# **ETSI-Alignment Support for Honolulu**

## ETSI-Alignment Support Navigation for Honolulu

ETSI Catalog Management - Honolulu ETSI Package Management (SDC Enhancements) - Honolulu ETSI-Alignment Support for Honolulu ONAP SO Hierarchical Orchestration (SO NFVO) - Honolulu SOL003 Adapter - Honolulu SOL005 Adapter - Honolulu

## ONAP ETSI Alignment Update presentation to the ETSI NFV on September 15th



## Honolulu+ Priorities Discussion



## **Requirements**

The following ETSI-Alignment requirements were presented at the LFN October event:



## Onboard ETSI SOL004 compliant VNF packages

- Executive Summary- Enable a vendor provided ETSI SOL004 v3.3.1 compliant VNF package including an ETSI SOL001 VNF Descriptor to be onboarded into ONAP for composition into an ONAP Network Service
  - Support for onboarding ETSI v3.3.1SOL004 CSAR Packages with CNF enhancements
  - ° Support for onboarding ETSI v3.3.1 SOL001 VNF Descriptor with CNF enhancements
  - Support for mapping of ETSI v3.3.1 SOL001 VNF Descriptor with CNF enhancements into SDC AID Data Model
- Business Impact- Enables operators and service providers to use same ETSI compliant VNF packages with ONAP and existing NFVO. Industry
  compatibility.
- · Business Markets- All operators that are currently using ETSI packages to deploy VNFs
- Funding/Financial Impacts- Reduction in operations expense from using industry standard VNF packaging. Reduction in capital expense from vendors using a single packaging methodology.
- Organization Mgmt, Sales Strategies-There is no additional organizational management or sales strategies for this requirement outside of a service providers "normal" ONAP deployment and its attendant organizational resources from a service provider.

### **Design ETSI SOL007 compliant Network Service Descriptor packages**

- Executive Summary- Design, catalog and distribute an ETSI SOL007 v3.3.1 compliant Network Service Descriptor package including an ETSI v3.3.1 SOL001 Network Service Descriptor (NSD) for deployment using an ETSI compliant NFVO.
  - Support for designing an ETSI SOL001 v3.3.1 compliant Network Service that can be deployed with an ETSI compliant NFVO
    - ° Composed of one or more VNFs and the Virtual Links that connect them.
    - Support for using VNFs with CNF enhancements
- Business Impact- Enables operators and service providers to use internally designed Network Service Descriptors with ONAP and existing NFVO. Industry compatibility.
- · Business Markets- All operators and service providers that are developing and deploying ETSI compatible Network Services
- Funding/Financial Impacts- Reduction in operations expense from using industry standard NSD packaging.
- Organization Mgmt, Sales Strategies-There is no additional organizational management or sales strategies for this requirement outside of a service providers "normal" ONAP deployment and its attendant organizational resources from a service provider.

### Design Nested/Hierarchical ETSI SOL001 v3.3.1 Network Service Descriptor package

- Executive Summary- Design an ETSI SOL007 v3.3.1 compliant Network Service Descriptor package including an ETSI v3.3.1 SOL001 Network Service Descriptor (NSD) that includes references to other Network Service Descriptors for deployment using an ETSI compliant NFVO.
   Composed of zero or more VNFs and one or more nested Network Services and the Virtual Links that connect them.
  - Support for using VNFs with CNF enhancements
- Business Impact- Enables operators and service providers to use vendor provided and internally designed Network Service Descriptors with ONAP and existing NFVO. Industry compatibility.
- Business Markets- All operators and service providers that are developing ETSI compatible Network Services especially for 5G Slicing where each Slice Subnet is associated with a Network Service
- Funding/Financial Impacts- Reduction in operations expense from using industry standard NSD packaging.
- Organization Mgmt, Sales Strategies-There is no additional organizational management or sales strategies for this requirement outside of a service providers "normal" ONAP deployment and its attendant organizational resources from a service provider.

