Orchestrated Network Services with LSO, SDN and NFV

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Service: NFV Fora perspective

Application

Orchestrator

Public Internet
Service: “Open” Fora perspective

Orchestrator

Application

Controller
Telstra

Controller
Telstra International

Controller
PCCW Global

Controller
HKT
Service: SPs’ perspective - Federation
Customer perspective

Desire: Click to Activate

Reality: Either... Or...

Facetime, Skype, GotoMeeting, WebEx, Lync, Zoom etc...
Service Operations Problem Definition

Application Layer
- Business Application

Infrastructure Layer

Control & Management Layer
- BSS/OSS
- Network Services

Management & Control Layer
- BSS/OSS
- Network Services

Northbound API

Southbound API
- Infrastructure Layer

Eastbound API

ENNI

CEN Operator 1

CEN Operator 2
To programmatically control a service, one needs to know:

1. **What it is**
   - Abstraction to standard basic components
   - Formal information model defining service constructs

2. **What is the Architecture**
   - Topology, Federated Orchestration Framework

3. **What Products are available**
   - Product Catalog, Availability, Feasibility, Commercials

4. **What can I do**
   - APIs to operate the service: Activate, Modify, Monitor, Cease
The Three Fundamental Vectors

Orchestration Architecture (LSO)

The “WHO & WHERE”
Define, streamline and standardize processes for buying, selling, delivering and operating MEF-defined services.
MEF 50

Process model for the generic Carrier Ethernet service lifecycle

- Service Operations Lifecycle management
- Product Lifecycle management
- Based on TM Forum SID
Service Operations Areas and Projects

Service Operations Committee

- Lifecycle Management
  - Lifecycle Service Orchestration Reference Arch.
  - Ethernet Service Lifecycle Process Model (MEF 50)
  - Ethernet Product Catalog
  - Ethernet Ordering
  - Ethernet Network Resource Provisioning
  - Ethernet Performance Reporting Framework (MEF 52)

- Partnership Management
  - Ethernet Service Qualification Questionnaire (MEF 53)
  - Ethernet Serviceability
  - Ethernet Interconnect Point

Bold text indicates published MEF spec.
Performance Reporting Framework (MEF 52)

- Real-Time vs. Ticket based
- Multi-Level/Multi-Domain
- Different views for Customer/SP/Operator
Steps for achieving transparent management

1. Agreement on what to measure
2. Agreement on how to measure
3. Agreement on how to present
4. Agreement on how to share
Steps for achieving transparent management

1. Agreement on what to measure
2. Agreement on how to measure
3. Agreement on how to present
4. Agreement on how to share

"Dial-tone" for the Third Network
Project Mapping

Orchestration Architecture (LSO)
The "WHO & WHERE"

Process Lifecycle
The "HOW"

Ordering
Provisioning
Billing
Cloud
IP-VPN
E-LAN
E-Line
Services
Information Models (MEF 7.2, CMI)
Interface Profiles
The "WHAT"
Network Resource Provisioning APIs: Single Operator

- **Service**
  - EVC: EVPL

- **Decomposition**
  - EVC segments

- **Flow domains**
  - Forwarding groups

- **Network**
  - Technology group
Network Resource Provisioning APIs: Multi-Operator

- **Service**
  - EVC: EVPL

- **Decomposition**
  - Multi-operator

- **Flow domains**
  - Forwarding groups

- **Network**
  - Technology groups
  - Multi-operator

- First OpenSource project – Agile Development
Service Abstraction (E-Line)
Information Model – Meccano™
Common Information Model

• LEGO parts do not fit Meccano models (and vice versa).
• Makes integration cumbersome/impossible.
• You can buy Meccano parts in Lego stores.
• But you can’t mix the parts together.

We need an Industry-Wide Common-Information-Model (MEF CIM project)
Industry Wide Alignment

**Process Flows**

- Compute
- Connect
- Store

Reference Architecture

**Information Model and Specifications**
Service Operations Committee Future Projects

• **Partner Relationship management**
  – Automation of services

• **Industry Standards Alignment**
  – Ethernet service billing specifications

• **Future Technology**
  – SDN
  – NFV
  – On-Demand Services (e.g. Dynamic Responsive Ethernet)

• **Interaction with other MEF committees**
  – Provide contributions to the technical, marketing, and certification committees
Q&A
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