Why the Rise of DevOps and DevSecOps Mandate Network Virtualization

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#vFORUM
Agenda

1. What has changed and Why?
2. VCN & Network Virtualization
3. Network Automation Demo
Digital Transformation

Agility

= Value Creation
Mistakes

\[ \approx \]

Value

Disintegration

Stock Performance (Billion$) vs. Time

- Retail company
- Entertainment company
- Financial company

Events:
- Site Down
- Loss of content
- Security Breach
Agility takes?

Future

Integrated Stack
VCF, VMC, Cloud IaaS

Legany

Disjointed Components
Compute, Storage, Networking

People

Doing a set of tasks

Processes

Automating and managing exceptions

Ticketing systems

Automated Workflows

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Apps are Changing

Size of Change

Monolithic Development:
Long cycle

Frequency of deployment
Apps are Changing

Monolithic Development:
- Long cycle
- High touch / High value
- Perceived to be understood
- Risk analysis / Preventive measures

Then
- IT time scale
- On-prem / Perimeters

Frequency of deployment

Now
- Dev time scale
- Multi-cloud / Borderless

Legacy Apps

Cloud native apps

Size of Change

Low touch / Difficult to assess value
- Not understood
- Risk what??
What is Networking?

- **Identity**
  - IP, DNS, Certificates

- **Connectivity**
  - Switches and routers

- **Security**
  - Firewall, IPS, VPN, WAF...

- **Scale**
  - LB, GSLB
What is Networking?

Identity
IP, DNS, Certificates

Connectivity
Switches and routers

Security
Firewall, IPS, VPN, WAF...

Scale
LB, GSLB

Complex
Too many knobs
Error prone
Fails catastrophically
Is this Network Going to Support Agility?
Network Virtualization
Simplification and Isolation

Complex and fragile
Failure in one place causes systemic failure

Simplified and isolated
Failures are contained

NSX Abstraction
Network Virtualization

Automation

Many Knobs
Lots of automation points that must work together
Lack of isolation exposes to global failures

many points to manage

App and Network not fully integrated

Application centric automation
Unified view of App, Infrastructure and Security
Network Virtualization contains misconfigurations

Automated processes

NSX Abstraction
Network Virtualization

Security

Network Appliances?

Intrinsic Security
Service Firewall

NSX Abstraction
Virtual Cloud Network

Virtual Machines | Containers | Bare Metal
Data Center | Cloud | Branch
# VMware NSX Portfolio

## The Foundation of the Virtual Cloud Network

### Networking and Security Management and Automation

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<th>Cloud-Based Management</th>
<th>Workflow Automation</th>
<th>Blueprints / Templates</th>
<th>Insights / Discovery</th>
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<td>End-to-end workload automation</td>
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### Networking and Security Virtualization

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<th>Integration</th>
<th>Extensibility</th>
<th>Automation</th>
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<td><strong>NSX Cloud</strong></td>
<td>Networking and security for Public Cloud workloads</td>
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<td>Multi-cloud Load Balancing, Security and Analytics</td>
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<td>Modern application security</td>
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<td>WAN connectivity services</td>
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</table>
NSX Data Center

DATA CENTER

Workloads

Virtualization Layer

NSX Platform

vSwitch

vm

APP

APP

vm

vm

vm
NSX Data Center Solutions

Network Automation
Cloud-Native Networking
Service-Defined Firewall
Multi-Cloud Networking
VMware NSX-T: Single Heterogeneous SDN Platform

Policy-based networking and security and operational consistency

**Connectivity**
Logical L2 / L3 across any workload
L2 stretch and L3 route/policy-based VPN

**Security**
L4 / L7 distributed & edge firewall
ADC with built-in WAF
Third party service insertion

**Operations**
Single, consistent, declarative policy that spans multi-cloud
Logging / auditability to meet varying compliance requirements
NSX – A Powerful Enabler

Network Automation

Cloud-Native Networking

Service-Defined Firewall

Multi-Cloud Networking
Infrastructure and Apps Are Subject to Wait

Days
Infrastructure Service Delivery

Weeks
Application and Change Delivery

Virtualized Infrastructure
Abstract & Pool

Compute Abstraction = Server Virtualization
Network Abstraction = Virtual Networking
Storage Abstraction = Software-Defined Storage

Physical Hardware
Compute
Network
Storage

Hybrid Cloud
VMware & vCloud Data Center
Partners

Private Clouds

Public Clouds
Demo Time!
NSX consumption built for Automation

NSX can be consumed in a variety of manners:

- Kubernetes / PAS / PKS / OpenShift
- Terraform / Ansible
- vRealize Automation
- OpenStack
- vCloud Director
- More…
How do you automate infrastructure in an application rollout?

**Traditional Network Automation**
- Config...
- VLAN (multiple switches)
- IP subnet (Router)
- Security Policy (Firewall)
- NAT service (Router)
- Load Balancing (ADC)

**Automation with NSX**
- POST/GET Logical Switch (~12)
- POST/GET Tier-1 Router (~2)
- POST/GET NSGroups (~3)
- POST DFW-Section (~2)
- POST EDGE Firewall (~2)
- POST NAT (~2)
- POST LB Config (~10)

**ONE JSON File**

```
PATCH https://<ip>/policy/api/v1/infra
{
  desired outcome
  human-readable JSON
}
```

**Scripting**

**Standardized API**

...Taken to a New Level
Modern Application Services - Catalog

vRealize Automation Catalog

- One-Click Application - Order with Networking and Security
- Automated IP Addressing
- Networking and Security via NSX API
- Integration with other enterprise services, e.g. AD, IMS, Ticketing, Inventory etc. with vRO extensibility services
- Automatic Cleanup With App Disposal
Modern Application Services - Blueprint

vRealize Automation Design Canvas

- Define Once – Multiple Use
- Deployment Time Options for Users
- Support for Multiple Network Topologies
- Repeatable Deployments
- From Single Machine to Multi-Tier Applications
- Security and Load balancer services offered
Modern Application Services – Catalog of Blueprints

**Blueprint**

- Define Once – Multiple Use
- Deployment Time Options for Users
- Support for Multiple Network Topologies
- Repeatable Deployments
- From Single Machine to Multi-Tier Applications

**Catalog**

- One-Click Application - Order with Networking and Security
- Automated IP Addressing
- Networking and Security via NSX API
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- Automatic Cleanup With App Disposal
Cloud Automation with NSX-T Data Center

Dynamically configure NSX-T logical Services

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<tr>
<td>Routing</td>
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<td>NAT</td>
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<td>DHCP</td>
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<td>Distributed Firewall</td>
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vRealize Cloud Automation

- Service Catalog
- Endpoint Management
- Cloud Resources
- Network profile
- Cloud Management Platform
- Blueprint

On Demand Application and Network Delivery

- Web
- App
- Db
- Web
- App
- Db
- Web
- App
- Db
Summary
Resources

How to get started

Learn
Design Guides
Demos

Try
Take a
Hands-on Lab

Connect
Join VMUG, VMware
Communities (VMTN)

nsx.techzone.vmware.com

@VMwareNSX
#runNSX
Thank You!
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2. Take Hands-On Labs
3. Get Certified With VMware - Visit VMware Booth
4. Join the Conversation #v FORUM SG AND #VMwareSG