

# Support for Composable Disaggregated Infrastructure (CDI) - A Multi-Cloud Project

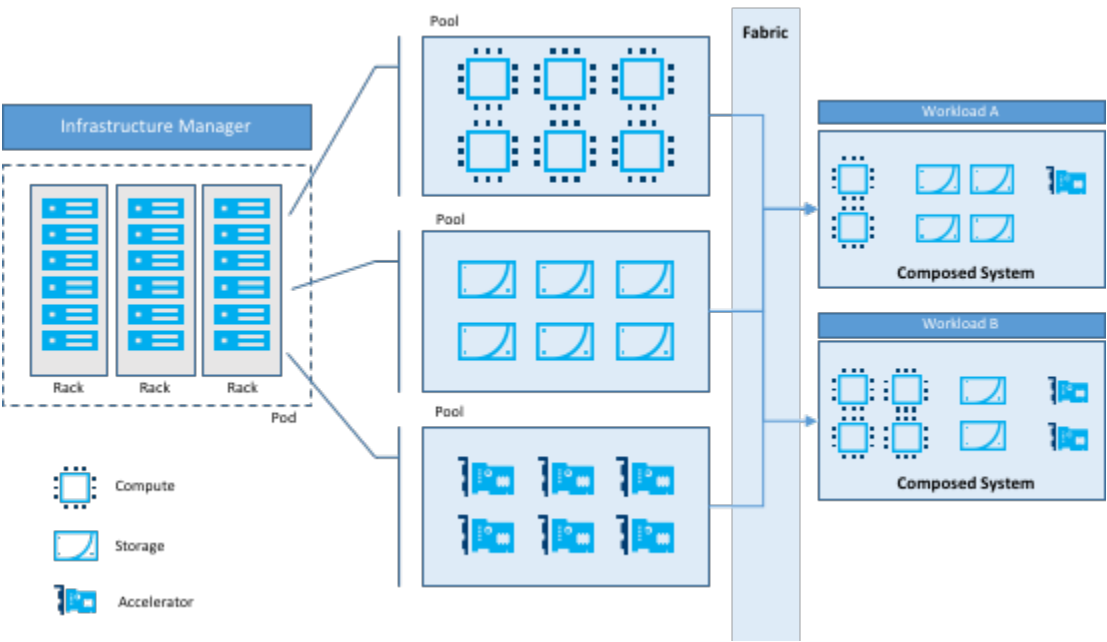
- [Project Description:](#)
- [Background](#)
- [Use Cases](#)
- [Benefits](#)
- [Scope:](#)
- [Architecture Alignment:](#)
- [CDI Infrastructure Manager...](#)
- [CDI Flows...](#)
- [Project Dependencies](#)
- [Other Information:](#)
- [Key Project Facts:](#)
- [Release Components Name:](#)
- [Resources committed to the Release:](#)

## Project Description:

The purpose of this project is to enable dynamic composition, deployment and optimization of NFV infrastructures and resources, using DMTF Redfish APIs for CDI management, as part of the Multi-Cloud layer in ONAP, and to enable use of CDI-composed resources for VNF instantiation.

## Background

Composable Disaggregated Infrastructure (CDI) enables dynamic composition of computer systems (a.k.a compute resources) from pools of disaggregated compute, storage and network components. The composition process is model driven, based on declarative templates that define what the composed system should look like in terms of its components and hardware capabilities. The disaggregated resource pools are contained within a set of racks, managed by the "infrastructure manager" software. The "infrastructure manager" software exposes set of northbound interfaces for consumption and administration of CDI. These interfaces are based on industry standard DMTF Redfish APIs. The following diagram illustrates basic components of CDI.



## Use Cases

The use cases to be enabled by this project are as follows:

ID	Description
1	Dynamic composition and deployment of NFV virtual infrastructure instances in-band, as part of network service instantiation, or out-of-band, as part of NFV infrastructure management. Examples of virtual infrastructures include OpenStack and Kubernetes instances.
2	Dynamic composition and rightsizing of virtual infrastructure resources for use during VNF homing and placement.

