

ONAP ETSI-Alignment Architecture & Features for Honolulu+

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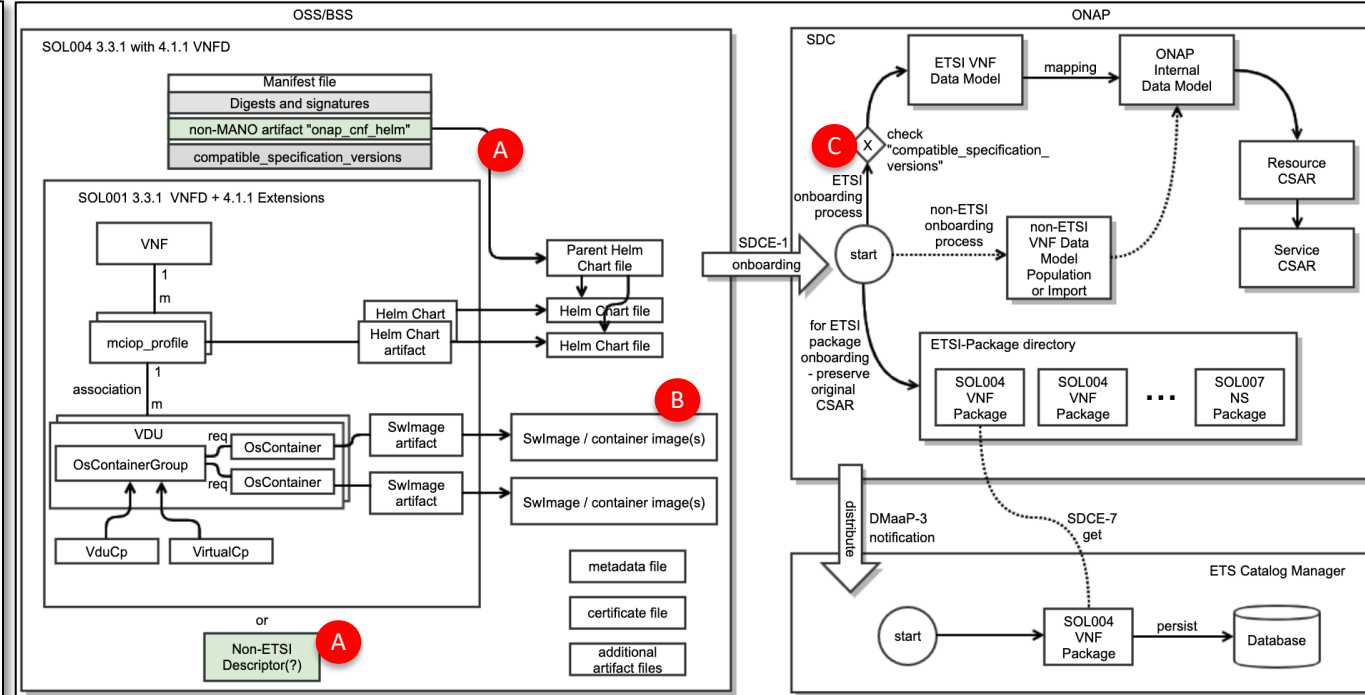
Orchestration Scenarios (a.k.a. ETSI-Alignment) Task Force weekly meeting,
Weekly meeting: Mondays at 1200 UTC, 4AM PST, 7AM EST, 1300 CET, 5:30 PM India, 8PM
China.
<https://zoom.us/j/722438866?pwd=d3VTTTFJiK3Bkemi2RIRqVkdhSihKQT09>
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ONAP SDC ETSI-Alignment Enhancements

