



# Cisco ACE replacement Cisco & Citrix Networking

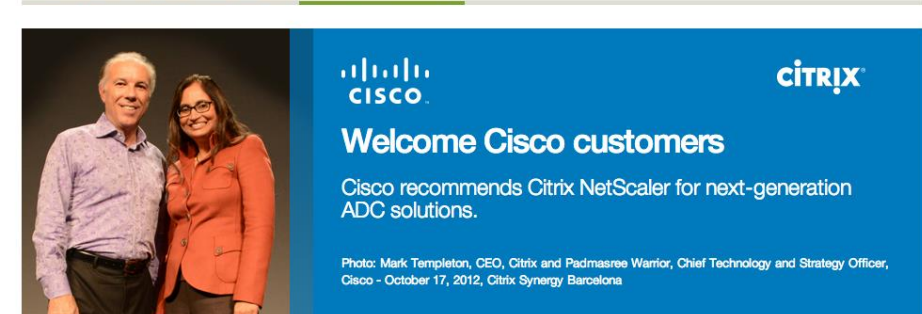
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*Citrix Systems International GmbH*

06.11.2014





# Cisco and Citrix work together to enable SDN and data center transformation





NetScaler 1000V  
Cisco OEM  
Virtual NetScaler



Nexus 1000v  
vPath Virtual Network  
Overlay



Nexus 7000  
RISE Integration



Nexus 9000  
ACI APIC

VMDC CVD  
VSA 1.0

VMDC CVD  
DCI 1.0

Mobile Workspaces CVD  
1.0



openstack  
Prime Network Services



Open Daylight



FlexPod  
Cisco, Citrix NetApp



VCE Vblock  
Cisco, Citrix, EMC

# Typical Deployments Sized

1 - 16 Gbps (64 Gbps Max)



ACE-4710 / ACE-30



ACE-30 Service Module & Multi-Chassis



GSS-4492R – Global Server Load Balancing

• 20k DNS RPS

## Single Tenant

- 1 or 2 VC's: Production & Staging/Test
- 2-4 SSL Vservers
- Single Role for Administration

## Multiple Tenants

- 5+ VC's
- 10+ SSL Vservers (2 per context)
- RBAC (Basic Roles)

## Service Providers

- 100+ VC's
- RBAC (Extensive Roles, Per VC AAA)

- Server Load Balancing
- Application Optimization & Application Security
- Virtual Context Support
- Multimedia & Voice Support
- Pay as you grow Throughput license upgrades (SSL, VC's, Compression)
- Support for Cisco Catalyst 6500 & 7600

# Cisco ACE / CSS / CSM to NetScaler

| Cisco Model   | Throughput    | Citrix NetScaler        |
|---|---------------|-------------------------|
| ACE 4710  | 0.5 – 4 Gbps  | MPX {5550, 5650, 8005}  |
| ACE 30 SM   | 4, 8, 16 Gbps | MPX {8005, 8015, 11515} |
| CSS 11501S-C  | 1.8 Gbps      | MPX 5550                |
| CSS 11503   | 6 Gbps        | MPX 5650                |
| CSS 11506   | 12 Gbps       | MPX 11515               |
| Cisco CSM   | 4 Gbps        | MPX 8005                |
| Cisco GSS – All NetScaler MPX Enterprise & Platinum |               |                         |



Each NetScaler MPX/SDX model matches or beats equivalent Cisco ADC platforms for price & performance

# Cisco ACE/CSS/CSM and Recommended NetScaler ADCs

| Cisco Model  | Throughput | Citrix NetScaler | Throughput |
|--------------|------------|------------------|------------|
| ACE 4710     | 0.5 Gbps   | MPX 5550         | 0.5 Gbps   |
| ACE 4710     | 1 Gbps     | MPX 5650         | 5 Gbps     |
| CSS 11501S-C | 1.8 Gbps   | MPX 8005         | 5 Gbps     |
| ACE 4710     | 2 Gbps     | MPX 8005         | 5 Gbps     |
| ACE 4710     | 4 Gbps     | MPX 8005         | 5 Gbps     |
| ACE 30 SM    | 4 Gbps     | MPX 8005         | 5 Gbps     |
| Cisco CSM    | 4 Gbps     | MPX 8005         | 5 Gbps     |
| CSS 11503    | 6 Gbps     | MPX 8015         | 15 Gbps    |
| ACE 30 SM    | 8 Gbps     | MPX 11515        | 15 Gbps    |
| CSS 11506    | 12 Gbps    | MPX 11520        | 20 Gbps    |
| ACE 30 SM    | 16 Gbps    | MPX 11530        | 30 Gbps    |

For Cisco GSS (Global Site Selector) - any NetScaler MPX appliance supporting NetScaler Global Server Load Balancing (GSLB) capabilities – Enterprise or Platinum Edition

# Citrix NetScaler 1000V – ADC from Cisco



Sold and  
supported by  
Cisco

- Virtual NetScaler ADC
- Available as Cisco software
- Sold and supported by Cisco
- ADC for Nexus 1000V Virtualized Data Center

# Citrix NetScaler 1000V – Platform Options

## Citrix NetScaler 1000V on ESXi (e.g. UCS)

- Up to 4 Gbps throughput
- Works on any commodity server



## Citrix NetScaler 1000V on Nexus 1110-X

- Nexus 1110-X – Cloud Services Platform (CSP)
- Platform for multiple Virtualized Network Services
- NetScaler SW + Nexus HW = Cisco ADC



