Oracle Communications Service and Network Orchestration Solution

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COMMUNICATIONS

As Communications Service Providers (CSPs) strive to increase their agility, embrace digitalization, and adopt new technologies – such as NFV, SDN and cloud – they are encountering hurdles presented by their existing systems and processes. The Oracle Communications Service and Network Orchestration solution surmounts these hurdles using an open, agile, model-driven approach that insulates IT systems from network complexity and accelerates CSPs' concept-to-cash-to-care processes.

"The top market drivers for telecom software spending include:

- New Digital Services
- Digital Experience
- Operationalizing NFV/SDN
- Cost reduction
- System Convergence
- LTE Deployment
- Increased Video Consumption
- Analytics Applications"

TELECOMS SOFTWARE: CONSOLIDATED WORLDWIDE FORECAST 2016–2020, ANALYSYS MASON

Optimized for Cross-Layer Orchestration

The Oracle Communications Service and Network Orchestration solution provides an open, multi-domain, cross-layer orchestration platform for service providers who are embracing digital services enabled by hybrid virtual and physical networks.
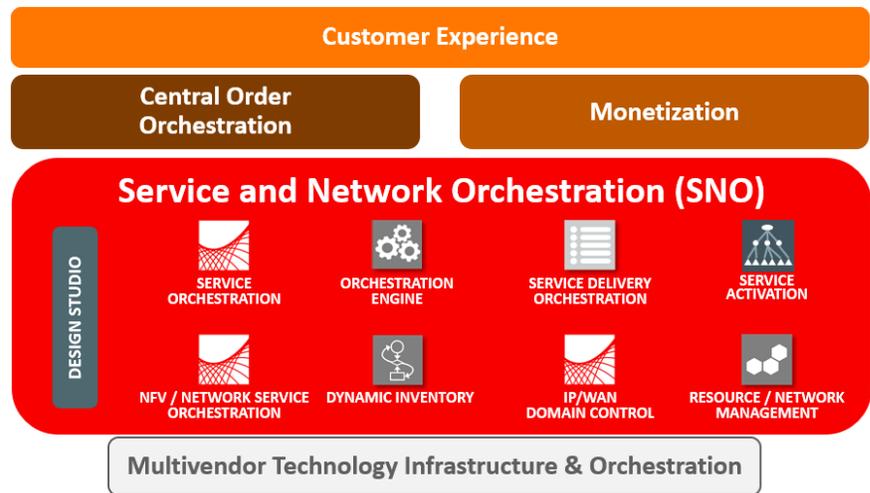

Figure 1: Oracle Communications Concept-to-Cash-to-Care solution highlighting its Service and Network Orchestration component

The solution's modular capabilities include:

- Integrated design environment across product, service and resource layers
- Dynamic service orchestration covering all technologies and domains
- Orchestration of physical and NFV-based networks across traditional and cloud-based infrastructure
- Support for physical network build-out and readiness operations
- Wide Area Network (WAN) control for MPLS and Metro Ethernet networks

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Dramatically reduces time-to-market with agile design of new services and rapid introduction of new network technologies

Enhances customer experience with on-demand customer-driven services, including complex connectivity services

Responds to changing demands instantly with dynamic service and network scaling

Simplifies systems and processes through modularity, encapsulation and re-use across all services and domains

Eases transition to NFV and SDN through a unified approach across physical and virtualized networks

Reduces implementation costs with rapid, modular integration to other systems

Reduces risk with proven carrier-grade scalability and performance

- Dynamic inventory, providing accurate, up-to-date details of services and resources, both physical and virtualized
- Automated scaling and restoration of services via closed-loop automation, leveraging external assurance and analytics systems
- Open APIs for streamlined integration with open source and third party components including assurance, network inventory, SDN controllers and partner gateways

The solution's core design principles – modularity, extensibility and re-usability – enable faster time-to-market, leverage economies of scale and reduce ongoing maintenance costs.

Agile, Model-Driven Design

The Oracle Communications Service and Network Orchestration solution enables agile design and rapid time to market of new services and service variations, using a common modeling and design approach based on re-usable self-realizing building blocks. This consistent approach, which is common across all layers, empowers business analysts to quickly implement new services and capabilities without needing detailed knowledge of the underlying systems.

Unlike procedure-oriented workflows, the solution's object-based and model-driven approach uses abstracted operations and entities for products, services, NFV-based network services and resources. This enables on-the-fly assembly and real-time delivery of customized services across multiple domains.

