

SpringOne Platform by Pivotal.

PCF in the Land of NSX: A Closer Look at PCF with NSX-V vs. NSX-T

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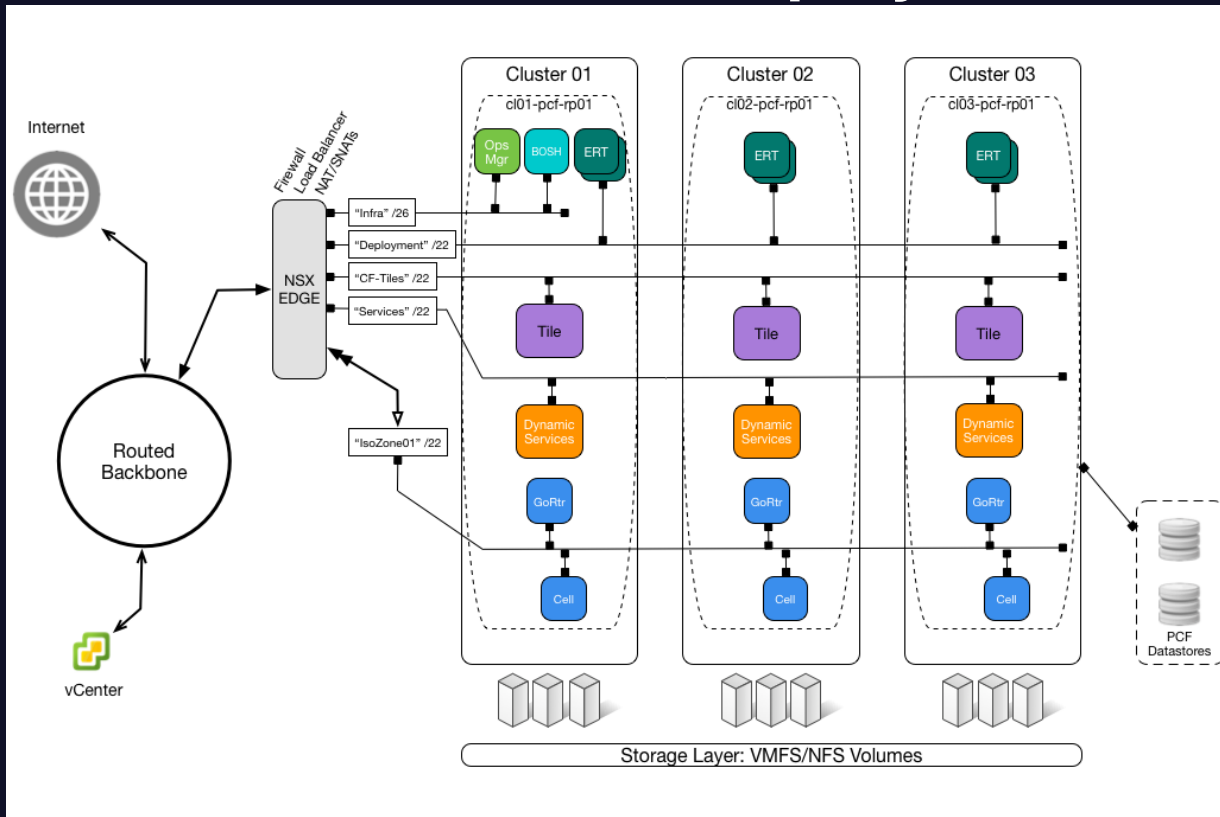
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Agenda

- PCF with NSX-V
 - Ref Deployment Arch
 - NSX-V Edge Gen Tool and Pipeline
 - Demo
- NSX-V vs. NSX-T
- NSX-T Drill down
 - NSX-T Router Design
 - NSX-T Network Setup
- PAS + NSX-T
 - NSX-T PCF Design
 - NSX-T Routing Configuration with PAS
 - App Security
 - Demo
- Q and A

PCF with NSX-V : Reference Deployment Architecture



PCF with NSX-V: current approach

- Default NSX-V Edge creation and maintenance
 - Complex steps
 - Manual
 - Time consuming
 - Tedious
 - Error prone

