

Oracle Communications Application Orchestrator

The Telecommunications industry is reaching an inflection point where decades of Telco business and network models are subject to change in how communications service providers will operate in the future. Network Function Virtualization (NFV) – a software centric network infrastructure -- promises to deliver superior benefits over legacy networks and change service delivery models. The Oracle Communications Application Orchestrator provides a complete life cycle management of Virtual Network Functions (VNF) instances while providing a consistent network model with Physical Network Functions (PNF). The Oracle Communications Application Orchestrator maintains the configuration to scale up or down network elements based on Key Performance Indicators (KPI) eliminating time-consuming and error prone manual network function deployments

“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.

KEY FEATURES

- Substantial reduction in provisioning time
- Elastic scale in/out of applications based on communications key performance indicators
- Support for multiple virtualization technologies (multi-cloud)
- Maintain high availability virtual machines
- Ease of onboarding and deploying VNFs with the Plug-in Development Kit (PDK)
- Northbound REST API interface for interaction with other applications

Overview

With the growth of digital lifestyle services, Communication Service Providers (CSPs) need to shorten their service development lifecycle and differentiate from their competitors via service agility and operational flexibility to execute on new opportunities. Network Function Virtualization (NFV) allows service providers to evolve their technology and business models by bringing together the best of IT Infrastructure and telecommunications network management. Some of the benefits include:

- the use and consolidation of industry-standard hardware platforms
- access to open ecosystems solutions
- rapidly deploying and scaling services

Such flexibility, along with network function and service abstraction from the virtualized infrastructure or datacenter inevitably leads to a fragmented stack of overlapping functionality, larger hardware footprint, and data aggregation need to gain the proper visibility of the overall picture. Legacy management and monitoring systems, built around assumptions of existing network architectures are incapable of holistically analyzing data and supporting the required run-time customizability dictated by NFV architectures. In addition, NFV dynamics introduce new challenges such as complex network function composition, elasticity of network functions, network functions with varied lifecycles, etc. The Oracle Communications Application Orchestrator enables CSPs to move away from rigid network architectures designed for a few fixed services to a flexible platform that can be programmed to address either dynamically or statically any number of current and future services.

KEY BENEFITS

- Automatically provisions virtual devices to meet demand
- Eliminates time consuming & error prone network function turn-up
- Maintains master configuration to bring up additional network elements
- Monitors real-time device level KPIs and cloud performance information

The Oracle Communications Application Orchestrator manages the creation, integration, capacity and virtualization for PNFs, VNFs, or a Composite Network Function (CNF) of both PNFs and VNFs. The Oracle Communications Application Orchestrator manages the complete lifecycle of a VNF, enabling CSPs to easily orchestrate within the dynamic environment of virtual networks. The Oracle Communications Application Orchestrator provides automated lifecycle management through intelligent resource utilization processing. The Oracle Communications Application Orchestrator also provides for rapid on boarding and integration of any VNF through the Plugin Development Kit (PDK).

Architecture

Oracle Communications Application Orchestrator supports the NFV framework from the European Telecommunications Standards Institute (ETSI) and is designed to fulfill the role of Virtual Network Function Manager in the ETSI architecture.

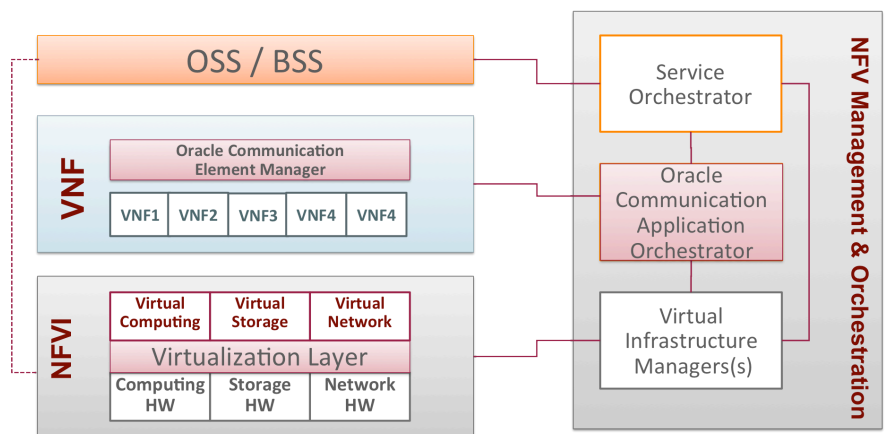


Figure 1. Oracle Communication Application Orchestrator within the NFV ETSI architecture

The Oracle Communication Application Orchestrator communicates with the Virtual Infrastructure Manager to allow full provisioning control and deployment model support of the VNFs. In addition, the Oracle Communication Application Orchestrator aggregates performance measurements from each VNF instance to monitor its utilization. Capacity thresholds are assigned to KPIs to guide the Application Orchestrator when scaling virtual devices.

