Service and Network Orchestration

Introduction to the SNO solution and its Reference Implementation

Oracle Communications
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Service and Network Orchestration

Solution Overview
Challenges of Today’s Service Providers

Dynamic portfolios, many-to-many. Complexity is the limiting factor.

- More of everything
- More diverse
- More frequently changing

- Disappearing silos: many-to-many
- Overwhelming number of combinations

Business Models & Market Channels

Commercial Offers & Bundles

Networks & Technologies

Retail | Wholesale | VNO | Etc.

Voice | Internet | Media | Mobile | Etc.

Satellite | Fibre | POTS/DSL | LTE | 3G | Wi-Fi | HFC
Service and Network Orchestration

Distinctive concepts and features

• Approaches
  – Ways of thinking about variability, regularity, reuse and separation of concerns that allow you to manage complexity

• Architecture
  – Functional blueprint, information model, and behavior patterns are designed for flexibility, transparency and localization of impact

• Process
  – Concept-to-market approach leverages the architecture to enable efficient and predictable cycles
SNO Multi-Layer Orchestration Architecture

Solution Definition Environment
- Design Studio
  - Design service definitions
  - Define Orch behaviors
  - Use high-level abstractions
  - Auto-realize Orch. config
- Run-time Platform
  - Service Design Orchestration
    - Designs & Assign services
    - Maps Products-Services (Optionally)
    - References Dynamic inventory
    - Identifies Technical Actions
  - Service Delivery Orchestration
    - Sequences Technical Actions
    - Transforms Actions Payloads
    - Integrates to Open APIs
    - Dispatches to Delivery Systems
  - Service Orchestration
    - Designs & Assign services
    - Maps Products-Services (Optionally)
    - References Dynamic inventory
    - Identifies Technical Actions
  - Technical Order
    - Sequences Technical Actions
    - Transforms Actions Payloads
    - Integrates to Open APIs
    - Dispatches to Delivery Systems
  - Open APIs
    - Presents Open APIs
    - Exposes network abstractions
    - Automates Lifecycle Management
    - Configures Virtual/Physical /IT
- Network Orchestration
  - Network and IT Configuration Protocols
  - Network Infrastructure
  - Cloud Infrastructure, VIMs
- Conceptual Model
- Orchestration Configuration
- Network and IT Configuration Protocols
- Product APIs
- Service APIs
- NFV-O
- WAN Controller
- Activation
- SDN Controller
- 3rd Party Delivery Systems
Rapid Service Design
Efficient Concept-to-Market projects

Technical Community

- Commercial-only changes: no OSS project required
  - Minor projects have localized impact
    - Upgrade network element, additional vendor for familiar equipment, Reshuffle activation systems
  - Small projects with well-bounded scope
    - New variant of familiar technology, e.g. ADSL+VDSL, GPON+BPON
  - Predictable and well-patterned projects, with transparent impact
    - New line of service, e.g. Introduce TV, VPN

Why is it Rapid?

Information Model & Best Practices
- Product-Service decoupling
- Technical & Vendor decoupling
- Hourglass scaling
- Object orientation
- Vendor-agnostic entity modeling
- SOM & TOM Fulfillment patterns
- Declarative design policies

Architectural Blueprint
- Entity-agnostic functions
- Standard order formats
- Configurable SOM/TOM topologies
Design Studio
A collaborative Design Environment for defining SNO Solution behavior

- Business Analyst
- Business Managers
- Domain Experts
- Network Config Experts

Conceptual Modeling

Orchestration Configuration
- Service Orch. Behavior
- Design and Assign Policy
- Tech Action Definition
- Technical Orch. Behavior
- Vendor-Specific Activation

Run-time Orchestration Platform

SME
Service and Network Orchestration Solution

• SNO Platform – *Run-time environment providing multiple levels of dynamic orchestration*
  – Generic orchestration capabilities driven by domain-specific meta-data to provide domain solutions
  – Licensed Oracle Communications Applications
  – Pre-integration and configuration of applications within a well-defined solution architecture
  – Working configurations and samples, extensible in the field to address unique requirements
  – Open APIs for integration with third party systems