- SDC SOL004 onboarding and SOL007 Design

SDC plans to support the following features and deliver them to ONAP Honolulu

- Support onboarding of ETSI 3.3.1 SOL004 compliant VNF / CNF packages
 - Support v3.3.1 VNF with minimum CNF enhancements from 4.1.1
 - A:** For the SO direct CNF LCM, use a new non-MANO artifact set identifier "onap_cnf_helm" which points to the top-level helm chart, without VNFD(s) – non-ETSI descriptors are under discussion
 - B:** Handling container image files with more than 2MB will be out of scope; this is an Istanbul discussion
 - Support one-level down backward compatibility for onboarding
 - C:** Based on the package manifest file and metadata "compatible_specification_versions", determine the onboarding procedure
- Support of design v3.3.1 SOL007-compliant Network Service Descriptor & Packages in SDC
 - ETSI SOL007 NS packages Generation for distribution to ETSI Catalog Manager
 - Mapping of ETSI v3.3.1 NSD (only NS, NsVirtualLink) into SDC AID DM
 - Onboarding of SOL007 NS is postponed to a future release for lack of open-source SOL007 NS designer tools
- Support of SOL004 VNF and SOL007 NS package security based on ETSI 3.3.1 specifications
- VNF (with minimum CNF enhancements) and NS Data Model for Honolulu has been defined**
 - Data Models have been defined
 - TOSCA Data types have been defined



- Support mapping of VNFD, VDU and CPD to SDC AID DM partially
 - No backward compatibility support in SDC AID DM due to lack of SDC versioning; this is an Istanbul discussion
 - ETSI IFA011 v3.3.1 & v4.1.1 Changes to ONAP Resource Model, <https://wiki.onap.org/pages/viewpage.action?pagelId=84664990>
 - VNF/CNF Data Model Based on ETSI v3.3.1 SOL001 plus CNF Enhancements, <https://wiki.onap.org/pages/viewpage.action?pagelId=93003033>
- Note: making VNFD optional for the direct CNF LCM is under discussion with ETSI-NFV, as a future consideration

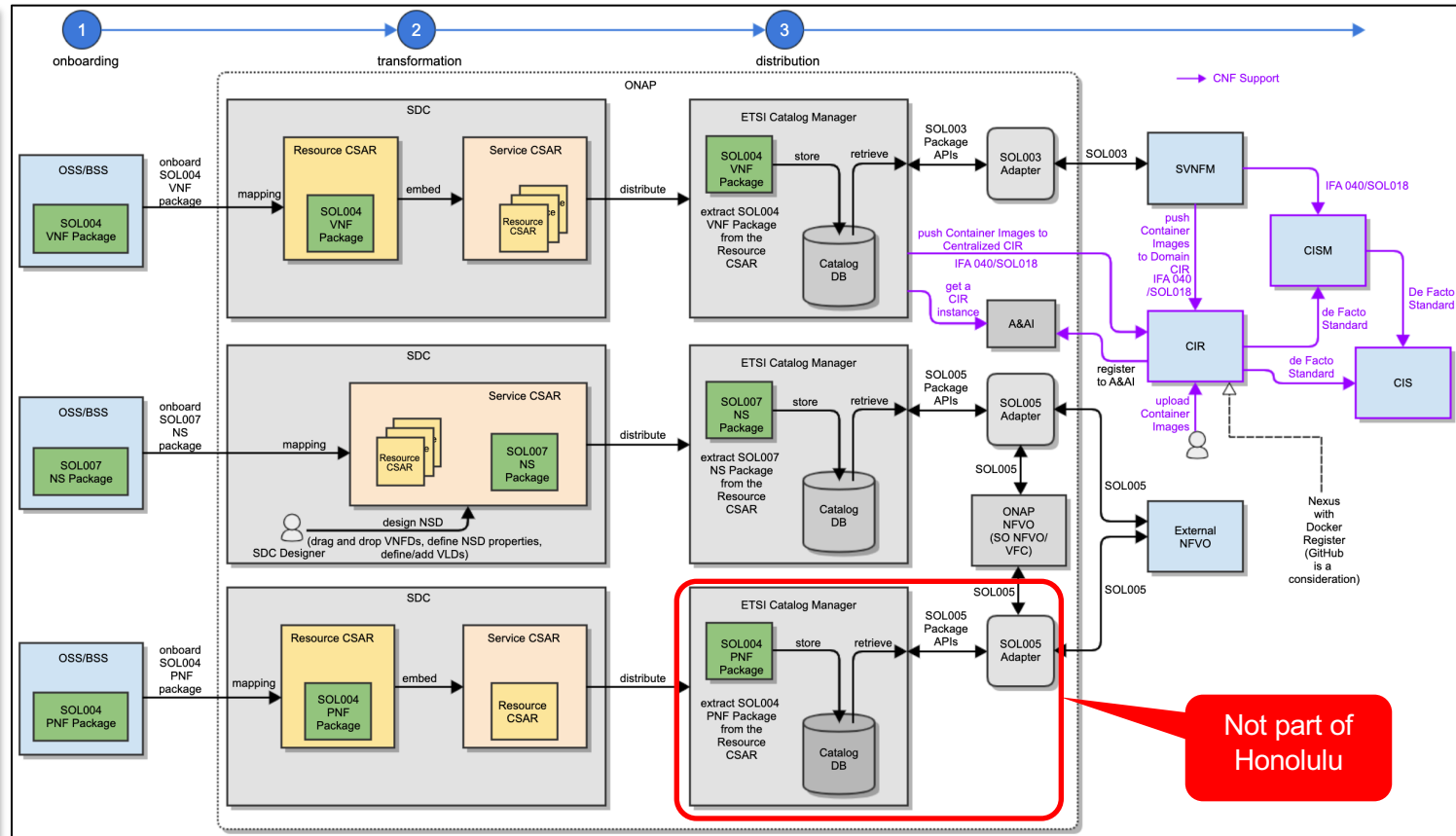
ONAP ETSI-Alignment Package Distribution

