



Verizon's Thoughts on ONAP

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Verizon Cloud Platform (VCP)

Core

Core:

- Wireline and Wireless
- Centralized locations
- Signaling applications

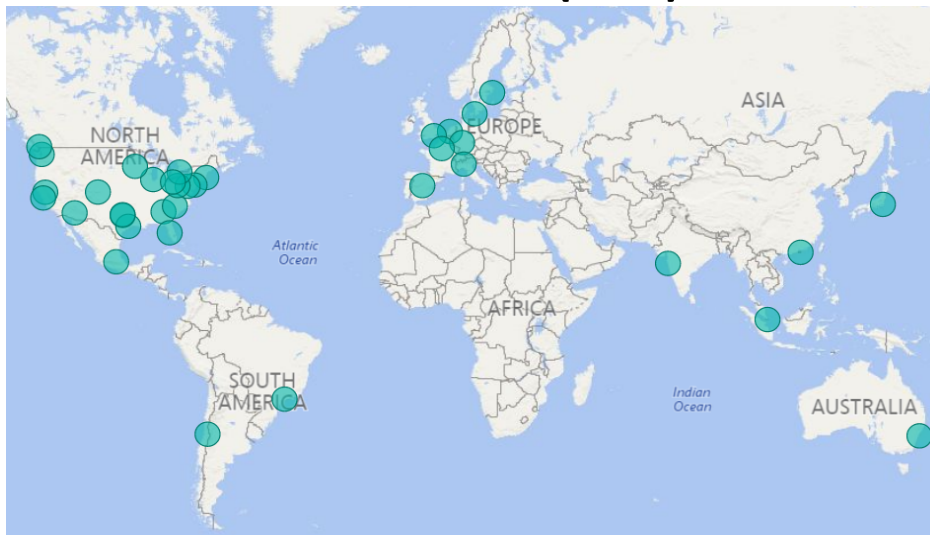
Lite:

- Global presence
- Close to users
- Reduced footprint

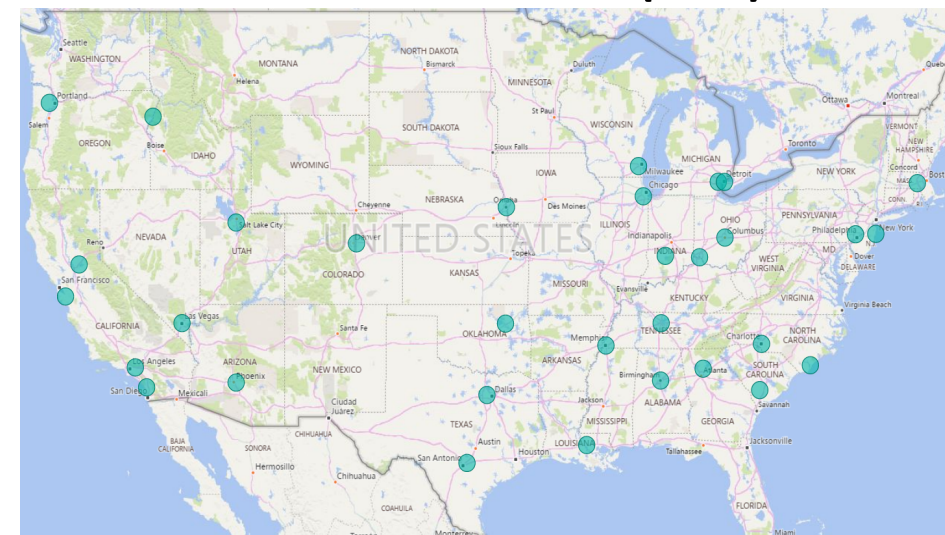
Edge

- Wireless SAP locations (NEBS compliant HW)
- Bearer closer to the user
- Local Internet access

