

Oracle Communications' Comprehensive Portfolio of Virtualized Network Functions



"Of all the suppliers (or even alleged suppliers) of NFV, the one who has shown the greatest and fastest gain in credibility is Oracle."

TOM NOLLE
PRESIDENT
CIMI CORP.

VNF KEY DESIGN PRINCIPLES

All Oracle Communications' VNFs are NFV-ready and built with key design principles

- Platform independence
- Efficiently architected for virtualized platforms
- Carrier-grade, feature parity, and co-existence with physical counterparts

The first wave of network function virtualization (NFV) has made considerable strides in achieving increased service agility and increased operational efficiency.

Oracle Communications' portfolio of VNFs are architected to be "cloud ready", run on a variety of VMs based on customer preference and capable of being fully orchestrated to achieve greater agility and operational efficiencies.

Characteristics of VNFs in Oracle Communications' Portfolio

Oracle Communications virtualized network functions (VNFs) that are built following key design principles that optimize their readiness for NFV, including the ability to scale elastically enabling networks to be fully automated.

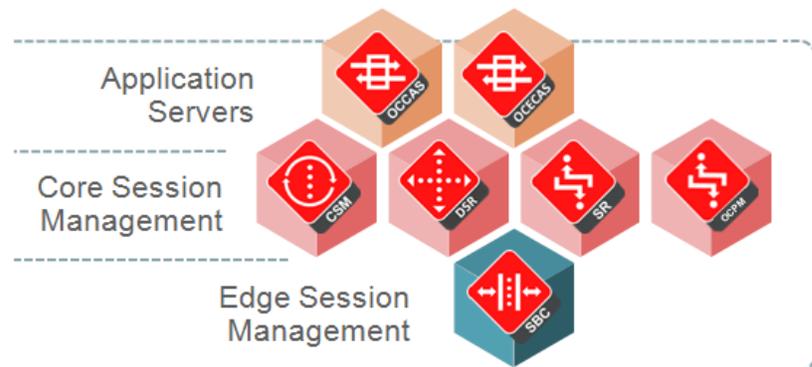


Figure 1. Oracle's comprehensive portfolio of VNFs

Oracle Communications' comprehensive portfolio of VNFs span edge session management, core session management and application servers. All VNFs are carrier-grade, provide platform independence and are designed for virtualized deployments where each can co-exist with its physical counterpart within a hybrid management and network orchestration (MANO) architecture.

Rapid Onboarding

To help service providers with their deployment strategy, Oracle Communications:

- Has defined a standard process with network analysis for deploying VNFs alongside Physical Network Functions (PNFs) with careful consideration for the requirements of the specific services.
- Is actively participating in a TMForum program to establish an industry-wide definition of a "well-enabled" VNF package and has won multiple industry-awards for the Proof

of Concept demonstrating how the “well-enabled” VNF can allow same-day onboarding when deployed with a standardized VNF package in order to automate business functions such as license contracts, SLA agreements, metrics, test and validations and more.

Edge Session Management

ORACLE COMMUNICATIONS SESSION BORDER CONTROLLER

OCSBC VNF provides trusted communications across IP network borders

- Unrivaled access and interconnect functions and features
- Versatile deployment in business and consumer IP communications services
- Complete implementation of signaling, media, transport, and security protocols
- Integrated P-CSCF and other 3GPP-compliant IMS functions

Oracle Communications Session Border Controller

The Oracle Communications Session Border Controller (OCSBC) enables service providers to deliver trusted and first-class real-time communications services across Internet Protocol (IP) network borders. OCSBC is available as a VNF in addition to a PNF, and this flexibility opens a wider range of deployment options for service providers. OCSBC VNF is equivalent in functionality to its purpose-built counterpart, and is suitable for all use cases such as SIP trunking, peering with other networks, mobile and fixed line access and hosted unified and contact center communications.

OCSBC VNF is not simply a port from its PNF form but has been re-architected to run optimally on the underlying virtualized hardware. It allows reservation of vCPU cores for its most important functions – security, signaling, media, and CPU intensive functions like encryption and transcoding. Service providers may customize the VNF and dedicate more (or less) cores to specific functions that allows for independent scaling of key functions within a single VM. OCSBC VNF also offers a range of network I/O models allowing service providers to trade-off between portability and performance.

OCSBC VNF deployments may coexist with PNFs in a cluster fronted by Oracle Communications Subscriber-Aware Load Balancer (OCSLB). This capability allows service providers to supplement their PNF installed base with VNFs making their deployments agile and responsive to changes in traffic demands.

OCSBC VNF runs on industry standard x86 platforms and on commercial virtualization software including Oracle Virtual Machine (OVM), Kernel-based Virtual Machine (KVM), and VMware. OCSBC VNF shares the same EMS as its PNF and is already pre-integrated with OCSDM, the VNF manager which controls its instantiation, scaling, and termination.

With its comprehensive function-set, customization possibilities, and seamless co-existence with its PNF, OCSBC VNF may be used to add flexibility to existing deployments or as an anchor of a new IP real-time communications network.

