

# The role of Network Virtualization in the Software Defined Data Center.

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*VMware Network & Security Business Unit*

The VMware NSX logo is displayed in the top-left corner of a graphic. The word "vmware" is in a white, lowercase, sans-serif font. Below it, the letters "NSX" are rendered in a large, stylized font with a multi-colored, geometric, and semi-transparent appearance. The background of the graphic is a dark blue/black area on the left, transitioning into a complex geometric pattern of overlapping triangles in shades of green, yellow, and blue on the right.

vmware®  
NSX

The VMware logo is located in the bottom-right corner of the graphic. It consists of the word "vmware" in a white, lowercase, sans-serif font, with a registered trademark symbol (®) to its upper right. The background behind the logo is a solid teal color.

vmware®



## Software-Defined Data Center

The ideal architecture for private, hybrid and public clouds.

All infrastructure is virtualized and delivered as a service, and the control of this data center is entirely automated by software.

# Software-defined data center approach

## Software-Defined data center

### Automation

XaaS: Self-service catalog,  
lifecycle management

### Operations Management

Analytics-based operations enabling  
self-healing, self-regulating IT

### Storage & Availability

### Compute

### Network & Security

Policy-based control &  
automation of infrastructure services

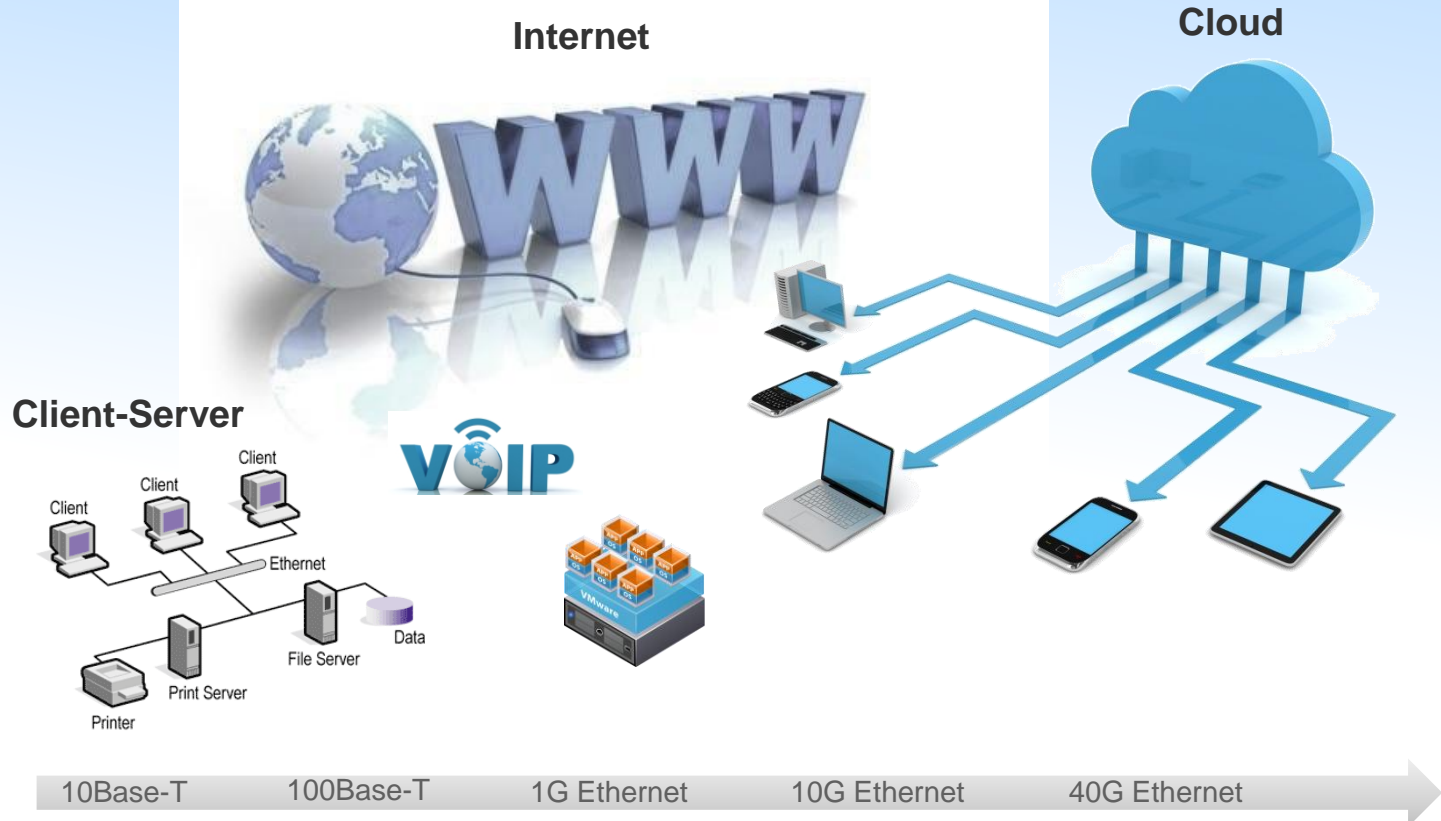
Abstraction & pooling

# A Major Industry Transformation

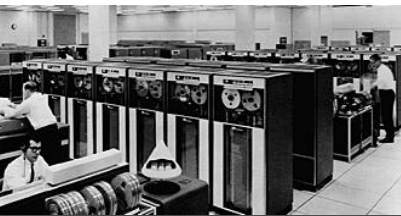
Industry Transformation  
From  
Mainframe To Client Server

Market Transitions

Industry Transformation  
From  
HDDC To SDDC



Mainframe



1990

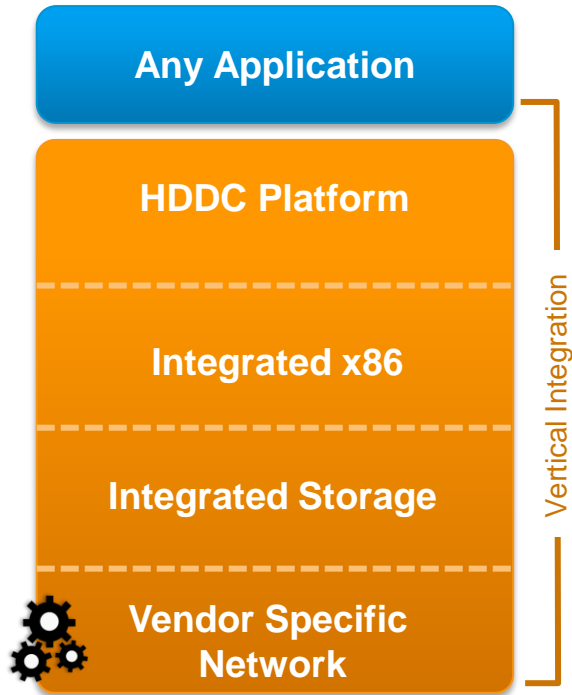
2000

2010

2014

# There Are Two Approaches

## Hardware Defined Data Center (HDDC)



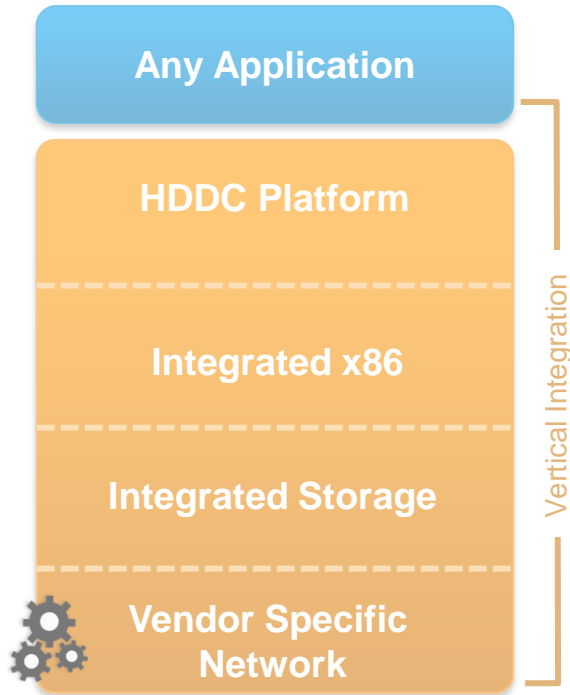
OR

## Software Defined Data Center (SDDC)

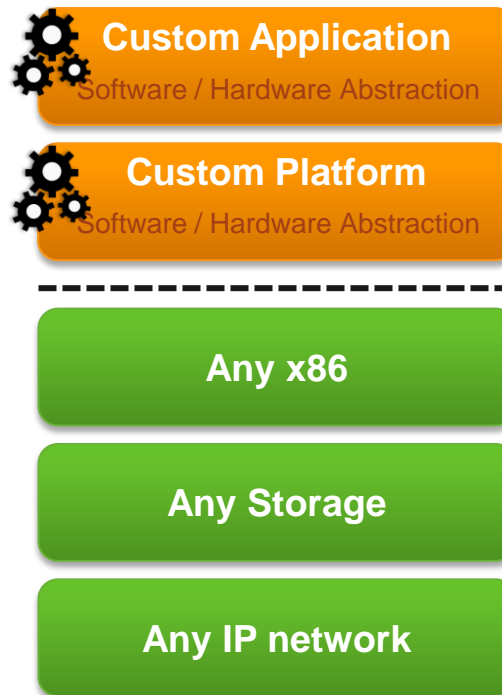


# The Anatomy of the Modern Data Center

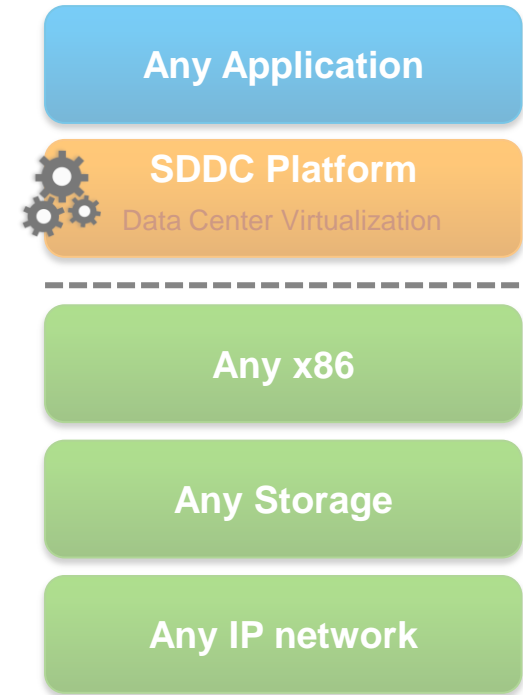
## Hardware Defined Data Center (HDDC)