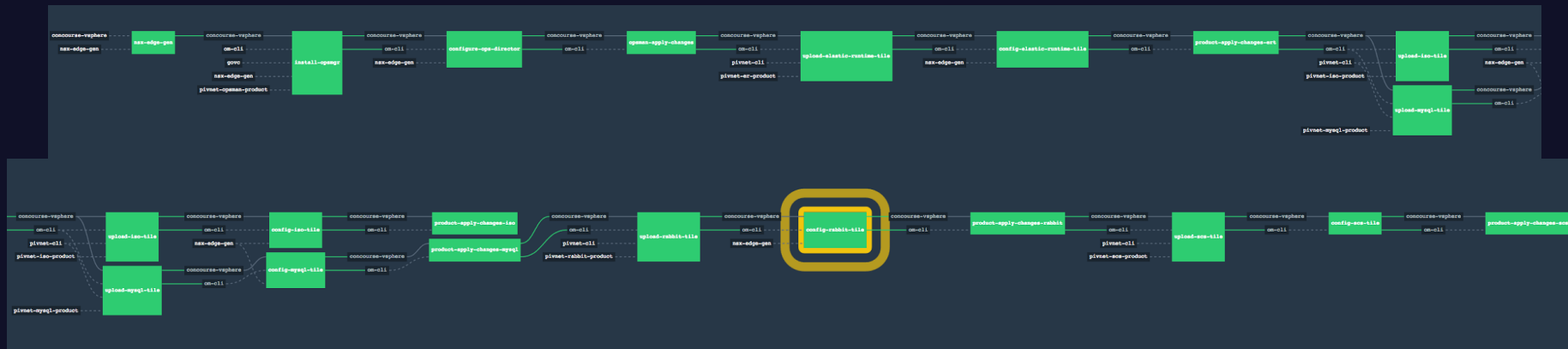
PCF with NSX-V - Automation

- nsx-edge-gen
 - Tooling to automatically create NSX-V Edge instance
 - Templated to support PCF v1.x Reference arch
 - Extensible (enable DLR, multiple iso zones)
 - Create edge instances in minutes
 - Consistent results
 - Github Repo
 - <https://github.com/cf-platform-eng/nsx-edge-gen/>

PCF with NSX-V - Automation

- nsx-ci-pipeline
 - One Click deployment driven via pipeline
 - Uses Concourse Pipeline
 - Creation of NSX-V Edge instance
 - Full install and deployment of Pivotal Ops Mgr, ERT, MySQL, RabbitMQ, SCS tiles (PCF 1.x versions)
 - Security Group integration for components (GoRouter, Tcp Router, MySQL/RabbitMQ Proxies) bound to Edge Load Balancer
 - Github Repo
 - <https://github.com/cf-platform-eng/nsx-ci-pipeline>

Pipelines



For more details

- <https://allthingsmdw.blogspot.com/2017/08/automating-nsx-integration-with-pcf.html>