# Onboard Prototype Package based on ETSI IFA011 v4.1.1 supporting containerized VNF (CNF) packages

- Executive Summary- Enable a vendor provided ETSI SOL004 compliant containerized VNF package including an ETSI SOL001 VNF Descriptor with container enhancements to be onboarded into ONAP for composition into an ETSI Network Service
  - Support for onboarding Prototype v4.1.1 CSAR Packages
  - Support for onboarding Prototype v4.1.1 VNF Descriptor
  - Support for mapping of Prototype v4.1.1 VNF Descriptor into SDC AID Data Model
  - Support for using a Prototype v4.1.1 VNF in an ETSI Network Service
- Business Impact- Enables operators and service providers to use same ETSI aligned containerized VNF (CNF) packages with ONAP and existing NFVO. Industry compatibility.
- Business Markets- All operators that are currently using ETSI packages to deploy containerized VNFs (CNFs)
- Funding/Financial Impacts- Reduction in operations expense from using industry standard containerized VNF (CNF) packaging. Reduction in capital expense from vendors using a single packaging methodology.
- Organization Mgmt, Sales Strategies-There is no additional organizational management or sales strategies for this requirement outside of a service providers "normal" ONAP deployment and its attendant organizational resources from a service provider.

### Support for ETSI SOL003 v3.3.1 Or-Vnfm Interface from ONAP to external VNF Manager(s)

- Executive Summary- Provide an interface adapter from ONAP Service Orchestrator to external VNF Manager(s) using ETSI SOL003 v3. 3.1 compliant Interface with CNF enhancements
  - Support for Create, Instantiate, Query of a VNF or a prototype CNF using an external VNF Manager
  - ° Support for Grant request from an external VNF Manager
  - Support for ModifyVnfInfo using an external VNF Manager
  - ° Support for receiving VNF Life Cycle Notifications (LCN) from a VNF Manager
- Business Impact- Enables operators and service providers to use vendor provided or internally developed ETSI compliant VNF Manager (s). Industry compatibility.
- Business Markets- All operators and service providers that are using ETSI SOL003 compliant VNF Managers
- Funding/Financial Impacts- Reduction in operations expense from using industry standard Interfaces.
- Organization Mgmt, Sales Strategies-There is no additional organizational management or sales strategies for this requirement outside of a service providers "normal" ONAP deployment and its attendant organizational resources from a service provider.

### Support for ETSI SOL005 v3.3.1 Os-Ma-nfvo Interface between ONAP SO and NFVO

- Executive Summary- Provide an interface adapter from ONAP Service Orchestrator tp NFVO(s) using an ETSI SOL005 v3. 3.1 compliant Interface
  - Support for Create, Upload, Update, Query, Delete of an ETSI NS Descriptor using an ETSI v3.3.1 SOL005 compliant NFVO
  - Support for Create, Instantiate, Terminate of a ETSI NS using an ETSI compliant NFVO
  - Support for receiving NS Notifications (LCN) from an NFVO
  - Support for ModifyVnfInfo operation.
- Business Impact- Enables operators and service providers to use vendor provided or internally developed ETSI compliant NFVO(s). Industry compatibility.
- Business Markets- All operators and service providers that are using ETSI SOL005 compliant NFVOs
- Funding/Financial Impacts- Reduction in operations expense from using industry standard Interfaces.
- Organization Mgmt, Sales Strategies-There is no additional organizational management or sales strategies for this requirement outside of a service providers "normal" ONAP deployment and its attendant organizational resources from a service provider.

