Oracle Communications
OSS Product Portfolio Overview
The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.
Oracle Communications Solutions

“OSS” Components

- ERP and Enterprise Management
- Customer Relationship Management
- Billing and Revenue Management
- Order Management
- Inventory Mgmt
- Service Activation
- Service Delivery Platform
- Application Integration Architecture
- Integration
- Master Data Management
- Fusion Middleware
- Infrastructure
- Carrier Grade Framework
Oracle Communications Solutions
OSS Component Introduction

- **Order Management** – Process enabled application for optimized delivery of captured customer and network orders. Performs order transformation, decomposition and orchestration of all order activities with full visibility & status aggregation over entire order lifecycle.

- **Inventory** – Unified, accurate inventory of subscribers, services, logical & physical resources together with design / assign capabilities for service fulfillment and actionable network analytics for network optimization.

- **Design Studio** – Design time environment for rapid assembly, config and deployment of new services

- **Activation** – Multi-service, multi-vendor service activation of network and IT applications. Stateful configuration and Service-aware configuration management of enterprise Ethernet / IP services.
Oracle Communications Solutions
OSS Component Introduction

- Oracle Communications Order & Service Management (OSM)
- Oracle Communications Unified Inventory Management (UIM)
- Oracle Communications Network Intelligence
- Oracle Communications Network Integrity
- Oracle Communications ASAP
- Oracle Communications IPSA
- Oracle Communications Design Studio
Oracle Communications Solutions
*Where the “OSS” Components Fit*

- **Front Office – BSS**
  - Order Management
  - Service Fulfillment
  - Service Activation

- **Back Office – OSS**
  - Inventory Management
  - Mediation

- **Network & IT Infrastructure**
  - Oracle SDP

- **External Partners**
  - Oracle ERP
  - Oracle BRM
  - Siebel CRM
Order & Service Management

http://www.oracle.com/industries/communications/oracle-communications-order-service-management.html

- **Orchestrate** orders across systems and people
- Ensure **visibility** of order progress at any point during order execution
- Manage in-flight changes to orders automatically
- Support the **human aspect** AND **system automation**
- Enable **fast time-to-market** deployments with ability to scale

Orchestrate between order capture and multiple order execution systems
## Order and Service Management (OSM)

### Key Product Capabilities

<table>
<thead>
<tr>
<th>Key Capabilities</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decomposition</td>
<td>Decompose sales orders and network orders to processes and tasks</td>
</tr>
<tr>
<td>Orchestration</td>
<td>Manage fulfillment actions involving the right systems and people at precisely the right time</td>
</tr>
<tr>
<td>Visibility</td>
<td>Ensure visibility of order progress at any point through OSM UI and through integration to other systems</td>
</tr>
<tr>
<td>Change Management</td>
<td>Manage in-flight changes to orders automatically</td>
</tr>
<tr>
<td>Reporting</td>
<td>Provide data and analysis on order process and activities</td>
</tr>
<tr>
<td>Service Studio</td>
<td>Graphical service creation tool for users to view, build, configure, and deploy services</td>
</tr>
</tbody>
</table>
Gain Control of In-flight Order Changes

Compare a simple order fulfillment process in other tools...including rainy day scenarios

Custom Logic for Supplemental Order Entry Point
- Handle unsolicited order
- Match to existing in-flight order
- Determine version of supplemental order and handle stacked/pending supps

Custom Logic to Analyze Order and Determine Compensation Plan
- Determine tasks executed to this point
- Identify data for this task
- Determine changes in data for this task

Sunny day Process Definition
Rainy day Process Definitions

Create ADSL Order
Submit

Verify ADSL Service Availability
Success

Assign Port
Completed

Port Available

Rollback Assign Port

Add Capacity
Completed

Rollback Add Capacity

Ship Modem Self-install Pkg
Completed

Rollback Ship Modem

Port Unavailable

Rollback Activate DSLAM

Check if Port Activated

Rollback Port Activation

Get New Port ID

Activate New Port ID

Check if Port Activated

Get New Port ID

Activate New Port ID

Send Customer Survey
Completed

Rollback Send Customer Survey

Check Bandwidth Compensation Process

Check BW Chg

Chk Port BW

Is Compatible?