Demo: nsx-edge-gen

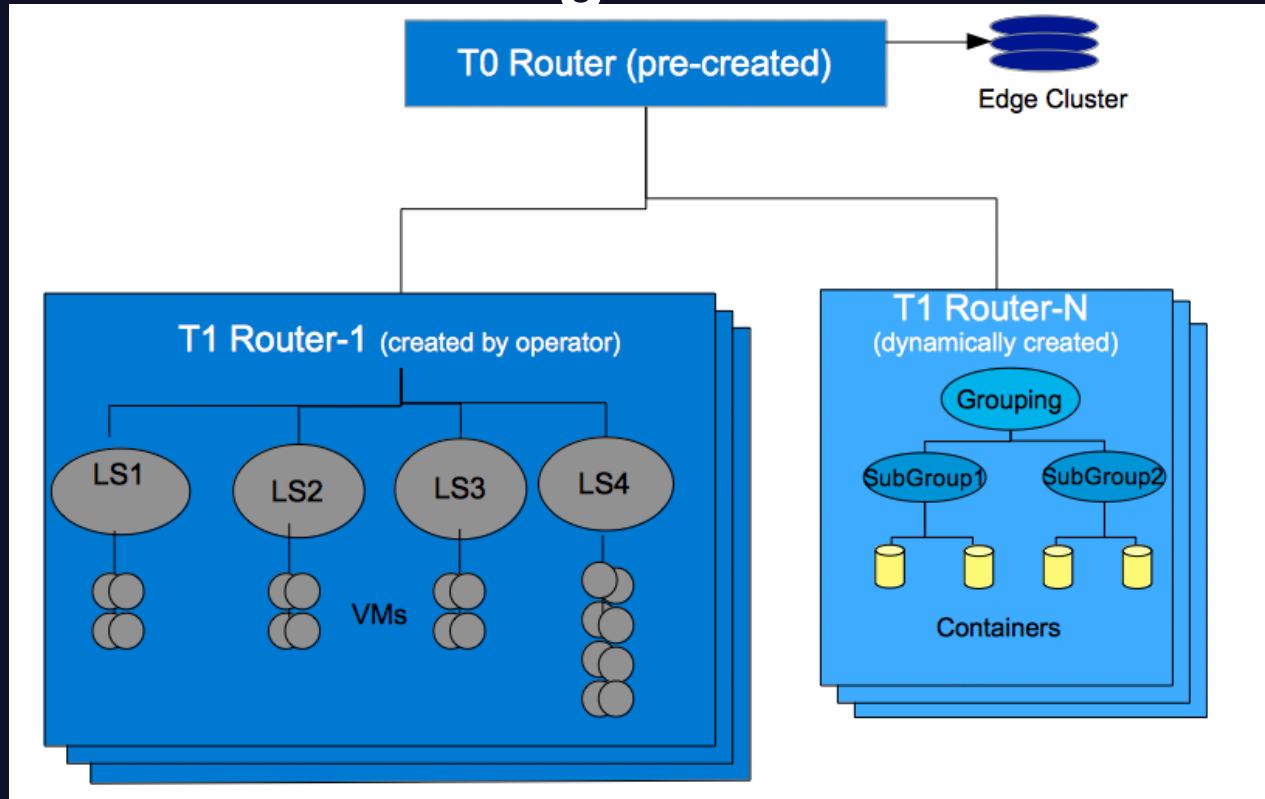
NSX-V vs NSX-T

Feature	NSX-V	NSX-T
Native Container Support	No	Yes (Docker, K8S, PAS)
Encapsulation	VLAN	Geneve
Form Factor	VMs only	VM or Bare metal
Hypervisor	ESXi only	Multi-Hypervisor: ESXi and KVM (RHEL and Ubuntu)