Core Session Management

ORACLE COMMUNICATIONS CORE SESSION MANAGER

OCCSM VNF is a cloud-ready IMS core

- Core session control functions SCSCF, I-CSCF
- Session routing – BGCF
- Dynamic load balancing support
- Support for 3GPP IMS-AKA authentication mechanism

Oracle Communications Core Session Manager

Oracle Communications Core Sessions Manager (OCCSM) is designed from the ground up for a NFV environment – it has been virtualized from day one from its inception with no PNF equivalent in our portfolio. OCCSM provides a complete set of session core functions including IP Multimedia Subsystem (IMS) Call/Session Control Functions (CSCF) and Break-out Gateway Control Function (BGCF) and their associated 3GPP interfaces. It provides efficient route management and a dynamic load balancer for one or multi-data center deployments when deployed in cluster environments, with a unified IP interface to all external network elements.

- Routing control with ENUM interface support and preferential routing based on User Equipment capabilities
- Advanced SIP Header and DIAMETER manipulation rules for increased interoperability

ORACLE COMMUNICATIONS POLICY MANAGEMENT

OCPM VNF provides innovative and robust policy control

- Configurable platform facilitates deployment of personalized, subscriber-specific policies
- Customizable policy creation and subscriber-management environment enables network service differentiation
- Integrated policy analytics provides valuable network and subscriber intelligence feedback
- Session-stateful geo-redundant, supporting requirements for real-time services

ORACLE COMMUNICATIONS DIAMETER SIGNALING ROUTER

OCDSR VNF centralizes Diameter routing and creates a secure signaling architecture

- Improves signaling network scalability with a centralized routing architecture
- Reduces provisioning, maintenance, and interoperability costs
- Secures signaling interconnection and protects against outages
- Enables NFV, VoLTE, and VoWiFi with a cloud-ready solution

OCCSM provides service providers with a rapid path to NFV with the industry's first production-ready, 3GPP-compliant virtualized session core. OCCSM VNF allows service providers to start realizing immediate benefits of NFV while evolving media performance critical elements over time and allows platform independence with multiple hypervisor and multiple platform support. OCCSM aligns with NFV's elastic scalability principles and combined with OCSBC and Oracle Communications Session Router (OCSR), a virtualized OCCSM core can scale from as little as a few thousands to tens of millions of subscribers. OCCSM is pre-integrated with OCSDM and when deployed within a MANO framework, full service automation is enabled which allows engineering and operations teams to rapidly deploy new network services and functions with significantly reduced operational effort and cost.

Oracle Communications Policy Management

Oracle Communications Policy Management (OCPM) provides the flexible and resilient network policy system needed to meet the demanding requirements of today's communication service providers. It is the market-leading independent policy management system, providing standards-based, yet customizable interfaces and multi-vendor interoperability with a wide range of third party network functions. Its GUI-driven, customizable natural language policy creation wizard provides an intuitive and flexible environment for easy and efficient creation of complex network policies. Its high scalability and resiliency provide a dependable backbone for the largest and most demanding 3G/LTE, VoLTE, VoIP, fixed, and cable networks.

OCPM is available today as a VNF, allowing OCPM to be deployed in private or hosted cloud or hybrid cloud environments, integrating with both existing PNFs and other VNFs using standardized interfaces to support cap-and-grow and mix-and-match deployments. OCPM VNFs are hardware and platform independent and support KVM, OVM, and VMWare hypervisors. OCPM VNFs are carrier-grade and offer feature parity with Oracle's physical Policy Management product. The VNFs offer the same scalability, reliability, resiliency, and session-stateful geo-redundant capabilities as the physical instance. A northbound API is provided for integration into Network Service Orchestrators to allow automation and orchestration of VNF deployment, bringing maximum flexibility to service providers seeking to pursue either a greenfield virtualized network strategy, or a hybrid physical/virtual growth strategy.

Oracle Communications Diameter Signaling Router

Oracle Communications Diameter Signaling Router (OCDSR) is a market-leading cloud deployable Diameter signaling controller solution. OCDSR centralizes routing, traffic management and load balancing, creating an architecture that enables IMS and LTE networks to be truly elastic and adapt to increasing service and traffic demands while optimizing the network resources.

OCDSR VNF is generally available today, and can be operated in a common and shared infrastructure with other telecommunications applications in private or hosted clouds. All OCDSR functions are cloud deployable, hardware agnostic and platform independent, supporting hypervisors/cloud managers such as KVM/Openstack and VMWare/VCloud. OCDSR VNFs are designed to be highly scalable where performance is guaranteed from a minimum lab configuration to a large deployment for a tier-1 service provider.

