

Powering NFV – Virtual Network Functions (VNFs)

SDXCentral – 2017 NFV Report Series Part 3 :
Power NFV-
Virtual Network Functions (VNFs)

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UCDAVIS

Virtual Network Functions (VNFs)



- VNFs provide the desired network services
- Benefit from NFVI (NFV Infrastructure) and NFV MANO (Management and Network Orchestration)
- CSPs (Communication Service Providers) find that challenges remain with VNF performance and management
- Vendors are trying to rewrite and adapt many VNFs

Popular Services (as per CSPs)



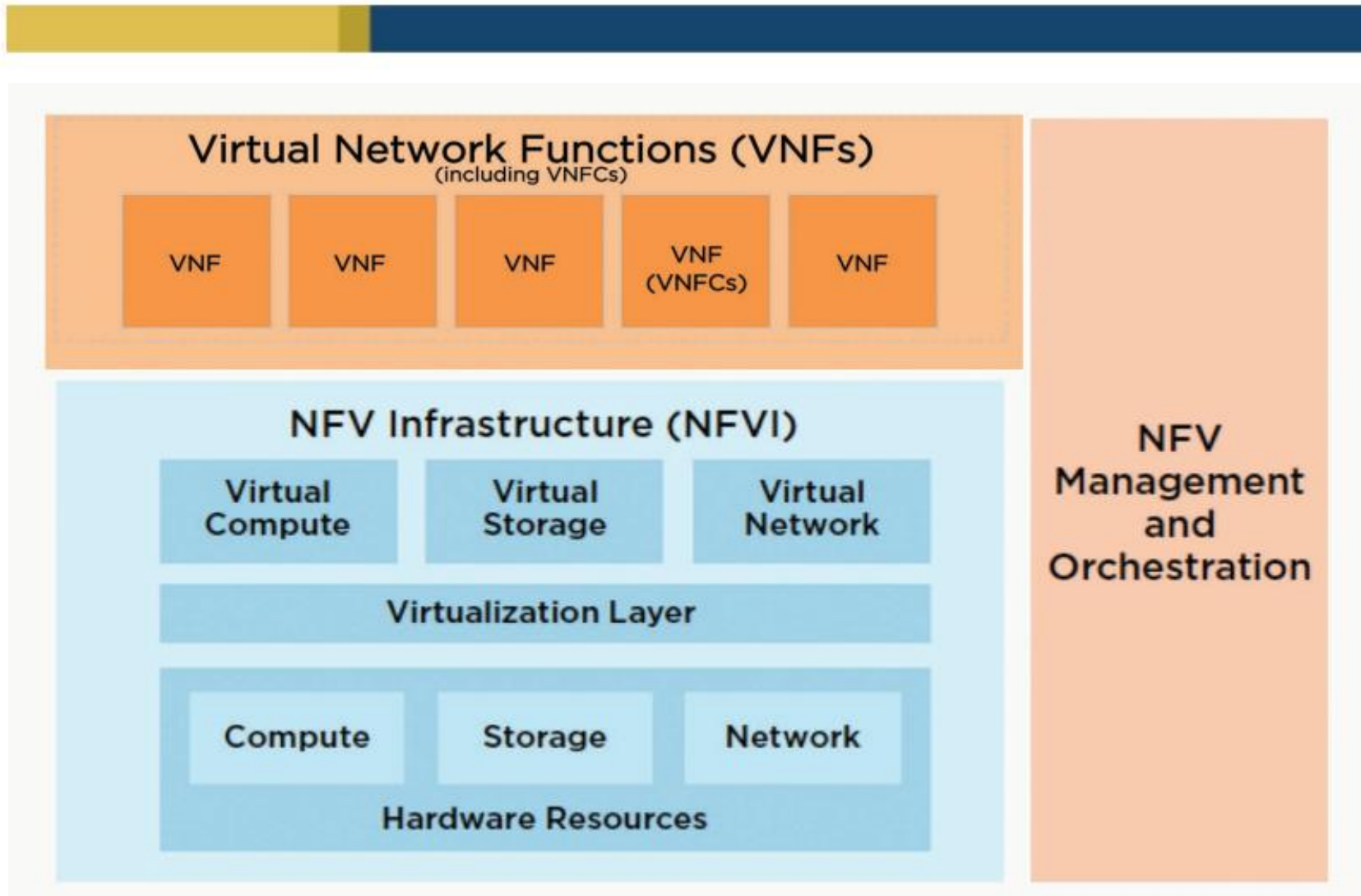
- vCPE (virtual customer service equipment)
- SD-WAN (software-defined wide-area networks)
- vEPC (virtual evolved packet core)
- vRAN/cRAN (virtual and cloud radio access networks)
- NFVaaS (NFV as a service)
- VNFaaS (VNF as a service)

