UNLOCK NEW BUSINESS OPPORTUNITIES WITH vEPC

Driving Business Agility for Service Providers

Market Demands for vEPC

Network Functions Virtualization (NFV) is leading the evolution of the next generation mobile network ecosystem. Virtualizing the Evolved Packet Core (EPC) has emerged as a leading use case and one of the most tangible examples of the advantages of NFV. vEPC is not only valuable in streamlining and automating 4G and LTE network cores, but it is the key technology in paving the way for all of the IoT and 5G emerging services. The agile provisioning and scaling of network resources achieved through virtualization transforms the network to deliver a cost-efficient model to meet the sky-rocketing mobile traffic demands. The ability to dynamically allocate capacity to meet peak usage requirements results in better Quality of Experience (QoE) and significant efficiencies in network utilization.

The explosive growth in mobile data services and the Internet of Things is a leading reason for operators to seek to virtualize the EPC to meet demand and take advantage of new revenue opportunities. Moving from purpose-built hardware to agile, software based network services, service providers can easily extend and dynamically scale their mobile networks, and drive network cost efficiencies, resulting in OpEx and CapEx savings.

Both established players and a new class of operators are seizing the opportunities to rapidly offer new services to the enterprise and consumer segments. Virtual EPC allows service providers to rapidly deploy new service offerings and adapt a 'fail-fast' model, where they can react quickly to customer feedback and tailor new services based on unique requirements. This agile approach gives service providers a wider latitude to pursue a broader range of use cases. It also opens doors for new Mobile Virtual Network Operators (MVNO), Mobile Virtual Network Enabler (MVNE) entrants and greenfield operators the ability to gain entrance into a competitive market. Service providers can now focus on customizing their networks to meet unique requirements especially as the Internet of Things (IoT) and Machine-to-Machine (M2M) communications promise to overshadow the current mobile data demand.

vEPC – Unlocking New Opportunities for Service Providers

M2M communications, IoT and Connected Car deployments are among some of the leading instances of virtualization of the mobile core and are being deployed worldwide by leading operators of various sizes. At the same time, virtual EPC also provides enterprises with greater flexibility and offers new deployment models as they look to provide mobile communication services to their remote locations or non-land transportation services, such as oil rigs, cruise ships and in-flight communication services.

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Furthermore, virtualized mobile private networks (MPN) are being deployed at multiple enterprises with mobile workforces or distributed locations within the transportation, logistics and oil and gas industries. Increased demand from government bodies (e.g. emergency services, police forces and military units) have also presented interesting cases of MPNs based on a vEPC deployment.

## vEPC – Deliver Differentiated Services with VMware vCloud NFV

The vEPC abstracts and decomposes the EPC functions and allows them to run in unique combinations as software instances, i.e. virtual machines, on standard COTS servers. This approach allows service providers to not only uniquely customize services and policies but also to design networks in new ways to drastically reduce costs and simplify operations. For example, IoT applications – the area with the most vigorous growth – as well as other high-speed mobile data applications, have very different network requirements and price points than traditional mobile applications today. vEPC has enabled service providers to build vertical specific segments of their networks and deploy network services in ways to meet those requirements.

The flexibility and diversity of vEPC combinations afforded by this VNF deployment approach can be delivered over the vCloud NFV platform with lowered operational costs.

- **Accelerate time to market** - Virtual EPC creation or function scaling automation can enable new services through policy-based and on-demand service creation of VNFs.
- **Flexibility in cross-cloud distribution** - VNFs separated by control and data plane functions elevates flexibility in dynamic workload balancing and placement across clouds or edge clusters.
- **Gradual roll-out for lower risk** - Service providers can start small and scale out later to other network functions or network traffic types.
- **Avoiding vendor-lock in** - Service providers are free from vendor lock-in since each component could be a separate VNF from independent providers.
- **Need for unified management** - Unified network management and service orchestration – "a single pane of glass", is clearly needed to maintain simplicity of operation and service quality. Furthermore, it enables intelligent service chaining and network slicing for service delivery optimized by customers and services.
- **Service chaining** – Deploy custom offerings and services by chaining functionality across network components that simplify new revenue and operational lifecycles.
- **Integration with external networks for new use cases** - The intersection between the mobile core and external networks, or their functions, provides examples of additional use cases: DPI, Web Proxy, video optimization, content and charging gateways, firewalls, software configured service chains, EPC to WiFi integration, etc.

REALIZING NEW BUSINESS MODELS WITH vEPC

- **Disaggregation** - Moving away from the complexities of traditional EPC cores to more optimized cost-savings models, centralized multi-tenant and/or edge centric.
- **Wholesale** - Multi-play offers and differentiated services demands from service providers are driving the needs for MVNO/E opportunities.
- **Enterprise** - Quickly respond and scale to enterprise offers with virtualized mobile private networks (MPN).
- **IoT Agility** - Segmented deployments optimized to meet the need of M2M connected devices with traditional and NB-IoT connectivity classes of services.
- **Rapid Innovation** - Ability to turn up virtualized test-bed environments to discover and validate new services and business models with 'fast-fail'.

