

FUTUREWAN'17

The **SD-WAN** Virtual Summit

#FutureWAN

anuta  networks

Network Orchestration for Managed Branch Services

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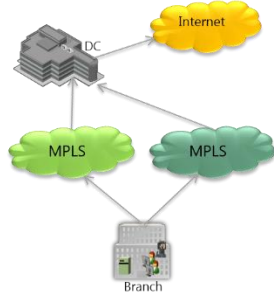
Agenda

- Challenges for Managed Branch Services
- Anuta NCX Solution Overview
- Customer Deployments

WAN / Branch Challenges

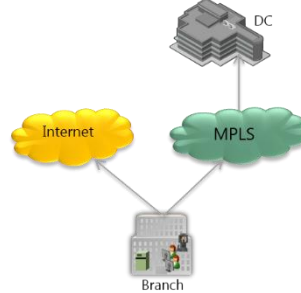
Goal: Reduce WAN Bandwidth Costs and Improve Application Performance

Dual MPLS



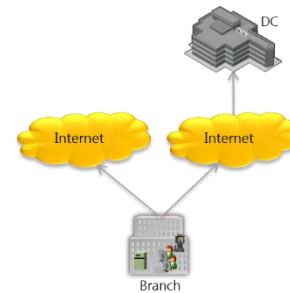
Best SLA
Very Expensive

MPLS + Internet



Balanced SLA
Medium Price

Dual Internet



Weak SLA
Best Price

Challenge: Managing Multi-Vendor branch networks at the scale of '00s

Field Tech Support – Scaling and OPEX

Goals	Day-1	Day-2 to Year 4
Business Goals (New/Refresh Branch)	Increase Revenue & Grow Business	Maintain Business Continuity
Technical Requirements of New / Refresh Branch	Procurement & Logistics	Network Monitoring & Performance Optimization
	Physical Installation	Re-Design & Changes to Network Services
	Manually Provision Management Interfaces	Network Services Troubleshooting
	Manually Provision L2 & L3 Configuration	Device RMA / Dead
	Enable Advanced Services QoS, ACL, Application Policies	H/W & S/W Upgrades
	Enable Applications (Firewall, Wan-Op, ZBF, IPS, VPN, Unified Comms)	Deploy New Applications & Additional Devices
OPEX Costs	Setup Costs	Scale Out
		Orchestrator helps to reduce cost & manage all operations

Telco/SP/Fortune 500 Top of the mind

Business Needs

- Agile Network Service Delivery
- Business Intent based Service orchestration
- **Standardization** of network services
- Self-service
- **Brownfield** Network & Service **Discovery**
- Migration path to SDN/NFV
- X-Domain, X-Platform, X-Technology, X-Form-Factor
- Visibility into Infrastructure & Service
- Configuration Drift & Compliance
- Role based Access & **Tenancy**
- Reduce Human errors

S/W Architecture Expectations

- **Pluggable**
- Highly Available
- Highly Scalable, Micro Services & Federated
- **Standards based**
- 100% Open APIs
- Horizontally Scalable
- Geo redundant (DR)
- **Vendor, Technology & Domain Neutral**
- Resilient, Hardened, Enterprise, Telco Grade

Anuta Networks

Company

- Extensive Experience in Networking and model driven Architecture
- Global Operations - Americas, India, ANZ, Asia-PAC and EMEA

Product

- Multi-Vendor YANG driven Software only platform (35+ Vendors, 100+ Platforms)
- Pluggable & Micro services oriented Architecture
- Horizontally scalable with Multi-Tenancy