Nexus 1110 Virtual Services Appliance

## HW SSL for NetScaler 1000V on Nexus 1110-X\*

\* Roadmap Q3 2014, subject to change



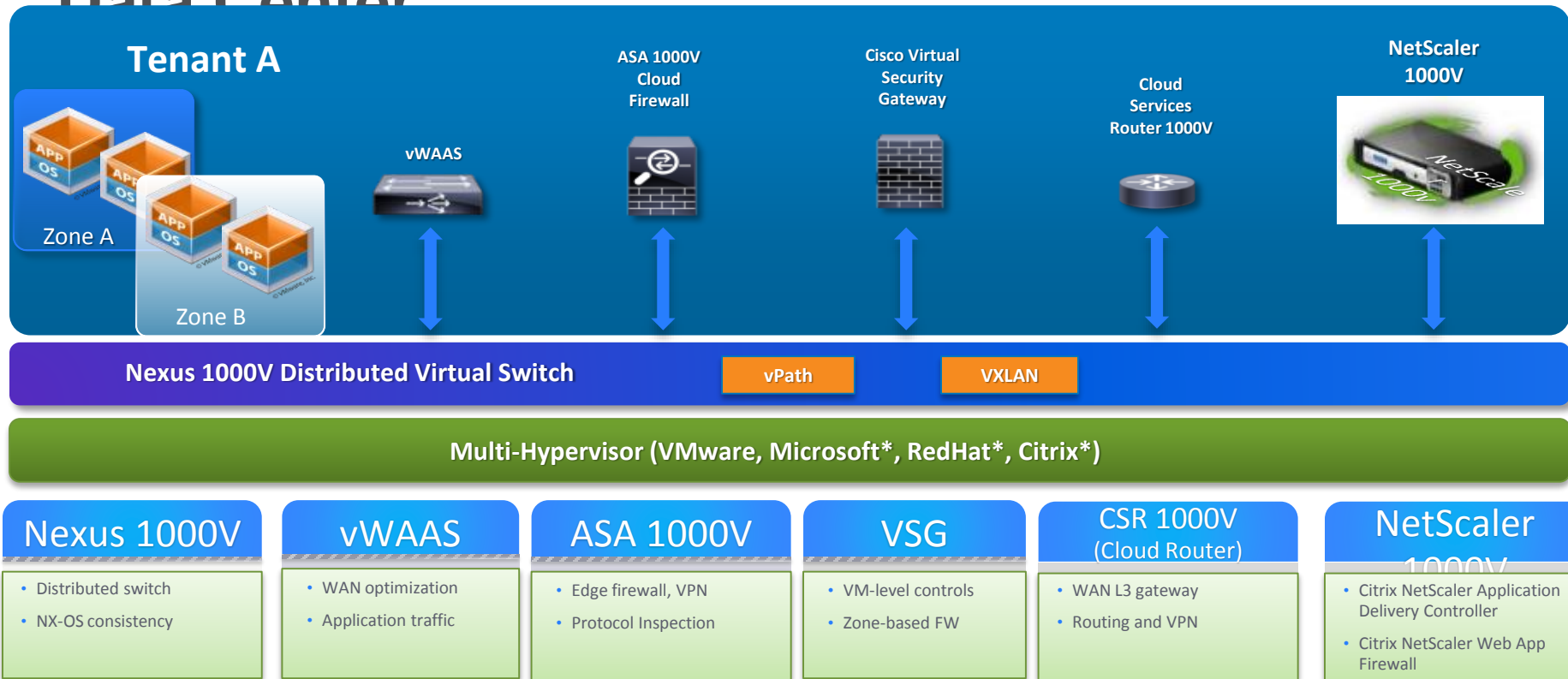
# Nexus 1000V Integration using vPath

- Virtual Network Overlay through Service Chaining



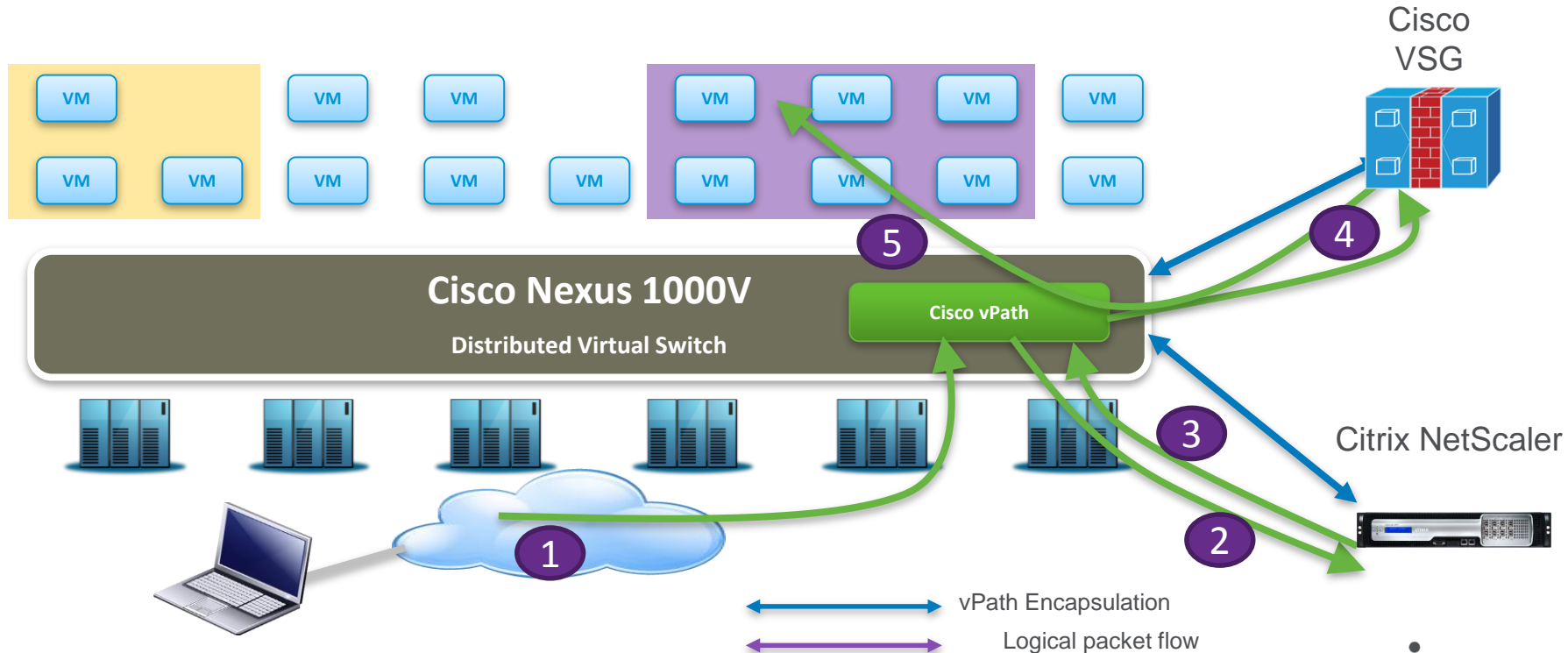
Nexus 1000v  
vPath Virtual  
Network Overlay

