F5 and HPE Partnership Overview for Service Providers

Improving the delivery of new services with an agile network

Network functions virtualization (NFV) is becoming more prevalent as service providers are recognizing the benefits of a virtualized network. With NFV, service providers can evolve their network architecture to a virtualized environment and realize the value of NFV, including lowering network CapEx and OpEx, greater agility to roll out new services faster to market, and the flexibility to dynamically spin up and down services based on network and business demand.

Service providers face numerous challenges as they cope with the massive growth of devices and applications, as well as competition from more nimble, more efficiently run cloud-based providers. One of those challenges is building a truly scalable network. Service providers have been deploying and managing different network components from multiple suppliers, and as they build these networks out, costs rise and network complexity increases. At a fundamental level, NFV aims to lower network costs by virtualizing core network functions that have traditionally run on purpose-built hardware. To alleviate this, service providers can migrate various network functions running on purpose-built hardware onto commercial off-the-shelf (COTS) servers. These virtual network functions (VNFs) include many L4–L7 services, such as load balancing, firewall, DNS, and policy management.

Along with costs savings, NFV also promises a more agile and flexible network that enables service providers to innovate and introduce new services faster to market, and deliver tailored services and applications that are closely aligned to subscribers' requirements.

Eventually, service provider networks will be fully virtualized. Until then, most will support a hybrid network architecture that consists of both purpose-built hardware and virtual services on COTS hardware.

Delivering NFV orchestration

Together, F5 and Hewlett Packard Enterprise (HPE) enable you to evolve your network architecture to NFV. F5 has a full portfolio of VNFs, including virtual Application Delivery Controller, virtual firewall, virtual DNS, virtual policy management, and virtual Diameter Routing Agent. HPE's management and orchestration system provides consistent behavior of multiple VNFs, allowing them to run on heterogeneous hardware platforms and in virtualized environments. As you deploy new services with a hybrid architecture of both purpose-built hardware and VNFs on COTS servers, HPE NFV Director provides the orchestration and management across both deployment models. This ensures that consistent management policies can be applied across the entire network, resulting in streamlined operational efficiencies and the ability to deliver new, innovative services faster to market.

HPE NFV Director is designed to meet the evolving ETSI specifications for NFV orchestrator functionality. This includes the orchestration and management of virtual network functions and network services, providing global resource management and provisions for disaster recovery, and consistently applying global, cross-VNF and VNF-specific policies.

With the combined F5 and HPE solution, you can deploy F5 VNFs in single sites and across multiple sites to deploy services such as virtual CPE, where various network elements are deployed on premises, while the virtual components are deployed in data centers.

To ensure service availability and service assurance, the F5 and HPE solution enables you to monitor the VNFs in the network. HPE NFV Director can automatically configure and monitor the thresholds for F5 VNFs. It can also issue events or execute commands when predefined

thresholds are crossed. This ensures that you have a highly available and highly scalable carrier-grade network that's built on purpose-built hardware, but that has the service agility and flexibility to launch new services with greater velocity that comes from a virtualized network.

F5s portfolio of VNFs

F5 offers a rich portfolio of solutions ready to be deployed in NFV environments. These carrier-class solutions can be deployed in core strategic points of control in the network across the data, signaling, and application planes. These highly available and highly scalable solutions enable you to scale, optimize, and secure the most critical applications and services in your network, including the Gi LAN and IMS. F5's VNFs leverage the same underlying operating system (TMOS®) that its purpose-built hardware solutions do, which gives you complete visibility, flexibility, high performance, and control across all your services. This enables you to seamlessly provision intelligent network services across both existing and virtualized networks.