Finish

Get New Port ID Compensation Process

Send Customer Survey
Completed

Check Bandwidth Compensation Process

Check BW Chg

Chk Port BW

Is Compatible?
Compare for a Simple Fulfillment Order

**Before**

- Excessive Process Pollution for Rainy days
- Excessive Custom Code for Order matching, delta analysis and compensation analysis
- Fragile to change, impossible to re-use
- Never sufficient for all scenarios
- Cost Growth for every service and change
- Every service is Slower-to-Market than the last

**After**

- Clean processes for any and all Rainy days
- Built-in order matching, delta analysis, net-effect analysis and compensation plan
- Easy to change, Highly re-usable
- OCM works for current and future services
- No Cost Growth for each service or change
- Every new service is Fast-to-Market
Design Studio plugin to Eclipse
Design Studio for OSM – Process Whiteboard

Visual design of fulfillment processes

Floating process design palette

In-line task creation or drag and drop

Floating “bird’s eye view” and navigation of process

Magnifier

Productivity Pluses...
- Design without OSM run-time
- Drag and drop
- Multi-select
- Copy/cut and paste
- Undo/redo in process design
- Zoom
- Auto-layout
- Sticky tool mode
- Multiple entity editors
Using External Data in Web Client

- DB
- External File
- Web Service
- OSM Order
- Other System
- OSM Order Attachment

Validations
- Presentation
- On-line help
- Tool tips
- Calculations
- Language localization
- Order Data view
OSM Reporting Module

- OSM Reporting Module add-on provides an interface to runtime data
  - Supports multiple configurable and filterable reports output in CSV or XML format
    - Orders
    - Order History
    - Tasks
    - Pending at Tasks
    - Processes
    - Notifications
  - Integration with enterprise reporting packages is also possible
Architecture and Process

Orders → OSM Server → OSM Database

Views → Stored Procedures → Reporting Schema → XML

CSV → BIPEE

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Activation

- Multi-service, multi-vendor service activation and configuration management

Across…
- Mobile Services
- Consumer Multi-Play
- Enterprise IP Services

- Activating over 500,000 mobile service orders per day at a given customer
- Managing some of the largest IP/MPLS networks

Confirmed Market Leadership
“Oracle is the [activation] market leader.”

OSS Observer April 2008
 Activation Applications  
At a Glance

<table>
<thead>
<tr>
<th>APPLICATIONS</th>
<th>ASAP</th>
<th>IP Service Activator</th>
<th>Configuration Management</th>
<th>Policy Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHAT IT IS</td>
<td>Flow-through high scale activation for Consumer services</td>
<td>Complex Enterprise IP/Ethernet service Activation</td>
<td>Service-Aware Config Mgmt of IP/Eth network</td>
<td>Centralized Mgmt of IP infrastructure (DNS, DHCP, Radius)</td>
</tr>
<tr>
<td>PAIN POINTS ADDRESSED</td>
<td>• High volumes of Service Orders to activate</td>
<td>• Very complex service configurations</td>
<td>• Reliable config back-ups</td>
<td>• Inefficient use of IP address Resources</td>
</tr>
<tr>
<td></td>
<td>• High subscriber growth rates - want rapid turn-up</td>
<td>• Tedious and error prone network updates</td>
<td>• Relating services to configurations</td>
<td>• Management of multiple DNS and DHCP servers</td>
</tr>
<tr>
<td>INTEGRATION POINTS</td>
<td>• OSM</td>
<td>• OSM, CM, Policy Services</td>
<td>• OSM, IPSA</td>
<td>• OSM, Inventory</td>
</tr>
</tbody>
</table>
## Communication Domains

### Business Applications

<table>
<thead>
<tr>
<th>Mobile Subscriber</th>
<th>Consumer Multi Play</th>
<th>Enterprise IP Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSM</td>
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<tr>
<td>ASAP</td>
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<td>IPSA and CM</td>
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<tr>
<td>Policy Services</td>
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<td></td>
<td>Disco</td>
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</tbody>
</table>

#### Characteristics:

- **Volumes:**
  - Mobile Subscriber: High
  - Consumer Multi Play: Medium
  - Enterprise IP Services: Low
- **Complexity:**
  - Mobile Subscriber: Low
  - Consumer Multi Play: Medium
  - Enterprise IP Services: High
- **$$$/Transaction:**
  - Mobile Subscriber: Low
  - Consumer Multi Play: Medium
  - Enterprise IP Services: High

### Policy Services

- **Service Examples:**
  - Mobile Subscriber: Pre/Post Paid, Voice and Data mobile services
  - Consumer Multi Play: DSL, Cable, FTTP, Satellite, Consumer & SME VoIP & Video
  - Enterprise IP Services: L3 MPLS VPNs, QoS, VPLS, Ethernet, etc.

