Agility from Customer to the Network

Using TMForum APIs to power an Omnichannel customer model over a MEF LSO Architecture

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Agenda

1. Leveraging TM Forum APIs to power the variety of customer channels

2. TMForum APIs for the MEF use cases achieve network agility and support the transition to NFV

3. An agile, omni-channel model, combined with the latest network service orchestration as a game changer
It’s a new Marketplace

a marketplace of customers and partners – touch the customer in the ways that deliver the best experience

Dynamic Portals  Mobile Apps  External Systems (B2B)  Call Centre  Wearables  Social

BSS/OSS

Dynamic APIs

Quote  Order  Ticket  Inventory  Event  Party  Catalog  Billing

Offer Management  Meta Data Management  Dynamic Inventories  Layered Mapping Offer to Resources

Product Orchestration

Price / Performance Policies  Network Behavior Policies  Intent based orders  Notifications  Statistics

Self Healing with customer experience measurement

Catalog of available network services  Management of underlying compute resources  Management of extensible VNFS  Geographic Resource Management  Assignable Inventory  Service Monitoring

NFV / NSO

ETSI, OASIS, TMF Zoom, ONAP, MEF all working on a way forward ...
Imperatives of Omni Channel (GB994)

Channel Choice based on Customer Preference
- Dynamic Web Portal
- TMF Open APIs
- Front of House

Channel Hopping
- ‘State’ is maintained behind the API
- Stateless channels can be used interchangeably

Deliver in Context
- Catalogs make the correct offers available to correct parties

Choose & Change

Most Omni Channel Implementations are sacrificing Agility!
Dynamic APIs to support Omni Channel and NFV/NSO

“A common set of business operations and APIs can be combined with meta-data instantiation of services to support any service type, NFV, SDN, IaaS, SaaS, IoT, Fibre as a Service.”

- Dynamic payload in APIs governed by meta data
- Common APIs to support best practice touchpoints
- There are several competing options for a sharable standard meta-data format
Meta Data: Confusing Terminology & Competing Standards

Metadata is data which defines data, also called:

- Templates
- Specifications
- Model Driven
- Catalog Driven
- Control Plane

Lots of standard and non standard meta data formats are available:

- TMForum SID Specifications (used by NBNCo)
- JSON Schema via hypermedia (MEF Sonata and preferred by web developers)
- Tosca (OASIS standard from the cloud world)
- Yang/Netconf (extending templating from traditionally networking)

NOT TO WORRY WE CAN CONVERT / ADAPT BETWEEN FORMATS !
Accelerating New Services Through Open APIs

➢ Service instances created as new network capabilities are enabled
  ❑ New network capabilities discovered and instantiated in domain catalog
➢ Domain catalog announces new service instances at adaptation layer
  ❑ New services instances BSS system can use to define market offerings
➢ Quickly augment Product Catalog with new offerings
  ❑ New services are made available through Omnichannel model
Characteristics for Rapid Development

- **DEVOPS PROGRAMMABILITY**
  - Quickly define rules needed to map TMF payload into service requests;

- **MICRO-SERVICES ARCHITECTURE**
  - Provided the ability to deploy new microservice for TMF Endpoint

- **INTELLIGENT ADAPTATION**
  - Mapping any resource/service modeling language like MEF Legato Yang definition to TOSCA
Characteristics for Rapid Integration

➢ OPEN APIs
   - Open northbound APIs enable integration with existing OSSs and other critical software systems by parsing TMF API specific requests and direct them to proper microservices action

➢ EXTENSIBILITY
   - Handle the additional lifecycle states that TMF supports (e.g., Designed, Inactive, Reserved etc)

➢ Asynchronous HTTP request Handling
   - With Callback registration and sending support to any 3rd party event listener
Objective:

Demonstrate fulfilment of an **Ethernet Virtual Connection (EVC)** order to connect on-net customer site with off-net customer site showing:

1) Use of the **MEF Sonata** interface to the off-net SP for their end of the Operator Virtual Connection (OVC).

2) Use of **TMF OpenAPIs (TMF/Legato)** to provision the On-net OVC Service as part of the EVC.
Realisations!