The solution automatically creates service and resource catalog entries, ensuring that relationships and behaviors defined at design time are automatically invoked at run time. Design changes can be made efficiently and minimal re-testing is required. Orchestration behaviors are modeled with zero software coding, with limited exceptions for complex extensions, where code may be introduced. With this approach, the design process is simpler, more predictable and easier to manage.
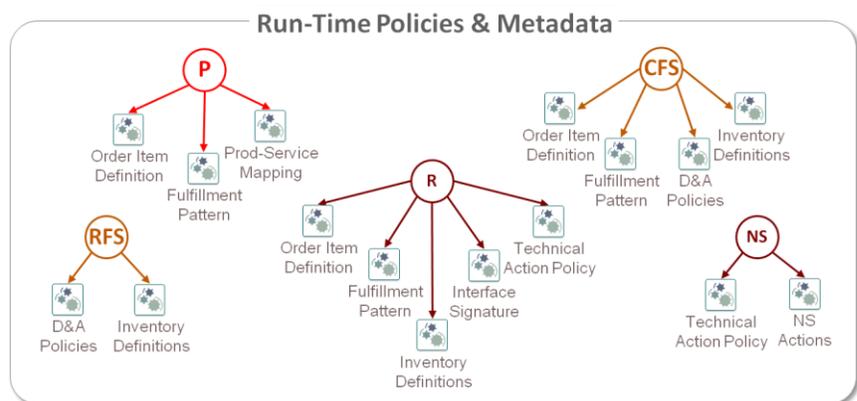
Figure 2: Design Environment generates patterns for Self-Realizing Entities

Service Orchestration

The solution's Service Orchestration layer dynamically generates service configurations, performs assignments and drives fulfillment and delivery, based on self-realizing service designs. It performs three critical tasks:

Transformation of requests from upstream systems

- Exposes Product and Service APIs that interwork with both lightweight cloud-based Customer Experience (CX) applications and mature CRM systems – whether Oracle or third party
- Performs complex order transformations out-of-the-box, including product to service mappings and policy-driven order decompositions

Service Fulfillment orchestration

- Designs and assigns pending service configurations through assignments that are independent of the network resource management flows
- Generates service delivery technical orders by calculating the changes needed to update the existing service configuration

Service Delivery orchestration

- Creates and executes an orchestration plan that assigns and sequences activities across diverse delivery systems and types, including Workforce Management, Supply Chain Management, Service Activation, NFV Orchestrators and Controllers

NFV Orchestration

The Oracle Communications Service and Network Orchestration solution provides extensive NFV orchestration capabilities in accordance with the ETSI Management and Orchestration (MANO) architectural framework. These capabilities automate and optimize the full lifecycle of network services and Virtualized Network Functions (VNFs) through real-time orchestration of VNF Managers (VNFMs), Element Managers (EMs), Virtualization Infrastructure Managers (VIMs), and SDN Controllers.

Service providers can rapidly onboard TOSCA-based network services or VNFs and design network services in complex hybrid network environments. Lifecycle management processes – to instantiate, scale, heal, update, query and terminate services – can be either triggered manually or automatically through policy-driven closed-loop monitoring provided by assurance or analytic systems.

The solution fully integrates manual processes for deploying and installing physical network equipment within an overall automated orchestration framework. By leveraging the same patterns for configuring both physical and virtualized components, the solution offers seamless management of both and allows decisions about virtualized vs. physical deployment to be made on the fly based on policy.

The Service and Network Orchestration solution also delivers network resource management (NRM) capabilities, including network planning, inventory and network data integrity, allowing service providers to plan, build and optimize their networks.

The Oracle Communications Service and Network Orchestration solution showcased innovative, model-driven orchestration concepts in two multi-vendor proof-of-concepts to win consecutive MEF Excellence Awards.


2016 PROOF OF CONCEPT FOR "ENABLING CUSTOMER-PREMISE CLOUD-BASED SERVICES WITH LIFECYCLE SERVICE ORCHESTRATION"

2015 PROOF OF CONCEPT FOR "ZERO TOUCH, BUSINESS READY NAAS WITH vCPE OVER AN ELASTIC NETWORK"

IP/MPLS WAN Control

The solution's WAN Controller provides domain control for wide area IP/MPLS and Metro Ethernet networks, enabling service providers to offer enterprises real-time connectivity in support of dynamic cloud-based services. Through its intent-based Network API, aligned to MEF Lifecycle Service Orchestration (LSO) specifications, it supports customer and application-driven service control for complex connectivity services, such as L3 MPLS VPNs, VPLS, VLL, and associated QoS configurations.
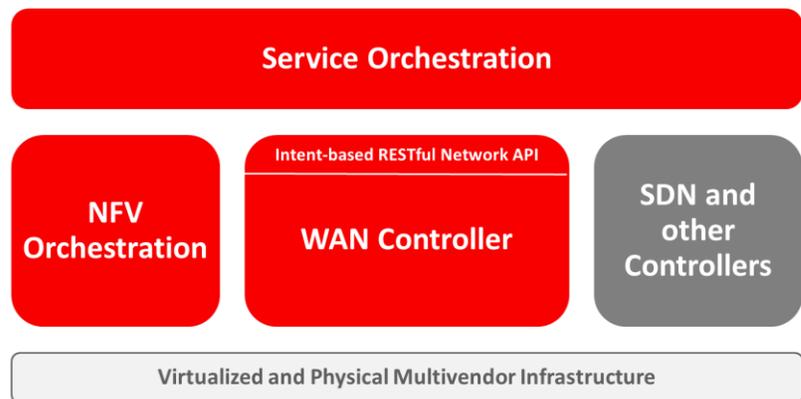
Figure 3: Oracle Communications Service and Network Orchestration IP/ MPLS WAN Controller