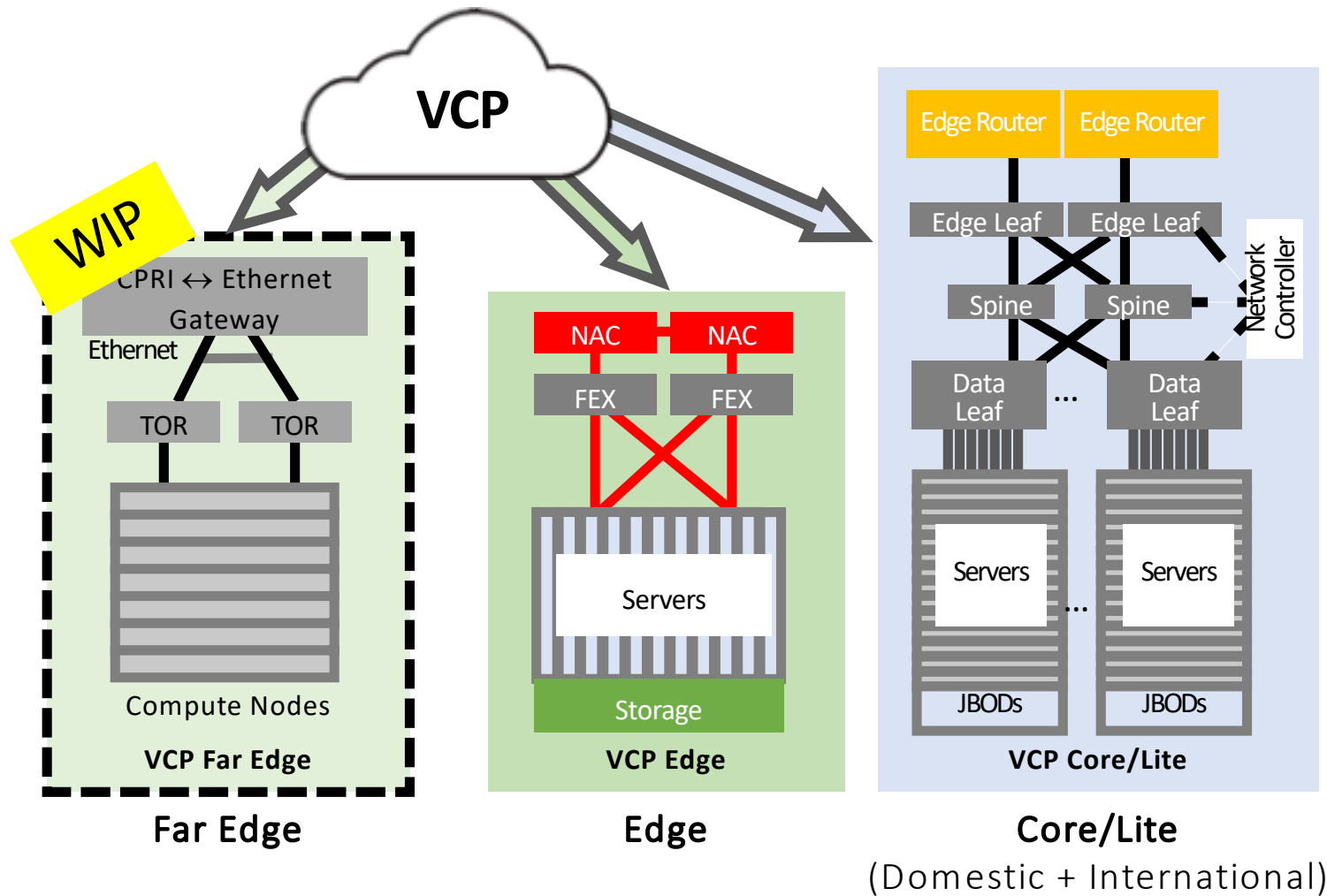
Global Sites (Live)



Domestic Sites (Live)