The ETSI Catalog Manager plans to support the following features in Honolulu

- Support of Subscription and Notification for NSD packages, <https://wiki.onap.org/display/DW/Modeling+R8+Honolulu+Architecture+Review>
 - SO NFVO will subscribe to ETSI Catalog Manager and provide an NSD package notification by conforming to SOL005 (stretch goal)
- Support of Container Images Management to CIR
 - ETSI Catalog Manager pushes Container Images to the selected CIR if the SOL004 VNF package embeds Container Images (stretch goal)
 - Leverage Docker Registry APIs by conforming IFA040/SOL018

CIR will be realized by Nexus with Docker Registry (GitHub would be considered in the future)

- Operators bring in their CIR(s) that support Docker Registry APIs
- ONAP embedded CIR(s) are under discussion
- Operators register the CIR(s) to A&AI
- ETSI Catalog Manager selects the CIR instance
- CIR provides Container Image uploading in the case where the SOL004 VNF package does not embed Container images

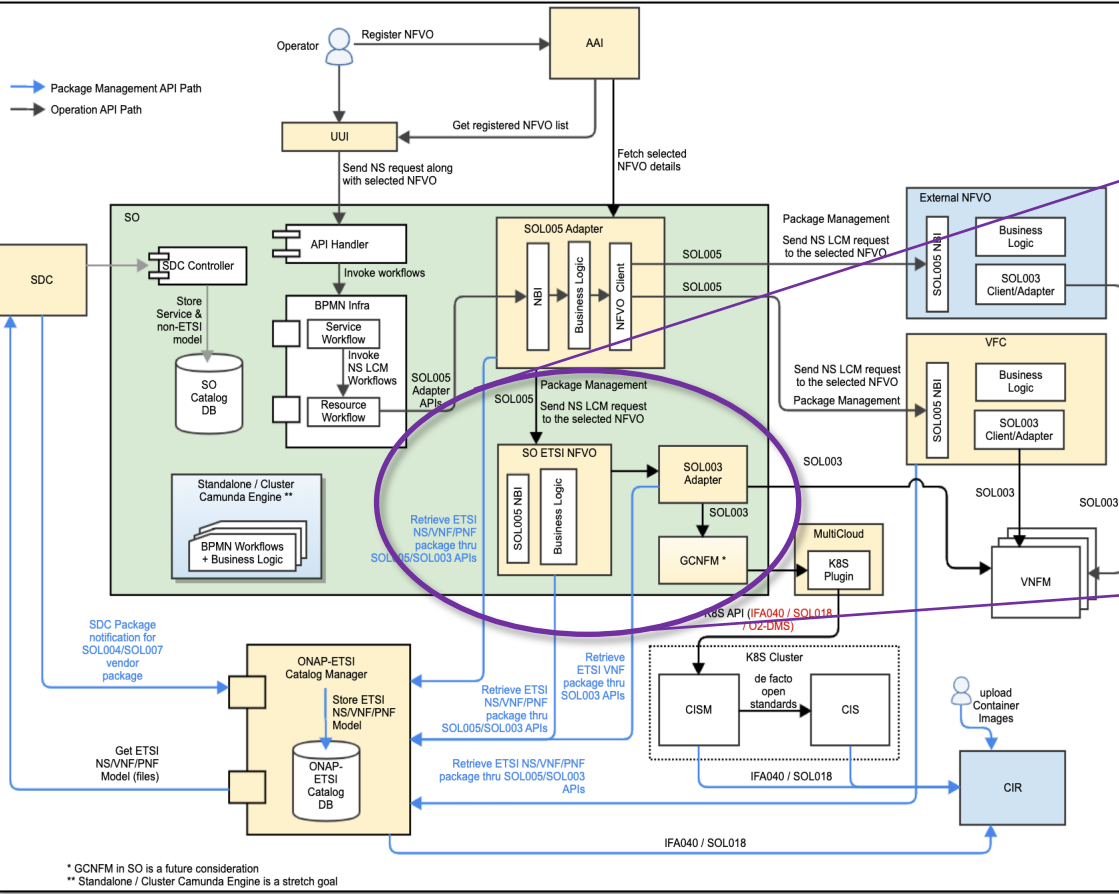
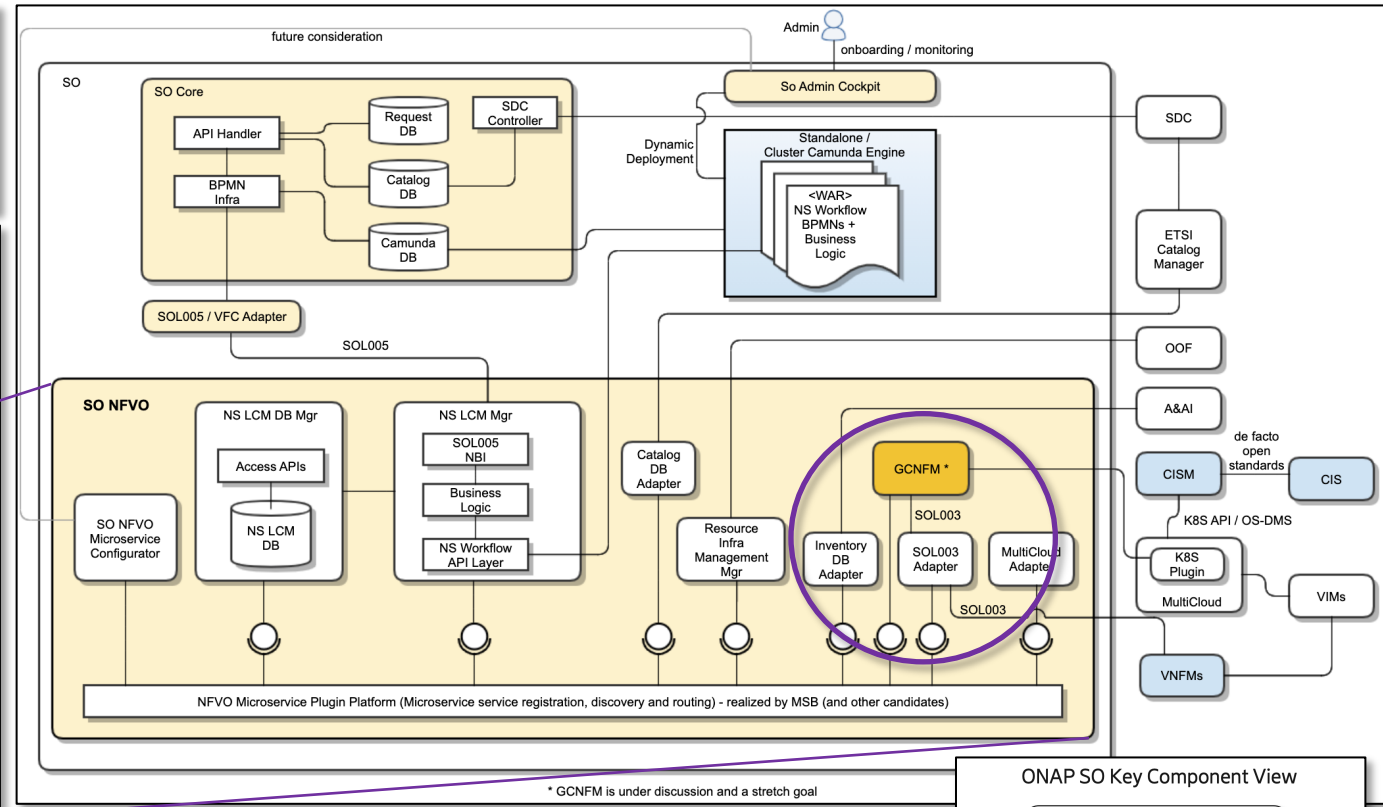


