



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
- NFVaaS
- 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

Characteristic	ETSI	MEF	TMF	NGMN	OSM	ONAP	5GEx
Use Case	NFVlaaS	Access E-Line + MEF-62 (May 2018)	NaaS	5G Slicing	No specific use case	CCVPN	Many (NFVlaaS, VNaaS, SlicingaaS etc)
Focus Area	Federation across MANO (virtualization domain) and ZSM Management Domains	Service Orchestration Function Federation – Focus on Service Layer	ODA : Autonomic Management interoperability across AD or Operational Domain interoperability – Focus on Service Layer	Slicing Management function interoperability, Resource and Service Layer interoperability	Interoperability between functional blocks across different domains	Federation across two operator ONAP instances for Service instantiation enabled through Ext-API	Federation in a multi domain multi layer orchestration scenario
Scope	Interaction between MANO instances in different administrative domains , interaction across management domain in ZSM	Interaction between SOF function between operator and partner domains in LSO architecture	Interaction between Operational Domains through TMF Open API, Interaction between autonomic management fns	Interoperability between Slice management functions , service and resource layers	Interoperability between federated Functional blocks at different layers – i.e SO and RO, SO and SO etc.	Interoperability between Orchestration function and Ext-API across operator domains	Covers federation across multiple layers including business, orchestration and resource layers
Standard Interfaces/Reference points	Defines a new Or-Or interface for inter orchestrator federation	MEF Interlude Reference point	Open API for inter domain interaction – specifically TMF 641, 640, 645, 656, 653, 677, 633	None	No standard interfaces , but SO expose SOL005 interfaces as of Release 3	TMF 641 exposed by Ext-API	At SO layer follows the ETSI specific interfaces , At RO layer suggests NetConf/Yang

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 ?