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VMWARE vCLOUD NFV DELIVERS:

- **Reliability:** Tested, optimized and proven NFVi in over 70 NFV implementations worldwide

- **Interoperability:** 100+ Telecom Technology Alliance Partners, 15+ Certified NFV Partners through VMware Ready for NFV program

- **Extensibility:** Ability to extend and unify automation and control in a cross-cloud environment: IT, NFV, public and managed clouds

- **Operations:** End-to-end operational intelligence and management from physical layer to Applications and VNFs

- **Support:** VMware first Carrier-Grade Support for NFV
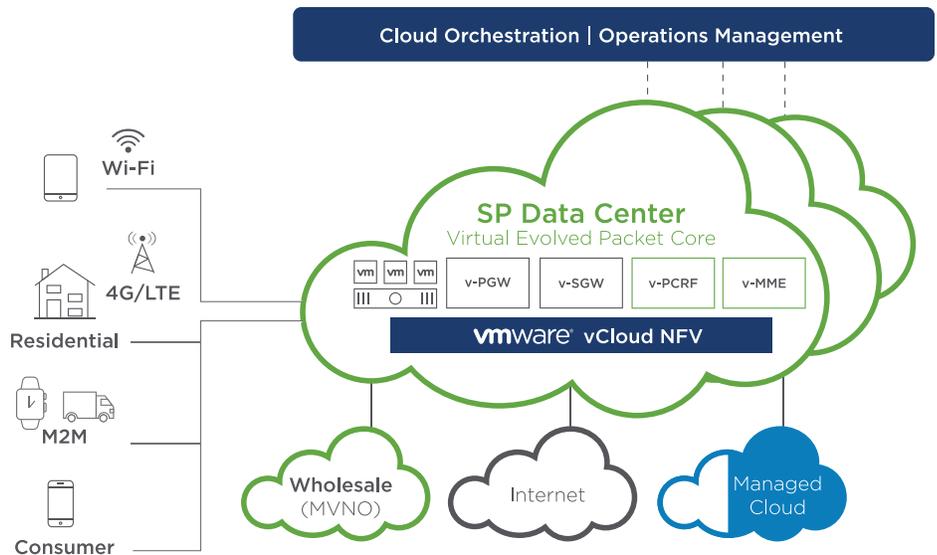
vEPC on VMware vCloud NFV

A technological and market leader in virtualization technologies, VMware has brought to market a proven, carrier-grade, NFV infrastructure platform that has been tuned for service provider requirements. With optimized resource management and prioritization of resources based on your workloads, vCloud NFV ensures top performance, scalability and high resiliency for your critical network services.

By teaming up with VMware, service providers benefit from:

- **Faster deployment and agility with advanced networking and security -** vCloud NFV embeds networking and security functionality and provides a complete set of logical networking elements and services including switching, routing, QoS and monitoring that can be programmatically provisioned and managed. Networks and VNFs are secure from any outside threats with automated, fine grained policies tied to the virtual machines.

- **Carrier-grade platform -** The high performance capabilities offered in vCloud NFV deliver a highly scalable NFVI platform that meets carrier-grade network requirements.

- **Automate and orchestrate network infrastructure -** vCloud NFV provides a Virtualized Infrastructure Manager (VIM) that controls and manages the NFVI compute, storage and network resources. Service providers can automate and orchestrate network infrastructure without worrying about the underlying physical configuration of resources. As a result, service providers can accelerate and simplify network provisioning and launch new services faster to market.

- **Simplify operations and improve network performance with end to end operations management and analytics -** vCloud NFV delivers a single pane of glass with 360-degree visibility and monitoring of the platform along with predictive analytics and logging insights to give service providers greater control of their network. With policy based automation, service providers can streamline key network processes and allocate and provision VM resources to rapidly provision and deploy VNFs. In addition, service providers can optimize and manage capacity by dynamically allocating and balancing VMs to guarantee optimal access to VNF resources.
- **Growing partner ecosystem -** VMware has also brought together the largest partner ecosystem of VNFs for vEPC deployments. Working with those partners, VMware offers pre- certified VMware Ready™ for NFV turn-key solutions that can deliver vEPC in hours or days as opposed to months.

VMware NFV: Removing Key Barriers for Business Transformation

VMware vCloud NFV is a fully integrated, modular and extensible NFV Infrastructure platform. It allows multi-vendor VNFs to share a pooled capacity of resources that can be intelligently orchestrated and automated for the provisioning and delivery of services in a cross-cloud environment. This enables service providers to support an elastic business model of multi-cloud services and personalized offerings while simplifying and automating networks, accelerating time-to-market and reducing TCO.

Learn More

For more information on the VMware vCloud NFV platform, visit http://www.vmware.com/go/nfv.

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