# NetScaler 1000V in the Nexus 1000V Virtualized Data Center



# vPath Service Chaining – Virtual Network Overlay

- Policy based traffic steering through virtualized network services



VMDC CVD  
VSA 1.0

VMDC CVD  
DCI 1.0

# Cisco Validated Designs

- Virtualized Multiservice Data Center (VMDC)

# Cisco VMDC: Virtual Multi Service Data Center

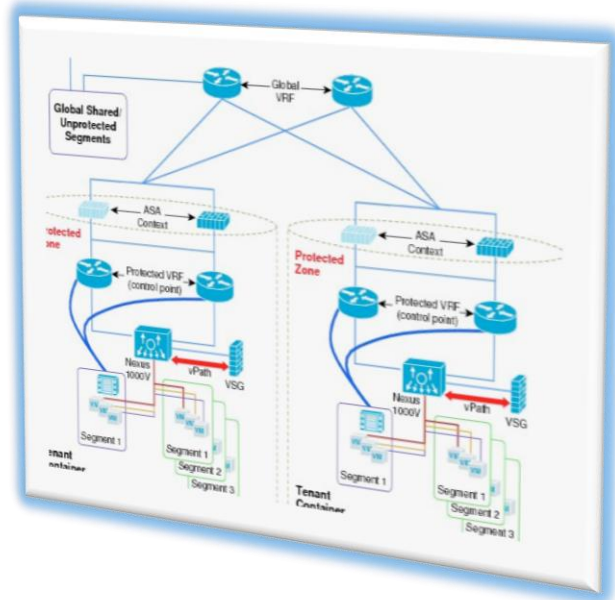
- CVDs incorporating NetScaler

## VMDC Virtual Services Architecture (VSA) 1.0

- Logical topology optimized for higher tenancy
- Incorporates NetScaler VPX & NetScaler 1000v

## VMDC Data Center Infrastructure (DCI) 1.0

- Virtual private cloud tenant containers in shared data center
  - Incorporates NetScaler SDX
- Available on [www.cisco.com/go/vmdc](http://www.cisco.com/go/vmdc)



**Citrix NetScaler is ADC for VMDC CVDs**

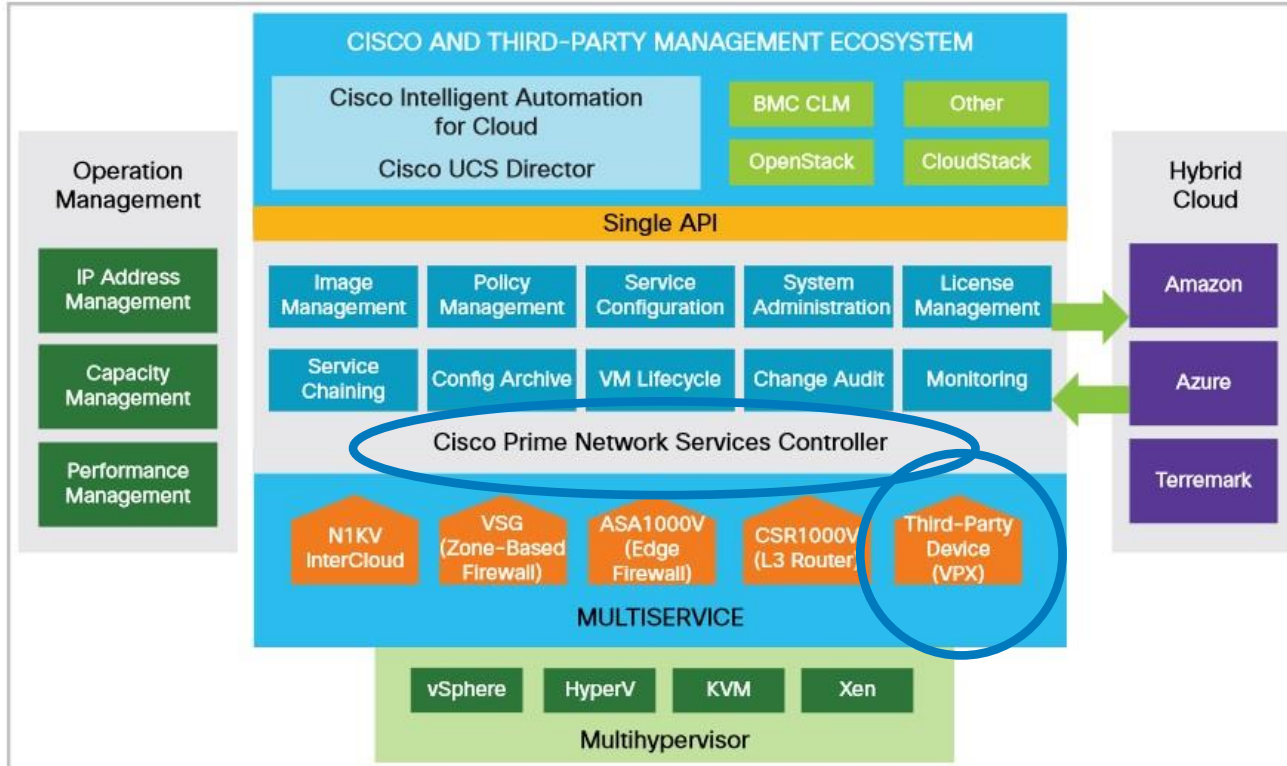
# Cisco Prime Network Services Controller



- NetScaler Integration via OpenStack

# Cisco Prime Network Services Controller

- Able to configure NetScaler using Openstack APIs



# Cisco Prime Network Services Controller

Prime NSC is able to configure and manage NetScaler

- Uses Openstack APIs to configure/manage NetScaler
- Virtual NetScaler instance creation from Prime controller using Openstack
- Platforms: NetScaler VPX and NetScaler 1000V
  - Hypervisor: KVM

NetScaler 1000V is part of Cisco Cloud Service - Cisco Intercloud

- Cisco Cloud Services builds / manages clouds for service provider customers
- <http://blogs.cisco.com/news/introducing-ciscos-global-intercloud/>