ONAP

OPEN NETWORK AUTOMATION PLATFORM

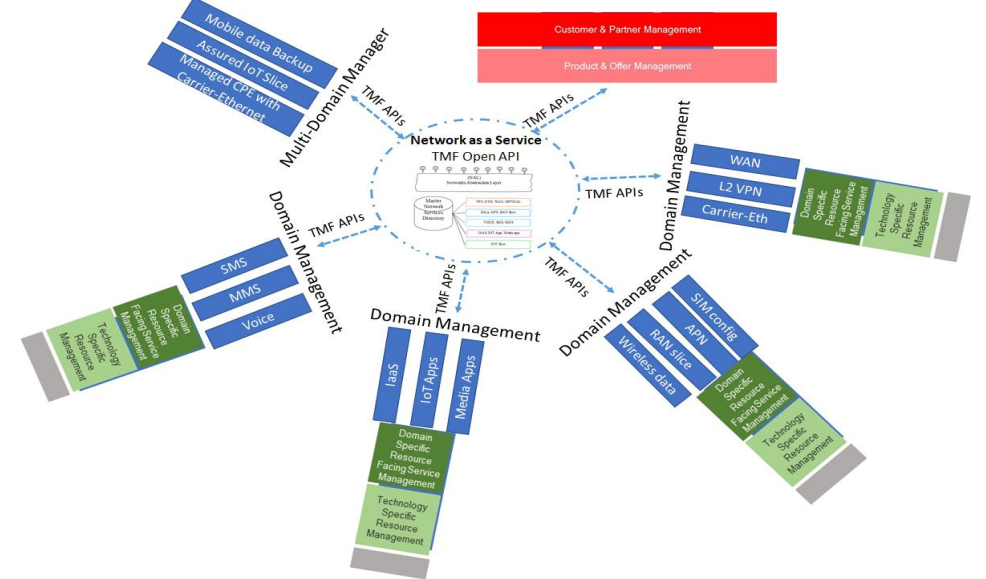
Thank You

Different SDO Views – TMF ODA



ODA Functional Architecture

Flat Domains Exposed Services Architecture



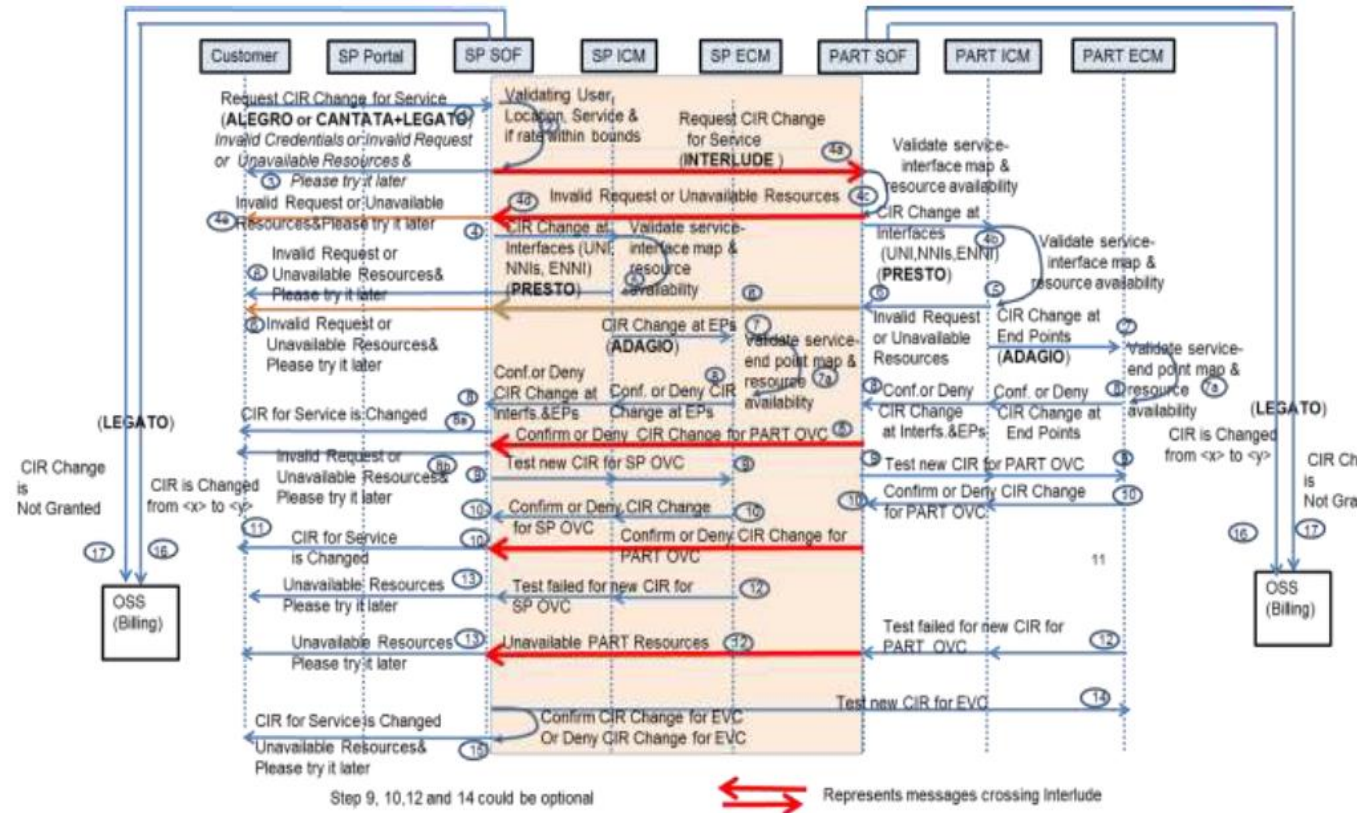
Network as a Service Use Case

- 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

- 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

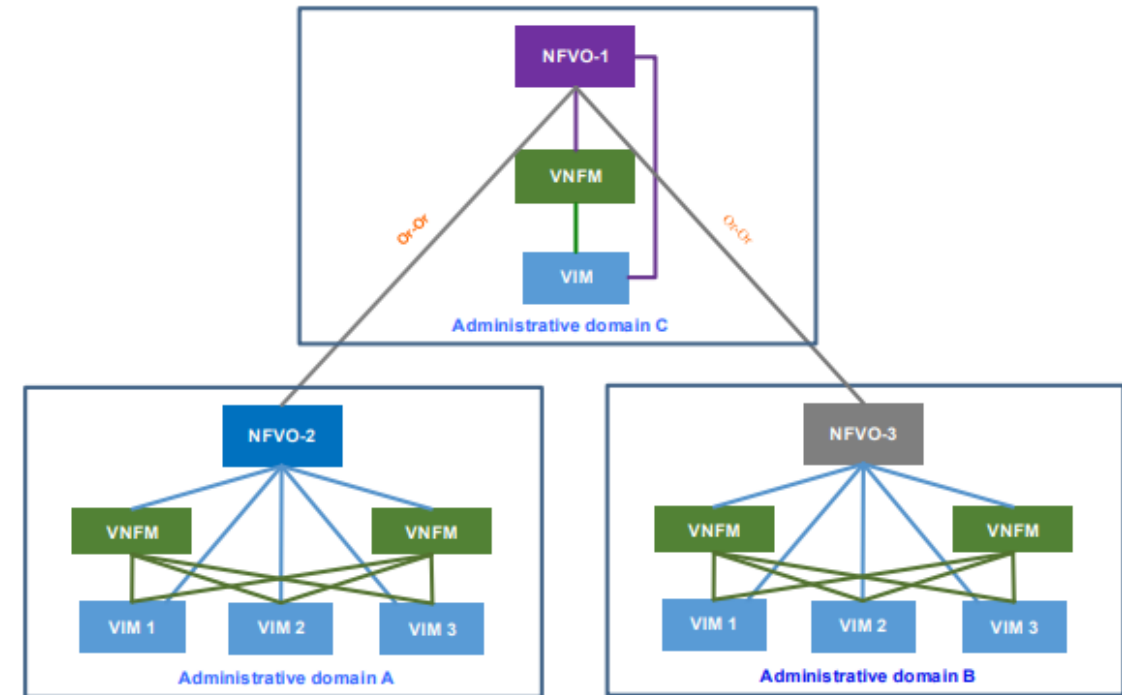
Different SDO Views – MEF

- 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

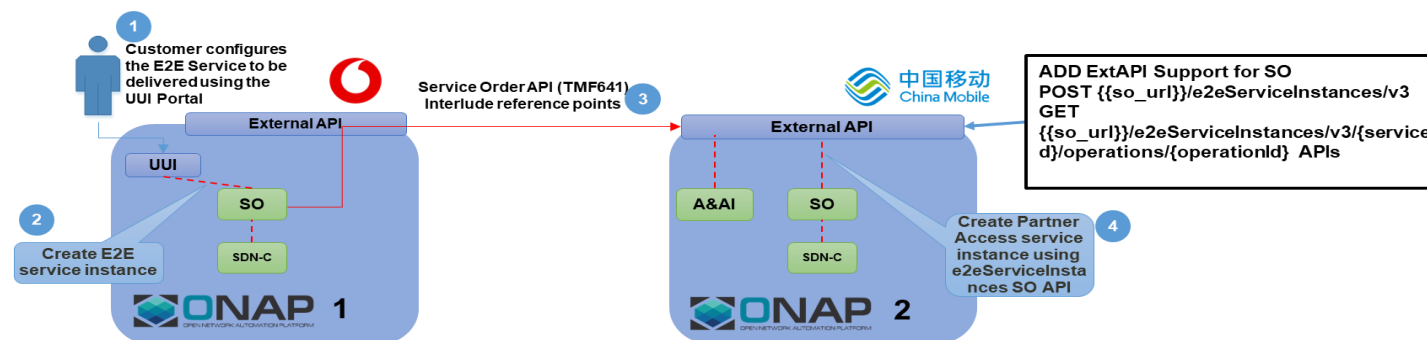
- Focus on the NFVlaaS Use Case
- Report on architecture options to support multiple administrative domains , ETSI GR NFV-IFA 028 V3.1.1 (2018-01)
- Introduces MLPOC (Multiple Logical Points of Contract) and SLPOC(Single Logical Point of Contract) with varying degrees of information abstraction at the 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 NFVlaaS 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.



Other Relevant SDO/OSSP Activities – ONAP CCVPN Use Case

• 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 NFVaaS, 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

