MULTI-CLOUD NETWORKING WITH VMWARE NSX DATA CENTER

Challenges to Digital Transformation in the Enterprise

As organizations address their growing infrastructure needs and redundancy plans, many have been adopting a multi-data center strategy. According to the 2018 Cloud Survey by RightScale, 81 percent of the respondents have a multi-cloud strategy, and organizations leverage almost five clouds on average.[1] IT organizations often face serious challenges in managing, securing, connecting, and maintaining compliance across their data centers. These data centers often require manual network reconfiguration to enable mobility between data center sites or the cloud.

Organizations are trying to prepare for everything from natural disasters to cyberattacks with costly disaster recovery plans to protect mission-critical applications and mitigate potential major losses in revenues or business operations. A 2016 report found the average cost of a data center outage to be $740,357[2], while other public examples of outages have cost up to $150 million. Traditionally, business continuity and disaster recovery (BCDR) plans have been complex, operationally challenging, or simply nonexistent. With the increasingly distributed nature of applications today, manual reconfiguration for failover can take hours or even days.

As businesses turn to the public cloud for increased agility and scalability, they face a myriad of challenges. Public clouds come with their own networking and security constructs and policy management. This results in a new set of technology siloes that increases expense, complexity, and risk. Diverse network topologies, security models and management environments, and different software versions may all serve to create barriers to portability and interoperability, slowing cloud adoption and constraining use cases.

Breaking Down Network Barriers

To address these challenges, IT must embrace a modern networking solution that brings networking consistency and security across heterogeneous sites and a level of automation that streamlines multi-cloud operations.

VMware NSX® Data Center abstracts network operations from the underlying hardware onto a distributed virtualization layer, allowing for high levels of agility, security, and economics that were previously unreachable with physical networks. Network services such as switching, routing, firewalling, and load balancing are closer to the application and distributed across the environment.

Together, NSX Data Center and VMware NSX® Cloud create a hybrid cloud model for networking and security by allowing IT admins to embrace multiple private and public cloud environments while having one cohesive strategy for network functions and consistent security. This solution allows for maintaining an application's IP address and supports failover scenarios across multiple sites by stretching Layer 2 domains between data centers, when appropriate. This eliminates manual network configuration and reconfiguration, achieving high operational efficiency through network automation. Network and security policies are tied to application context, so they remain with the individual workload through its lifetime.

"With VMware NSX Data Center, we created a secure, world-class data center architecture that will enable the credit union to deliver the next generation of member services. There's no downtime, we're saving money, and management is simplified."

AMY HYSELL
SVP AND CIO
ARIZONA FEDERAL CREDIT UNION

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1 State of the Cloud Report, RightScale Inc., 2018 www.rightscale.com/2018-cloud-report

2 Cost of Data Center Outages, Ponemon Institute, January 2016 https://www.ponemon.org/blog/2016-cost-of-data-center-outages

- Provides a unified networking and security model that eliminates manual network configuration and reconfiguration, achieving high operational efficiency through network automation
- Enables organizations to migrate VMs or entire data centers from one location to another with minimal or no application downtime
- Helps deliver secure and seamless application mobility, making it easy to migrate to and from the cloud or between physical sites
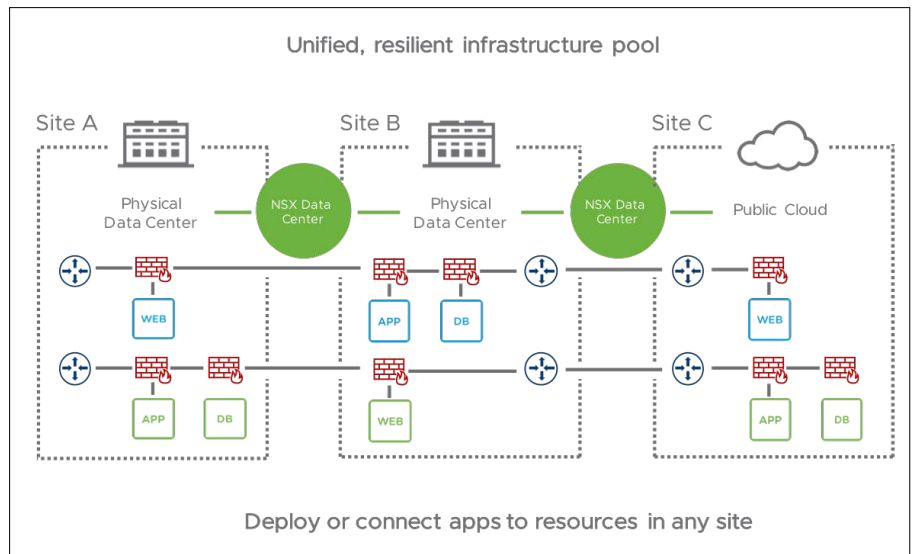