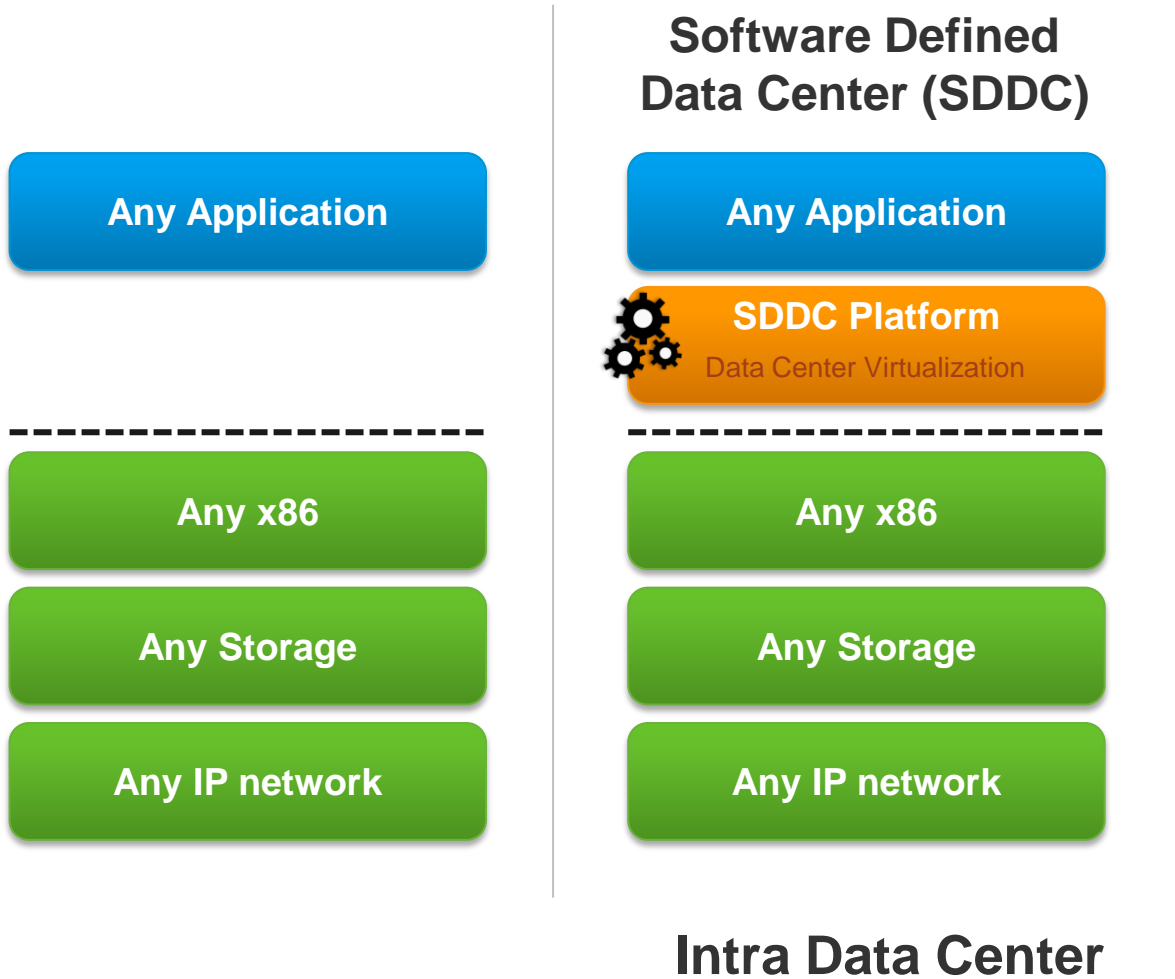
## Google / Facebook / Amazon Data Centers