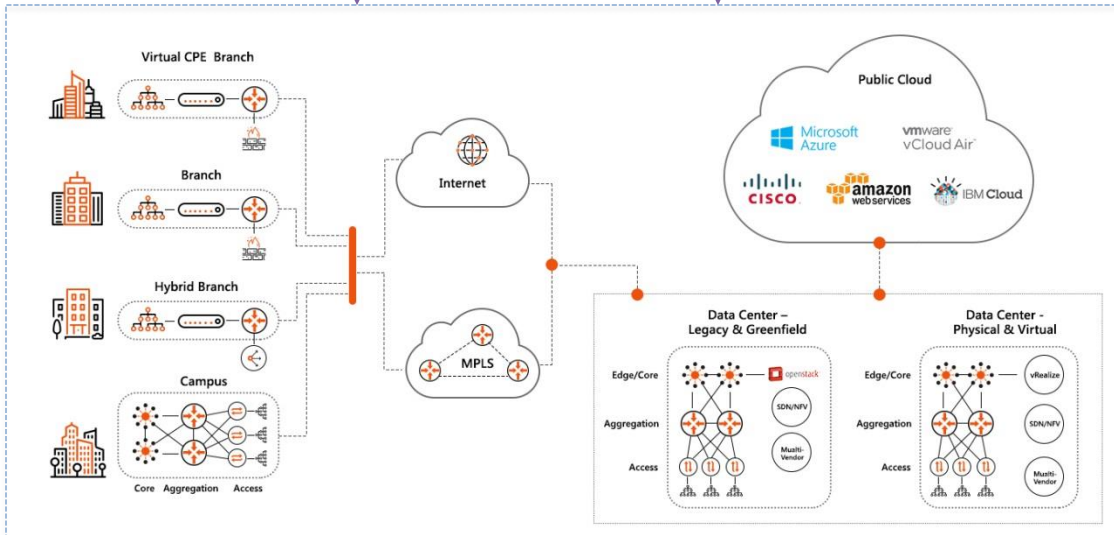
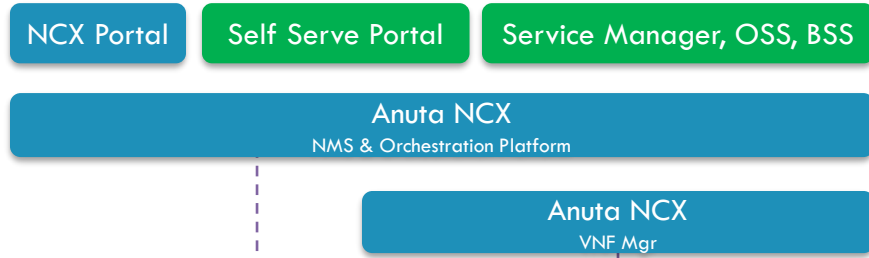
Our Mission

- Model driven agile network services
- Deliver Platform & SDK to enable customer & partners Apps

Customers

- Production deployments with Fortune 100 Enterprise & SP & Managed Services Providers
- Deployed across Americas, ANZ, Asia-PAC and EMEA

Anuta NCX Orchestration Platform



Orchestration for
Multiple
Networking
Domains

NCX ROI – 6 Branches per year

Description	Total
NCX Price – Annual Subscription License + Setup	\$ 40,560
NCX Savings in OPEX for 1 year	\$ 54,577
NCX savings due to low outages in 1 year	\$ 24,000
Total NCX Savings for 1 year	\$ 78,577
ROI for 1 year	93 %

Managed Branch Services

- Self-Service and Automated Provisioning
- Customizable workflow enables Tiered Pricing
- Eliminates errors and decreases OPEX

Customer 1



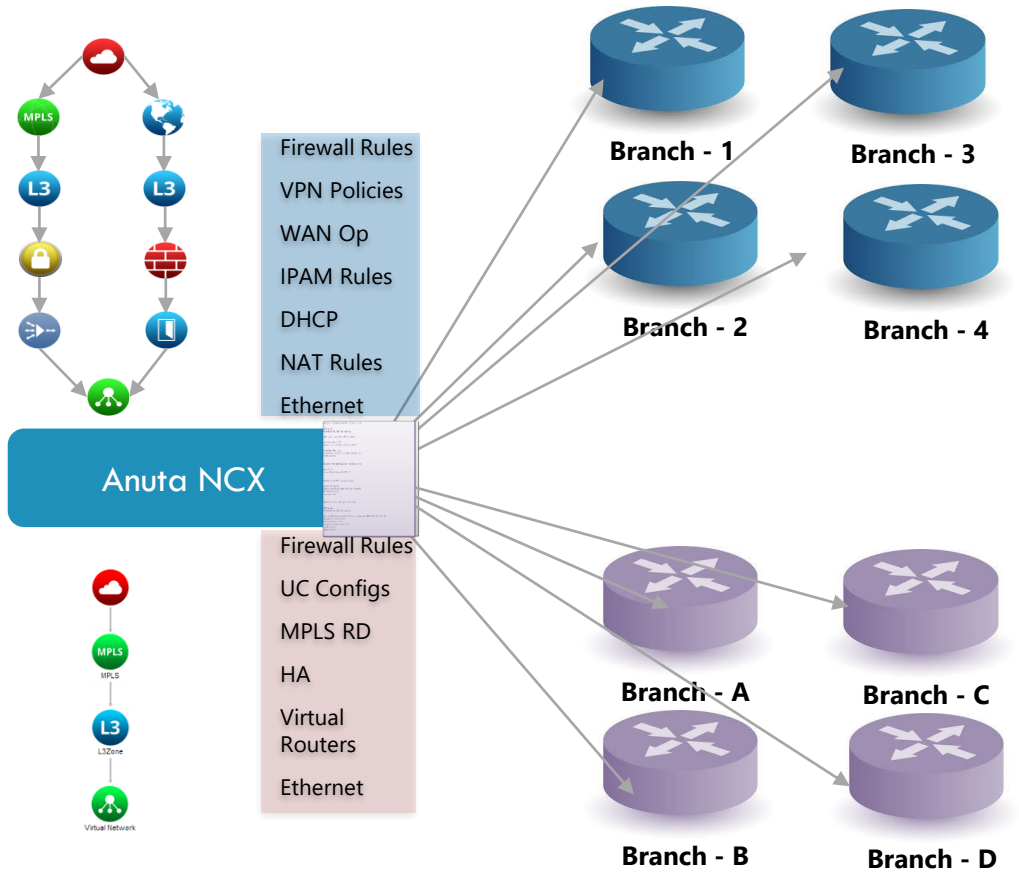
Zone Based Firewall	<input checked="" type="checkbox"/>	AVC	<input checked="" type="checkbox"/>
IPS	<input type="checkbox"/>	IPAM	<input checked="" type="checkbox"/>
VPN	<input checked="" type="checkbox"/>	DHCP	<input checked="" type="checkbox"/>
CME / Unity	<input type="checkbox"/>	NAT	<input checked="" type="checkbox"/>
WAN Optimization	<input checked="" type="checkbox"/>	Virtual Routers	<input checked="" type="checkbox"/>
High Availability	<input checked="" type="checkbox"/>	Ethernet Module	<input checked="" type="checkbox"/>