### Customer Examples:

- **Examples:**
  - Mobile Subscriber: O2, américa móvil
  - Consumer Multi Play: Bell, BrasilTelecom
  - Enterprise IP Services: Liberty Global, at&t, BT, BaneTele, C&W
Multi-service, multi-vendor cartridges enabled through proactive hardware partnerships and deployments
Activation as part of OSS/BSS

Billing System

Performance Management

Fault Management

Workforce Management

CRM System

Messaging/EAI

Order and Service Management

Process Control Engine

View Frame Engine

Upstream XML OSM API

OSM Control GUI

Upstream Activation API

Service/Subscriber Web GUI

Service Inventory

Subscriber Inventory

Design/Assign/Admin GUI

Physical Inventory

Logical Inventory

Activation

Activation Controller

Existing Activation System(s)

High Volume Mass Market Services (ASAP)

Unique IP-Based Next Generation Services (IPSA)

Cartridge Plug-in Framework

Inventory

Service Inventory

Subscriber Inventory

Logical Inventory
ASAP Design Studio

IDE for rapidly building and deploying services (subscriber or network build out)

Design, document and deploy Network and Service Activation Cartridges

Design, document and deploy SRT Cartridge for upstream integration

Cartridge relation graph for showing relationships among Service and Network Cartridges, and run-time environments
Activation
IPSA Component Overview

- Policy & role-based management of IP & Carrier Ethernet services
  - Stateful, abstracted, intelligent, multi-vendor
- Seamless operation within Activation or as part of Service Fulfillment for multi-domain, multi-vendor service control
- Integrated Configuration Management for lifecycle management of service and device configurations
  - Archiving, intelligent restore, compliance management

Key Value Proposition
- Productised intelligence for rapid deployment with little / no customisation
- Both activation & ongoing management of device configurations
Activation
IPSA Component Overview

• IP Service Capability
  • L3 MPLS VPNs (RFC 2547)
  • L2 MPLS VPNs
  • PWE (Martini)
  • VPLS
  • IP/MPLS QoS
  • Dedicated Internet Access
  • Security – ACLs/Firewalls
  • Metro Ethernet VLAN
  • MPLS-TE LSP Management
  • IPsec VPNs
  • VRF Lite
• Extensibility via:
  • Configuration Templates
  • Generic Policies

Flexible, Highly Automated Activation for IP Networks
Activation – IP Service Activation

VPN Configuration Made Easy

- Drag & drop service activation, or wizard-based
- Full support for RFC 2547 MPLS VPNs
- Automatic configuration of PE routers including:
  - VRF table creation
  - PE-CE communication (using eBGP, OSPF, RIP, static routes)
- Device Drivers:
  - Convert generic service requests into device / vendor specific commands
  - Distributed approach drives scalability
- Audit trail in place - no “fire and forget” activation
Unified Inventory Management (UIM)
Oracle’s Strategic Next-Generation Inventory Platform

- Combines flexibility and speed to market for mature service providers
  - Extensible SID-based data model enables next generation services across and beyond the network
  - Dynamically extensible to support business process variations
  - Designed to enable pre-built support for multiple communications service domains

- Modern, standards-based IT architecture
  - Java EE, Web Services, XML, browser-based GUI, SOA compliant
  - Modular structure allows UIM to be used for specific needs alongside legacy systems

UIM is a leading-edge, future-driven software product built on current leading practices from the communications and software industries
Oracle’s Information Model
Alignment Between Oracle CIM and TMF SID

Oracle’s Communications Information Model is based directly on the SID. This is the native object model for our Inventory repository.
UIM Product Structure
Modular Functionality, Modular Value

Core Platform
Architectural framework and common services

Technology Packs
Enable concepts, terminology & process variants specific to customer-oriented services, or network-oriented technologies

Functional Managers
Manage resource life cycles and relationships between resources, services and customers

Available à la carte, with certain dependencies
Available à la carte
Included with purchase of any Functional Manager
Domain Support in UIM
Artifacts Built in Design Studio Give UIM Its “Face”

To model these inventory components in UIM...

... which are a realization of the object model of the DSL service

... we first use Design Studio to create the specifications that are templates for these types of object...

Representing inventory in a DSL context will need as a base a set of pre-configured specifications for the equipment, devices, connections etc. that are part of this domain. These would be created in UIM by importing the Design Studio cartridges bundled as a DSL Technology Pack.
Consumer VoIP Technology Pack
Product Description

Technology Pack Facts

<table>
<thead>
<tr>
<th>Domain</th>
<th>Consumer VoIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Logic</td>
<td>Deep</td>
</tr>
<tr>
<td>Business Model</td>
<td>Broad</td>
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<td>Vendor/Device Independent</td>
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<td>Model Perspectives</td>
<td>L2C: Service Fulfillment</td>
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<tr>
<th>Specifications</th>
<th>85</th>
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<td>Characteristics</td>
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<tr>
<td>Cartridges</td>
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</tr>
<tr>
<td>Custom Web Services</td>
<td>5</td>
</tr>
</tbody>
</table>

Provides business entities and behaviors commonly required by providers of consumer Phone service using VoIP technology.

