ONAP Interlude Specification
Scope Discussion

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Plan for the ONAP Interlude specification

• Expected Outcome
  - Initial scope (Casablanca) is limited to a study on the best practices and impact on ONAP
  - A wiki page for ONAP adaptation of a standard inter provider management interface
    • A study comparing best practices for inter provider interaction at orchestration layer - MEF, ETSI, TMF, 3GPP, NGMN, ONAP, 5GEx etc.
    • Identify the impacts on ONAP
    • Potential use cases where this specification might be applicable
    • Alignment with existing works in ONAP – CCVPN, Architecture Tiger team contributions, Modelling subcommittee etc.
    • Clarification on terminologies
    • Baseline requirements from operator community members

• Timeline
  - To be incrementally developed in multiple phases across releases (short term, long term etc.)
  - A draft wiki page to be prepared by Casablanca timeframe with initial scope
Interlude Specification Study Scope

Business Use Cases
- NFaaS
- NaaS
- SD-WAN
- SlicingaaS
- MVNO Scenario
- Connectivity as a Service
- NFVlaaS
- Application as a Service (For Edge scenarios)

Operational Use Cases (across Operator domains)
- Dynamic Service Control
- Query Service State
- Update Service
- Request Connectivity Service (across two Service interfaces)
- Query Service Inventory
- Receive Service Notification
- Receive Service Performance Update
- Initiate Service Test

Considerations
- Layers of interaction, Separation of concerns
- Security
- Business contract - Policy
- SLA Management
- Inventory/State Management, Consistency Check, Identity mapping
- Interface/API – Reference Specification
- Licenses
- Modelling impact
- Integration

Best Practices
- ETSI GR NFV-IFA 028 V3.1.1 (2018-01)
- ETSI ZSM
- MEF LSO Interlude (link)
  - Contributions by Mehmet and Jack
- TMF ODA
- ONAP CCVPN Use Case
- 5GPPP 5G-Ex Project
## High Level Comparison of SDO and OSSPs for inter-provider interface

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ETSI</th>
<th>MEF</th>
<th>TMF</th>
<th>NGMN</th>
<th>OSM</th>
<th>ONAP</th>
<th>SGEx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use Case</strong></td>
<td>NFVlaaS</td>
<td>Access E-Line + MEF-62 (May 2018)</td>
<td>NaaS</td>
<td>SG Slicing</td>
<td>No specific use case</td>
<td>CCVPN</td>
<td>Many (NFVlaaS, VNFaaS, SlicingaaS etc)</td>
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<tr>
<td><strong>Focus Area</strong></td>
<td>Federation across MANO (virtualization domain) and ZSM Management Domains</td>
<td>Service Orchestration Function Federation – Focus on Service Layer</td>
<td>ODA : Autonomic Management interoperability across AD or Operational Domain interoperability – Focus on Service Layer</td>
<td>Slicing Management function interoperability, Resource and Service Layer interoperability</td>
<td>Interoperability between functional blocks across different domains</td>
<td>Federation across two operator ONAP instances for Service instantiation enabled through Ext-API</td>
<td>Federation in a multi domain multi layer orchestration scenario</td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td>Interaction between MANO instances in different administrative domains, interaction across management domain in ZSM</td>
<td>Interaction between SOF function between operator and partner domains in LSO architecture</td>
<td>Interaction between Operational Domains through TMF Open API, Interaction between autonomic management fns</td>
<td>Interoperability between Slice management functions, service and resource layers</td>
<td>Interoperability between federated Functional blocks at different layers – i.e SO and RO, SO and SO etc.</td>
<td>Interoperability between Orchestration function and Ext-API across operator domains</td>
<td>Covers federation across multiple layers including business, orchestration and resource layers</td>
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<tr>
<td><strong>Standard Interfaces/Reference points</strong></td>
<td>Defines a new Or-Or interface for inter orchestrator federation</td>
<td>MEF Interlude Reference point</td>
<td>Open API for inter domain interaction – specifically TMF 641, 640, 645, 656, 653, 677, 633</td>
<td>None</td>
<td>No standard interfaces, but SO expose SOL005 interfaces as of Release 3</td>
<td>TMF 641 exposed by Ext-API</td>
<td>At SO layer follows the ETSI specific interfaces, At RO layer suggests NetConf/Yang</td>
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</tbody>
</table>
ONAP Interlude Specification : Assumptions

• While the work item focus on interlude, the scope should not limit to the capabilities defined by MEF Interlude. It will be a combination of best practices across different layers of interaction between SP and Partner as defined by different SDOs and OSSPs (To be discussed)

• Inter-party business contract negotiation and associated Policy derivation is not studied by any of the SDOs. This is assumed to be out of scope for ONAP

• The initial scope is limited to the Service Orchestration layer interaction between SP and Partner.