Challenges



- VNF Migration
 - VNF Performance Optimization and Tuning
 - VNF pricing and licensing
 - VNF use accounting and charging
 - VNF compatibility with underlying NFVI and MANO

NFV framework and role of VNFs



VNF Use Cases

- Layer 4-7 VNFs
 - Session Border Controllers
 - Load balancers and application delivery controllers
 - Firewalls
 - Intrusion detection
 - Devices policy enforcement managers
 - DNS platforms and WAN accelerators
- Beyond layer 4-7 VNFs
 - Lower-level physical networking equipment such as routers, DNS, DHCP
- Virtualization of Home and Business Gateways (vCPE, SD-WAN)
- Virtualization of Mobile Core (vEPC, vIMS)

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- Virtualization of Content Delivery Networks (CDNs)
- Virtual Network Platform as a Service
- Virtualization of Mobile Base Stations
- Virtual Network Function as a Service (VNFaaS)
- Network Function Virtualization as a Service (NFVaaS)
- Service Function Chaining (SFC)

VNF Migration Challenges



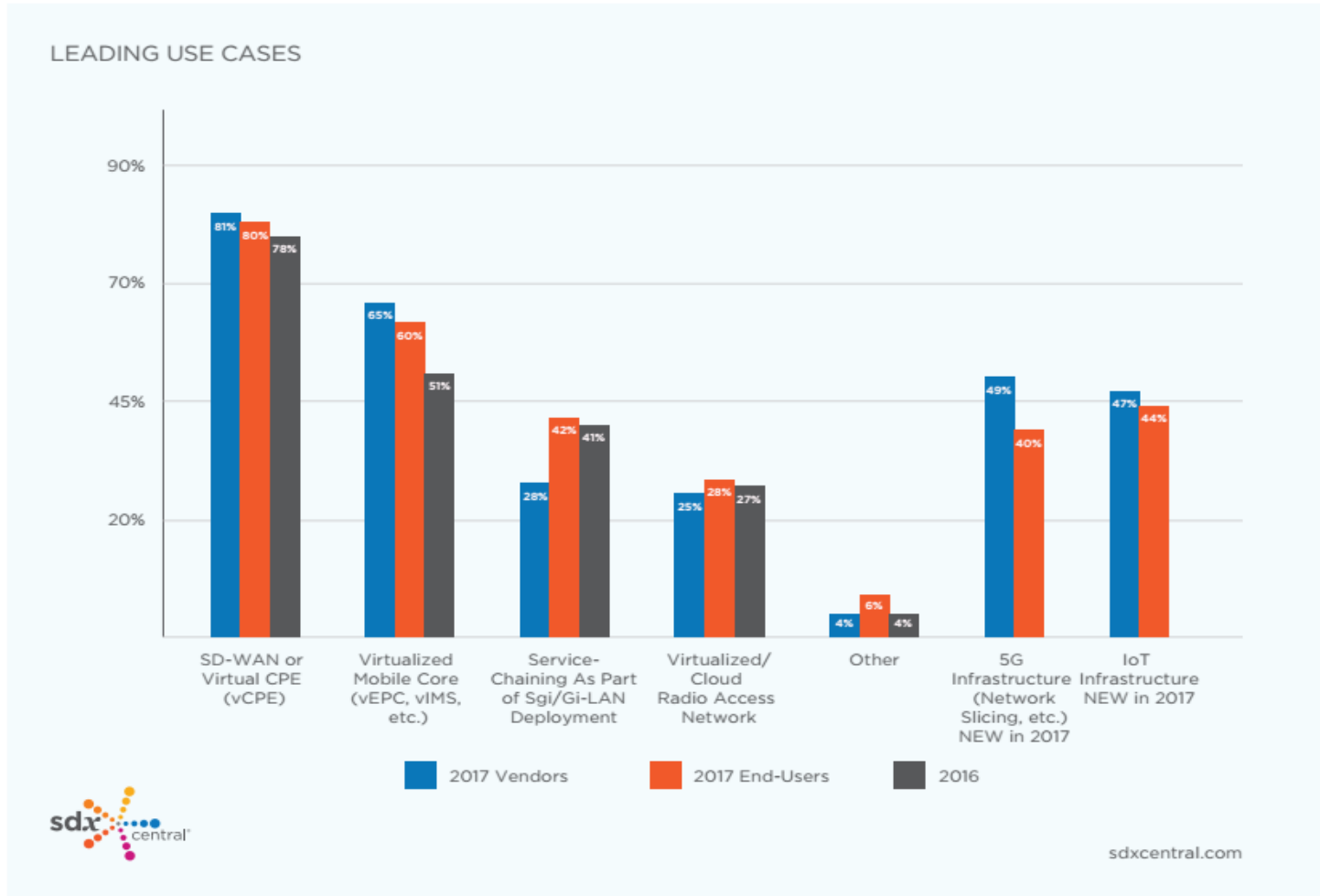
- VNF and NFV Washing
- VNF Licensing—Work in Progress
- VNF Performance—Not a Solved Problem
- Not Quite Turnkey NFV and VNFs
- NFV Process and Orchestration—The Missing Link
- Working Towards NFV/VNF Standards