- docker tag <imageld or imageName> <nexus-hostname>.<repository-port>/<image>:<tag>
- docker tag af340544ed62 nexus.example.com:18444/hello-world:mytag
- docker push <nexus-hostname>.<repository-port>/<image>:<tag>
- Docker pull <nexus-hostname>.<repository-port>/<image>:<tag>
 - docker push nexus.example.com:18444/hello-world:labeltest
 - docker pull nexus.example.com:18443/hello-world:labeltest

ONAP ETSI-Alignment SO NFVO & SOL003 Adapter Refactoring

SO NFVO supports the following features by conforming to ETSI NFV:

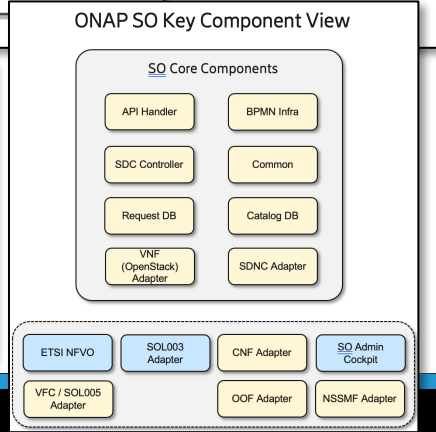
- Create NS / Instantiate NS / Terminate NS / Delete NS
- Get NS Operation Status
- Invocation of SOL 003 Adapter for multiple VNFs LCM



SO NFVO Honolulu Focus Areas:

- **SO NFVO, SOL003 Adapter & SO Admin Cockpit module refactoring – part of SO Module refactoring**
- The modules are separated from the SO Core component.
- **SO NFVO & SOL 003 Adapter CSIT enhancements**

Note: for Honolulu, SO NFVO and SOL003 Adapter continue to support ETSI v2.7.1, instead of upgrading v3.3.1 SOL005 and SOL003 APIs



* GCNFM in SO is a future consideration
** Standalone / Cluster Camunda Engine is a stretch goal

