZTNA (Zero Trust Network Access)**: Implementing and enforcing zero-trust access policies to enhance network security.

The Alkira Platform: Architecture and Functionality

The Alkira Platform comprises two main components:

The Alkira Portal: This provides an intuitive User Interface (UI), Application Programming Interfaces (APIs), Software Development Kits (SDKs), and Terraform interfaces for users to build, deploy, manage, and monitor their entire network from a single interface.

Cloud Exchange Point (CXP): CXPs are virtual constructs deployed using Alkira's global network infrastructure as-a-service. Each CXP belongs to a customer and serves three primary functions:

- **Connectivity:** Providing global routed and secure connectivity to and from on-premise locations, end-users, clouds (infra and inter-cloud), and the internet.
- **Security and Network Services**: We offer native Alkira services like access controls, network address translation, and resource sharing, as well as the integration of third-party security appliances (e.g., Palo Alto, Checkpoint, Fortinet, Cisco), IPAM/DDI services (Infoblox), and load balancers (F5).
- **Visibility, Governance, and Policies**: Providing a management layer with end-to-end visibility, monitoring, and troubleshooting tools.

How Enterprises Leverage Alkira

Enterprises can utilize Alkira through a straightforward three-step process:

Deploy one or more CXPs: This establishes a global routed, full mesh, high-speed, low-latency backbone with end-to-end segmentation between CXPs.

Connect: Various connectivity options, ranging from 100 Mbps to tens of Gbps, are available to connect:

- Data centers connect to their nearest CXP via high-speed connections like AWS Direct Connect, Azure ExpressRoute, and GCP Cloud Interconnect.
- Sites to CXPs can be reached by extending their SD-WAN fabric or connecting via standard IPSec from Customer Premises Equipment (CPE).
- Clouds to CXPs through multiple options for connecting AWS VPCs, Azure VNets, GCP VPCs, and Oracle Cloud Infrastructure (OCI) VNICs.

Deploy security and/or network services: This includes configuring access controls and Zero Trust Network Access (ZTNA) policies, deploying third-party firewalls from the Alkira portal, and deploying IPAM, DDI, and load balancers based on specific use cases and requirements.

The Transformative Impact on Enterprise Networking and Operational Overhead

NIaaS fundamentally transforms traditional enterprise networking and significantly reduces operational overhead by:

- **Eliminating Infrastructure Management:** Enterprises are relieved of the burden of deploying, managing, and maintaining physical network infrastructure, leading to substantial reductions in both CAPEX and OPEX
- **Enhancing Agility and Speed**: Network deployments that took months can now be completed in minutes, enabling businesses to respond rapidly to changing needs and accelerate cloud adoption.
- **Simplifying Global Connectivity**: Complex configurations and physical deployments for global connectivity are eliminated, allowing for seamless and secure connections across diverse environments.
- **Integrating Security**: Consolidating networking and security into a single platform simplifies security management, enables consistent policy enforcement, and can potentially reduce the overall security appliance footprint.
- **Centralizing Visibility and Management**: A single pane of glass provides comprehensive visibility and control over the entire network, streamlining operations, improving troubleshooting, and saving valuable time and resources.
- **Adopting a Cloud-Like Consumption Model**: The pay-as-you-deploy model eliminates significant upfront investments and provides greater flexibility and cost-efficiency by aligning network costs with actual usage

Conclusion: Embracing Network at the Speed of Cloud

Network Infrastructure as-a-Service, exemplified by the Alkira platform, represents a paradigm shift that empowers enterprises to overcome the complexities and limitations of traditional networking. By providing a fully managed, global, and agile network infrastructure delivered as a service, Alkira enables organizations to stop managing infrastructure and start innovating. Enterprises can now focus on their core business objectives while enjoying the agility, security, and simplicity of a modern, on-demand network that operates at the speed of cloud. The transition to NIaaS is a technological upgrade and a strategic imperative for businesses seeking to thrive in the cloud era.