#### Old version

- Onboard ETSI SOL004 compliant VNF/CNF packages (ETSI Package Management)
  - Support for extended VNFD, Helm Charts, Container Images/references, based on IFA 011
  - SOL001 VNF/CNF mapping to SDC AID DM (including Policy Aspect/VF-Module, VDU/VFC)
  - Enhance AAI Schema for CNF topologies for granting
  - Onboarding VNFD with configuration properties
- Design ETSI SOL007 compliant Network Service Descriptor packages (ETSI Package Management)
  - SOL001 NS mapping to SDC AID DM
    - Generate SOL007 NS package to the "ETSI\_PACKAGE" directory
- Onboard ETSI SOL007 3.3.1 compliant Network Service Descriptor packages (ETSI Package Management) stretch goal

  SOL001 NS mapping to SDC AID DM
  - Preserve the original vendor NS package to the "ETSL\_PACKAGE" directory
- Support for Nested/Hierarchical ETSI SOL001 Network Service Descriptor stretch goal
- Support for ETSI SOL003 Or Vnfm Interface from ONAP to external VNF Manager(s)
- Enhance the SOL003 Adapter to support VNFM VNF/CNF orchestration
- Support for ETSI SOL005 Os Ma nfvo interface between ONAP and NEVO
  - Support invocation of NEVO (SO NEVO, VEC, External NEVO) based on modeling thru SOL005 APIs
     Enhance SO E2E Workflows for collecting parameters for NS requests
- Enhance SO E2E Workflows for collecting parameters for NS requests Support for ETSI Package distribution including Software and Container Images
- Container Including Solware and Container Image
   Container ETSI Catalog Manager to push Container Images to CIR
  - Support Or Vi for Software Image management
- Support for ETSI NEV NEVO Orchestrator in ONAP SO
  - Support ETSI SOL005 and SOL003 APIs including subscription and notification
    - Support Dynamic BPMN Workflows (ability to deploy custom NEVO BPMN workflows and logic which SO is running)
  - OOF-based resource Granting for Instantiation and Termination
- Support for ETSI-based Application Configuration (for VNF) post Honolulu?
  - Design CBA and attach it to SDC CSAR for CDS-based configuration

- ° Enhance SO NEVO to leverage CDS and SDNC, support VNF application configuration

- Enhance SO NEVE to everage CDS and SDNC, support VNE application
   Onboarding VNED with configuration properties
   Support the Modify Configuration APIs from SOL005/SOL003 Adapters

   Note: expect VNEM supports the Modify Configuration APIs

   Scaling and Healing support is NOT part of Honolulu

# **Architecture**

# **Model-driven CNF LCM Orchestration**

The following diagram depicts model-driven CNF LCM orchestration.



## **CNF Support Architecture**

The following diagram depicts ETSI-based CNF support Architecture.



#### **CNF** Support

- · CNF Support is one of Ericsson's highest priority work items for ONAP
  - Define a fast path to CNF support, and accomplish it across multiple releases (Honolulu+)
  - For now, leverage currently available ETSI Stage 2 specifications, without just waiting for ETSI Stage 3 (SOL)
- Many (Ericsson, Verizon, Bell Canada, Huawei, others) believe the target is CNF, 5G Edge, etc. VNF support is a steppingstone towards that goal
   CNF support and Cloud Native Support are closely related.
  - CNF enables Cloud Native (Microservices, Containers, Elastic scalability, On-demand deployment)
  - What other Cloud Native support? APs: Define its scope and study architecture
  - In Honolulu, CNF scope is:
    - 1. CNF modeling and distribution support for microservice-based CNF and images,
      - 2. CNF LCM through SO, SO NFVO (or VFC) and VNFM via standard APIs (covering instantiation and Day 0 configuration based on Helm Charts)
        - a. Note: VNFM support for CNF is vendor-specific
      - 3. OOF-based Granting only for both VNF/CNF Instantiation and Termination, not for VNF/CNF Healing or Scaling
      - 4. Software Images and Container Image Handlings via NFVO, ETSI Catalog Manager and CIR
      - 5. Collaborate with non-ETSI-based CNF support in SO; SO launches the CNF LCM path based on models (i.e., model-driven)

#### **Configuration Support Architecture**

This following diagram depicts ETSI-based Configuration support.



- Leverage CBA design and SDC distribution (CBA + CSAR) for model-driven configuration
  Leverage existing CDS, SDNC / MultiCloud path, or new ETSI-based configuration support thru Ve-Vnfm (SOL002) •