The PDK provides for rapid 3rd party VNF interoperability and integration with the Oracle Communications Application Orchestration. The PDK includes an easy to use interface to on board and deploy VNFs along with a lifecycle management services. The Oracle Communications Application Orchestrator leverages the existing PNFs along with the VNF configuration to deploy and automatically activate VNF instances combining the benefits of agile VNFs with the density and cost effective purpose built PNFs. Where a network service is composed of several PNFs or VNFs, the Oracle Communications Application Orchestrator defines a CNF for ease of deployment and management regardless of Physical or Virtual Network Functionality.

ORACLE COMMUNICATIONS APPLICATION ORCHESTRATOR

Manages the complete lifecycle of a virtual network function, enabling CSPs to more easily orchestrate the complex network environments required by emerging services such as Voice over LTE, Rich Communications Suite, fixed-network modernization, Over-the-top service integration

RELATED PRODUCTS

Designed from day one to fully support core session management capabilities in virtualized environments:

- Oracle Communications Core Session Manager
- Oracle Communication Session Border Controller
- Oracle Communications Session Aware Load Balancer
- Oracle Communications Session Router
- Oracle Communications Evolved Communications Application Server
- Oracle Enterprise Manager
- Oracle Communications Session Delivery Manager

For network resiliency, the Oracle Communications Application Orchestrator also supports configuration synchronization for High Availability VNFs, and Anti-Affinity Rules. Anti-affinity rules guarantee that active and standby VM devices do not run on the same physical host.

The Oracle Communications Application Orchestrator is designed to work with multiple virtualization infrastructure managers to support a flexible, multi-cloud environment and help avoid vendor lock-in.

Built for Elasticity

The Oracle Communications Application Orchestrator responds to changes in network capacity requirements by dynamically calculating thresholds on KPIs; and can automatically provision virtual devices to meet demand. For CSPs who are transitioning to NFV in phases to minimize service interruptions in their network, the Oracle Communications Application Orchestrator also allows for manual set-up and deployment of individual virtual devices for complete control of specific resources.

Key Performance Indicators

The Oracle Communications Application Orchestrator can automatically provision and de-provision Virtual Machines (VMs) based on KPI thresholds. Capacity planners within the Oracle Communications Application Orchestrator are assigned to each VM group and they process KPI statistics to determine when to scale out or scale in the VM instances. For enhanced flexibility and automation, KPIs are configured on individual VM groups. The following are examples of generally available KPIs on the Oracle Communications Application Orchestrator:

- Calls Per Second
- Active Sessions
- CPU Utilization
- Memory Utilization
- Active Local Contacts

Due to the stateful nature of transactions within a telecommunication cloud, graceful shutdown of Virtual Network Functions is crucial for successful network operations and SLA requirements. When the Oracle Communications Application Orchestrator determines it is safe to scale down, it selects a VM instance with the least current usage in the VM group based on KPI thresholds to gracefully scale out while minimizing network impact.

Optimized Capacity Planning

With the advent of NFV, the network will be far more fluid and dynamic; hence visibility becomes even more critical. These network changes pose huge challenges in delivering superior customer experience, complying with service level agreements, and optimizing networks. Real-time network intelligence will be critical in supporting the dynamic orchestration decisions required in NFV. Within the Oracle Communications Intelligent Orchestration framework, the Oracle Communications Application Orchestrator real-time monitoring capability allows for insight into usage trends, as well as the operational state of devices and the orchestration engines managing the VNFs. The monitoring feature

displays device-level KPI and cloud performance information for all virtual devices managed by the Oracle Communications Application Orchestrator. Figure 2 demonstrates the device virtual machines table with the following information:

- Device name and device state and total running time of the device
- Current use and total capacity of the active local contacts for the device
Current use and total capacity of CPU and memory utilization for the device

The Oracle Communications Application Orchestrator will use the above information to make intelligent orchestration and appropriate scaling decisions.

Rapid Path to NFV

In today's dynamic market environment, the ability to quickly deploy, scale, and repurpose infrastructure assets are critical. The Oracle Communications Application Orchestrator together with the Oracle Communications Core Session Manager enables CSPs to start their evolution to NFV today. The Oracle Communications Core Session Manager was designed from day one to fully support core session management capabilities in virtualized environments. It provides a complete set of session core functions including IP Multi-media Subsystem Call/Session Control Functions and Break-out Gateway Control Function and their associated 3GPP interfaces.

System Requirements

TABLE 1: ORACLE COMMUNICATIONS APPLICATION ORCHESTRATOR SYSTEM REQUIREMENTS

Server	Certified	
Operating System Support	<ul style="list-style-type: none"> • Oracle Linux • CentOS • Red Hat Linux 	
Virtual Infrastructure Manager Support	<ul style="list-style-type: none"> • Oracle (Enterprise Manager, OVM Manager, Openstack) • VMware (vCloud Director, vCenter) 	



CONTACT US

For more information about the Oracle Communications Application Orchestrator, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

CONNECT WITH US



blogs.oracle.com/oracle



facebook.com/oracle



twitter.com/oracle



oracle.com

Integrated Cloud Applications & Platform Services

Copyright © 2016, Oracle and/or its affiliates. All rights reserved. This document is provided for information purposes only, and the contents hereof are subject to change without notice. This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document, and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group. 0116



Oracle is committed to developing practices and products that help protect the environment