ONAP ETSI-Alignment for CNF and O-RAN O2

- Future Collaboration Plans

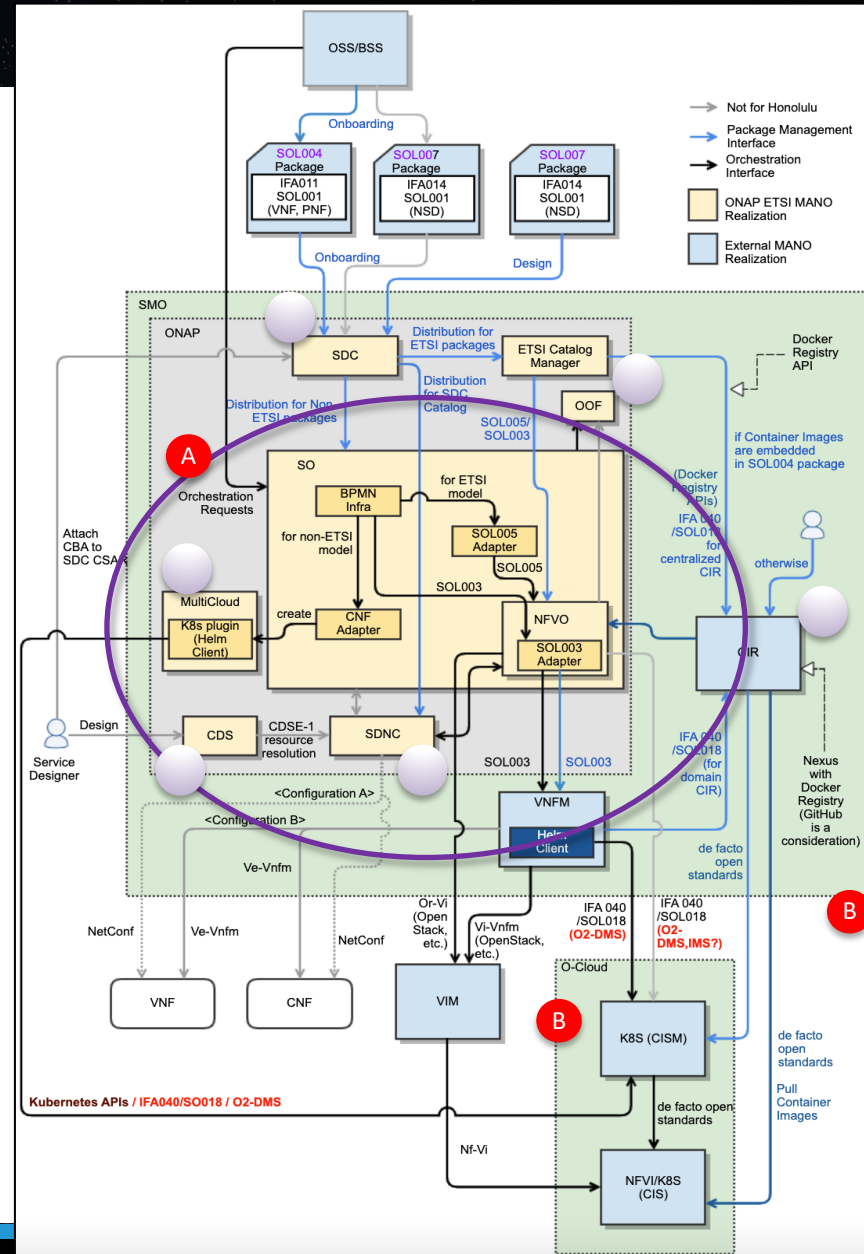
shared component

A: There are two tracks in ONAP for CNF support: ONAP ETSI-Alignment and Direct Path for CNF (Based on models, SO selects a proper path):

- **ETSI-Alignment path**
 - Following ETSI NFV IFA/SOL specifications for CNF
 - Leveraging and extending existing ONAP ETSI-Alignment Architecture
- **Direct Path**
 - Some think there is no need for the full VNFD for LCM, just Helm Charts and Images; delegate LCM to CISM; it may work for simple CNFs
 - Note: there are several cases where more complete VNFDs will be needed, such as 5G Core NFs.
- **Collaboration Areas:**
 - Unified Modeling, Packaging & Onboarding (SDC) – optional VNFD?
 - Shared Package Distribution mechanism (SDC – ETSI Catalog Manager – CIR)
 - Leveraging other Common Components (e.g., **CNF Adapter**, CIR, A&AI, CDS, SDNC, K8S Plugin, OOF)
- **Note: CIR is realized by Nexus with Docker Registry**