# Cisco RISE N7K Integration with Citrix NetScaler

- Data Center Automation



Nexus 7000  
RISE Integration

# Data Center Switching and L4-L7 ADC Services

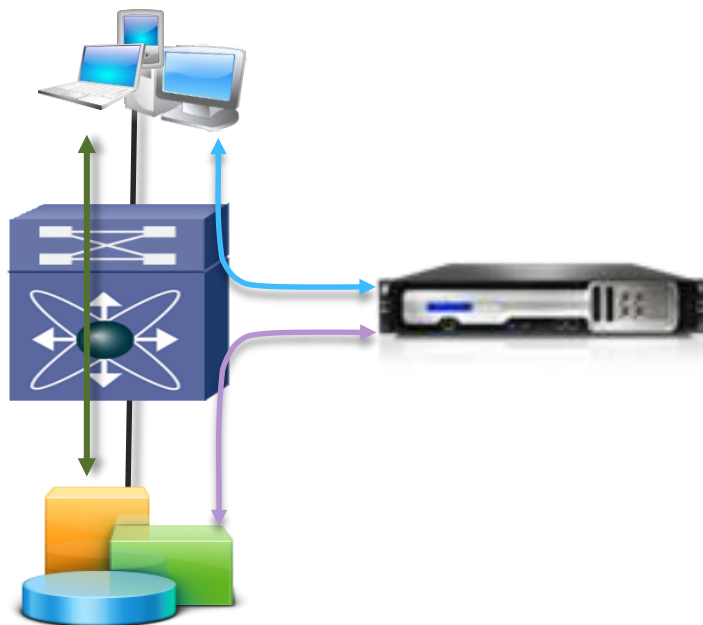
L4-L7 ADC services haven't kept up with L2-3 switching speeds

- Switching speeds are Terabit / sec
- ADC speeds are Gigabit / sec

Rules out inline ADC deployments

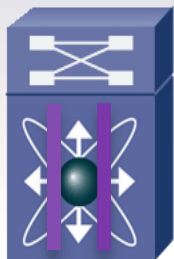
One-arm NetScaler deployments are typical

- 70-80% of deployments are one-arm



# Service Integration Challenges within Data Centers

Service Modules

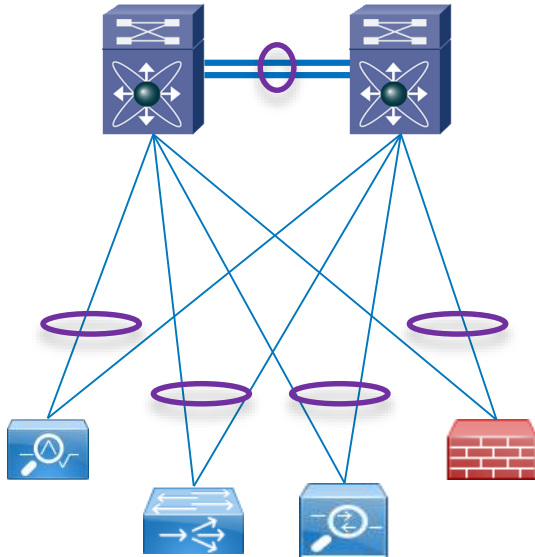


- ✓ Tightly embedded with switch backplane
- ✗ Slot is expensive
- ✗ Performance bottleneck
- ✗ Scaling is difficult

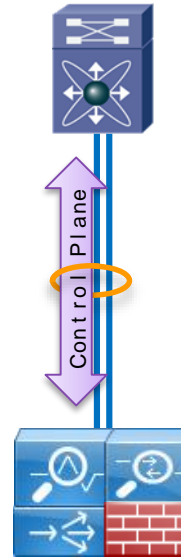
# Cisco Remote Integrated Service Engine (RISE)