MSP Self-Service Portal

Customer 2



Zone Based Firewall	<input checked="" type="checkbox"/>	AVC	<input checked="" type="checkbox"/>
IPS	<input type="checkbox"/>	IPAM	<input type="checkbox"/>
VPN	<input type="checkbox"/>	DHCP	<input type="checkbox"/>
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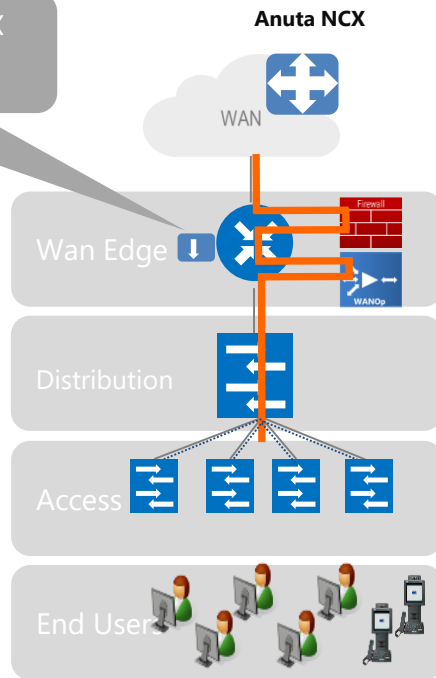
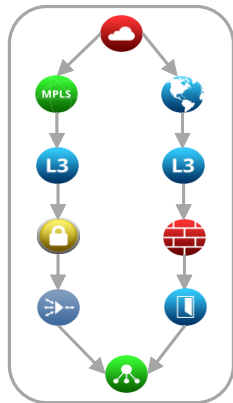


Policy Deployment – Branch On-boarding

- Agent communicates with NCX Server in DC
- Branch functional in minutes

Business Intent:

- Bring up a new secured, and optimized branch
- Must have private WAN to DC and local internet access



Anuta Solution:

- MPLS-VPN for private WAN to DC
- Firewall & Encryption delivering security
- Local internet access
- WAN Optimization
- Automated Documentation of branch network

Zero Touch

- Provisions L2, L3, ACL, QOS, Firewall, IPS, Site-to-Site VPN, MPLS-VPN, Encryption, Management N/w

Solution Benefits:

- Dramatically Reduced OpEx
- Higher Customer Sat
- Satisfies industry compliance
- Eases Troubleshooting

Policy Management

Business Intent:

- World Wide block Netflix, Facebook, Dropbox access

Zone Based Firewall	<input checked="" type="checkbox"/>	AVC	<input checked="" type="checkbox"/>
IPS	<input type="checkbox"/>	IPAM	<input type="checkbox"/>
VPN	<input type="checkbox"/>	DHCP	<input type="checkbox"/>
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Anuta NCX server