## Software Defined Data Center (SDDC)

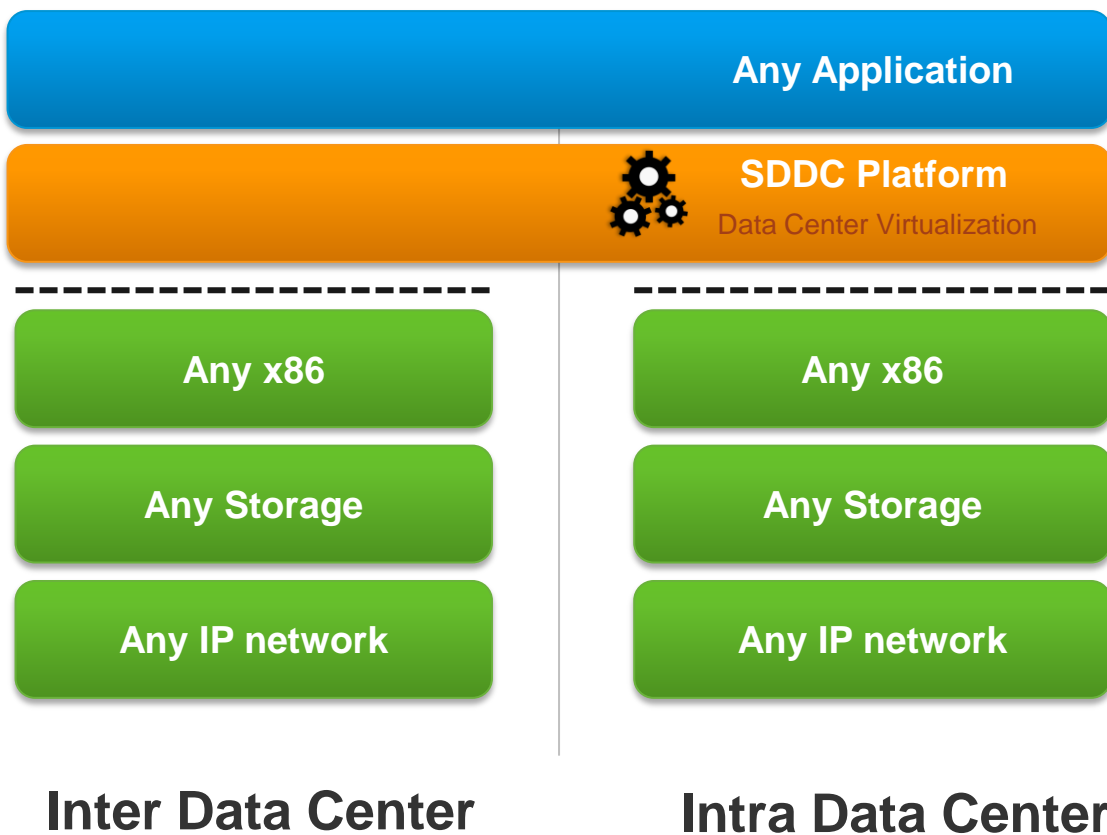


# The Power of SDDC



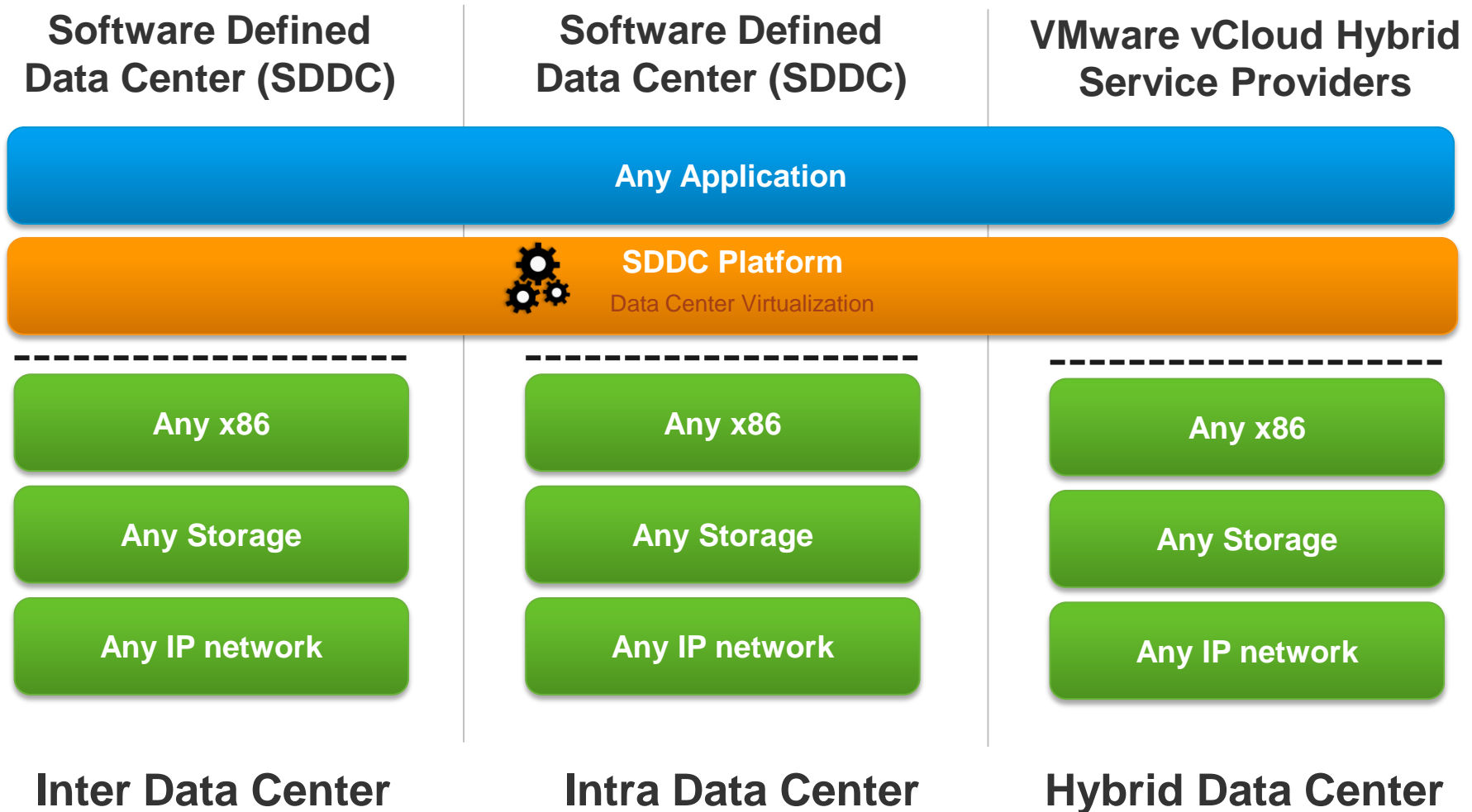
# The Power of SDDC

## Software Defined Data Center (SDDC)



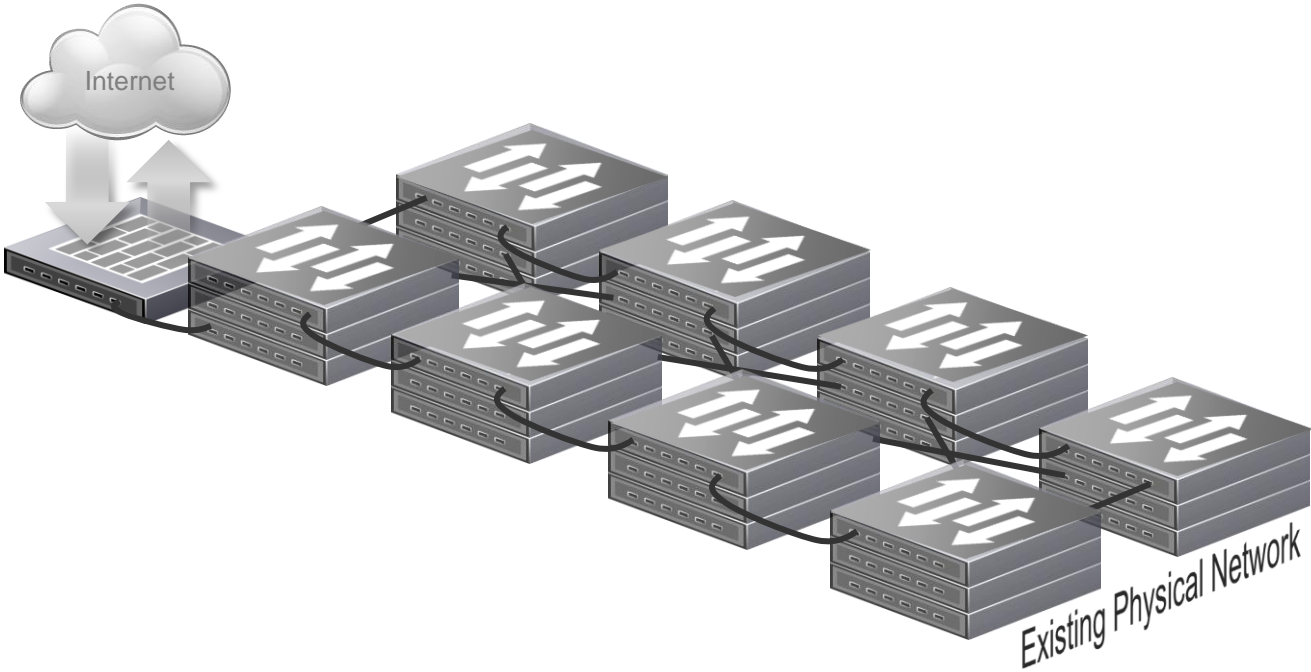


# SDDC and the Hybrid Data Center

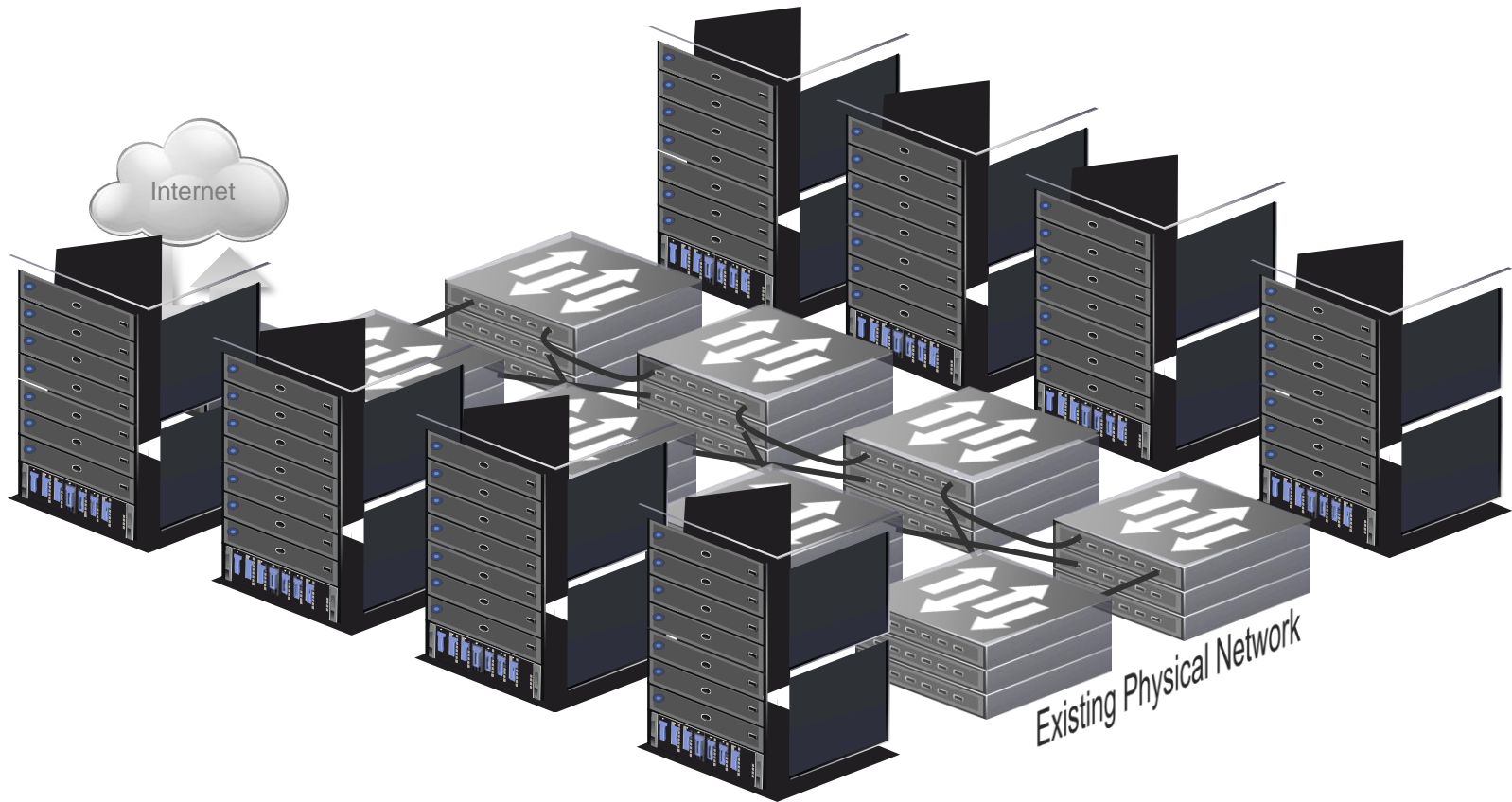


# NSX | Network Virtualization

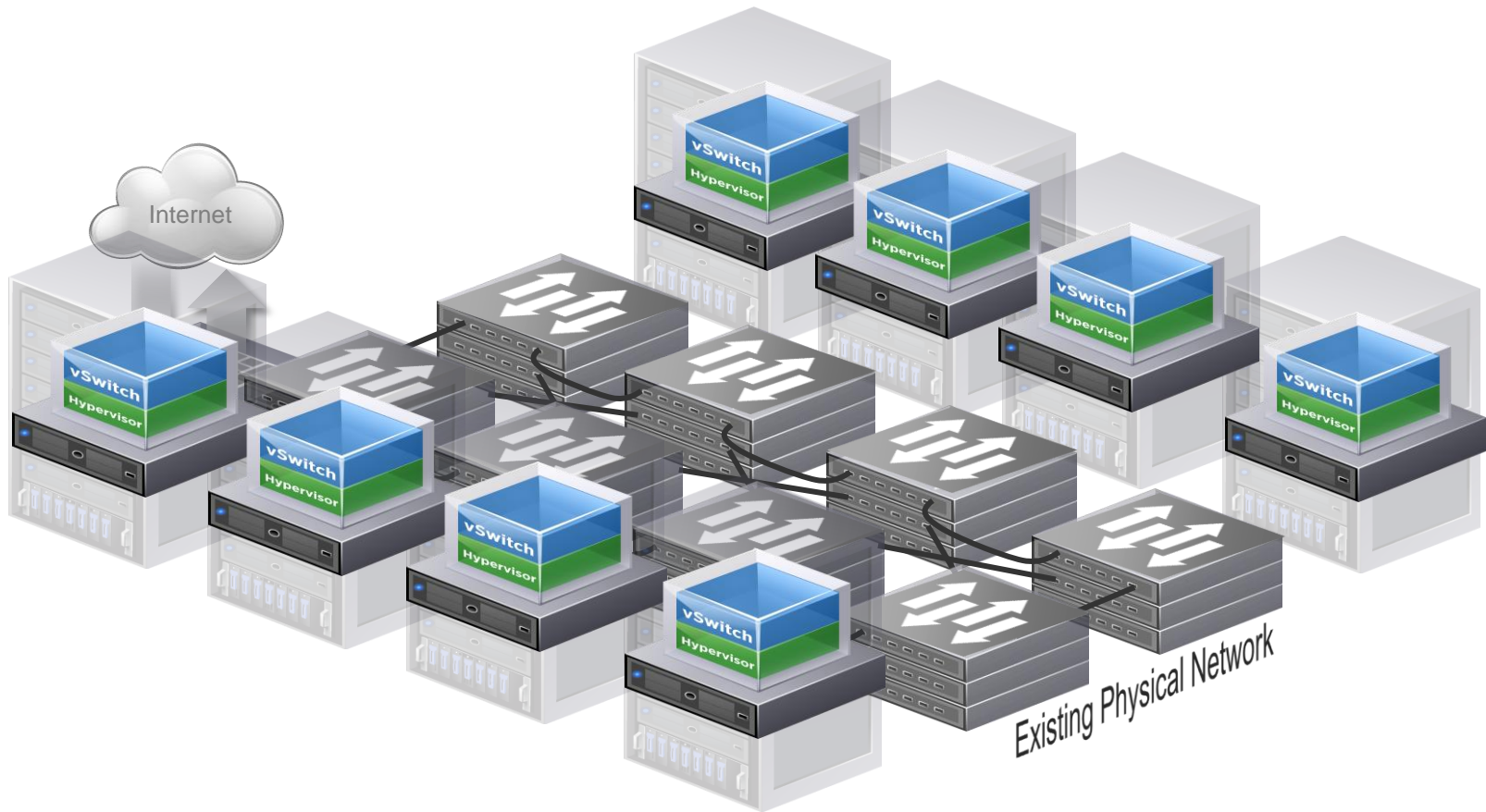
# A Data Center Network...



