VMware Modern Apps Connectivity Services

AT A GLANCE

VMware Modern Apps Connectivity Services provide north-south application services with NSX Advanced Load Balancer (Avi Networks) and secure east-west connectivity via VMware Tanzu Service Mesh for traditional and modern applications across heterogeneous platforms.

KEY CAPABILITIES

- **Application Connectivity** – Seamless connectivity for traditional and modern applications, enabling continuity and availability across hybrid and multi-cloud environments

- **Application Resiliency** – High availability and automatic failover to meet service-level objectives while enabling autoscaling and cloud bursting across clouds

- **Application and Data Security** – Consistent security policies and encryption to secure applications and data and deliver end-to-end, zero trust security

- **Context-Aware Observability and Control** – Complete observability into application services across users and services/APIs, simplifying DevSecOps and paving the path to production

The Business Challenges Inherent in Enterprise Modernization

As enterprises modernize and build Kubernetes applications, they are confronted with a lab-to-production gap that presents challenges to their ability to operationalize modern apps.

Application developers can have self-service access to Kubernetes clusters in Dev/Test environments. However, in operationalizing Kubernetes and running applications in production, Infrastructure and Operations (I&O) teams face a very different set of connectivity and security challenges. Among those challenges are:

- How to bridge legacy and modern apps across multi-cluster, multi-infrastructure environments without having to refactor or rearchitect software?
- How to provide consistent policy for both north-south and east-west traffic?
- How to automate configuration and lifecycle management, and how to troubleshoot individual infrastructure components?

I&O teams must piece together a mixture of traditional tools and disparate, point solutions to run and manage these applications. They must also ensure seamless, secure connectivity between container-based and VM-based environments — and across private and public clouds. But most importantly, I&O teams need to provide a consolidated services platform to support the pipeline from application development to production.

What is VMware Modern Apps Connectivity Services?

VMware Modern Apps Connectivity Services is a solution comprised of the VMware NSX Advanced Load Balancer (Avi Networks) and VMware Tanzu Service Mesh.

NSX Advanced Load Balancer delivers consolidated, multi-cloud, north-south application services — including enterprise-grade L4 load balancing, L7 ingress controller, global server load balancing (GSLB), and web application security — and ties all these services together with powerful observability.

Tanzu Service Mesh provides end-to-end connectivity, continuity, resiliency, security, and observability from application end users to microservices and data in single and multi-cloud environments. Using sidecar proxies and gateways (ingress/egress), Tanzu Service Mesh automates running distributed apps with secure east-west connectivity within and across Kubernetes clusters, and bridges connectivity to VM environments. Tanzu Service Mesh provides distributed applications with traffic management, policy control, observability, encryption, and authorization services.
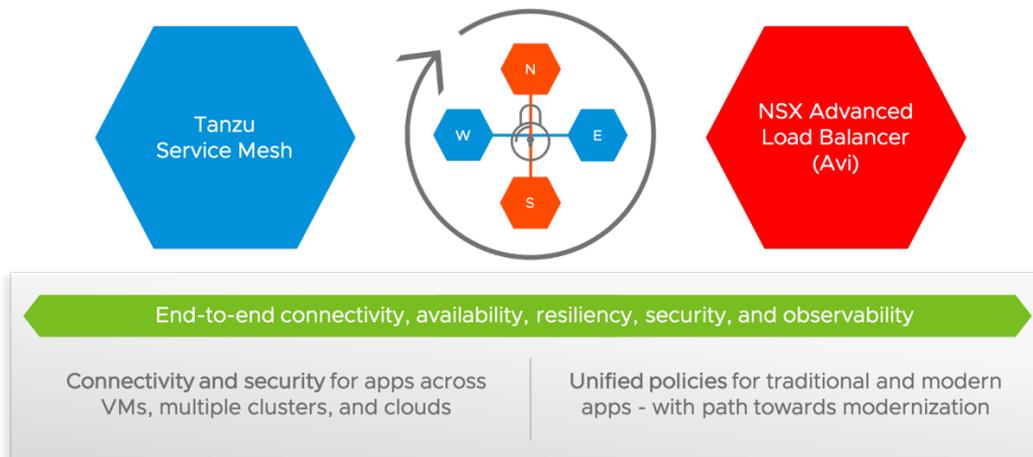
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Figure 1: VMware Modern Apps Connectivity Services combine service mesh, ingress, and more to address app modernization challenges