- Consumer VoIP Service
  - Subscriber association
  - Telephone Number Management
  - Phone Feature Assignment
  - User credentials

- VoIP Terminal Modeling
  - VoIP variant: SIP, H.323
  - CPE details
    - Serial, MAC, IP address, etc.
  - Associations to:
    - Gatekeeper, Proxy, Session Border Controller
    - DHCP, TFTP servers

- Business Logic
  - Allocation of Telephone number
Metro Ethernet Technology Pack
Product Description

Provides business entities and behaviors commonly required by providers of data networking services using Metro Ethernet technology as standardized by the Metro Ethernet Forum.

- **Metro-E Services**
  - Ethernet Virtual Private Line Services – EVP-Line, EVP-LAN, EVP-Tree

- **VLAN Management**
  - VLAN assignment and usage management within a domain

- **Ethernet Sites**
  - UNI-N parameter modeling
  - VLAN assignment and EVC mapping
  - Logical modeling for CPE device, interfaces

- **Business Logic**
  - Model integrity Validation and characteristic validation
MPLS L3 VPN Technology Pack

Product Description

Comprehensive model for RFC4364 MPLS L3 VPNs
- Specific type of a Data Networking Service
- Network Based VPN
- IP VPN Service
  - H&S/Mesh/Hybrid Topologies
  - Extranets
  - Managed resources: Router Target and VPN-ID
- IP VPN Termination
  - Modeling of Dual homed Sites
  - Logical modeling for CPE device, interfaces
- PE and VRF modeling
  - Logical modeling for PE device, VRFs, interfaces
  - Managed resources: Route Distinguisher, IP addresses
  - Extensive Routing attributes for:
    - eBGP, OSPF, RIP, EIGRP
    - Static Routing
  - VRF attributes
  - VRF-lite, Interface-less VRFs
- Business Logic
  - Allocation of RDs, RTs, VPN-IDs

Provides business entities and behaviors commonly required by providers of data networking services using MPLS Layer 3 Virtual Private Networks

Technology Pack Facts

<table>
<thead>
<tr>
<th>Domain</th>
<th>MPLS L3 VPN</th>
</tr>
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<tbody>
<tr>
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<td>0</td>
</tr>
</tbody>
</table>
Layer 2 VPN Technology Pack

Product Description

- L2 VPN Services
  - Virtual Leased Line (aka Pseudo Wire Emulations (PWE))
    - Ethernet VLAN, Port-based, Q-in-Q
  - Virtual Private LAN Services (VPLS)
    - H&S/Mesh Topologies
    - Technology Variants: Lassare (LDP-Based) & Kompella (BGP-based)
    - Managed resources: Router Target and VPN-ID

- VPN Site
  - Modeling of Dual homed Sites
  - Logical modeling for CPE device, interfaces

- PE and VSI modeling
  - Logical modeling for PE device, VSIs, interfaces
  - Managed resources: Route Distinguisher, VSI attributes

- Business Logic
  - Allocation of RDs, RTs,

Provides business entities and behaviors commonly required by providers of consumer Phone service using VoIP technology.
Yankee Group: "Five Significant OSS Trends We Expect to See in 2008"

One of the Five Significant Trends:

“Network capacity planning and trend analysis will also become an area of key focus for OSS vendors. Accurate capacity planning and trending is becoming critical in the context of fulfillment of NGN services.

On-demand, bandwidth-intensive service requires dynamic, real-time allocation of network resources across the end-to-end network infrastructure. Accurate, realistic and proactive network capacity planning and trending capabilities are a key requirement for OSS solutions.