vCenter Integration	Tightly integrated	Can be standalone (public cloud support in future)
User creates	Edges	Logical Routers (T0/T1 Routers) and switches

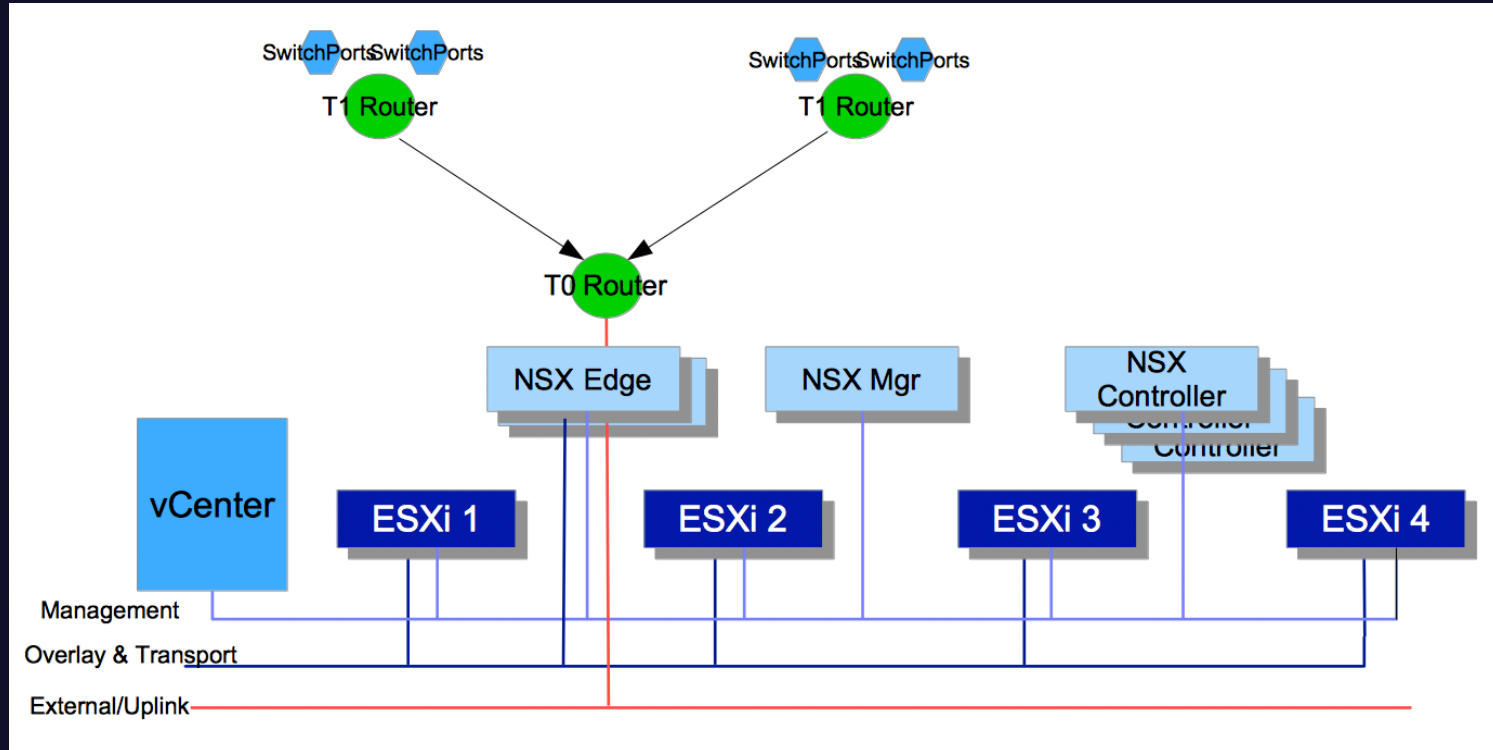
NSX-V vs NSX-T...