• SNO Design Environment - *Efficient model-driven catalog development*
  – Utilizes Design Studio, a collaborative integrated design environment based on an open source platform
  – Foundational support for the definition of Conceptual Model entities and relationships
  – Auto-realization capabilities for generating application-specific catalogs from a Conceptual model
  – Application specific design capabilities for enriching application configuration from auto-realizations

• Rapid Service Design Methodology – *Predictable agile Solution Development*
  – Methodology Documentation
  – Modeling Guidelines and illustrations of Best Practices
  – Webinars and training

• SNO Reference Implementation - *Working implementation illustrating multiple domains*
  – Installers for both design-time and corresponding run-time environments
  – Catalogs for Broadband, Mobile, Carrier Ethernet, Layer 3 Value-added Services (L3 VAS) and Smoke Test
  – Readiness data and predefined sample orders enabling execution of end-to-end run-time use cases
  – Documentation describing the use and development considerations for each sample domain
SNO Reference Implementation

Introduction
Installing the SNO RI

Procedure overview

• Acquire the installers

• Acquire all the install media and collect it in the staging folders as specified by the Software Source Locations

• For RI runtime (server-side)
  – Plan the installation and prepare the installation environment
  – Install and configure the installer
  – Run the installer

• Do the same for RI design time (desktop)

Start
• Unix server system without Oracle Communications Apps
• Prerequisites and topology options as specified

End
• A WebLogic Admin server and repository database
• Managed servers for ASAP, OSM and UIM
• Intra-suite messaging infrastructure, system emulators
• Deployed configuration of apps for SNO
• Deployed sample catalogs for selected domains
• Ready to process sample orders

Start
• Windows desktop system without Design Studio
• Prerequisites as specified

End
• Design Studio on Eclipse
• SDKs for OSM and UIM
• Required Oracle and 3rd party development tools
• Selected sample catalogs ready to be explored & tailored
SNO RI Design Time Environment

IDE with pre-installed domain catalogs, leveraging common infrastructure

• Design Studio with application plug-ins and development tools
• Workspaces pre-populated with projects that configure OSM, UIM and ASAP according to the SNO blueprint
• Illustrative domain-specific data sets built using the Rapid Service Design methodology – structured for rapid change

Domain catalogs and other material sourced from OTN are provided free of charge, as-is without Oracle product support commitment.
Installing the Design Time Environment

Using the automated installer

**• Prerequisites**
- Windows, minimum 8Gb RAM
- Ant, JDK installed
- Installation media in place

**• Installer Options**
- Install any or all of Smoke Test, Broadband, Mobile catalogs in a single Workspace

**• Installation should take about 30 minutes once media is collected**
SNO RI Runtime Environment

Pre-configured Service Order processing system, with sample orders

- ASAP, OSM and UIM servers, with messaging infrastructure and adjunct system emulators
- Pre-configured with SNO-standard domain-agnostic configuration for each application
- For each sample service domain:
  - Pre-deployed application-specific catalog data sets
  - Pre-loaded inventory of ready resource instances
  - Library of sample service orders
- Order submission test harness

The default installation is “PoC ready”, not performance-tuned or secure for production use.
Installing the Runtime Environment

Using the unattended installer

• Prerequisites
  – 64-bit Linux hosts, 16 GB RAM
  – Installation media in place
• Installed
  – OSM, UIM, ASAP, WLS, Oracle DB 11g on a single host
  – Optional distribution of applications across multiple servers, WLS clustering, use of previously installed DB
• Installation should take about 2 hours once media is collected
Beyond the Reference Implementation

Understood and evaluated, now what?

• Systems Integrator Sales & Pre-Sales teams
  – Integrate RI into standard demo kit
  – Use as basis for customer-specific proofs-of-concept

• Ongoing Education
  – Integrate RI into courseware, use to build exercises

• Production Deployment
  – License necessary product components
  – Work with Oracle and SI to design and set up a server environment suitable for large-scale production
  – Clone/own-modify/extend domain catalogs using Rapid Service Design Methodology
  – Integrate 3rd party systems

Questions or issues with the Reference Implementation?

• Communications Service Delivery community space on OTN
• Oracle Consulting for architectural expertise in production deployments
• My Oracle Support for issues with product components