The Right Network for VMware NSX

HIGHLIGHTS

The right network underlay is critical for enabling the full value of VMware NSX in a virtualized data center. Brocade VCS Fabric enables a VMware NSX environment by:

- **Eliminating points of failure:** Automation removes human error that can come with repetitive operational touches
- **Automating scaling:** A Brocade VCS Fabric is a self-provisioning, self-healing architecture—just add and grow
- **Simplifying management:** Brocade provides network visibility to vRealize enabling end-to-end SAN and IP visibility while Brocade tools allow incident drilldown and resolution
- **Improving policy planning:** Network-wide awareness integrated into vRealize creates transparency for global policy planning and consistency
- **Supporting pooled network resources:** The right network for VMware NSX provides transparency and reliability to be managed as a pool of resources, perfecting your SDDC solution

Brocade VCS Fabric Enables Full VMware NSX Business Value

Is your data center ready for the business requirements you envision a year from now? Business user expectations have risen rapidly and application design has changed. And while flexibility, security, and automation are always critical, organizations must also assess whether their current network performance will meet future business requirements. If the current network design is a limiting factor in data center performance, then it could affect application rollout and support. It is time to ask what is new.

Building the Better Data Center

While data center compute and storage technology has advanced tremendously through virtualization and performance enhancements, the old network still looks the same as it did 10 years ago. What has changed is the way it is used. With the new challenges of virtualized services, east/west traffic, and enhanced storage and compute performance, network implementation has become the new data center bottleneck. Overall operational efficiency, the volume of attached users and devices, the service offering scale, and the ability to handle self-service and provisioning of network access as part of the IT services catalog are all bottlenecked by network design.

The solution is to take the next steps toward the Software-Defined Data Center (SDDC) to optimize performance and management efficiency, and most importantly, to best serve the consumers of IT services. As IT organizations evolve into service providers for internal customers, the supporting data center infrastructure requires a rich set of scalable automated network services with high resiliency. Data centers are now essentially private clouds. While there is a strong push to move to this private cloud model in recent years, the reality is that data centers frequently grew to this point organically through incremental steps. Organization data centers are following similar guiding principles as large hosted cloud environments, yet also must incorporate additional needs for internal security, management, and use of existing resources. Ultimately, it is imperative for data center architects to design and build infrastructures that can scale while reliably providing the required services and meeting the tenant Service Level Agreements (SLAs) the way private clouds are designed to do.
What surprises many organizations is that they are already operating a SDDC. With servers and storage virtualized into resource pools—managed with VMware tools—to be applied when and where appropriate, they are already far along the SDDC path. However, given the new virtualized data center design, demands on the network are different—scaling, traffic, flow patterns, security, and protection are all different. A virtualized infrastructure design that includes the network can achieve true agility.

The network is the missing piece because the network is not a silo—it is an integral part of every communication that occurs between applications and their associated data. Abstraction of data center functions has made IT more agile because IT can serve user needs from a pool of resources, and the network is joining that abstraction with virtualization through VMware NSX.

**Network Virtualization for VMware**

For a VMware environment with applications that are virtualized with VMware and use VMware tools to manage the workloads, NSX is the network virtualization product that integrates most seamlessly with the tools and workflows that are already in place. NSX is VMware’s network virtualization solution that brings the flexible operational model made familiar by virtual machines to the data center network, transforming the economics of network and secure operations. NSX allows organizations to treat their physical network as a pool of definable interconnections between applications, devices, data, and locations with network and security services attached to VMs with a policy-driven approach. The assumption, of course, is that the physical network connections actually do exist, are reliable, and are flexibly configurable to the business. However, while NSX might be SDDC-ready, not all networks are NSX ready. Automation provides the freedom to focus on higher priorities, but this also means trusting that the network is unerringly reliable. It is important to consider what you need from the underlying network. These questions need to be answered before beginning the NSX journey:

- **Complete Network**: Value is lost if only a portion of the network is incorporated in the virtualized design. Is there more than one network in place? Is there a SAN and will it be part of the integrated design or managed separately?
- **Workload Analysis**: Will automation follow cross-business needs, or will it be limited to just routine administration? Are the application workloads contained to one POD or network, or do they require scale, connectivity, and access to storage in the SAN?
- **Tool Integration**: How many separate management tools will continue to be used, and is it possible to reduce that number with the integration of all network visibility into a suite such as vRealize?
- **Scaling Plan**: What is the mid-to-long-term plan for the data center and its connectivity? Has a technology roadmap with flexible future options been created?