Planning will not only enable correct sizing of the future network but will also help CSPs reduce capacity shortfalls, minimize order fallout and increase efficiency by identifying underutilized network resources.”
Network Intelligence

Objectives

• Just-in-Time capacity – anticipate necessary network change just ahead of the demand curve
• Balanced asset utilization and routing, have adequate stretch capacity
• Business Intelligence dashboard for improved decision making
• View multiple networks, with multiple inventories, as if one homogenous network (Federated View)
• Model ‘What-if’ scenarios as to future demand and impact on network
## Principle Network Intelligence Value Propositions

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
<th>VALUE</th>
</tr>
</thead>
</table>
| Lack of Forecasting                         | Plan Manager            | • Accuracy tracking forecast system that couples marketing forecasts to engineering data  
|                                              |                         | • Agile adjustment of plan to market conditions                      |
|                                              |                         |                                                                      |
| Inaccurate Bid Network Design Costing        | Plan Manager            | • Rapid cost and plan generation for major customer bids             |
|                                              |                         | • Clarifies margin and detailed plan improves bid credibility       |
|                                              |                         |                                                                      |
| Un-validated Planning                        | Plan Manager            | • Move toward market driven JIT planning                             |
|                                              |                         | • Budget is built from sales/marketing plan and continually tracked and adjusted |
|                                              |                         |                                                                      |
| Lack of governance over service delivery    | Core Manager Routing Manager | • Keep the network optimal with circuit routing optimization reporting |
|                                              |                         | • Create Service and/or Customer specific Routing profiles to enforce circuit routing policies |
|                                              |                         |                                                                      |
| Optimization of existing inefficient network routings | Routing Manager       | • Do optimal re-routing studies of high bandwidth circuits.         |
|                                              |                         | • Improve resilience with shorter routings                           |
|                                              |                         |                                                                      |
| Feasibility analysis for traffic migration   | Migration Manager       | • Calculate the cost of traffic migration                            |
|                                              |                         | • Produce a rerouting plan to do it                                  |
|                                              |                         |                                                                      |
| Service Assurance                            | Outage Manager          | • Report on affected customer services quickly and identify restoration paths. |
2. Match Discovered networks and services with Inventory’s view

Ex 1: Match the discovered NE and each port with objects in Inventory

Ex 1: Poll NE to find all ports and if each port is free or assigned

Ex 2: Poll optical EMS to find unused ports

2. Match Discovered networks and services with Inventory’s view

Ex 1: Match the discovered NE and each port with objects in Inventory

3. Detect discrepancies (errors), generate reports

Reports can be used by management to understand and track Inventory’s accuracy

4. View and correct discrepancies with easy-to-use Reconciliation GUI

Rapidly make corrections

Reduces manual errors

- Keeps Inventory synchronized with the network & other systems
- Flexible, configurable, extensible & easy-to-use
- Supports any type of network, service & data source
Key Discovery Capabilities

- Discovery from any type of network or data source
  - Core competency is telecom/data NE, EMS & NMS
  - Also applicable for any type of data source such as Billing, CRM, Asset Management, etc.
- Focus on GUI configuration for ease-of-use
  - Flexible Scheduling of Discovery Scans
- Highly flexible & extensible Cartridge approach
  - Rapidly add support for discovering new NEs, EMS & NMS
  - Extensive library of network interface cartridges
  - Enrich raw data with Enhancement cartridges
  - CDK enables Oracle PS & SIs to meet customer-specific needs
- Carrier Grade OSS
  - Provides significantly more then an Enterprise-grade tool or home-grown systems
Discovery Scan Configuration

- GUI provides configuration & scheduling of Discovery Scans
- A Discovery Scan includes:
  - Interface protocol
  - Address range
  - Config items (retries, etc.)
  - Schedule
- Discovery Groups simplify operation
  - Scans can be grouped to manage geographic regions, device types, departments, etc.
- Entirely user-configurable
A Cartridge Chain typically provides:
- Collection – interface to NE using the required protocol (SNMP, TL1, etc.)
- Modeling – map discovered data into object model
- Distribution – in MTOSI XML

Numerous discovery methods can be supported simultaneously, for example:
- SNMP Discovery – automatically discover NEs by polling an IP address range
- EMS/NMS – discover the network by querying an NMS
Discovery Cartridge Configuration
Key Integrity Capabilities

• Innovative Visualization GUI allows users to see all discrepancies (errors) with simple labelling
  • Easy navigation
• Corrections can be uploaded automatically to any inventory database via a suitable API
• Discrepancy reports are produced at configurable intervals
  • Summary and Detailed discrepancy reports are automatically generated and emailed
• Integrity will work with any inventory system which provides data extraction and insertion capability
Network Integrity GUI

- Simple Visualisation
  - The GUI lists all objects with discrepancies in an easy to navigate tree browser
- Smart Object Comparison
  - Compares discovered data with extracted inventory and highlights discrepancies
- Clever Copy and Paste Correction
  - The Discovered Live object can be copied and pasted into the Inventory view
- Rapid Reconciliation
  - Create a Configuration Change report and/or
  - Upload changes to Inventory