B: Possible Collaboration consideration between ONAP and O-RAN for CNF:

- Interface between VNFM and CISM: use k8s APIs, potential to leverage an alignment with O2-DMS (O2-DMS Interface scope is under discussion)
- Interface between MultiCloud K8s Plugin and CISM: use k8s APIs, potential to leverage alignment with O2-DMS
- **Note: support O2-DMS is a future release consideration; In Honolulu, use K8S APIs**



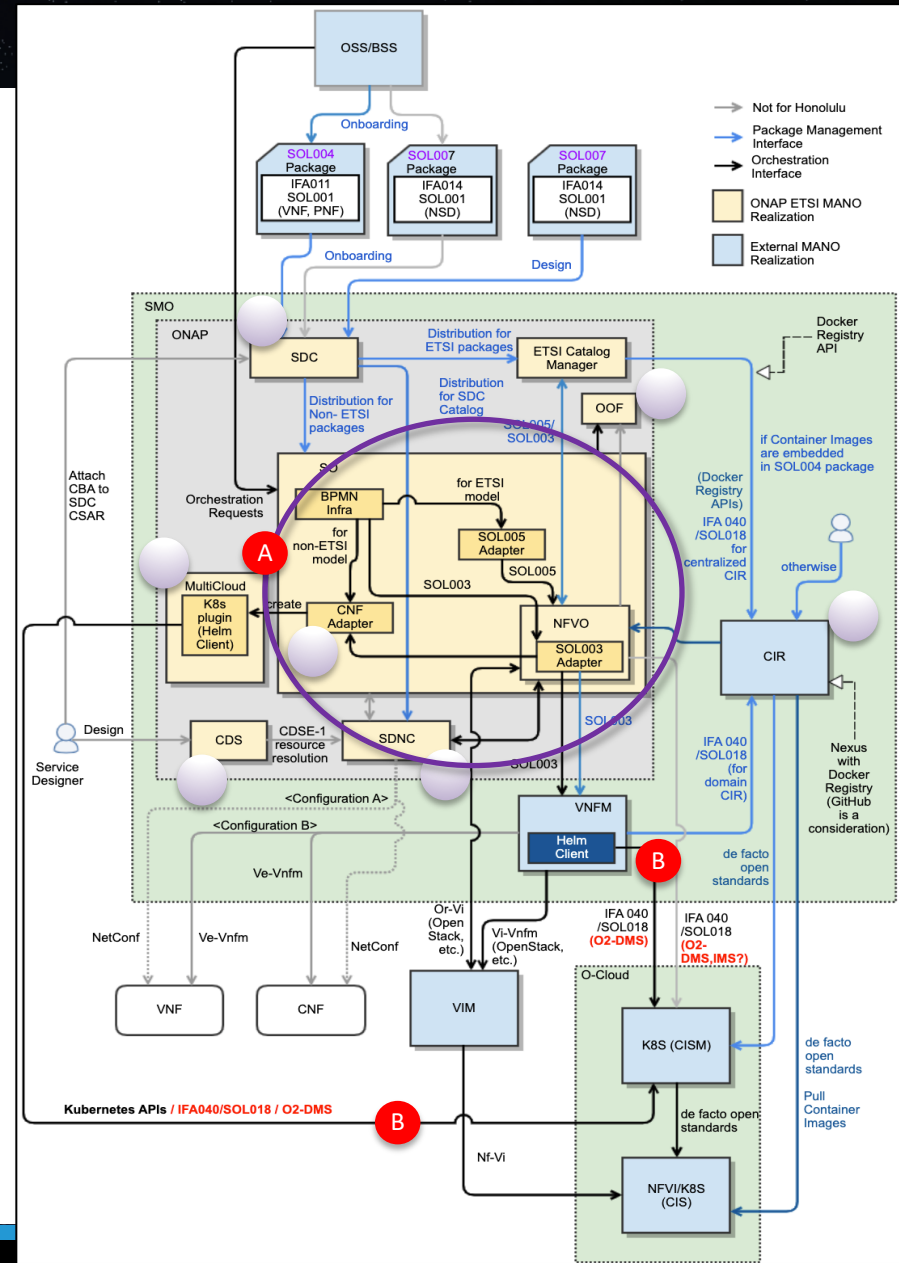
ONAP ETSI-Alignment CNF & Generic CNF Adapter - Future Considerations