VMware Modern Apps Connectivity Services is a powerful combination that establishes a path to modernization for enterprises by enabling secure connectivity with consistent policies for traditional and modern apps across hybrid and multi-cloud environments. The solution is built on cloud-native principles and automates the process of connecting, observing, protecting, and scaling applications across multi-site environments and clouds. Modern Apps Connectivity Services provide seamless application connectivity to discover and connect Kubernetes services across multiple clusters and clouds, as well as traditional workloads residing on VMs.

How VMware Modern Apps Connectivity Services Powers App Modernization

Enterprises often find that refactoring specific parts of an application in place provides more practical value than rewriting the entire application. While this development technique for app modernization may provide newer versions of libraries and render future updates easier, it can also lead to the need for the updated applications to communicate with legacy workloads and databases.

Also known as the Strangler Fig Application, this modernization approach allows for application innovation to happen "in place" — while allowing legacy systems to fade away gradually.

In pursuing this approach to app modernization, there are specific challenges enterprises face:

• Hybrid and Multi-Cloud Applications – Application development teams make use of multiple small clusters instead of jointly sharing a single large cluster because it is easier to establish isolation and multi-tenancy. However, cross-cluster visibility can be low and implementing consistent security policies across a fleet of disparate clusters can be even more challenging. Tanzu Service Mesh solves this by automating service discovery, routing, and security across clusters and clouds.

• Application High Availability (North-South) – Application teams often run the same service across clusters either in the same region for high availability or in another region for disaster recovery in order to improve application availability and meet service level objectives. However, each cloud provider comes with its own network services, making it difficult to implement consistency. With VMware Modern Apps Connectivity Services, publishing applications and managing app lifecycles can be simplified by deploying NSX Advanced Load Balancer to provide global server load balancing to all clusters to which the application is deployed. This enables automated network configurations across supported cloud providers

• Application High Availability (East-West) – The individual microservices that make up the overall application can be distributed across Kubernetes clusters, even on multiple clouds with Tanzu Service Mesh. Enabled through a unique feature called Global Namespaces, Tanzu Service Mesh provides cross-cloud, cross-cluster service discovery and connectivity automation with built-in application-level security controls to connect and protect microservice applications.

Drive Application Continuity and Scaling

Kubernetes takes care of application auto-scaling by scheduling more pods. However, operators must monitor metrics and then issue commands to auto-scale pods up or down. This becomes even more challenging when there are multiple compute form-factors involved.

Modern Apps Connectivity Services provide high availability with integrated GSLB, allowing platform operators to intelligently set service-level objectives, auto-scaling, and cloud bursting.

Tanzu Service Mesh provides a rich interface for platform operators to define service-level objectives (SLO) — that deliver alerts when services fail pre-defined Service Level Indicator (SLI) performance thresholds — and auto-scale services to meet changing demands. NSX Advanced Load Balancer enhances application resiliency by steering traffic to another cluster on the same site and/or to a different cluster on another site.

The VMware Modern App Connectivity solution works with VMware Tanzu, Amazon Elastic Kubernetes Service (Amazon EKS), and upstream Kubernetes today and is in preview with Red Hat OpenShift, Microsoft Azure Kubernetes Services (AKS), and Google Kubernetes Engine (GKE).

The solution closes the dev-to-production gap caused by the do-it-yourself approach forced on many networking teams who are under pressure to launch reliable, business-critical services that work consistently across heterogeneous architectures and environments.

How to Get Started

Discover how Modern Apps Connectivity Services can help you modernize your applications in days and weeks, not months and years.

Talk to a Tanzu Expert

https://tanzu.vmware.com/service-mesh

Read the Multi-Cloud Load Balancing for Dummies Guide

https://info.avinetworks.com/load-balancing-for-dummies-ebook-web

Read the Service Mesh for Dummies Guide

https://www.vmware.com/learn/service_mesh_dummies.html