• Cross provider / cross domain topology discovery and reconciliation is outside the scope of ONAP. ONAP mostly follows the SLPOC model defined in the ETSI IFA028

• Multi-domain slice orchestration is currently not considered in the scope of this study
Open Question

- Do we need to consider inter operator multi-administrative domain interaction – i.e communication across different instances of domain orchestrators (ONAP or non-ONAP)
- Do we need to limit the scope of Interlude to Service Activation and Configuration or include Service Order Management
- Do we need to come up with ONAP specific terminology? Different SDOs follow different terminology e.g. operator interoperability, domain interoperability, administrative system interoperability etc.
- Catalogue and Inventory Management – Strategy for 1) onboarding the catalogue with service specification across inter domain boundaries 2) Reconciliation and aggregation of inventory at each domain – Pull vs Push model
- Service Model Impact: Service hierarchy in the Service model – i.e Composite or Nested Service, Constituent Service – How the service model is decomposed and distributed to operator and partner domains? Any pattern to follow? Or based on request attributes?
- Cross layer access requirement for multi-domain interaction for example Orchestration layer of SP need to interact with VIM of Partner for resource instantiation – Is this model valid (MLPOC as per ETSI IFA028)
- Federation Actors and Roles: What type of provider roles we should consider – (NGMN Actor Roles 5GEx Actor Roles etc – Infrastructure provider, Connectivity SP, Partner SP, Master/Slave), Do we also need to consider different layers of partners – infrastructure, connectivity etc.
- Use Cases: What use cases we should consider for the interlude specification? Generic Operational use cases (Service activation, query etc) or Specific Business use case? (NaaS, NFaaS, Access E-Line etc) – Short term and Long Term Target?
- Consideration for interaction between ONAP and non-ONAP (Legacy) Management system across operator domains
- Need for including the Business layer interactions within the scope of interlude
- Strategy for closed loop control (Assurance) – Who will manage? Partner managed or SP managed
- Resiliency requirements for inter operator management connectivity – Failover mechanisms
- Do we need to consider inter dependency of Interlude and Legato/Sonata interface? Should we cover ONAP specific cases alone?
Thank You
Different SDO Views – TMF ODA

ODA Functional Architecture

- References NaaS (Network as a Service) Use Case (IG1169 defines the requirements for NaaS use case) contributed by Telstra
- NaaS Use case suggest a flat architecture with an API Gateway enabling interaction across domains
- NaaS Use case (IG11169) and ODA Architecture seems to be not in sync in terms of terminology or vision.
- ODA Functional architecture suggest multiple models of Federated ODA instances between Autonomic Management functions or between Autonomic management and Production Functions.
- TMF 909 NaaS API Suite gives reference APIs for NaaS use case which is mostly aligned with TMF Open API

Network as a Service Use Case

- For NaaS use case Inter provider or inter domain interaction is represented as a call to API gateway
- Limits the scope to NaaS API but gives a very generic architecture
- Not specific to inter provider API, but covers a mix of NBI and East-West
- Focus on lifecycle APIs such as – Prospect to Order, Order to Activate, Trouble to Resolution, Usage to payment – Not all might be relevant for Interlude.
- Does not cover Low level functionalities at resource level (assumed to be responsibility of the domain)
- Treats each domain as a black box and expects any low level resource level functionalities to be enabled by respective domains
Different SDO Views – MEF

• MEF
  - Focus on the Access E-Line Service and Interlude specific use cases, requirements and IM
  - Business Requirements and Use Cases for Access E-Line Service (May 2018)
  - Interlude Interface Specification
    • MEF LSO Interlude Activation API – Jack Pugaczewski, Century Link
    • Access E-Line Service Control Information model based on MCM

• Comment :
  • MEF Specs are good reference for understanding the scope and overall requirements for Interlude Reference point.
  • ONAP Scope might be more generic/broader than a specific Access E-Line Service currently discussed in MEF.
Different SDO Views – ETSI

• Focus on the NFVIaaS Use Case
• Report on architecture options to support multiple administrative domains, ETSI GR NFV-IFA 028 V3.1.1 (2018-01)
• Introduces MLPOC (Multiple Logical Points of Contract) and SLPOC(Single Logical Point of Contract) with varying degrees of information abstraction at the VIM Level
• Introduces a Or-Or interface across NFVOs in different administrative domains
• ETSI IFA 026 defines an Network Security Manager function to manage security policies and requirements between trust domains
• Comment :
  - ETSI Focus is limited to the NFVIaaS use case and also the virtualization domain. Not all aspects of a multi domain connectivity service realization is covered well, but expected to be handled by respective VNFMs.
• **ONAP CCVPN Use Case**
  - Limited MEF Interlude capabilities supported for Casablanca CCVPN use case
  - Implements Service Order related APIs between Service Provider and Partner
  - Service Order Creation request is initiated by SO in the Service provider domain and placed on the Ext-API on the partner domain
  - In the SP domain the SO input parameters received from Ext-API is mapped to construct the Service Order request to be placed on the Partner.
  - **Comment:**
    - SO is assumed to be Service Order aware, this does not strictly consider layering and functionality separation between Ext-API and SO
    - Role of ONAP domains is not clear and also the Package onboarding process is not clearly detailed (to be done independently or using a single SDC instance)
Other Relevant SDO/OSSP Activities – 5GPPP 5GEx

- Elaborate in scope and covers a broader list of use cases (Mostly for 5G) like NFVIaaS, VNFaaS, Slice as a Service, Value added connectivity services, Assured Service Quality services etc.
- An extension of ETSI multi domain orchestration concepts with additional scope and interfaces in own domain and across domains. Mostly leverages ETSI MANO specific interfaces and virtualization domain
- Additional focus on Security, SLA, Catalogue Management, VNF Management, Topology Discovery, Abstraction and Management

Comment:
- Gives a detailed list of actors, roles and layers in a multi domain orchestration scenario
- Includes Business layer interactions (SLA, Charging, Catalogue) as part of the inter provider API scope
- Most elaborate in scope, but mostly keeps an ETSI specific view for Orchestration across domains
- Can be leveraged as a primary source for defining the scope of study