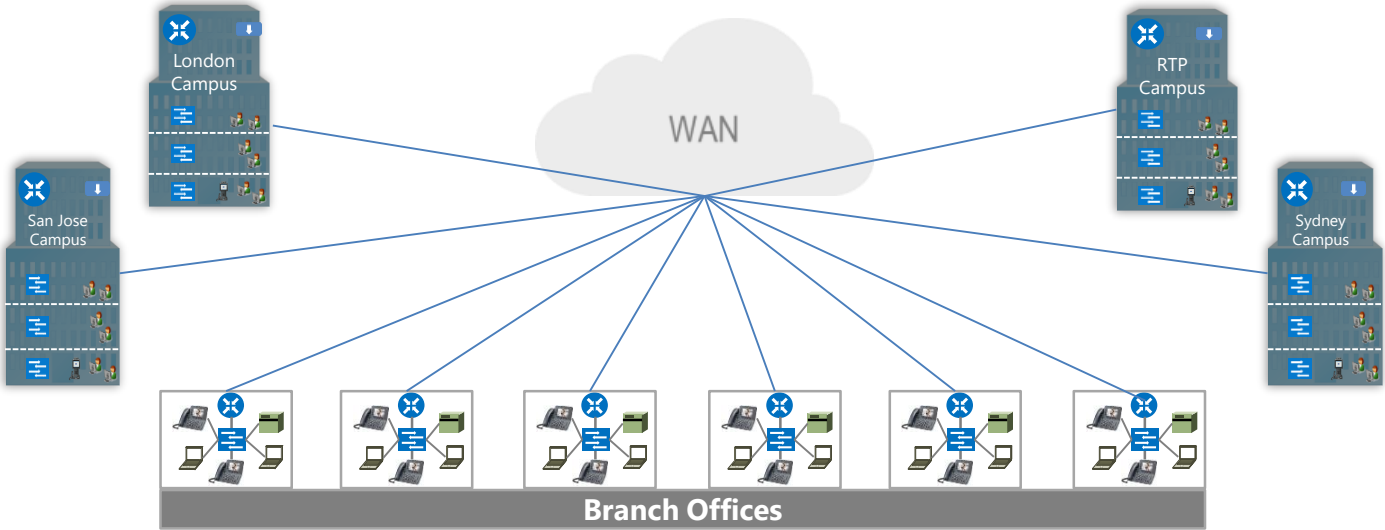
Anuta Solution:

Policy based updates

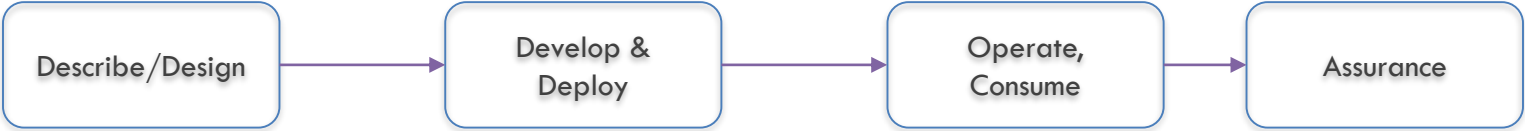
- Simple to create policies
- Instantaneous campus & branch updates

Solution Benefits:

- Rapid policy delivery
- Dramatically Reduced OpEx
- Extreme scale



Service Delivery Life Cycle (DevOps View)



Product Manager
Service Owner

NCX starter kits for
vCPE, SD-WAN, L3
VPNs etc.