Feature	NSX-V	NSX-T
Entry/Exit	Edge uses Uplink IPs	BGP or Floating IPs (via T0 Router)
Security Groups	At VM Level (via Bosh) and Isolation Zones	Fine grained; VM and Container level (ASGs, App policies, DFW)
PCF Foundations	One per Edge	Only one T0 Router per Edge instance. Harder to use cookie cutter approach
OSPF Support	Yes	No
PCF version support	PCF 1.x and 2.x at Bosh level	PCF 2.0 - Bosh and CF CNI
Loadbalancer	On Edge	stretches across hypervisor

NSX-T Router Design

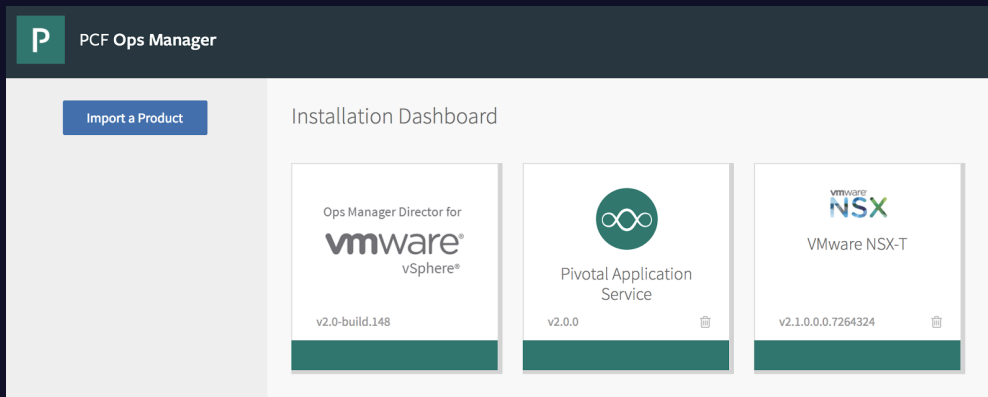


NSX-T Network Setup



PAS + NSX-T Tile

- NSX-T as External CNI Provider for PAS, replacing Silk



☐ Standard vCenter Networking

☒ NSX Networking

NSX Mode*

☐ NSX-V

☒ NSX-T

NSX Address*

Container Network Interface Plugin*

☐ Silk

☒ External

Enable TCP requests to your apps via spe

VMware NSX-T

Settings Status Credentials Logs

NSX Manager

NSX Manager Configuration

NSX Manager Address*

Use Client Certificates or Username/Password*

☐ Client Certificate Authentication

☒ Basic Authentication with Username and Password

NSX-T Design for PAS

NSX

NSX Dashboard

Getting Started

Tools

Load Balancing

Firewall

Encryption

Routing

DDI

Switching

Inventory

Fabric

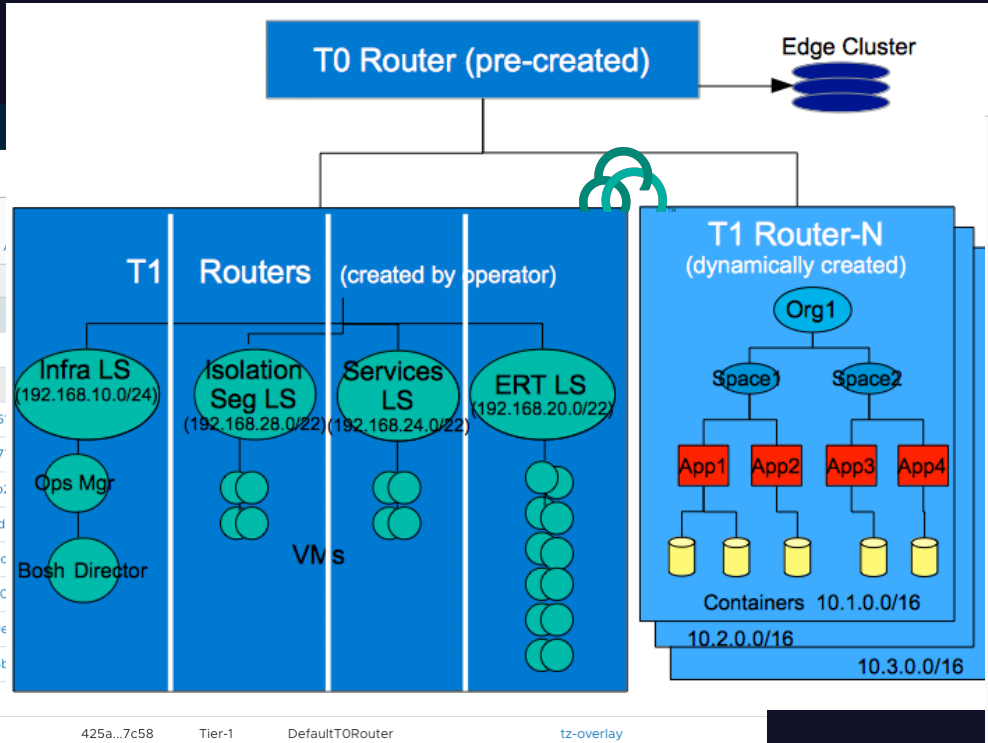
System

Routers NAT

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- ☐ Logical Router ↑
- ☒ DefaultTORouter
- ☐ PAS-TIRouter
- ☐ PCFMgmt-TIRouter
- ☐ pc2.0-CATS-1-ORG-8a5efc975e446
- ☐ pc2.0-CATS-2-ORG-f2c486b78bf67
- ☐ pc2.0-CATS-3-ORG-46aa1b4a12c9b
- ☐ pc2.0-CATS-4-ORG-7e0ec17d4139d
- ☐ pc2.0-CATS-5-ORG-ae7bfbb3d8ec
- ☐ pc2.0-CATS-6-ORG-e67bc4b41a4aC
- ☐ pc2.0-CATS-7-ORG-17c1855968df9e
- ☐ pc2.0-CATS-8-ORG-4ab306598f45t
- ☐ pc2.0-dev
- ☐ pc2.0-system

425a...7c58 Tier-1 DefaultTORouter tz-overlay



Switches Ports Switching Profiles

Switches

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- ☐ Logical Switch ↑
- ☐ dynamic-services
- ☐ ert
- ☐ infra
- ☐ isolation-zone1
- ☐ pc2.0-dev-0
- ☒ pc2.0-system-0
- ☐ services
- ☐ vlan-logical-switch