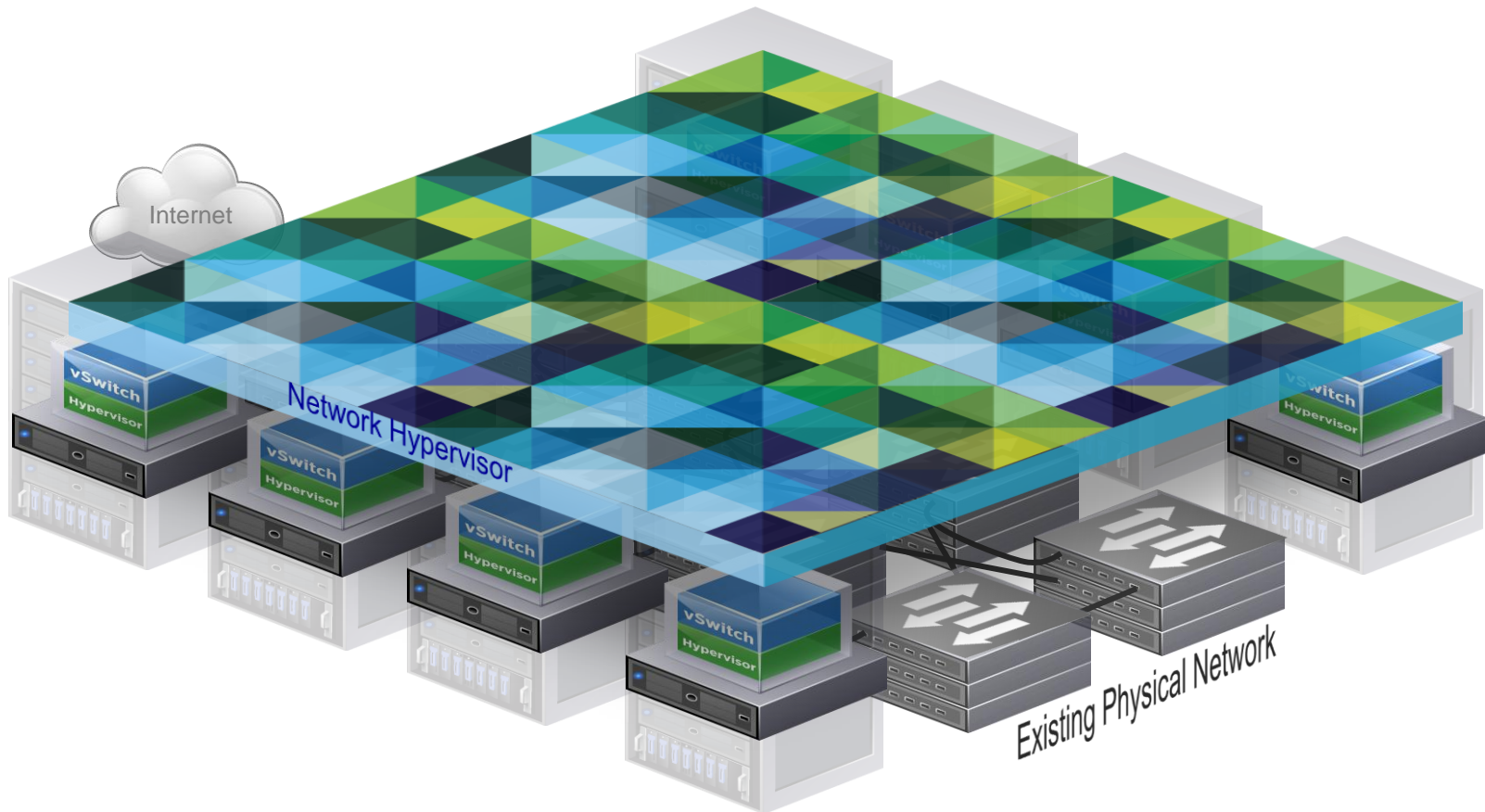
# Compute Infrastructure....



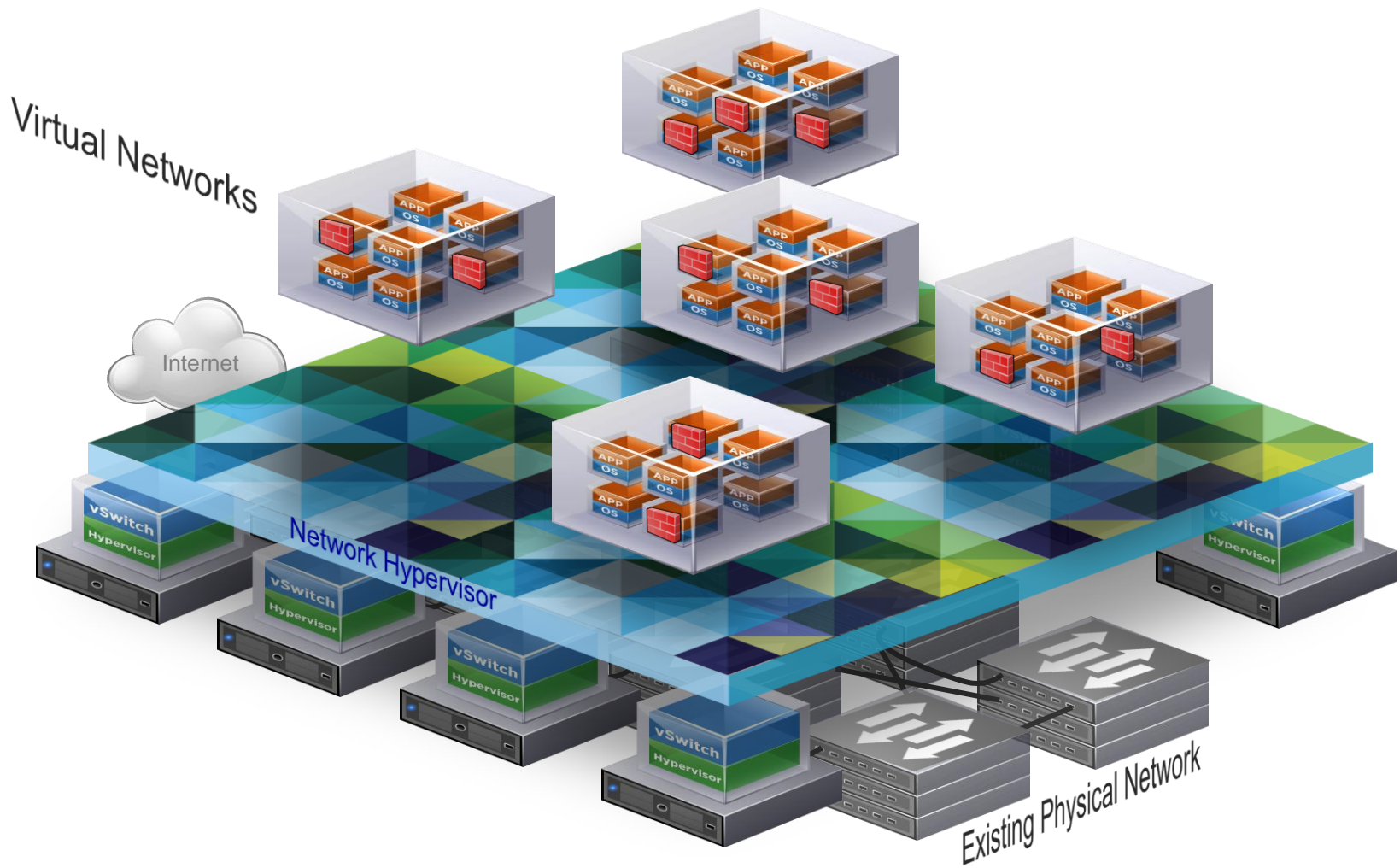
# Hypervisors and vSwitches...



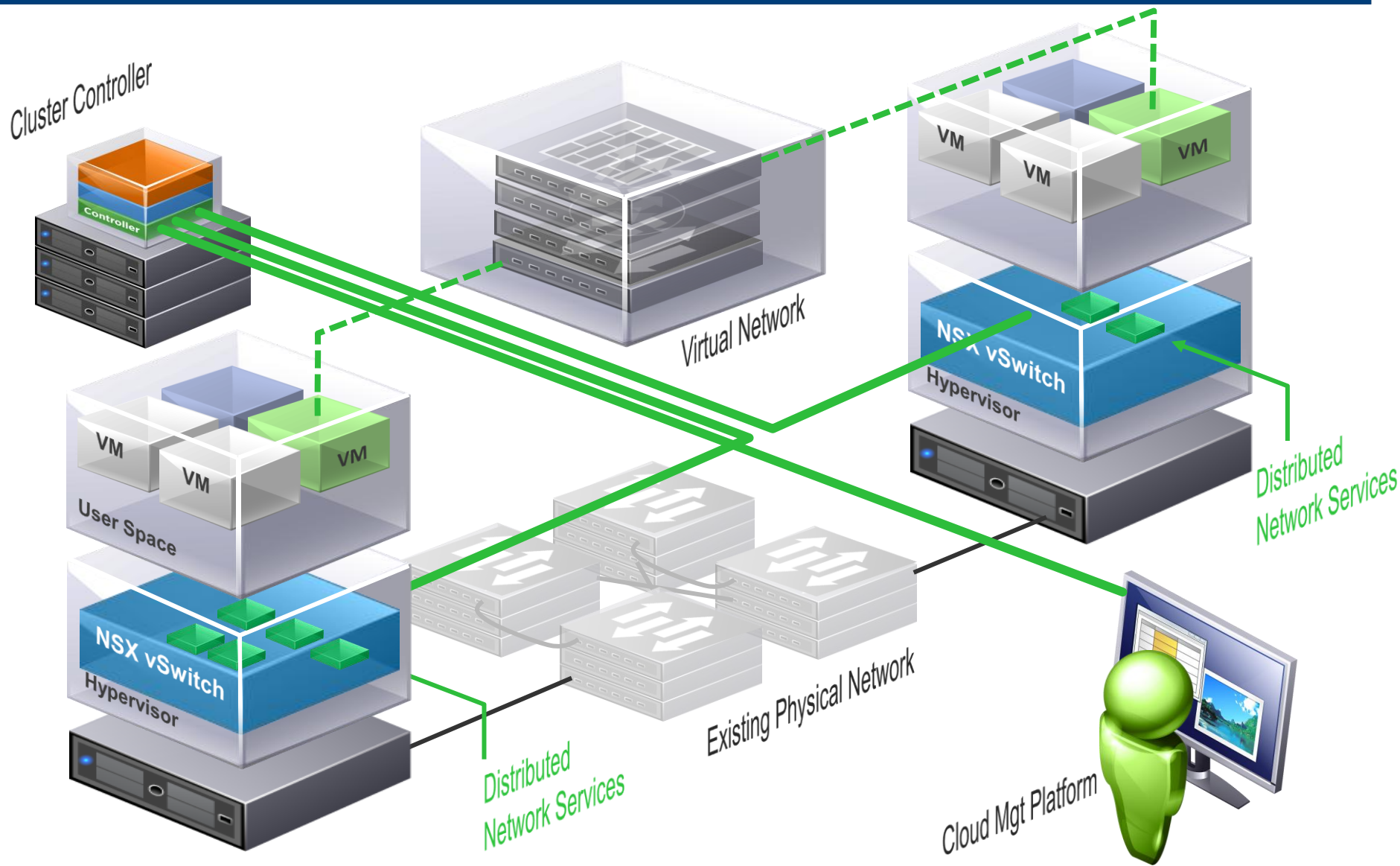
# NSX | The “Network Hypervisor”