Survey Results



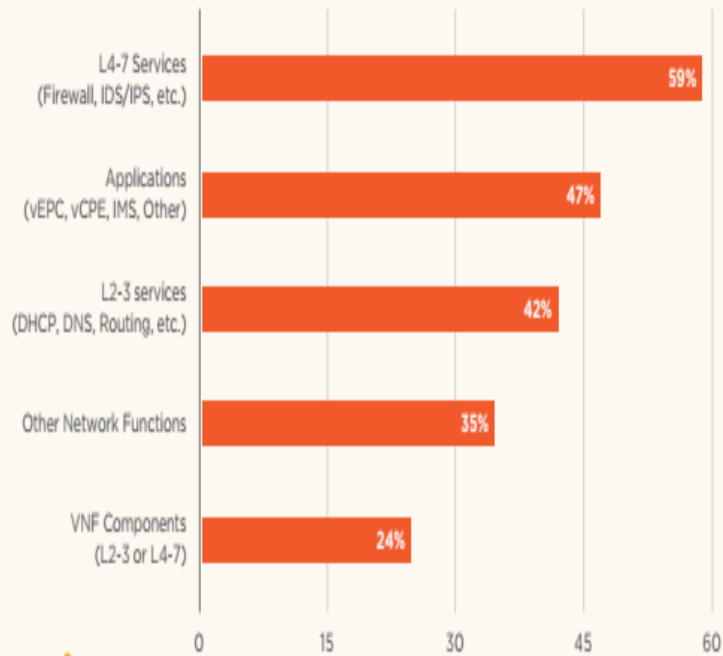
- NFV MANO frameworks critical for deploying VNFs at scale
- In all other respects, VNFs are an instance of a virtual appliance.

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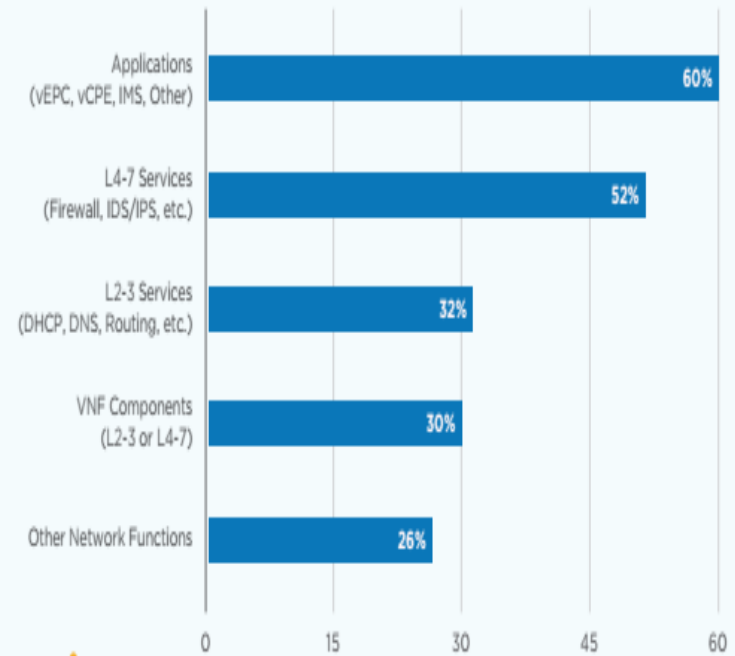
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2017 - BEST CANDIDATES FOR NFV ACCORDING TO END-USERS



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2017 - BEST CANDIDATES FOR NFV ACCORDING TO VENDORS



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NFV VENDOR MINDSHARE