- Logical integration of a NetScaler with Nexus 7000 and 7700 platforms

Physical Topology



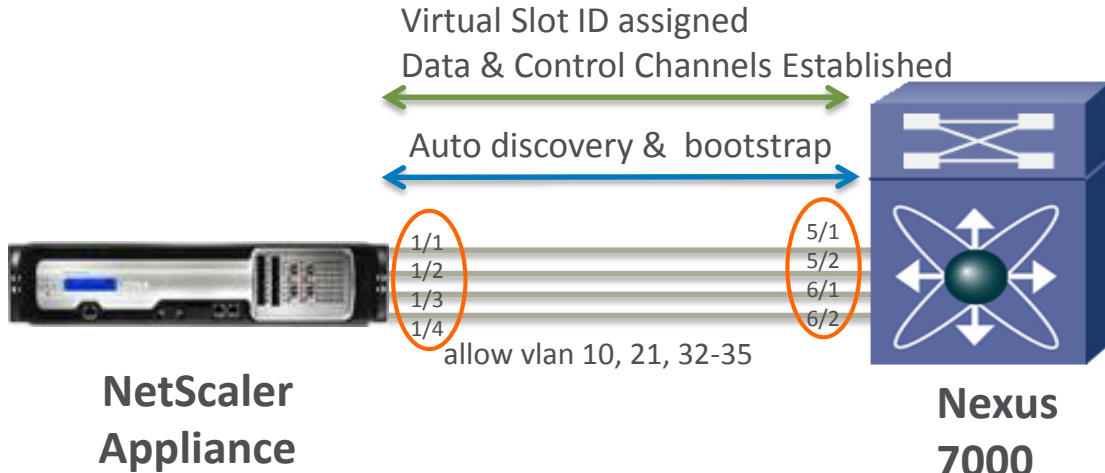
Logical RISE Topology



# Auto-Discovery/Bootstrap of NetScaler by N7K

- Reduces Steps to Install

## Directly Attached NS to Nexus7000 Line Card Ports



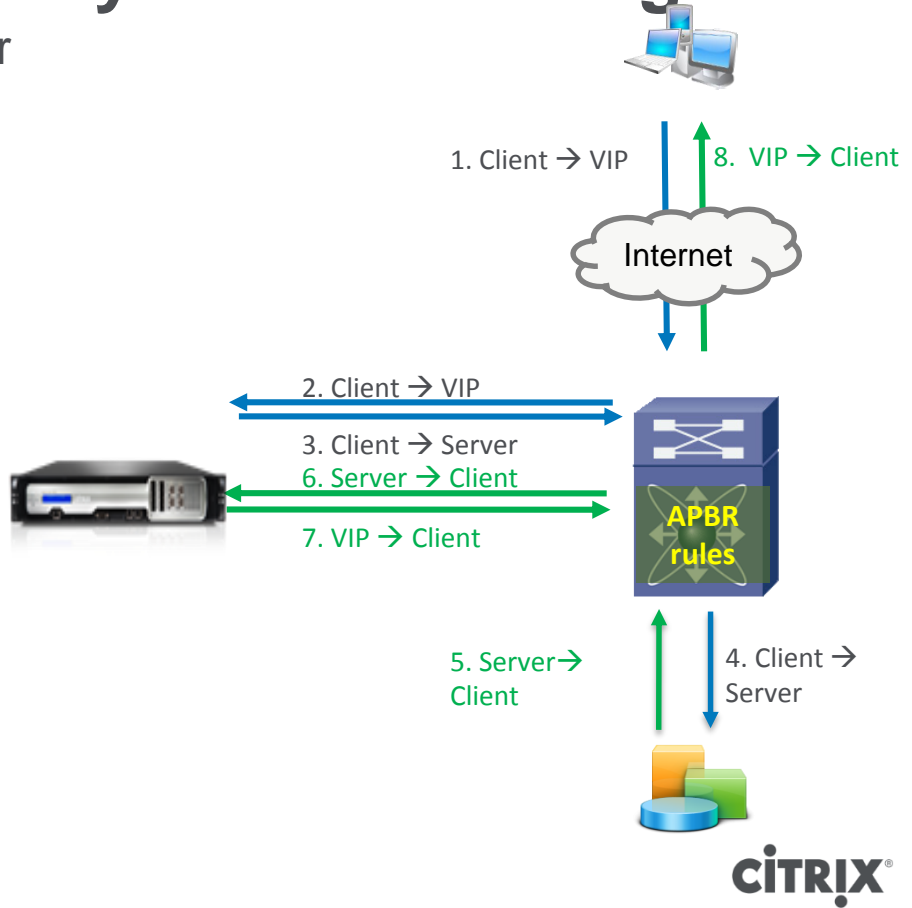
## Four Simple Steps to Getting Connected

1. Create port-channel
2. Set up trunk vlans
3. Create rise service to get an assigned slot
4. Interconnect the NetScaler with the

N7k

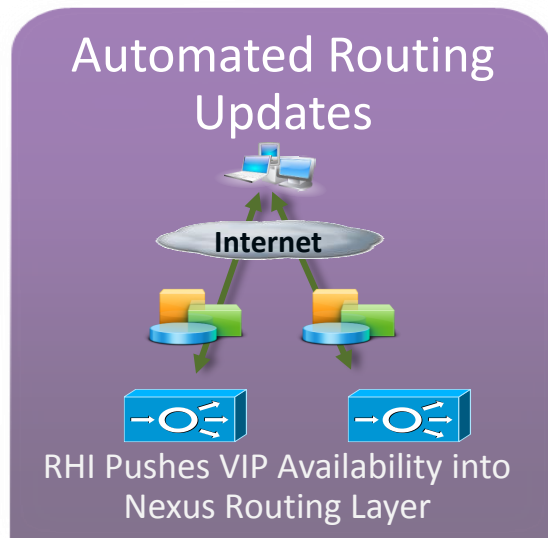
# RISE Automated Policy Based Routing

- Optimized traffic flows in the data center
- Traffic flows are directed to the NetScaler
- APBR Rules redirect return traffic to NetScaler
- **Benefits**
- No need for Source-NAT
- No manual PBR configuration needed



# RISE Automated Routing Updates\*

- Integrated Routing using RISE
- Route updates are communicated over the RISE control channel
- Allows NetScaler ADC to advertise (add or delete) the VIPs to Nexus 7000 dynamically based on operational status of VIPs
- Routing protocols on Nexus 7000 can redistribute VIP routes to rest of the network



\* Roadmap Q3 2014, subject to change

# Netscaler Appears as Virtual Service Module

- N7k SUP recognizes NetScaler as a RISE service module.

```
switch# show service rise summary
```

| Service Name | Service Type | Interface | Module | State  | Version          |
|--------------|--------------|-----------|--------|--------|------------------|
| tme-rise     | RISE         | N/A       | 332    | active | NetScaler NS10.5 |

- N7K SUP can attach a RISE module and access NetScaler CLI via SSH from N7K
- Access to NetScaler CLI from N7k

```
'attach rise slot X'           to ssh to appliance/vm  
'attach rise name ABC'
```



# NetScaler Monitoring in Nexus DCNM

172.26.241.253 - Remote Desktop Connection

DCNM-LAN (172.26.241.253)

File View Tools Go Help

Feature Selector

- Inventory
  - Power Usage
  - Virtual Switch
- Topology
- Inventory
- Virtual Devices
- Interfaces
- Switching
- FCoE
- Routing
- Security
- Configuration Change Management
- Device OS Management
- DCNM Server Administration
- Network Servers
- Event Browser
- Network Analysis