# Virtual Networks – Like Virtual Machines for the Network

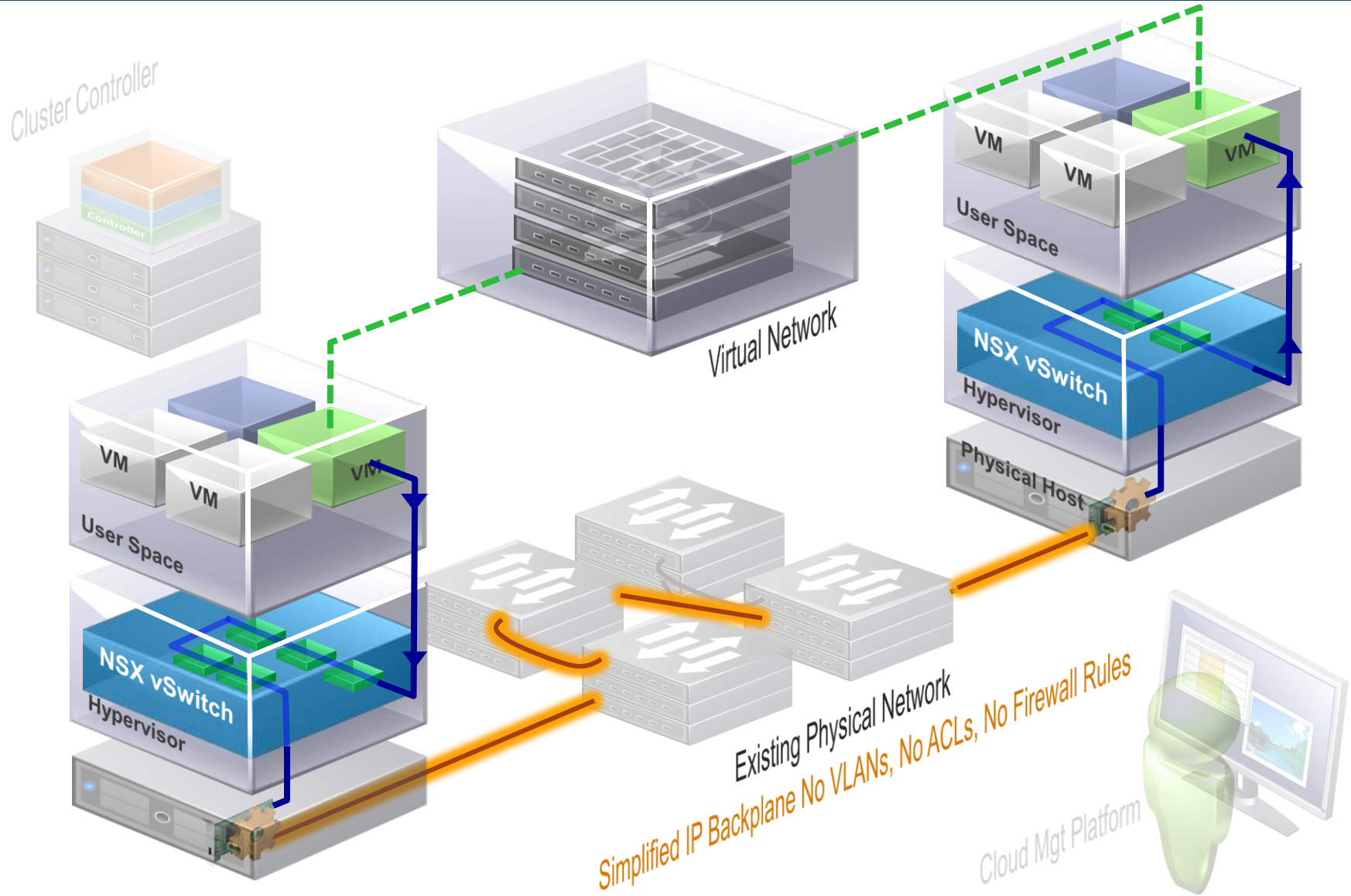


# Programmatically Provisioned



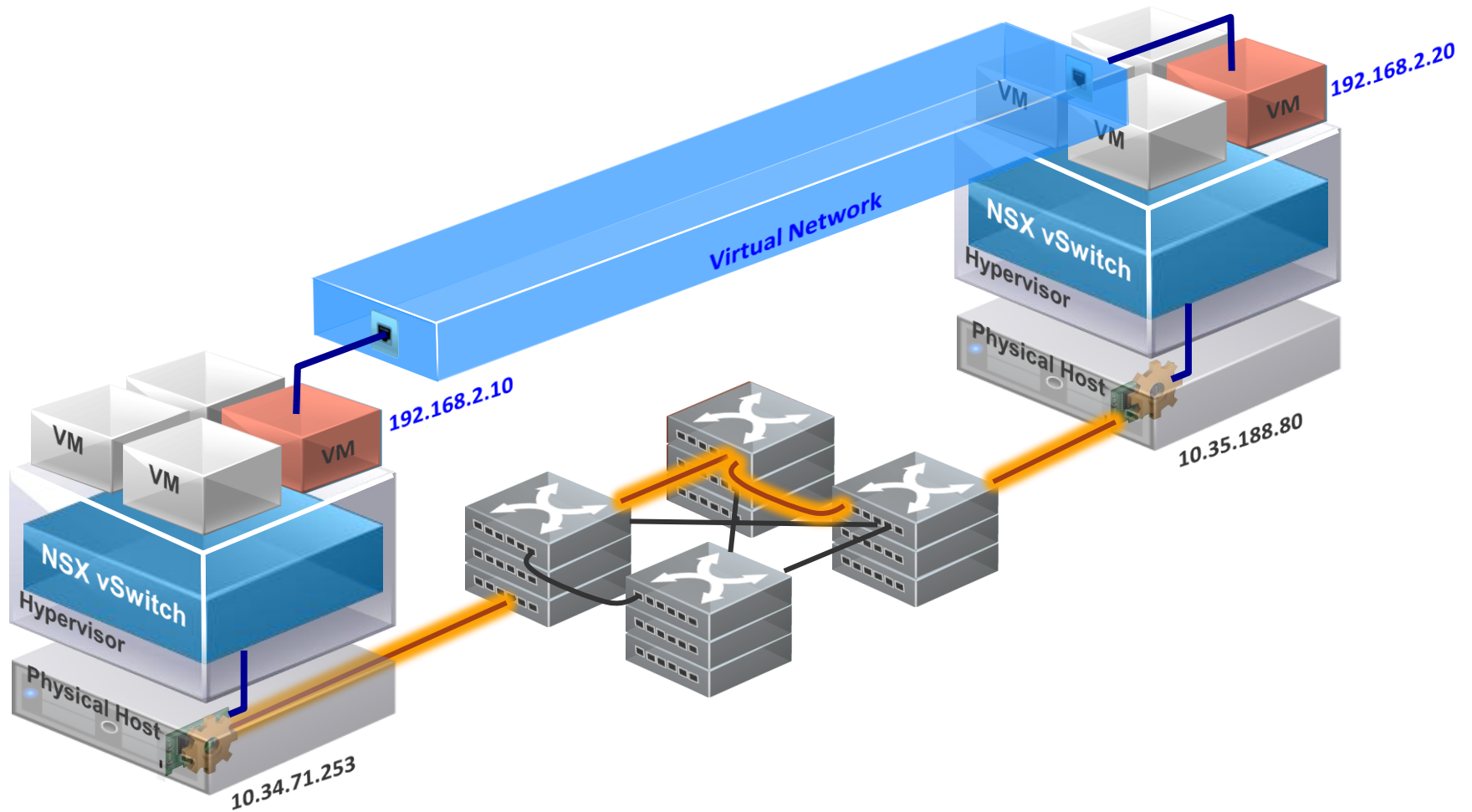


# Services Distributed to the Virtual Switch



# Better Operational Visibility & Troubleshooting

# Visibility & Troubleshooting



# Visibility & Troubleshooting

### Port Connection

Select a logical port source type: Logical Switch  
Enter a Logical Switch UUID: 01f3bf60-d002-4134-a2e3-0a1bad347961  
[Demo 2](#)

Select a Logical Switch Port: 4cea7...10556 (1) fa:16:3e:7ffc:74  
Go  
Select a Logical Switch Port: a72ec...ca5c8 (2) fa:16:3e:63:d5:9c

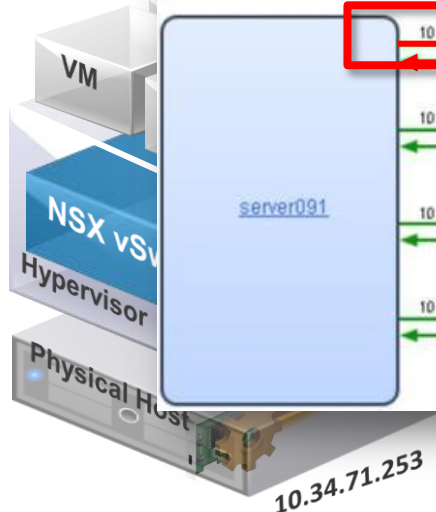
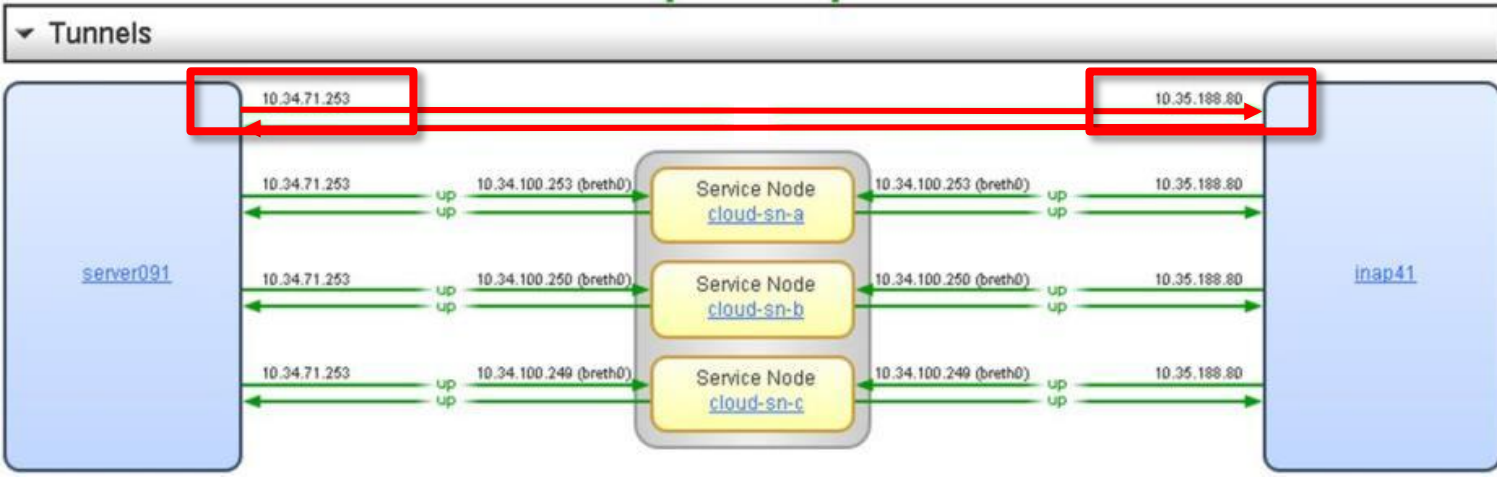
All Sections: [Expand](#) • [Collapse](#)