DevOps

Customer Extensions
using SDK



Operations
Tenants
LOB

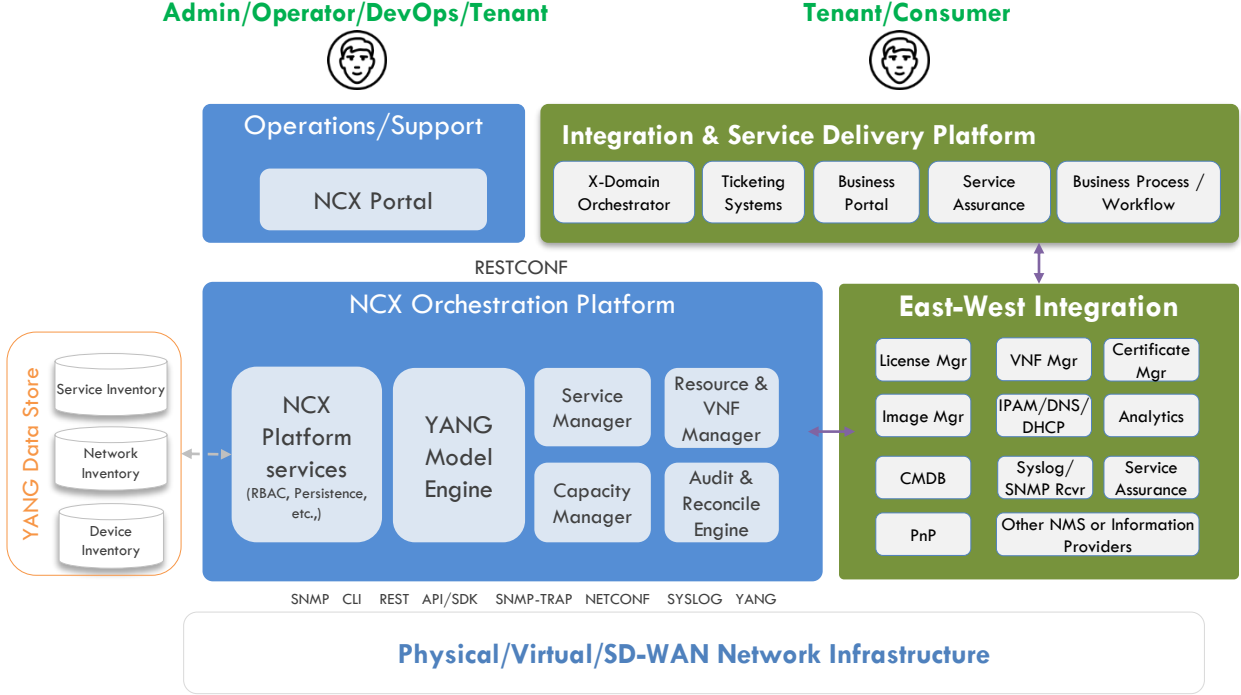
Service Catalogs
and On-demand
Service Provisioning



Operations

KPI Model-driven
Assurance and
Reconciliation

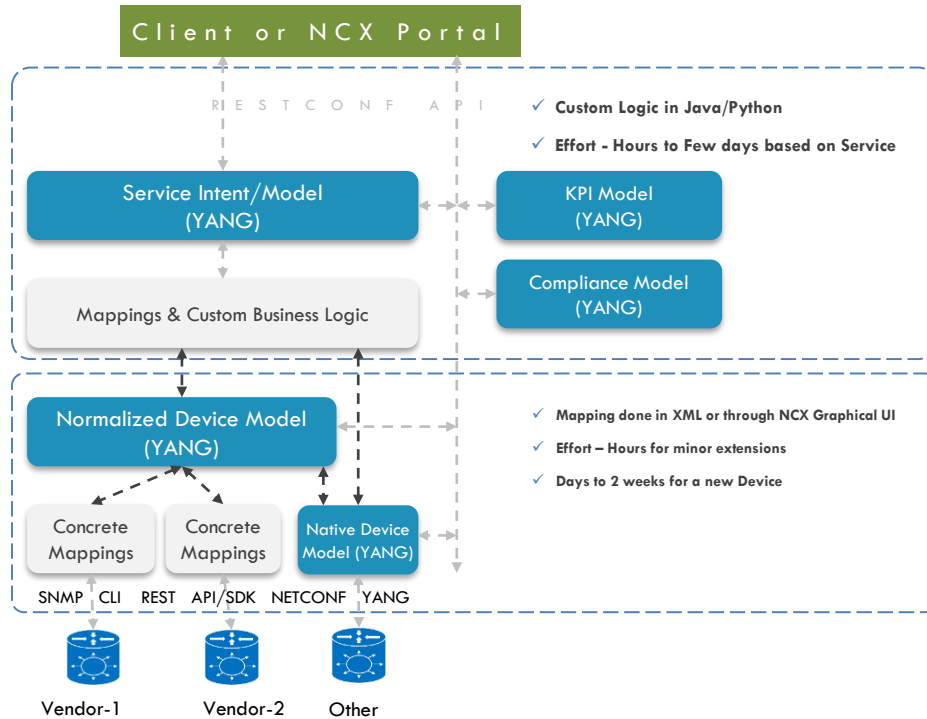
NCX High level Architecture



- **ANY** Network Service or Application
- **ANY** Technology or Architecture
- **ANY** Vendor, Platform or Device Type
- **ANY** Southbound Interface (CLI, REST, YANG, NETCONF etc.,)
- YANG Model Driven Device, Network and Service

Model Driven, Layered and abstraction approach helps in delivering vendor neutral, extensible and maintainable services

Pluggable Extensible Platform



- **Significant Out-of-the-box support – Device Models, Vendor Validated Designs/Service Models**