Inventory > Device: N7K-3 > Card: Network Card in Slot 396

| Name                     | Description                                    | Product ID      | Serial Number | Hardware Ver... | Software Version       | Status     | Temperature St... |
|--------------------------|--|-----------------|---------------|-----------------|------------------------|------------|-------------------|
| CORE-1                   | Nexus7000 C7010 (10 Slot) Chassis              | N7K-C7010       | TBM14364968   |                 | 6.1(1)                 |            |                   |
| N7K-3                    | Nexus7000 C7010 (10 Slot) Chassis              | N7K-C7010       | TBM14301075   |                 | 6.1(1rise)             |            |                   |
| Network Card in Slot 1   | 10/100/1000 Mbps Ethernet XL Module            | N7K-M148GT-11L  | JAF1428BJRC   | 0.202           | 6.1(1rise)             | Ok         | Ok                |
| Network Card in Slot 5   | Supervisor module-2                            | N7K-SUP2E       | JAF1608ACEM   | 0.403           | 6.1(1rise)             | Active *   | Ok                |
| Network Card in Slot 6   | Supervisor module-2                            | N7K-SUP2E       | JAF1608ACEB   | 0.403           | 6.1(1rise)             | HA-Standby | Ok                |
| Network Card in Slot 10  | 1/10 Gbps BASE-T Ethernet Module               | N7K-F248XT-25   | JAF1602APQS   | 0.3             | 6.1(1rise)             | Ok         | Ok                |
| Service Card in Slot 11  | Fabric card module                             | N7K-C7010-FAB-1 | JAF1415CLGR   |                 |                        |            | Ok                |
| Service Card in Slot 12  | Fabric card module                             | N7K-C7010-FAB-1 | JAF1415CLJR   |                 |                        |            | Ok                |
| Service Card in Slot 13  | Fabric card module                             | N7K-C7010-FAB-1 | JAF1434ABGA   |                 |                        |            | Ok                |
| Service Card in Slot 14  | Fabric card module                             | N7K-C7010-FAB-1 | JAF1434ABHQ   |                 |                        |            | Ok                |
| Service Card in Slot 15  | Fabric card module                             | N7K-C7010-FAB-1 | JAF1434ABGN   |                 |                        |            | Ok                |
| Network Card in Slot 396 | ACE 4720 Virtual Appliance                     | ACE-4720V       | NA            | NA              | 3.0(0)A90(10.2.183)... | Ok         |                   |
| Power Supply 1           | Nexus7000 C7010 (10 Slot) Chassis Power Supply | N7K-AC-6.0KW    | DTM141400X2   |                 |                        | Ok         |                   |
| Power Supply 2           | Nexus7000 C7010 (10 Slot) Chassis Power Supply | N7K-AC-6.0KW    | DTM141400TA   |                 |                        | Ok         |                   |
| Fan1                     | Nexus7000 C7010 (10 Slot) Chassis Fan Module   | N7K-C7010-FAN-5 | FOX1431XAEQ   |                 |                        | Ok         |                   |
| Fan2                     | Nexus7000 C7010 (10 Slot) Chassis Fan Module   | N7K-C7010-FAN-5 | FOX1431XAEQ   |                 |                        | Ok         |                   |

Environmental Status | TCAM Statistics

General

Card Name: Network Card in Slot 396  
 Description: ACE 4720 Virtual Appliance  
 Number of Ports: 0  
 Product ID: ACE-4720V  
 Hardware Version: NA

Software Version: 3.0(0)A90(10.2.183) adbuild\_00:46:26-2012/06/27\_/auto/adburn\_nightly4/nightly/nightly\_air  
 Status: Ok  
 MAC Address Range:  
 WWN Range:  
 Serial Number: NA

Done

Start | C:\Documents and Sett... | C:\Program Files\Cisco S... | Untitled - Notepad | C:\WINDOWS\system32... | DCNM-LAN - Windows In... | DCNM-LAN (172.26.24... | dcnradmin | 91M of 247M | 3:06 PM

# HW, Versions, and License Requirements

## Platforms

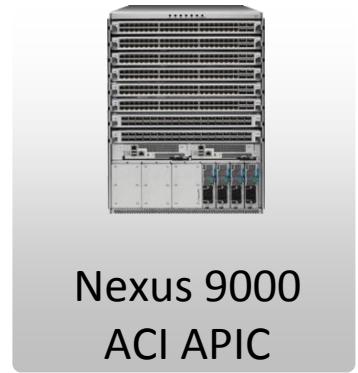
- Nexus 7000 Series Switches – M-Series and F-Series Modules
- NetScaler MPX, SDX, VPX. Also NetScaler 1000V from Cisco
- Cisco Prime NAM has added RISE support in version 6.02

## Versions

- Nexus NX-OS 6.2.8
- NetScaler 10.1e Build 124, 10.5 and later

## Licenses

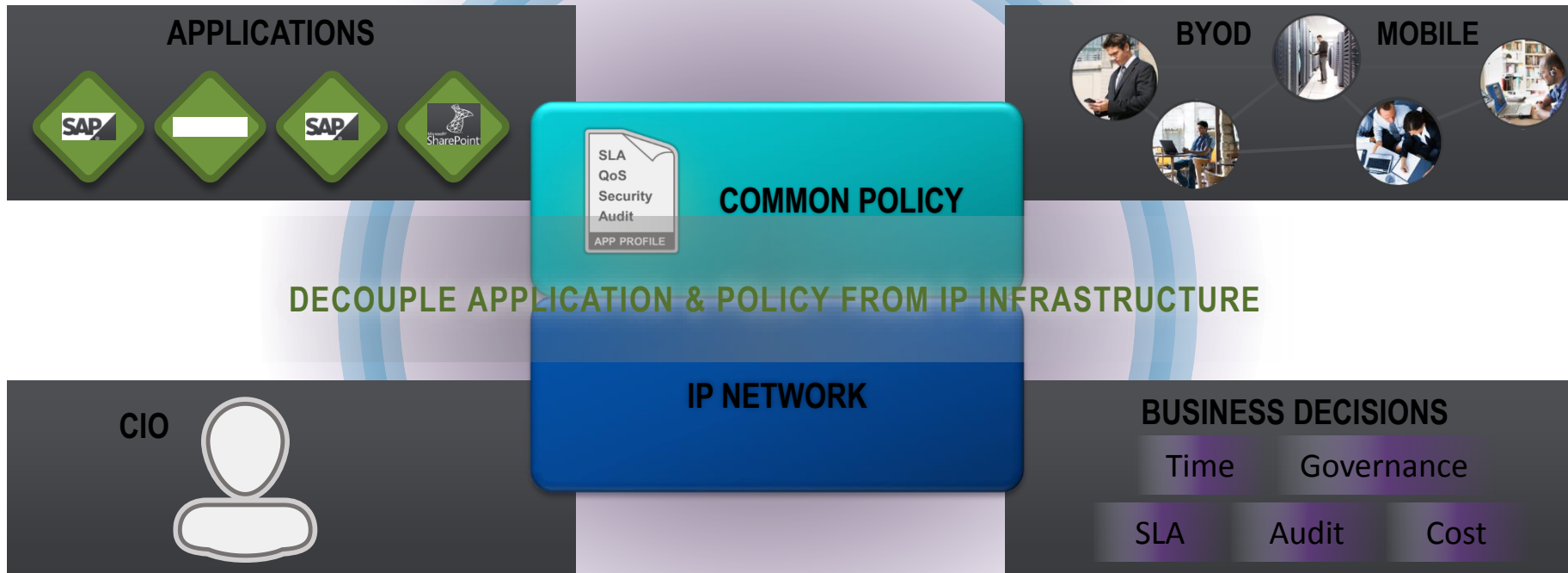
- Nexus Enhanced Layer 2
- NetScaler Enterprise Edition, Platinum Edition