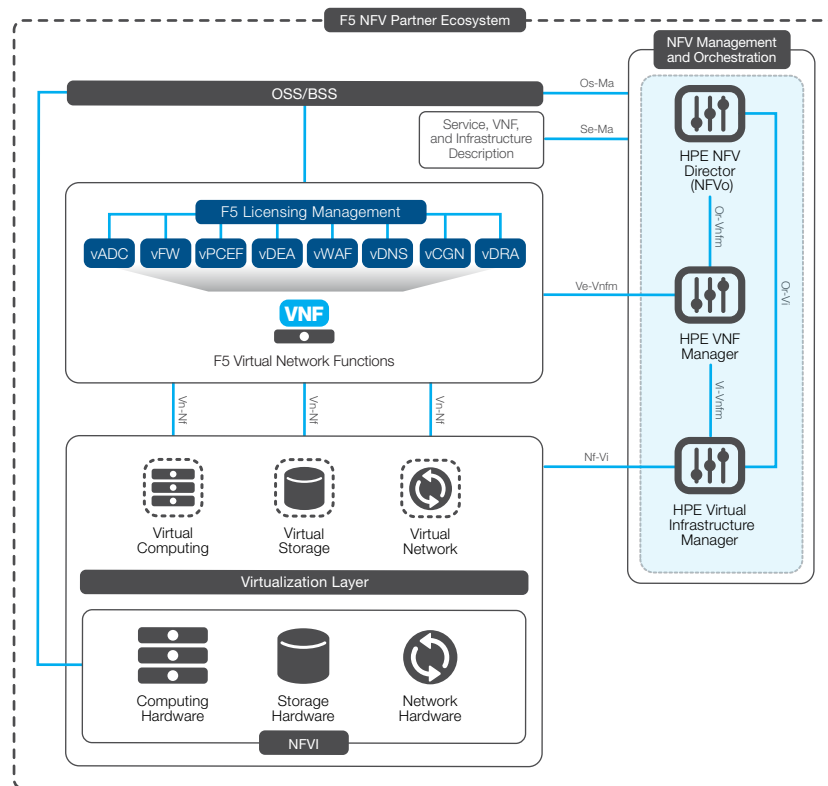## Virtual CPE and dynamic service chaining

Virtual CPE gives you greater agility and lowers operational costs by enabling you to deploy virtualized functions as a managed service. With vCPE, services such as vFW, vADC, and vDNS can be deployed from your network. With this flexibility, you can dynamically chain multiple services together, providing enterprise customers a service that is customized for their specific requirements. With vCPE, you can deploy new services faster to market while streamlining operations and processes.

The full portfolio of F5 VNFs along with the HPE NFV Director management and orchestration system gives you complete flexibility to dynamically spin up and spin down services in response to peak network utilization. You also gain greater agility and velocity in delivering new applications and services and improving QoE.

A combined F5 and HPE solution enables you to deploy a fully virtualized network, or a hybrid network with a combination of purpose-built hardware and VNFs. This approach allows you to quickly and easily deploy network functions for faster innovation and increased revenue.

VNFaaS

NFV enables you to leverage common NFV infrastructure for services that are being deployed in the cloud as well as in the network. With NFV, where multiple core network functionality is offered, VNF as a Service (VNFaaS) enables you to adopt a cloud model where you can share a common pool of resources and be able to dynamically allocate physical compute and network resources to these VNFs. Using HPE NFV Director, service providers can deploy individual instances of virtualized network functions and offer them as services. F5's breadth of VNFs can be deployed as services, including Application Delivery Controller (ADCaaS), firewall (FWaaS), and DNS (DNSaaS). The joint F5 and HPE solution enables you to achieve faster deployments and higher revenues from service monetization, as well as higher ROI.

Key benefits

· Automate management and network operations to reduce operational efforts.

· CapEx and OpEx predictability.

· Rapidly provision networks and deploy new services faster to market.

· Gain network agility and flexibility by quickly and easily spinning up and spinning down network services.

· Simplify operations, increase cost efficiency, and unlock new revenue.

· Seamlessly transition your network from physical to virtualized mode.

· Easily integrate virtualized network functions into your OSS and IT environment.

· Standards-based architecture enables a multi-vendor approach.

F5's breadth of VNFs and HPE's management and orchestration system enable you to flexibly and cost-effectively deliver new services.

Solution

- Deploy a broad range of L4–L7 services, including ADC-, Security-, and DNS as a Service.

- Flexible deployment options with software running on COTS hardware or purpose-built hardware.

- Deliver new, innovative services such as vEPC, VoLTE, vCPE, and dynamic service chaining; this enables you to launch new services based on deep network visibility.

- Seamlessly manage, orchestrate, and provision VNFs and purpose-built hardware.

- Active monitoring and full visibility of network services across all VNFs and physical network functions.

- Full orchestration across multiple sites and support of multi-tenant environments.

Solutions for
an application world.