▼ VM

192.168.2.20

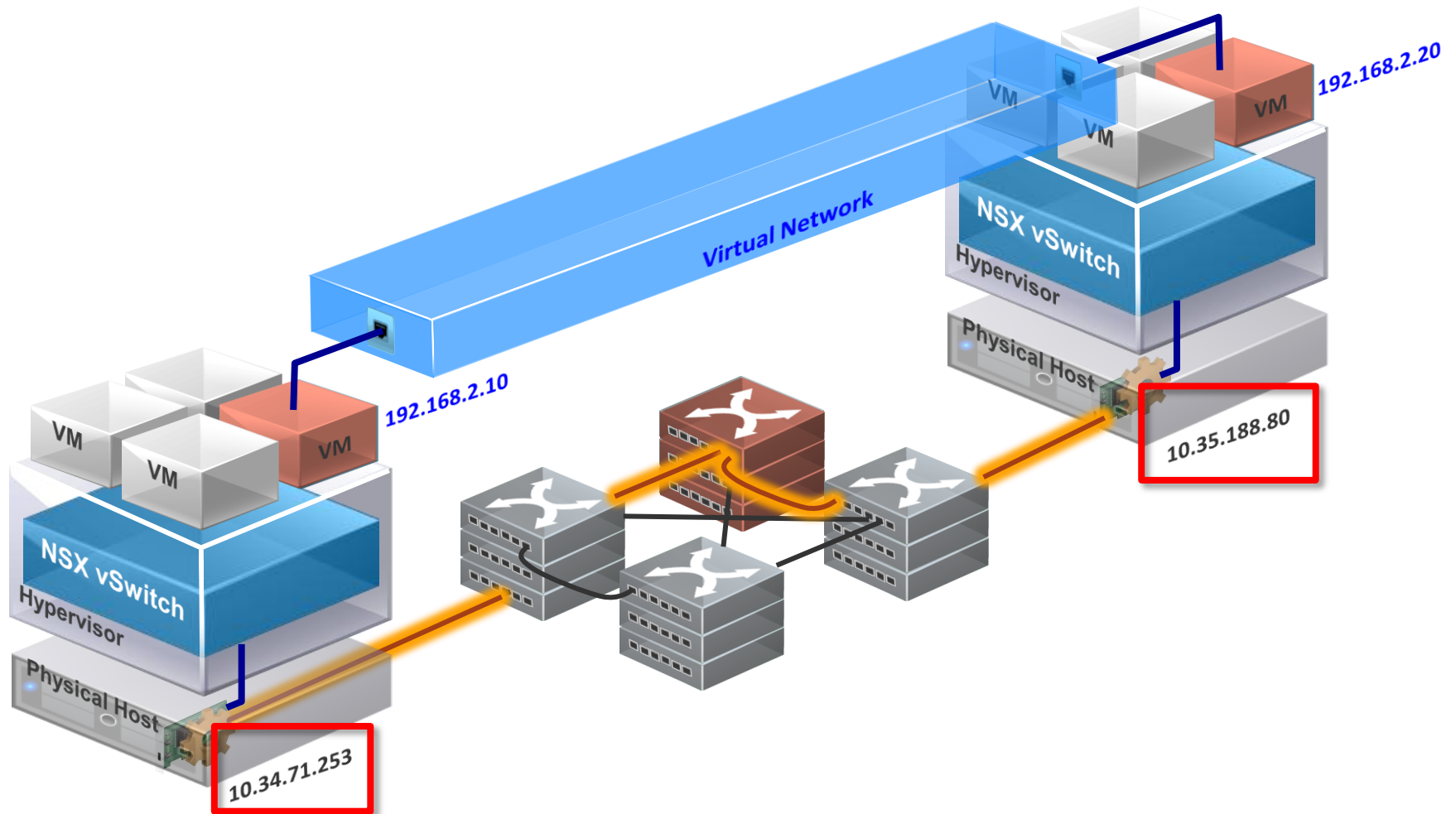
### ▼ Transport Node

server091	Display Name	inap41
Hypervisor	Type	Hypervisor
af6356dc-54fe-4a37-8439-9ba3a195f157	UUID	1038509d-b869-4f6c-a52f-0e9bd8dd40df
Disconnected ●	Disconnected ●	Disconnected ●



# Visibility & Troubleshooting

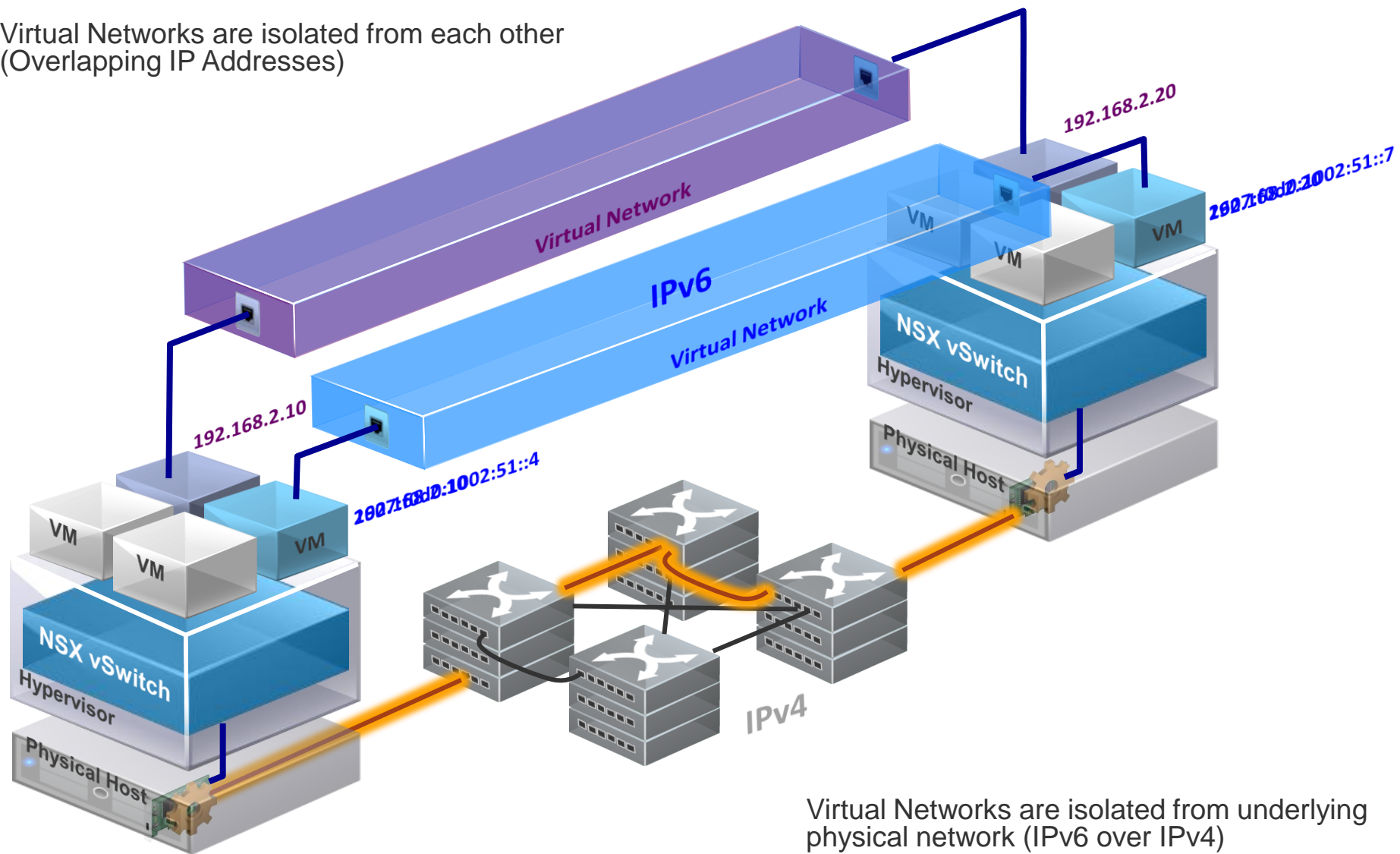
Use the network troubleshooting tools you use today,  
but with better information