ORACLE COMMUNICATIONS SESSION ROUTER

OCSR VNF increases scalability and performance of SIP routing

- Reduces complexity and cost of delivering SIP multimedia services
- Enables cost-effective network scalability
- Mitigates risk and protects network uptime
- Provides rapid interoperability and faster time to market

ORACLE COMMUNICATIONS CONVERGED APPLICATION SERVER

OCCAS VNF is an IMS application container that converges Web-telecom

- SIP Servlet 2.0 built on Java EE 7 includes efficient optimal POJO and CDI interfaces, concurrent session management, web sockets, and standard JSON, XML, JAX, JMS interfaces
- Extends unified communications (UC) and contact center features to enterprise applications
- Carrier-grade high availability Grid Computing architecture with geographic redundancy
- Extreme high performance and low latency with coherence in-memory cache and virtualization

ORACLE COMMUNICATIONS EVOLVED COMMUNICATIONS APPLICATION SERVER

OCECAS VNF allows flexible, agile and reliable VoLTE and VoWiFi offerings

- Standards-compliant VoLTE and VoWiFi application for immediate productivity
- Simplified yet powerful drag-and-drop

OCDSR VNFs carrier-grade, support feature parity with the PNF equivalent, and allow for mix and match where an existing network of PNFs can expand capacity using VNFs. This allows customers to keep existing OCDSR deployments and to allow new capacity expansion in the cloud. OCDSR supports a north-bound interface (NBI) for orchestration which can be used to integrate with any orchestrator.

Oracle Communications Session Router

Oracle Communications Session Router (OCSR) is a key element of network core that provides extensive routing capabilities for calls based on defined policies and a variety of criteria such as least cost and time-of-day. OCSR is available on Acme Packet purpose-built hardware, as a software-only image for x86 based platforms, and now as a VNF for virtualized environments. This broad range of support gives service providers wide flexibility for deployment options. As a VNF, OCSR follows the same design principles as OCSBC VNF in terms of platform and hypervisor support, choice of network I/O drivers, customization of dedicated CPU cores, and is also fully integrated with Oracle Communications Application Orchestrator.

Application Servers**Oracle Communications Converged Application Server (OCCAS)**

Oracle Communications Converged Application Server (OCCAS) provides an open, standards-based, virtualized converged application platform with integrated SIP and Web capabilities; OCCAS helps customers worldwide reduce the cost and time of developing and deploying carrier-grade, converged applications by over 70%. It enables customers to maximize profitability from existing services, to realize new revenue from innovative converged Web-Telecom applications, and implement new features in their existing enterprise Unified Communication (UC) and contact center networks.

OCCAS VNF is efficiently architected to work in virtualized environments like OpenStack and VCloud and has OVM, VMWare & KVM (hypervisor) certifications. It takes full advantage of the real-time Java Virtual Machine (JVM), Coherence Grid Computing, and optimization of the converged application container for extremely high throughput. Every OCCAS server is a single Java process and scales horizontally and dynamically, bounded only by the available hardware and networking resources. OCCAS supports elastic scaling (up/down), dynamic cluster configuration, scaling without server restart and homogeneous clustering. OCCAS VNF has a NBI for orchestration and KPI monitoring support for a large number of statistics - hence KPIs like size of coherence session cache can be monitored easily by an orchestrator.

Oracle Communications Evolved Communications Application Server

Oracle Communications Evolved Communications Application Server (OCECAS) is built from day one to support virtualized deployments and is powered by OCCAS as the underlying service engine, leveraging the unrivalled performance, and in-memory data grid technology. OCECAS provides a comprehensive, standards-compliant, out of the box application for VoLTE, ViLTE and VoWiFi that is 100% configurable and extendable. The optimized application can be configured and extended via a graphical, drag and drop, business view of all service logic with continuous design-time validation

application configuration

- Automated deployment across testing, staging, and production environments
- Flexible data federation to prevent costly custom integrations
- Standards-compliant IMS interfaces built with SIP, Diameter, and Java

enforcement which alleviates the need for coding or vendor customizations. OCECAS increases service agility by embracing DevOps approach to new service rollout using an automated deployment process from testing to staging to production environments.

OCECAS VNF fully supports NFV MANO architecture. It provides ground-up support for virtualized orchestration and redefines IMS Application Server extensibility and scalability by utilizing cutting-edge Oracle Coherence in-memory data grid technology that preserves service continuity and maintains latency under NFV infrastructure failure conditions. OCECAS is delivered as virtualized software that runs as a series/cluster of virtual machines using standard VM software such as Oracle Virtual Box, VMWare (ESXi) and KVM, and is deployable on X86-based hardware.

Summary

Virtualizing network functions alone will not create an NFV-ready network. Service providers require well-enabled and orchestrated VNFs that restructure networks to deliver greater automation and operational efficiency. Oracle Communications' comprehensive portfolio of VNFs is truly "NFV-ready" and allows service providers to:

- Expand choices with platform independence
- Increase agility by being efficiently architected for NFV
- Reduce costs with rapid onboarding and integration with MANO architecture including pre-integration with OCSDM and OCNSO
- Leverage existing investment with carrier-grade deployments that provide feature parity and co-existence with physical counterparts
- Transform to NFV-cloud with contemporary software architectures

Service providers deploying VNFs from Oracle Communications' comprehensive portfolio will be best prepared to unlock the full potential of NFV-cloud transformation.

CONTACT US

For more information about Oracle Communications Virtualized Network Functions, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

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