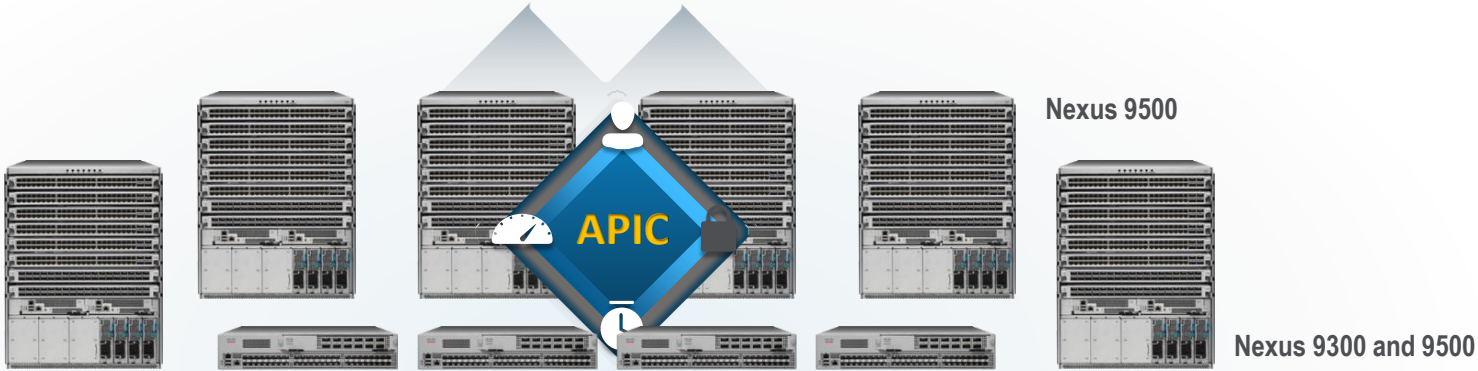
# Cisco ACI

- Application-Centric Networking (SDN)

# ACI – driving business transformation



# Application centric infrastructure



Physical  
Networking

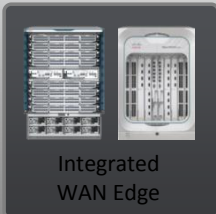
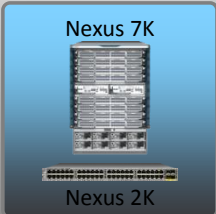
Hypervisors  
and Virtual  
Networking