# Better Security

# Security – Complete Isolation

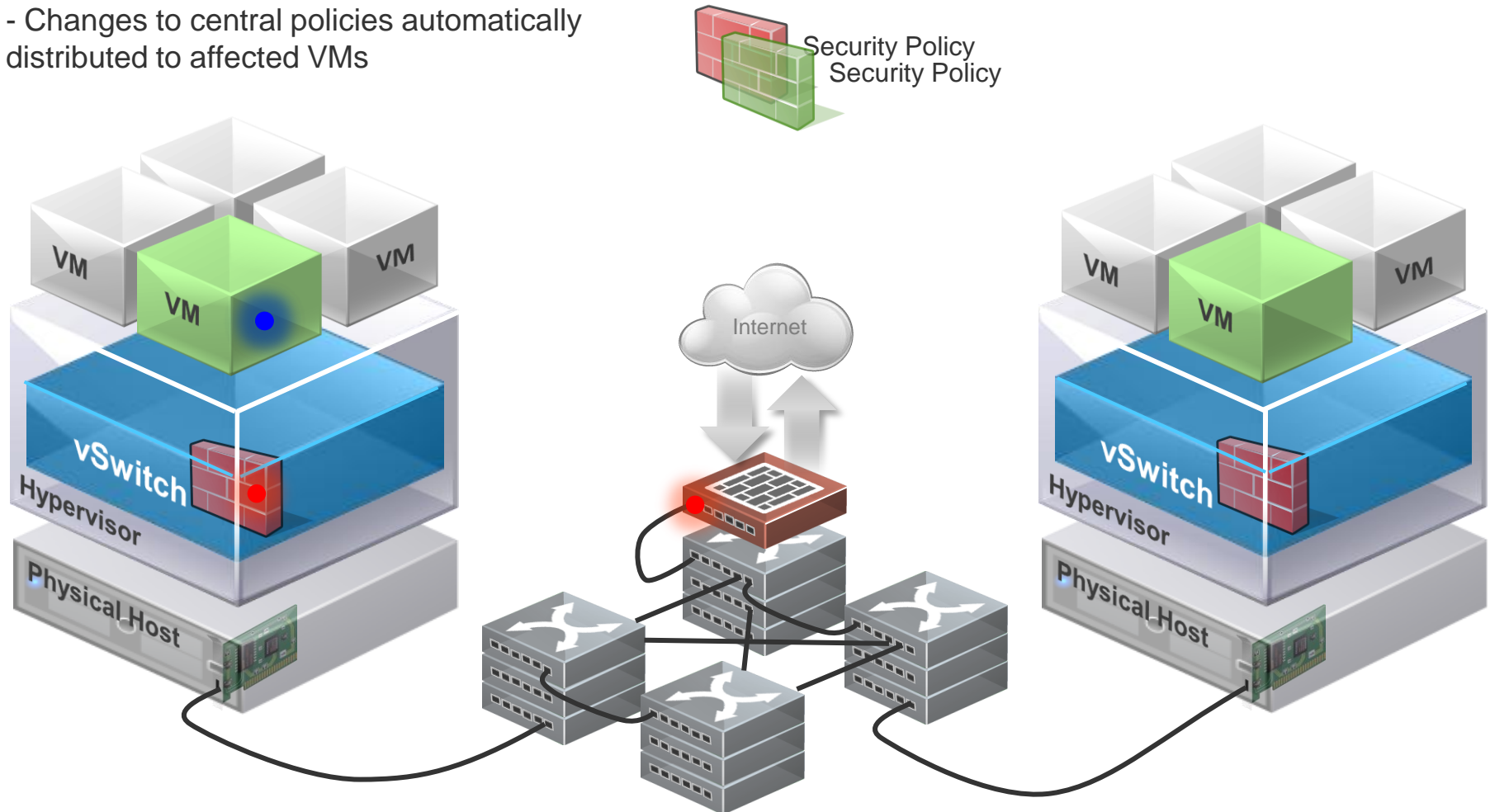
Virtual Networks are isolated from each other  
(Overlapping IP Addresses)



Virtual Networks are isolated from underlying physical network (IPv6 over IPv4)

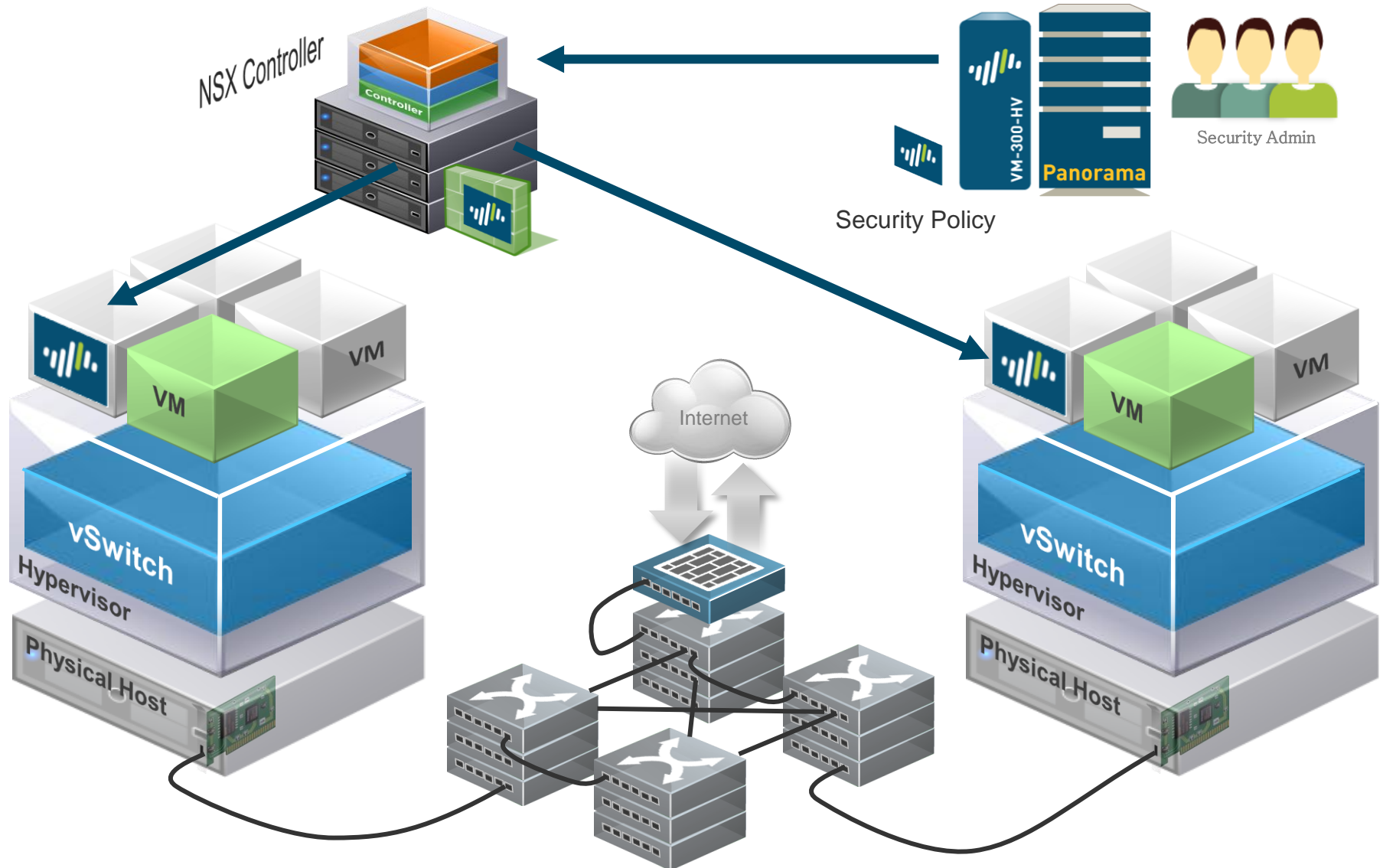
# Central Policies, Distributed Enforcement, Move with VMs

- Reduce Choke Point Security
- Centrally Define Policies, Distribute Rule Enforcement for Segmentation
- Security Policies Move with VMs
- Changes to central policies automatically distributed to affected VMs





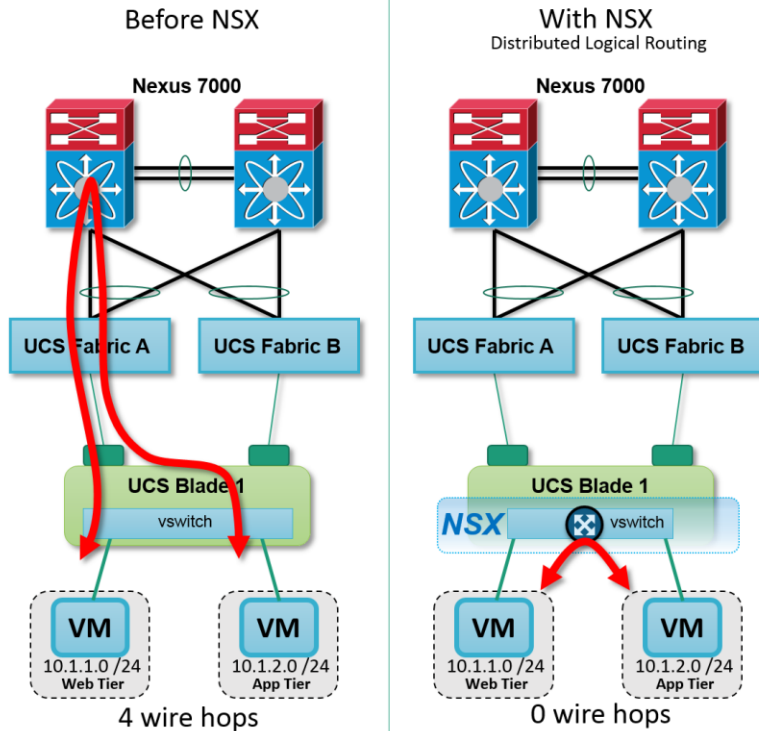
# Service Insertion – Example: Palo Alto Networks Next Gen Firewall