A: ETSI-Alignment CNF Orchestration

- It leverages SOL004 / SOL001 VNFD with CNF extensions for defining complex CNFs
- SO / SO NFVO communicates with OOF for CNF Resource Placing optimization
 - OOF use for CNF Granting and Healing
 - OOF interfaces with Policy, AAI and MultiCloud
- Continue to allow the direct use of the SOL003 Adapter from the BPMN Infra as needed
- SDC enhancements for large-size Container Images
- **Use Case for CNF Adapter resides within ONAP SO**
 - It would not require vendor-provided VNFMs
 - It is part of SO
- **CNF Adapter supports:**
 - Leveraging MultiCloud K8S Plugin (as its Helm Client) to bridge between ONAP and K8S CISM thru K8S APIs first (then considering O2-DMS APIs in the future)
 - Support of unified Scaling and Healing Path: K8S -> DCAE -> Policy -> SO -> SO NFVO -> SOL003 Adapter -> CNF Adapter -> K8S Plugin -> K8S
 - For ETSI-based CNF requests, transforming SOL003 requests to MultiCloud K8S Plugin API (Helm/K8S) requests

B: MultiCloud K8S Plugin and Vendor VNFM could conform to ETSI SOL018 (v0.0.1)

- SOL018 profiles reference:
 - Kubernetes APIs (v1.20) for OS container management and orchestration
 - Helm for management (v3.4.2) of OS container workload based on an MCIOP
 - Docker registry API (v2) for OS container image management
 - VNF LCM use cases: Resource granting, Resource placement, Network modeling
- **Discuss MultiCloud K8S Plugin Collaboration with O2-DMS APIs**
- **Monitor progress of SOL018 and O-RAN O2-DMS (scope) specifications**



ONAP ETSI-Alignment Architecture Reference for Honolulu

ONAP ETSI-Alignment Architecture for Honolulu was presented to the ONAP Architecture Sub-Committee and approved on January 12th, 2021

- <https://jira.onap.org/browse/ONAPARC-648> (Honolulu-R8 Func ETSI-Alignment for Honolulu)
 - Sponsor(s): Byung-Woo Jun (Ericsson), Fernando Oliveira (Verizon)
 - Documents reviewed: <https://wiki.onap.org/display/DW/ETSI-Alignment+Architecture+-+Honolulu>
 - Test Plan: <https://wiki.onap.org/display/DW/ETSI-Alignment+Integration+Test+Plan+for+Honolulu+Release>
- <https://jira.onap.org/browse/REQ-400> (ETSI-Alignment Requirements for the Honolulu Release)
 - Owners: Byung-Woo Jun, Fernando Oliveira, Seshu Kumar
 - Link to HLD/LLD: <https://wiki.onap.org/display/DW/ETSI-Alignment+Support+for+Honolulu>
 - Ericsson contribution:
 - Overall Architecture, Epics, User Stories, ETSI NS and VNF/CNF Data Model, SDC, SO NFVO, SOL003 Adapter, CSIT for SO NFOV and SOL003 Adapter Integration Testing, SO NFVO refactoring for potential dynamic orchestration
 - Verizon contribution:
 - Requirements,
 - ETSI NS & VNF/CNF Information Model
 - ETSI NS & VNF/CNF Data Model
 - Architecture review
 - CMCC and ZTE contribution:
 - ETSI Catalog Manager enhancements
 - Huawei contribution:
 - Architecture review

ONAP ETSI-Alignment Support, <https://wiki.onap.org/display/DW/ETSI-Alignment+Support+for+Honolulu> & its sub wiki pages



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