The SDDC allows organizations to focus on workloads instead of the infrastructure. It also enables simplification through automation and frees administrative teams to monitor SLAs through visibility tools rather than requiring touches on routine management tasks. By consolidating management tools and infrastructure silos as much as possible to work collectively, workloads can then be managed through a common interface with infrastructure complexities managed through automation. This cannot be

**SDDC FOR BUSINESS**

Many advantages can be obtained through abstracting compute, storage, and the network resources into software-defined pools of resources, including:

- **Simplified management**: Policy-based automation and aggregated monitoring free administrators to proactively manage strategy instead of reactively resolving emergencies.
- **Self-service**: Automation allows IT to scale to facilitate a service broker structure, enabling self-service capabilities.
- **Security**: Security is enforced through tenant separation and the ability to provide micro-segmentation between users or workloads as needed to share infrastructure across groups with different permissions and requirements.
- **Efficient application rollout**: Pooled resources can be assigned, structured, and rolled out immediately.
- **Stability**: Fewer touch points provide higher availability through reducing the chance for operator error.
- **Reduced maintenance downtime**: With network virtualization and self-forming links, workloads are safely routed when hardware is to be taken offline, avoiding downtime with automated failover and redundancies.

To be SDDC-ready, firms must have their compute, storage, and network virtualized and SDDC-compliant. To learn more, please visit: [http://community.brocade.com/t5/Data-Center/Building-Highly-Scalable-SDDC-Infrastructures-with-VMware-NSX/ba-p/79094](http://community.brocade.com/t5/Data-Center/Building-Highly-Scalable-SDDC-Infrastructures-with-VMware-NSX/ba-p/79094).
done without network virtualization, and it can be optimally achieved with the right network combining SAN and IP management.

Why Brocade for NSX?
Virtualizing the network is not a theoretical possibility for the future; there are excellent immediate and long term values for virtualizing today. Introduction of network virtualization is the incremental next step in addressing networking needs such as implementing automation to reduce operational touches, securing access to confidential assets in a connected world where there is no clear perimeter to defend, and scaling to handle constantly changing device and user profiles through self-service IT catalogs. A virtualized network is the convergence of many evolutionary paths, equipping a business for whatever lies ahead. If you have a VMware environment, then one key decision that must be determined is whether to expand that operational model with the NSX solution that plugs in or to pursue a separate approach that could require infrastructure changes.

So why choose Brocade VCS Fabrics for an NSX underlay? Because it just works. When the goal is to focus on provisioning and not worry about the network continuing to function, it is critical to deploy the network that is known for reliability, accessibility, and serviceability. Brocade allows a set and forget approach with management as a single logical chassis where new switches added to the fabric obtain policy settings from those already in place. This self-forming, self-healing reliability is critical to a functioning SDDC.

Advantages with a Brocade VCS Fabric and VMware include:

- **VTEP (Virtual Tunnel Endpoint) Gateway**: Enables a simple and reliable traffic handoff from virtual to physical network. Only one virtual VTEP is required to establish the fabric, rather than a connection to each switch or port in the physical network.

- **Brocade VCS Logical Chassis**: Scales the network easily by adding switches to the existing Brocade VCS Logical Chassis with the global configuration being inherited for a rapid, limited-touch expansion.

- **Security and micro-segmentation**: A cost effective “zero trust” approach to secure network architecture where virtual connections between actors and devices can be created or broken through policy-based actions when a threat is sensed.

- **Visibility**: Integration into vRealize Operations correlates VTEP to VTEP communication with the physical network traffic information.

- **Simplicity**: Brocade VCS Fabrics simplifies the operational configuration and management of the fabric, removing the need for developing expensive self-made tools.

**Conclusion**
In order to realize long-term business goals, an organization’s data center must start with the right foundation providing the correct level of flexibility, automation, security, and performance. Having already invested in a VMware-based virtualized infrastructure with compute and storage pools, the next logical step into SDDC is network virtualization, with NSX sitting on a Brocade VCS Fabric. VMware NSX with a Brocade underlay provides a simplified deployment and ongoing management along with integration into existing vRealize orchestration tools.

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**Figure 1**: Why NSX and Brocade are better together.

- **Automated**
  - Zero-touch VM discovery, configuration, and mobility
  - All links fully active; none on standby
  - Multi-pathing at all layers of the network
  - IP storage-aware with Auto-QoS
  - Self-healing and self-forming fabrics

- **Efficient**
  - Native multi-tenancy with Virtual Fabrics
  - Scale out non-disruptively
  - Orchestration through Open APIs and OpenStack

- **Cloud-Optimized**
  - Application aware for true integration – not just plumbing
  - It just works – vMotion and beyond
  - Holistic view from SAN to LAN in one tool w/VM level views
About Brocade
Brocade networking solutions help the world’s leading organizations transition smoothly to a world where applications and information reside anywhere. This vision is designed to deliver key business benefits such as unmatched simplicity, non-stop networking, application optimization, and investment protection. Learn more at: www.brocade.com.

Figure 2: Virtualization allows network change control while providing policy-based flexibility for users to allocate resources.