VCP Flavors

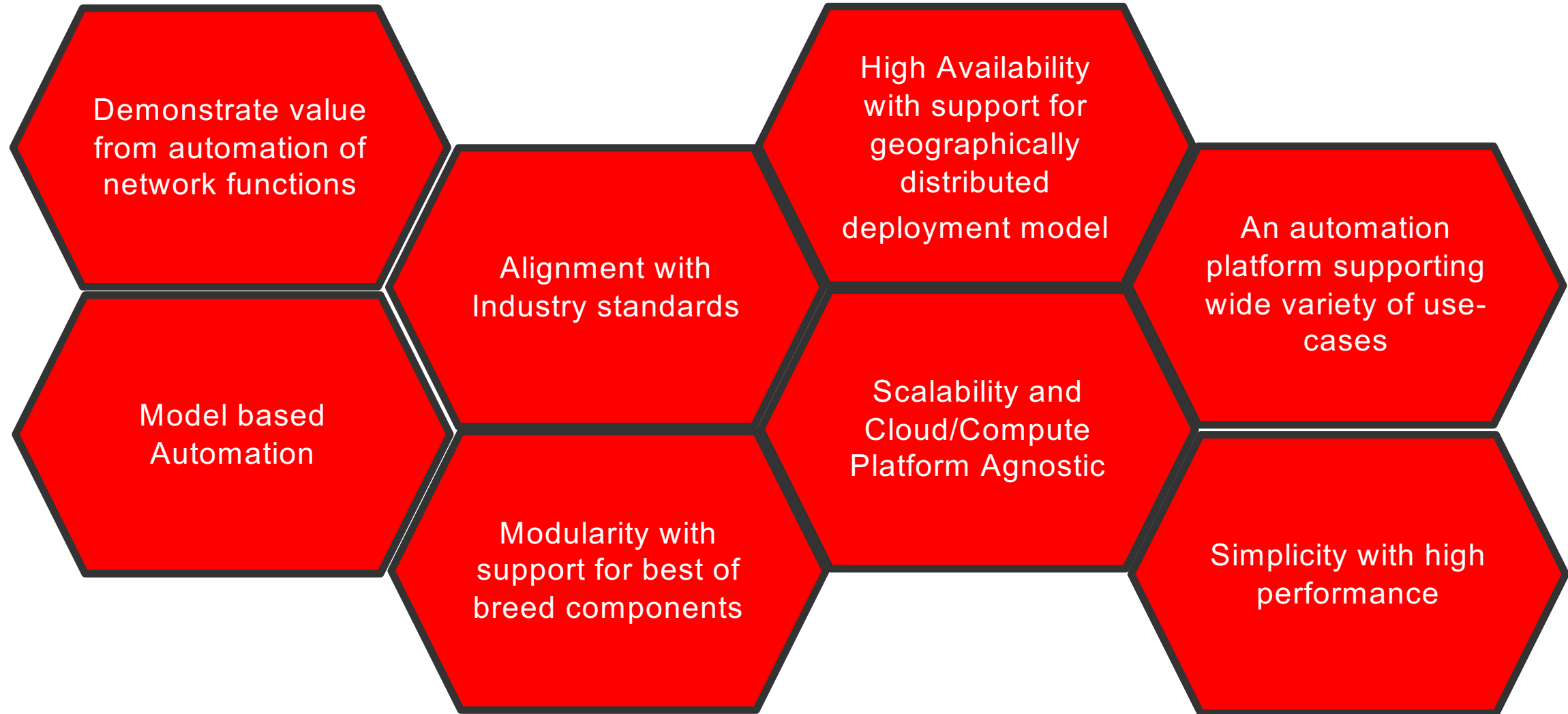


- Common experience to workloads across different physical locations and implementations
- Infrastructure services to support both VMs and Containers
- Placement based on multiple requirements (Latency, Proximity, Network Slice, Resource Availability)
- Seamless migration of workloads between VCP flavors & locations

Verizon Applications

- Many different kinds of profiles
 - Data movers
 - Little persistent data, very high bandwidth, latency critical.
 - High Packet Rate
 - Messaging
 - Large persistent data, high bandwidth, performance sensitive.
 - High Transaction Rate
 - Back office – More like traditional web workloads
- Virtual Network Functions
 - A mix of components of these profiles
 - Distributed over multiple locations (latency sensitivity)
 - Geo-diversity for resiliency

Verizon Strategic Objectives



Verizon ONAP Exploration

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- ✓ ONAP R0 via HEAT
- ✓ ONAP R1 via HEAT
- ✓ ONAP R2 via OOM

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- ✓ vFW / vLB / vDNS
- ✓ Clearwater IMS
- ✓ Clearwater IMS multi service
- ✓ Verizon Proprietary service

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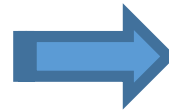
Accomplishments

- ✓ Onboarded 5 Verizon VNFs
- ✓ Established CI/CD based on ONAP Community master
 - ✓ Enabled us to deploy ONAP changes into test environment with a single click
- ✓ Enhanced Closed loop demos – Single click, zero touch.
- ✓ Customized SDC to suit specific custom needs
- ✓ Plug'nPlay with Verizon components : SDC, SO, Policy

Production Challenges for ONAP

Production Challenges

- ✓ ONAP currently tied to specific use-cases. Unable to spin-up operator-desired network services
- ✓ Non compliance to industry standards
- ✓ Lack of operational maturity and stability
- ✓ Lack of vendor backed ONAP distribution



Verizon Requirements for ONAP Community

- ✓ Standards compliant on-boarding / orchestration interfaces
 - SOL 004 & 001 (Onboarding)
 - SOL 003 & 002 (Orch/VNFM)
 - VNF Certification
- ✓ Model based orchestration
 - TOSCA for NSD/VNFD
 - YANG/Netconf/VES
 - Custom workflows support
- ✓ Fine grained RBAC for deployment dashboard
 - Custom Roles & ABAC
- ✓ Ability to deploy Geo-Redundant Highly-Available Network services
 - GR part of network design
- ✓ Geo-Redundant Highly available ONAP deployment
 - Shared runtime Catalogues
- ✓ Vendor backed ONAP GA
 - E.g. Red Hat / Mirantis for OpenStack

Verizon's Focus for ONAP R3 and beyond

- Contribute, not just observe and comment
- Participate in the following Community Projects in ONAP R3 release to drive standardization of E2E Service Automation:
 - VNF SDK (for adding full ETSI SOL 004 support)
 - VNF SDK, SDC (for adding ETSI SOL 001* support)
 - SO or VF-C, A&AI, DCAE (for ETSI SOL 002 / 003 support & VNFD embedded LCM*)
- Demonstrate LCM workflows using vendor S-VNFM Integration
- Implement minimum RBAC for Verizon operational requirements (MVP)
 - SDC, AAF, Policy etc