- It is a nice model to build Omni Channels on TMForum APIs
- Dynamic APIs are the key to Agility in Network Service Orchestration and at the Customer Layer
- In our customer case study the Omni-Channel model contributed to the significant increase in customer satisfaction. Read about it in the TMF 2017 case study handbook P.40
- Visit the “Partnering Platform for MEF Services” Catalyst at this event to see the APIs in action.
Additional Information Slides ...
Building Blocks of Automated Networks

Fundamental components of closed-loop automation have solidified

- Multi-domain orchestration for E2E service lifecycle management
- Programmable domain control of specific networks and services
- Analytics and machine learning for deriving business insights from the network

Improved collaboration for network & IT teams and overall business efficiency

Ciena Blue Planet integrates the elements of Intelligent Automation within a single platform
Ciena Blue Planet Resources

Information to help you along your path to automation are available

Datasheets and Solution Briefs
- Blue Planet Software Suite
- Infobrief: Beyond Service Ability - Advanced Analytics Helps Boost Service Reliability and Build Customer Trust
- Making Intelligent Automation a Reality with Advanced Analytics White Paper
- Evolution to SDN, NFV and Intelligent Automation

Articles and Blogs:
- TM Forum Network Automation
- TM Forum Quick Insights (QI) Report
- MDSO for Next-gen OSS
- Blog: Keeping the Lights On With Advanced Analytics
- Blog: 7 Steps to Big Data Analytics and AI
- Blog: How to Ensure Your Network Analytics Solution Can Drive Intelligent Automation

Webinars and Videos
- TM Forum Webinar: Driving Intelligent Automation with Analytics
- TM Forum presentation: Ciena and OBS: Path to Operational Agility
- Webinar: Ciena and Windstream - Promise of Programmable Networks
- Blue Planet Analytics Chalk Talk
- Blue Planet MCP Controller Chalk Talk

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Functions provided by Telflow from DGIT Systems

**CATALOG**
The drag & drop design environment powering the platform.

**CPQ**
Live pricing, flexible approvals & customer self-quote.

**ORDER**
Seamless quote to order. Zero-code order forms & validation.

**WORKFLOW**
Automated and/or human, but always structured.

**INTEGRATE**
APIs & events, for a strong set of integration options.

**INVENTORY**
Automatically created via orders and validated against catalog.

**OPERATE**
Happy Customers. Reporting, MACs, Tickets & Performance.

**SUPPLIERS**
Catalog driven integration for off-net ordering.

**DECOMPOSE**
Consult the catalogue to dynamically create service/resource orders.

**NETWORKS**
Rapid integration into multi-domain orchestrators or EMS.
Design to Run Time

**Telflow Zero-Code Portal**
Telflow automatically builds all order capture forms from the catalog no coding required.

**Telflow Catalog Driven APIs**
Telflow’s APIs are linked directly to the catalogue so your customers can start ordering immediately.

**Custom Channels**
Use Telflow’s APIs and rendering libraries to reduce both time-to-market and the lifecycle costs of your own digital channels.

**Rapid Product Design**
Telflow allows product managers to easily build, compose, price and take new offerings to market, using an intuitive drag & drop interface.
### TMForum Open API functions in the run time journey

<table>
<thead>
<tr>
<th>Quotation APIs</th>
<th>Order Submission APIs</th>
<th>Manage Order APIs</th>
<th>Manage Service APIs</th>
</tr>
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<tbody>
<tr>
<td>Place</td>
<td>Place</td>
<td>Inventory</td>
<td>Inventory</td>
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<tr>
<td>Qualification</td>
<td>Qualification</td>
<td>Tasks</td>
<td>Inventory History</td>
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<tr>
<td>Quotation</td>
<td>Order</td>
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<td>Related Inventory</td>
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<tr>
<td>Price</td>
<td>Order Relationship</td>
<td>Configuration Entity</td>
<td>Tickets (Enquiry)</td>
</tr>
</tbody>
</table>

**Manage Customer**
- Party
- Catalog

**Inventory History**
- Events

**Tickets (Enquiry)**
- Events
Transformation Case Study – Ultrafast Fibre (NZ)

UFF is a government funded open access fibre company in NZ. They implemented an Omnichannel model to empower their customers as part of their recent transformation

Independent Results Published in TMForum 2017 Case Study Handbook

- NPS up from -46 to +25
- average lead time for fulfilment down by 33%
- 20% decrease in volume of rejected orders
- 20% reduction in work effort to fulfil orders
- 50% reduction in errors in data

Read the case study...

Watch the Video
https://vimeo.com/216805488/eb0779c32a