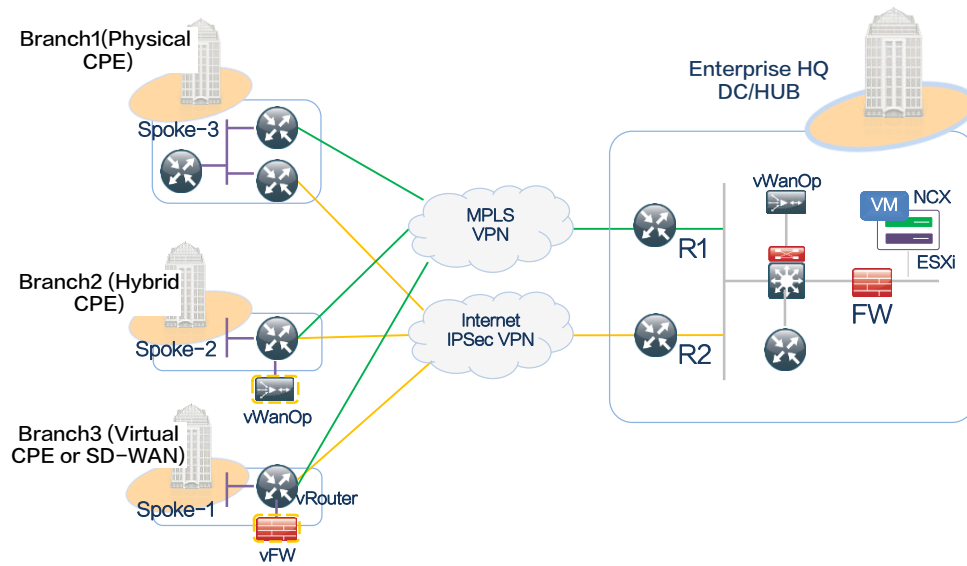
- **Extensible**

- > 35 Vendors Supported
- > 100+ Device platforms supported
- > 10,000+ Device Commands/APIs mapped
- Out of the Box Device Models, Model Mappings & Best Practice Service Models for:
 - Public Cloud, Private Cloud with SDN server
 - Carrier Core / Mobile backhaul
 - Branch, Campus, Data Center Interconnect
 - SD-WAN, Virtual CPE & NFV Use cases
 - OpenStack or VIM
 - Mobile Packet Core
 - Metro Ethernet, Optical
 - L3VPN / Wholesale Services

Network Service Examples

- ✓ Layer-3 VPN, Layer-2 VPN
- ✓ Application Container
- ✓ Load Balancer As a Service
- ✓ Security as A Service
- ✓ Find Unused Ports on a Switch
- ✓ QOS Assessment and remediation
- ✓ Bulk AAA and User management changes
- ✓ Security Vulnerability assessment

Use case: Branch Automation



Service agility to Branch infrastructure : Traditional CPE, SD-WAN, Virtual CPE, or Cloud CPE

Day-0 and Other Services

- PnP, Bulk Configuration
- Virtual Appliance Deployment
- Branch Resource Management – Capacity, health and metrics
- Audit Log

Branch Service Chaining and Dynamic Services

- App Visibility, QOS, NAT
- MPLS L3VPN, IPSec VPN over MPLS or Business Internet
- Wan Optimization
- Security – Zone Based Firewall, Web Security
- Port Security, IP DHCP Relay
- Layer-2 Networks – Traditional STP, Fabric Path, Hybrid Networks
- Static and Dynamic Routing (RIP, OSPF, BGP etc.,...)
- First Hop Redundancy – HSRP, VRRP, GLBP
- Policy Based Routing, Route Redistribution and Route Filters
- Site to Site IPSec, Remote Access VPN

Day-1–Day-N Branch MACDs

- Add/Update/Delete Firewall Zone Rules on all Branches
- Add/Update/Delete WAN Optimization Policy
- Add/Update/Delete of Layer2, Layer3, Security and Other configuration