Figure 1. Maximize Impact of Outages with Multi-site Pooling

Key Customer Scenarios

Data Center Extension

NSX Data Center seamlessly extends on-premises data centers to other physical sites and to the cloud using NSX Cloud, enabling organizations to leverage scale, redundancy, and economics. Furthermore, VMware NSX Hybrid Connect provides IT admins with secure, seamless app mobility between VMware vSphere® environments, enabling zero-downtime live migrations and scheduled low-downtime, large-scale migrations.

NSX Data Center allows fast migration and failover by maintaining an application's networking services (e.g., same IP address, security policy, and other services) by binding the services to the application workload. As a result, the IP address and security policies associated with workloads—virtual machine (VM) or container based—remain consistent as they move dynamically from one location to another.

NSX Data Center also supports secure, encrypted user access to private corporate applications (SSL VPN) and site-to-site connectivity between NSX Edge gateways and remote sites (IPsec VPN) with optional VPN gateways or hardware routers from other vendors.

Disaster Avoidance and Recovery

Modern data center design requires better redundancy and demands the ability to have BCDR in case of a catastrophic failure. Organizations with high application availability requirements rely on a strategy of disaster avoidance (active-active deployment) as opposed to disaster recovery (active-passive deployment).

NSX Data Center provides consistent logical networking and security across protected and recovery sites, which lowers the recovery time objective in the event of a disaster. With networks and security spanning consistently multiple sites, applications can recover in the recovery site and retain their network (IP) and security configuration. In addition, NSX Data Center easily creates test networks that can be utilized when testing recovery plans without disrupting the production environment.

In the context of disaster avoidance, multisite pooling creates a unified, seamless, and resilient pool of infrastructure to run applications across multiple data centers and to the cloud, enabled by a single consistent networking

platform. In the same way, apps can be deployed in any location and connect to resources located across sites to accommodate disaster avoidance, planned/ unplanned outages, or better resource utilization.

Workload Mobility

Workloads often need to be moved between sites on demand for tasks such as data center migration, consolidation, data center upgrades/security patches, cloud onboarding, cloud bursting, and disaster avoidance.

NSX Data Center and NSX Cloud make workload mobility seamless by extending the same virtualized network and security platform that IT organizations use on their infrastructure into the cloud, resulting in a single networking and security configuration for both private and public cloud resources. This enables businesses to be prepared as operations continue to shift toward the public cloud, ensuring that both the workloads and their policies are mobile and consistent across different environments.

Production applications can be moved to the public cloud to begin leveraging native cloud services without any complex conversions or the need for re-architecture. Migrations can be even more rapid between vSphere-based clouds with NSX Hybrid Connect, which enables large-scale and zero-downtime migration options as well as continuous network routing between the sites.

Organizations can move workloads from one location to another—data center to data center, or data center to cloud—seamlessly without worrying about VM format compatibility. NSX Hybrid Connect includes automatic image conversion to the desired cloud format, so VMs can be placed on or migrated easily.

Summary

VMware delivers a modern network virtualization solution that brings networking and security consistency across heterogeneous sites. As a result, NSX Data Center enables a multitude of multi-cloud use cases ranging from seamless data center extension to multi-data center pooling to rapid workload mobility. Customers globally rely on NSX Data Center and its multi-cloud networking capabilities to build reliable, flexible, agile, and highly available data center environments running thousands of workloads optimally.

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