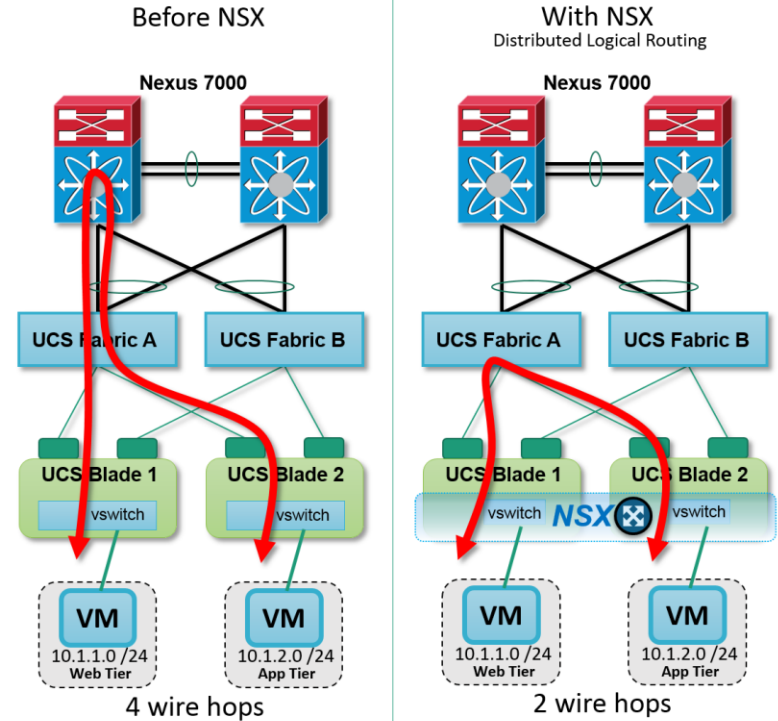
# The Power of Distribution

## Distributed Routing

### East-West Layer 3 / Same host



### East-West Layer 3 / Host to Host

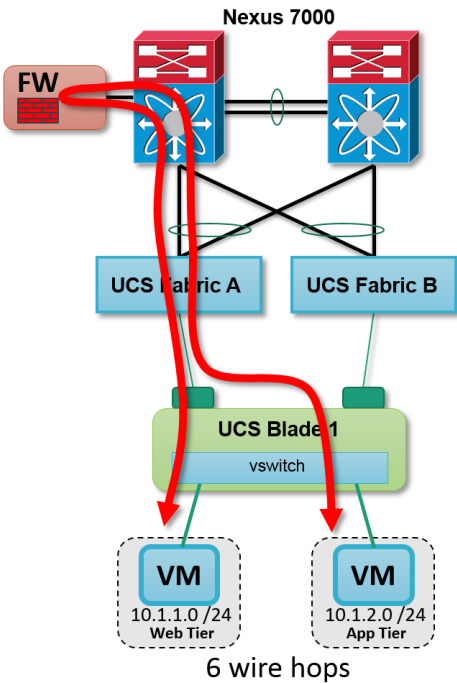


# The Power of Distribution

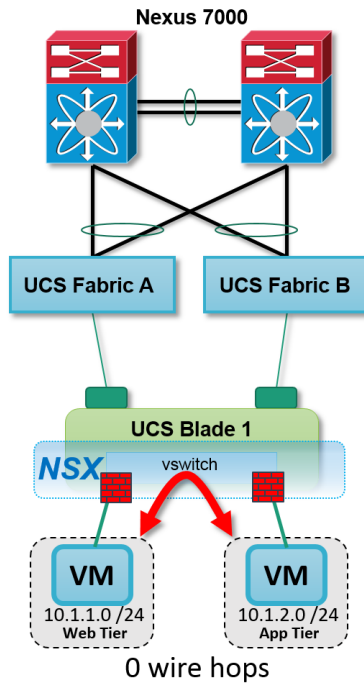
## Distributed Firewall

### East-West Firewalling / Same host

Before NSX

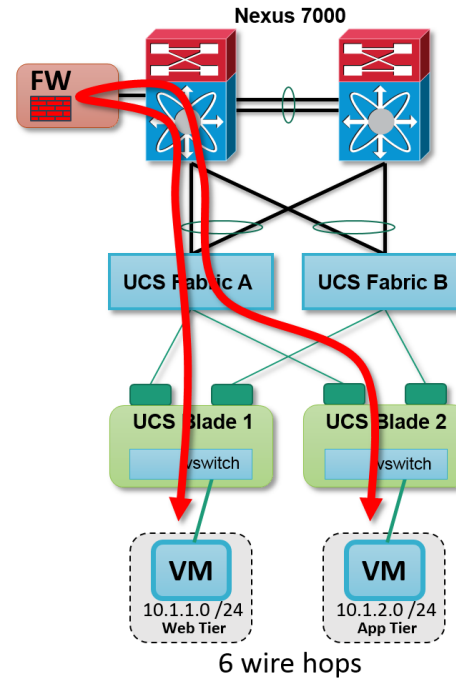


With NSX  
Distributed Virtual Firewall

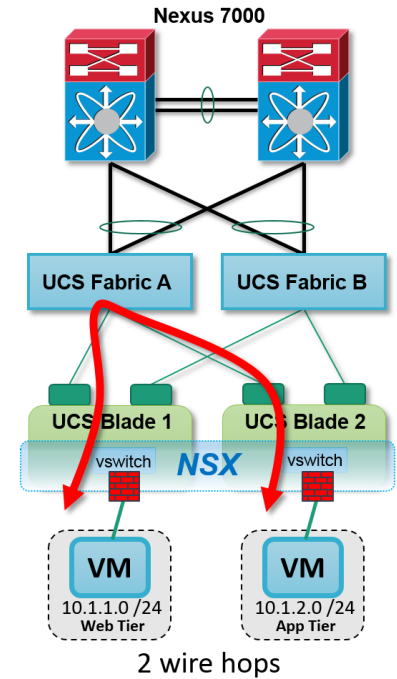


### East-West Firewalling / Host to Host

Before NSX



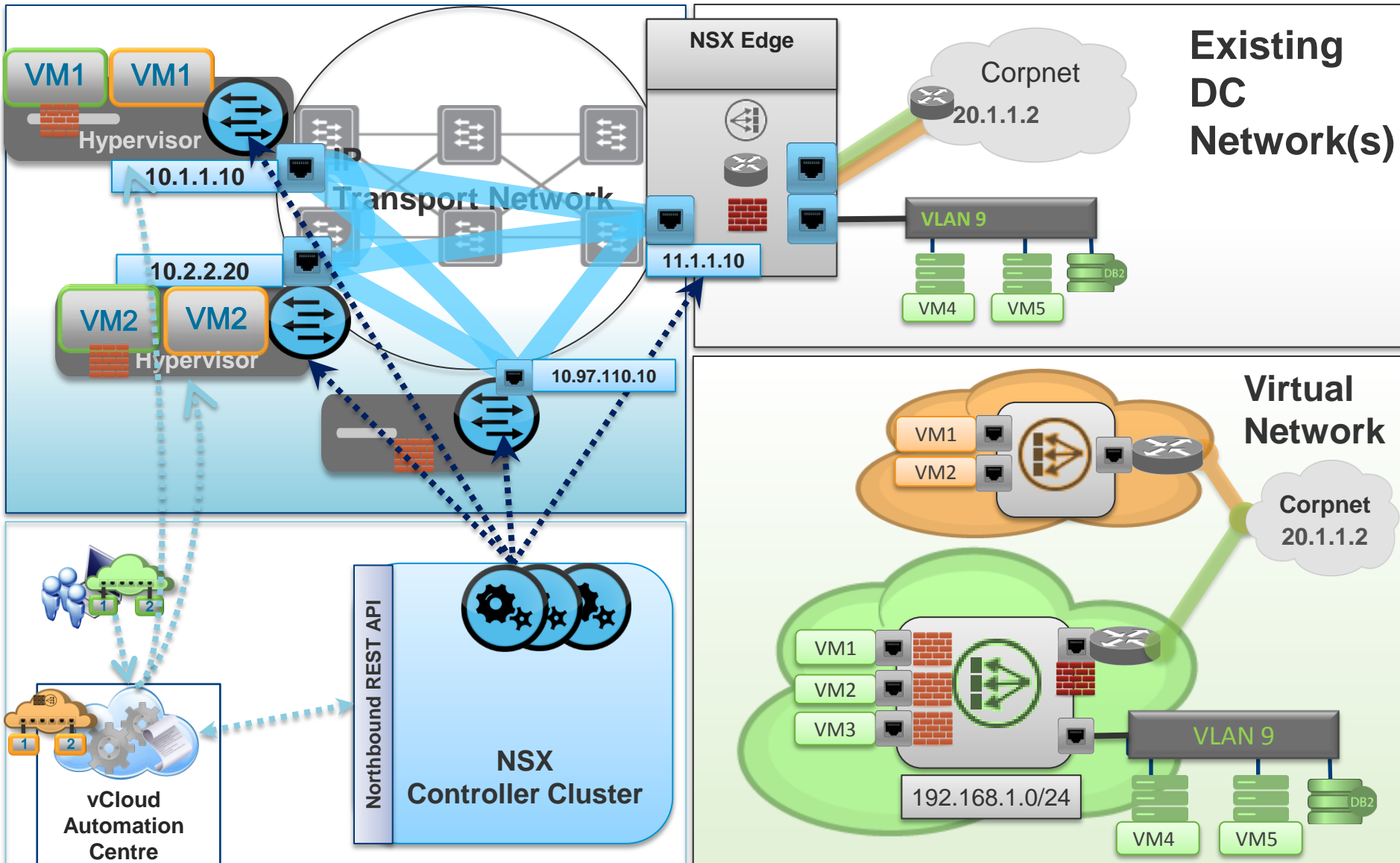
With NSX  
Distributed Virtual Firewall



# NSX – How it Works

Data Plane

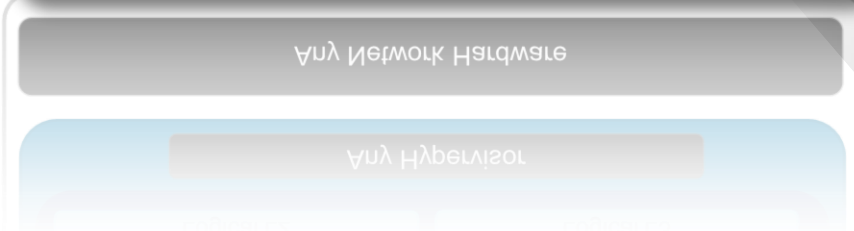
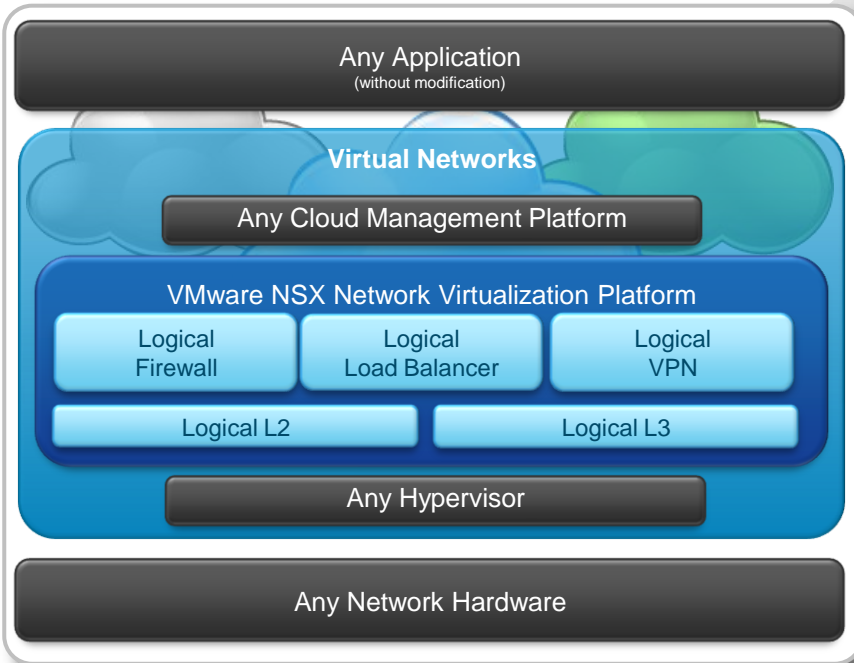
Control Plane



# VMware NSX Ecosystem – Technology Partners



# VMware NSX – Networking & Security Capabilities



## Automation & Operations

- API Driven Integration
- Service Composer for Security Workflows
- Server Access Monitoring
- Troubleshooting & Visibility

## Rich Networking & Security Services

- Scalable Logical Switching
- Physical to Virtual L2 Bridging
- Dynamic L3 Routing: OSPF, BGP, IS-IS
- Logical Services:  
Firewall, Identity-based Firewall, Load-balancing, VPN (IPSec, SSL, L2VPN)

## Partner Extensibility

- Physical ToR L2 Integration
- Security Services – IDS / IPS, AV, Vulnerability Mgmt
- Network Services – Load Balancers, WAN Optimization

# Thank You!

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Confidential

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