Case Study – Branch Automation at Tier-1 MSP in APAC

Use case and Challenges

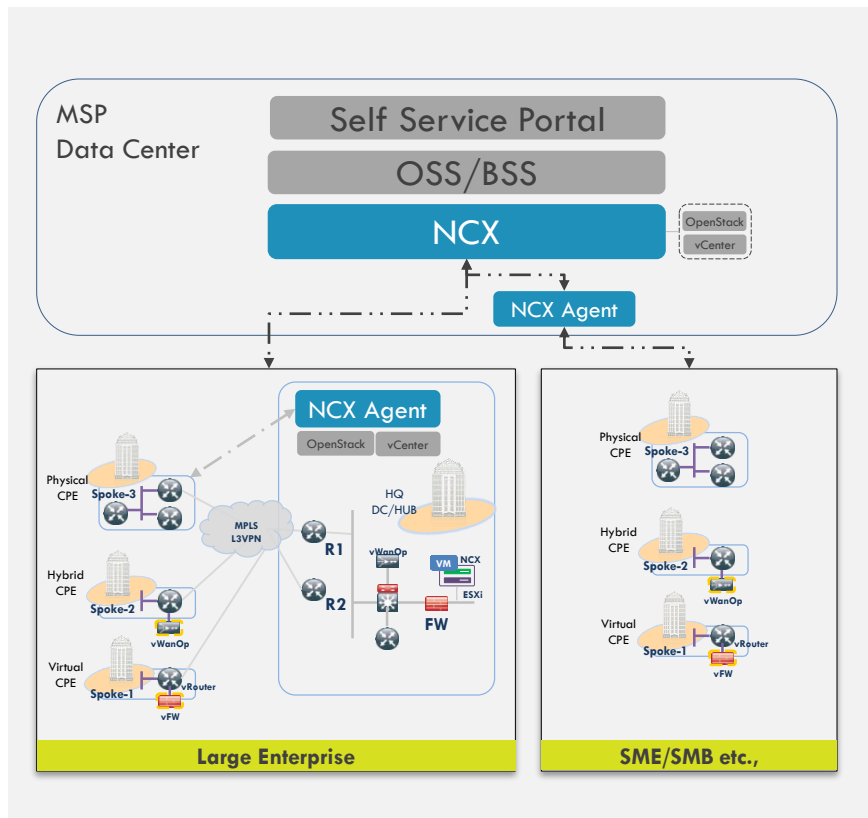
- Branch Automation for Managed Service Customer
- Automate and manage the Branch Router for customers who avail L3VPN service
- Multi-Vendor, Physical, Hybrid and Virtual Network Services
- Triggered policy push , Ability to switch over the traffic from primary WAN to secondary WAN.

Profile

- One of the largest Telco
- > 100K CPE or Branch Locations from 1000+ customers
- Global Presence

Solution

- IETF YANG Based NCX Network Services Platform
- ZTD of new Branch
- NCX as the orchestrator performs ZTD of new branches and manage the MSP managed CPE devices.
- NCX monitors the KPI of the CPE and trigger the traffic over secondary CPE device by modifying the relevant configurations.



Case Study – Managed Enterprise Services



Use case and Challenges

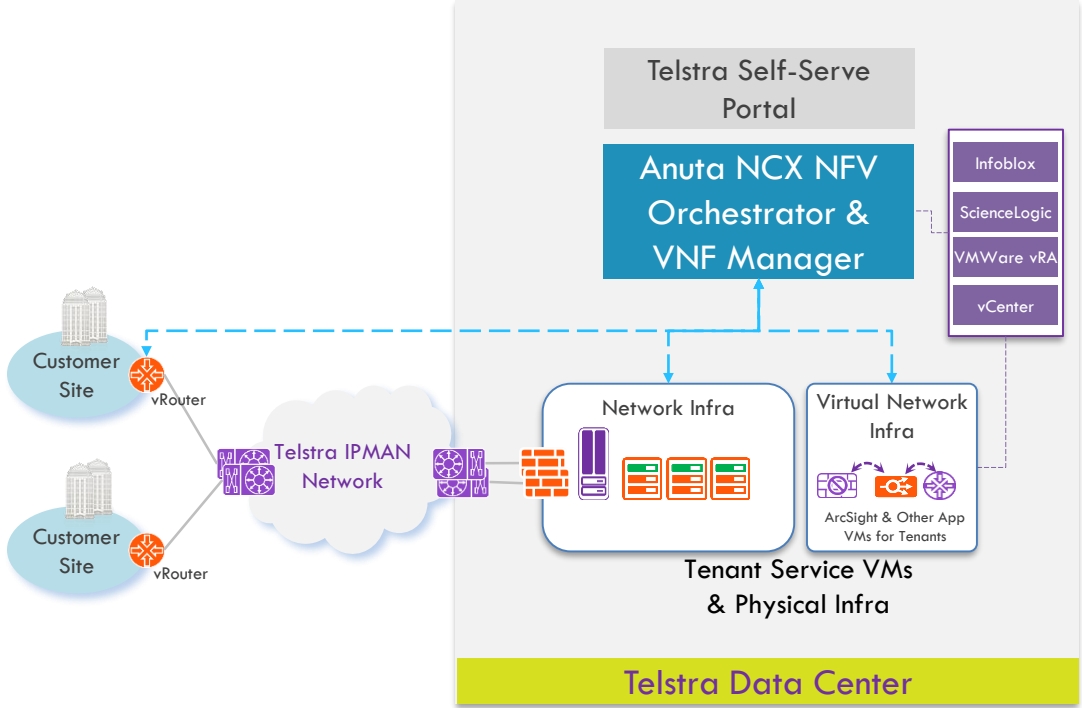
- Manual activation of Customer vCPE devices
- Activation of new management services takes months
- Operator driven instead of Customer self-service driven