The controller's powerful policy-driven approach and expert service models enable the efficient and automated provisioning of Ethernet, IP and MPLS-based connectivity services across multi-vendor networks.

YANG vendor models are on-boarded within seconds, producing service configuration policies with full create/modify/delete/rollback configuration capabilities.

Open API with Abstracted Interfaces

The Oracle Communications Service and Network Orchestration solution orchestrates services, including NFV-based network services and resources, while presenting a highly-abstracted set of interfaces to client applications and users. This abstraction insulates other applications from the complex technical details of implementing services over various technologies and vendor equipment. It includes an end-to-end connectivity abstraction, which allows client applications to request complex end-to-end network connectivity in an intent-based manner, while the solution determines the detailed configurations for each section of the network and each technology.

Automated Closed-loop Operations

The solution's orchestration capabilities are used across fulfillment, assurance and capacity expansion functions, dynamically fulfilling service request and reacting to network events such as failures, congestion and increased aggregate demand.
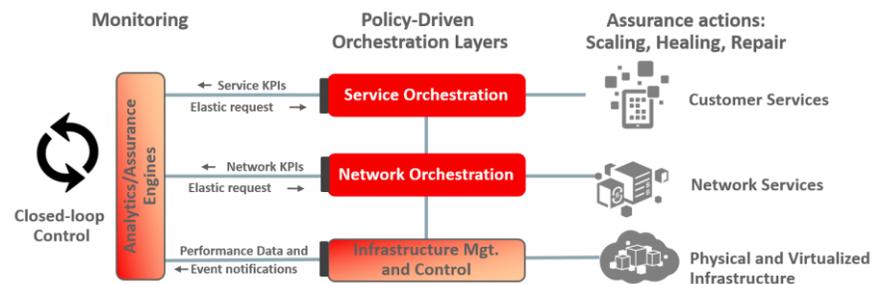
Figure 5: Closed-loop Control for Automated Scaling and Healing across layers

The solution's open APIs and configurable, policy-driven orchestration work seamlessly with third party and open source analytics and assurance systems to enable automated closed loop operations. These systems feed data and intelligence into orchestration at various layers, to automatically trigger scaling and healing of services, network services and virtualized network functions (VNFs).

Dynamic Inventory

In order to reliably and repeatedly deliver digital services with a high success rate, Oracle Communications Service and Network Orchestration maintains an accurate, up-to-date dynamic inventory of all service and network resources, both physical and virtual. This allows the solution to make instant decisions as to how and where to deploy services, using up-to-date information. It also tracks the assignments of resources to services, so that if there is a failure, whether in the network or data center, the impacted services can be quickly identified.

The inventory is dynamically updated as resources are added, removed, assigned and de-assigned and as services are created, scaled repaired and removed. Virtual resource levels are discovered via interaction with the Virtual Infrastructure Managers and physical resource levels are discovered via a network discovery process. Lifecycle management flows check and reserve resources before initiating transactions to effect change in the network. The solution's dynamic inventory enables policy-driven scaling and healing of services driven by network events and based on an accurate picture of current resource levels.

Open Platform

Nobody wants to be locked into a closed solution that only the solution vendor can evolve and extend. Oracle recognizes the importance of providing open interfaces and being able to integrate to open source and third party systems, including OSS/BSS and orchestration systems.

The Oracle Communications Service and Network Orchestration solution is an open and modular platform designed to integrate easily with these systems and to evolve flexibly to meet ongoing business needs. Open APIs and a layered, loosely coupled architecture support integration with a wide range of systems, including Workforce Management, Supply Chain Management, SDN controllers, assurance and analytics. Productized support for quickly on-boarding new and evolving vendor capabilities – either virtualized or physical – is also provided.

Summary

Oracle Communications Service and Network Orchestration is an open, multi-domain, cross-layer orchestration solution that delivers unsurpassed operational and network agility to service providers that are adopting NFV, SDN and cloud-based services while continuing to support traditional wireless and wireline networks. It uses agile, model-driven design and assembly together with dynamic orchestration functions that optimize modularity and re-use. This modern solution enables rapid time to market for new services and capabilities while also supporting scalable operations that reduce IT complexity and costs.

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