pc2.0-system-0

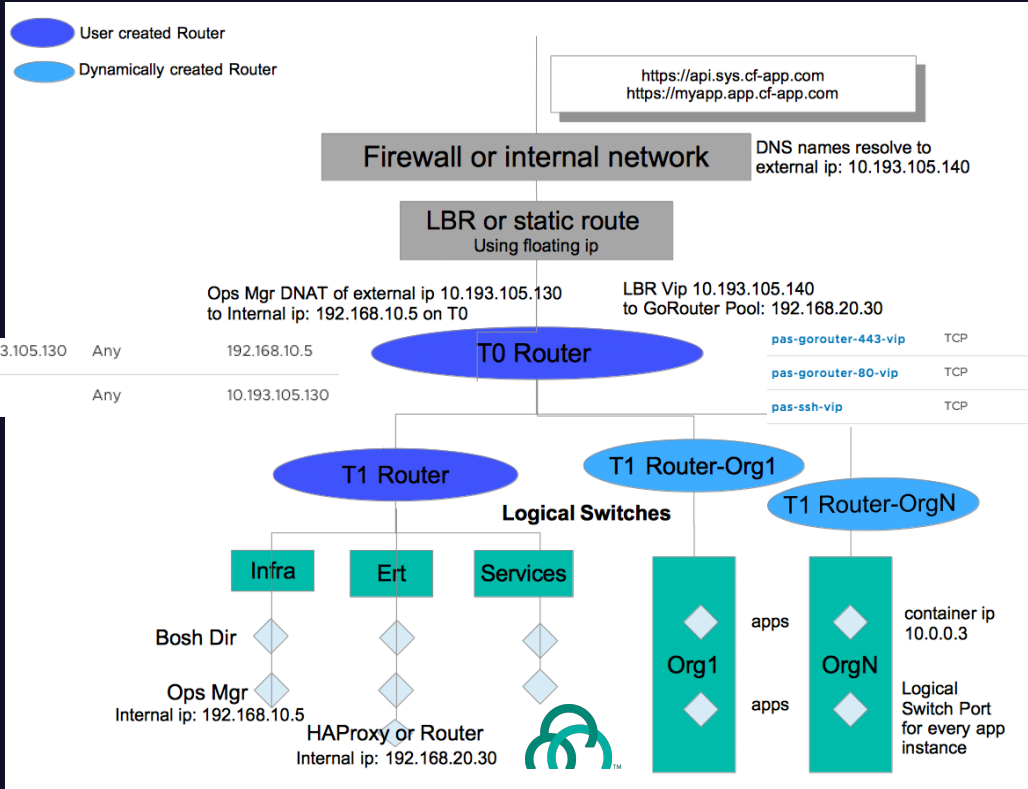
Overview Monitor M

All Ports on Switch

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- ☐ Logical Port ↑
- ☐ 5e01bde3-b1f6-4a4e-
- ☐ pc2.0-0-app-usage-
- ☐ pc2.0-0-app-usage-
- ☐ pc2.0-0-app-usage-
- ☐ pc2.0-0-apps-manag-
- ☐ pc2.0-0-autoscale
- ☐ pc2.0-0-notifications
- ☐ pc2.0-0-p-invitations
- ☐ pc2.0-0-pivotal-acco
- ☐ pc2.0-1-app-usage-s
- ☐ pc2.0-1-apps-manag
- ☐ pc2.0-1-notifications
- ☐ pc2.0-1-p-invitations
- ☐ pc2.0-1-pivotal-acco
- ☐ pc2.0-2-apps-manag
- ☐ pc2.0-3-apps-manag
- ☐ pc2.0-4-apps-manag
- ☐ pc2.0-5-apps-manag

NSX-T Routing Configuration



App Security

- Support for ASGs
- Support for container to container policies
- Distributed firewalls
- Micro-segmentation
 - Fine grained control
 - Identification of apps to external services/parties

The screenshot displays the VMware NSX Firewall configuration page. The left sidebar contains navigation links: Dashboard, Getting Started, Tools, Load Balancing, Firewall (selected), Encryption, Routing, DDI, and Switching. The main panel shows the 'General' tab for a firewall rule set. At the top, there are tabs for General, Ethernet, Exclusion List, and Settings. Below these are action buttons: + ADD RULE, + ADD SECTION, DELETE, MOVE UP, MOVE DOWN, and ACTIONS. A table lists the configured rules with columns for #, Name, ID, Sources, Destinations, and Stats.

#	Name	ID	Sources	Destinations	Stats
1	asg-pcf2.0-public_networks	ba45cfb0-43c0-497d-8d95-0f1f06...		Stateful	Applied To: 2
2	asg-pcf2.0-dns	875fac5b-ee09-4f99-89dc-883d1a7...		Stateful	Applied To: 2
3	np-pcf2.0-backend	c75cec02-1282-4e71-a6bb-fc6540d...		Stateful	Applied To: 1
4	asg-pcf2.0-default_security_group	b94e1858-e878-445c-a490-2f0112c...		Stateful	Applied To: 2
5	is-pcf2.0-system	16114daa-b644-4253-851e-8be979f...		Stateful	Applied To: 1

Demo: NSX-T

Questions ?

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Check out

<https://allthingsmdw.blogspot.com/2017/08/automating-nsx-integration-with-pcf.html>

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