Profile

- Major Tier1 MSP serving over 7000 managed network customers and over 120,000 CPE devices

Solution

- Customer Self-service user service activation/de-activation and reporting
- Differentiated service offering with integration into VMware vRealize, ScienceLogic
- Integration with Infoblox for IPAM, Cisco ACS for Secure authentication
- YANG based Extensible Platform to support future growth and requirements



Case Study - vCPE at Tier1 MSP

Use case and Challenges

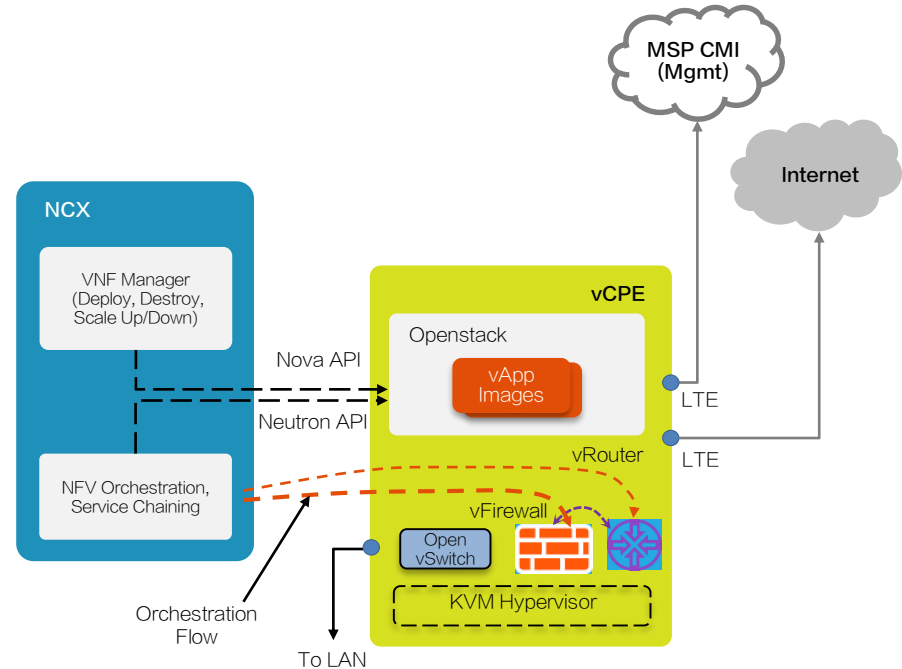
- Need for a turn-key CPE solution for retail business customers with faster speed to market
- Current deployment model for retail CPEs inefficient due to the geographic spread, shortage of skilled local engineers and servicing costs of hardware

Profile

- Major Tier1 MSP serving over 7000 managed network customers and over 60,000 CPE devices
- Looking to fill a key gap in the Retail space with Virtual CPE solution that can be bought over the counter from MSP outlets

Solution

- x86 hardware, Ubuntu Linux and KVM hypervisor
- Brocade Vyatta as vRouter, Juniper vSRX as vFirewall
- Openstack as the virtual infrastructure manager
- OVS orchestrated via Openstack API
- NCX as the VNF Manager and performing end to end orchestration and service chaining



Summary of Network Orchestrator

- Automates configurations for all SD-WAN features in hybrid deployments.
- Support for IETF YANG standard allows extensibility and full customization.
- Helps on-board hundreds of new and existing branches within days.
- Simple GUI deploys network policies to thousands of devices and avoids human errors.
- Supports Zero Touch Deployment, Multi-Tenancy & Config Reconciliation.
- Reduces OPEX

Recommended FutureWAN'17 Sessions

- ◆ Voice of the Customer: First American's SD-WAN Transformation
- ◆ What To Ask Your Vendor on Enterprise SD-WAN Capabilities
- ◆ Office 365 and SaaS Optimization with SD-WAN
- ◆ Analyst Keynote: Building the SD-WAN Business Case (Nemertes Research)

Access All Summit Sessions

<http://viptela.com/futurewan-sd-wan-virtual-summit/>

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