Compute

L4-L7  
Services

Storage

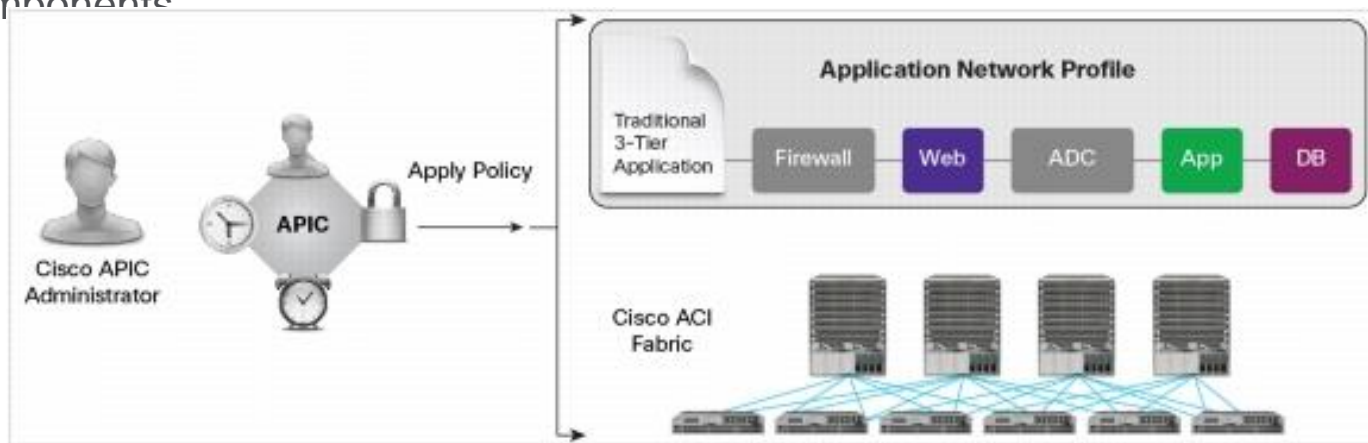
Multi DC  
WAN and Cloud



# APIC - Application Policy Infrastructure Controller

Cisco APIC is single point of automation and fabric element management

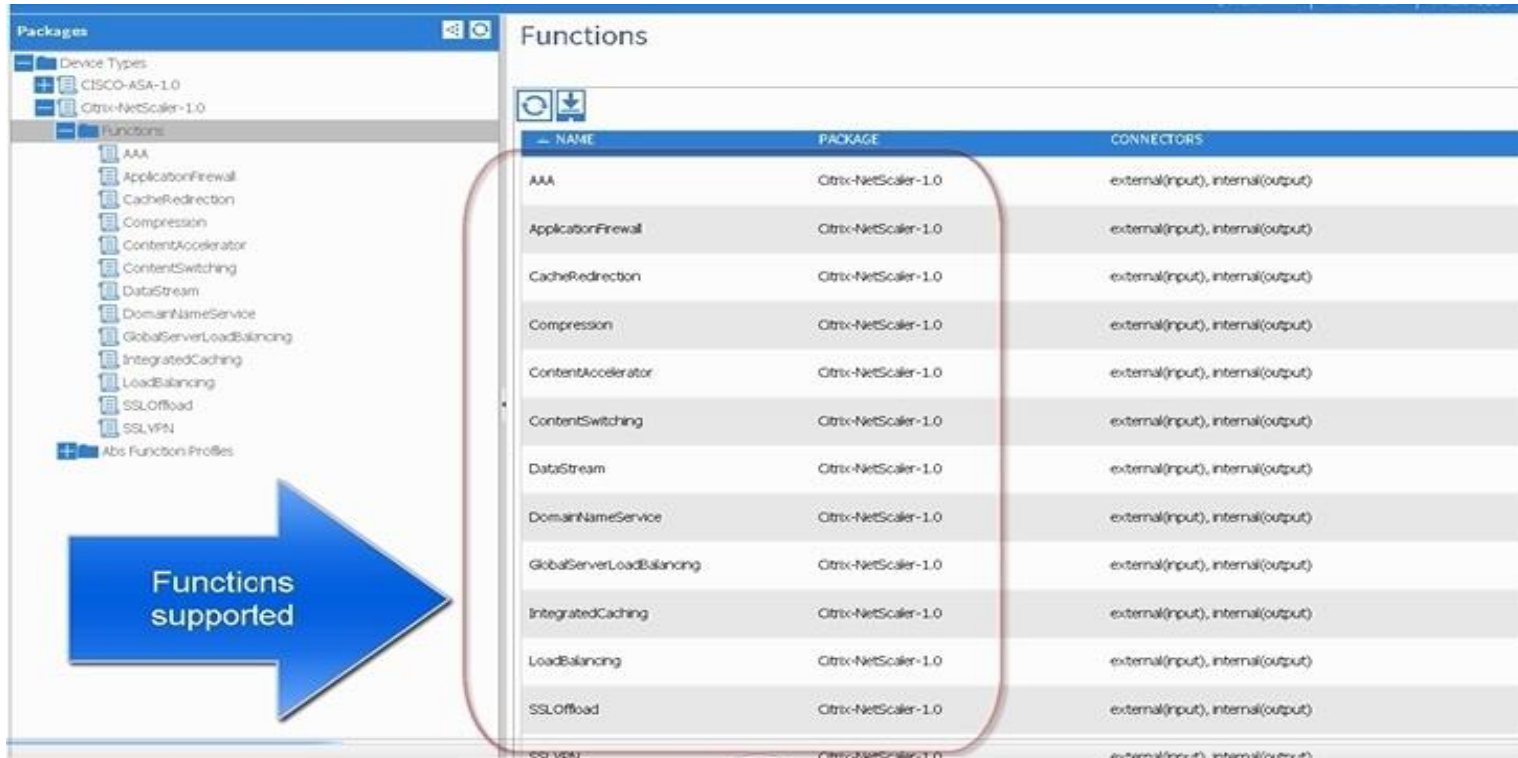
- Common policy, management and operations interface
- Application control and automation over both physical and virtual networking components



**NetScaler integrates with Cisco APIC for L4-L7 ADC**

# APIC DEVICE PACKAGE FOR NETSCALER

- Full NetScaler Feature Set



The screenshot displays the APIC interface with the 'Functions' table for the 'Citrix-NetScaler-1.0' package. A blue arrow labeled 'Functions supported' points to the table. A red oval highlights the table content.

| NAME                      | PACKAGE              | CONNECTORS                        |
|---------------------------|----------------------|-----------------------------------|
| AAA                       | Citrix-NetScaler-1.0 | external(input), internal(output) |
| ApplicationFirewall       | Citrix-NetScaler-1.0 | external(input), internal(output) |
| CacheRedirection          | Citrix-NetScaler-1.0 | external(input), internal(output) |
| Compression               | Citrix-NetScaler-1.0 | external(input), internal(output) |
| ContentAccelerator        | Citrix-NetScaler-1.0 | external(input), internal(output) |
| ContentSwitching          | Citrix-NetScaler-1.0 | external(input), internal(output) |
| DataStream                | Citrix-NetScaler-1.0 | external(input), internal(output) |
| DomainNameService         | Citrix-NetScaler-1.0 | external(input), internal(output) |
| GlobalServerLoadBalancing | Citrix-NetScaler-1.0 | external(input), internal(output) |
| IntegratedCaching         | Citrix-NetScaler-1.0 | external(input), internal(output) |
| LoadBalancing             | Citrix-NetScaler-1.0 | external(input), internal(output) |
| SSLoffload                | Citrix-NetScaler-1.0 | external(input), internal(output) |

# Service Graphs – Drag and Drop Configuration Ease

The screenshot displays the Citrix Service Graph configuration interface. At the top, there are navigation tabs: TENANTS, FABRIC, VM NETWORKING, L4-L7 SERVICES, and ADMIN. Below these, a search bar and tenant selection options are visible. The main area shows a 'Service Graph' configuration window with a blue header 'CREATE L4-L7 SERVICE GRAPH'. On the left, a 'Devices' tree lists various service nodes under 'Citrix' and 'Cisco' categories. The 'Citrix' category is expanded, showing nodes like LoadBalancing, GlobalServerLoadBalancing, ContentAccelerator, SSLOffload, SSLVPN, Compression, ApplicationFirewall, CacheRedirection, IntegratedCaching, DomainNameService, ContentSwitching, AAA, and DataStream. On the right, a diagram shows a service graph with three nodes: N1 (Citrix SSLVPN), N2 (Cisco Firewall), and N3 (Citrix LoadBa...). The nodes are connected in a sequence: 'To Consumer EPG' connects to N1 (port 1 Int), N1 connects to N2 (port 2 Ext to port 1 Int), N2 connects to N3 (port 2 Ext to port 1 Int), and N3 connects to 'To Provider EPG' (port 2 Ext). Below the diagram, there are input fields for 'Name' (VPN\_FW\_ADC1) and 'Description' (optional). At the bottom right, there are 'SUBMIT' and 'CANCEL' buttons.

TENANTS FABRIC VM NETWORKING L4-L7 SERVICES ADMIN

ALL TENANTS | ADD TENANT | search by name | common | Acme | AcmeIntra | coke | nigrnt

Service Graph

CREATE L4-L7 SERVICE GRAPH

Drag tree node to create L4-L7 service nodes

Devices

- CISCO
- Firewall
- Citrix
  - LoadBalancing
  - GlobalServerLoadBalancing
  - ContentAccelerator
  - SSLOffload
  - SSLVPN
  - Compression
  - ApplicationFirewall
  - CacheRedirection
  - IntegratedCaching
  - DomainNameService
  - ContentSwitching
  - AAA
  - DataStream

Name: VPN\_FW\_ADC1

Description: optional

To Consumer EPG

1 Int

2 Ext

1 Int

2 Ext

1 Int

2 Ext

To Provider EPG

SUBMIT CANCEL



# Q&A

**CITRIX<sup>®</sup>**