3	On-demand scaling of virtual infrastructure capacity.
4	On-demand scaling of virtual infrastructure resources, within a given virtual infrastructure instance.
5	Dynamic resource sharing, balancing and reuse between multiple and different virtual infrastructure instances.

## Benefits

The benefits of using composable disaggregated NFV infrastructure (NFV-I) are as follows:

- On-demand optimization of VNF resources, in line with VNFD specified resource requirements.
- Reduction of orchestration (instantiation/operation/remediation) failures due to lack of required infrastructures and/or resources.
- On-demand dynamic capacity optimization across multiple virtual infrastructure environments
- Unobstructed access to infrastructure telemetry
- Industry standard interfaces models and interfaces
- TCO (CAPEX and OPEX) reduction as consequence of dynamic resource sharing/optimization, and infrastructure management automation.

## Scope:

The following functionality will provided:

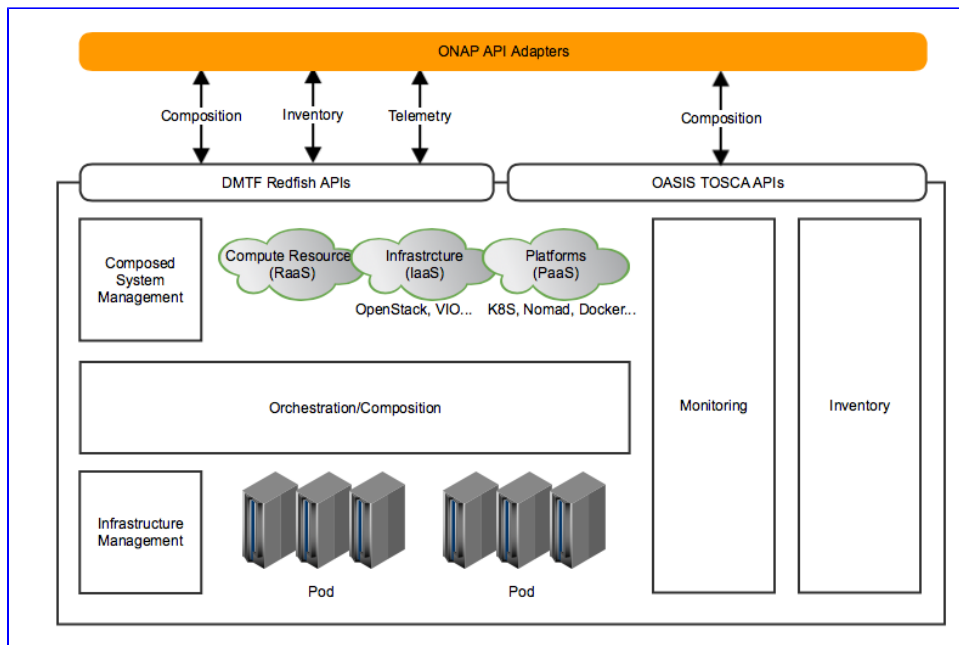
	Deliverables	Dublin Release
1	DMTF Redfish® API adapter (management/composition)	Yes
2	Redfish® API based automated resource composition and instantiation	Yes
3	Redfish® API based automated virtual infrastructure (IaaS/PaaS) composition and instantiation.	Yes
4	TOSCA based resource, automated virtual infrastructure (IaaS/PaaS) composition and instantiation	-
5	Dynamic virtual infrastructure scaling	-
6	Dynamic resource scaling	-
7	CLIs/SDKs for programmatic access	-
8	HPA support	-
9	AAI integration (inventory/capacity information)	Yes
10	DCAE integration (telemetry)	Stretch
11	Orchestration integration (composition/scaling)	-
12	OOF integration (optimization)	-

The initial focus of this project is on composition and optimization of NFV-I resources across OpenStack and K8S environments. Composition and optimization of resources consumed by ONAP components is out of scope.

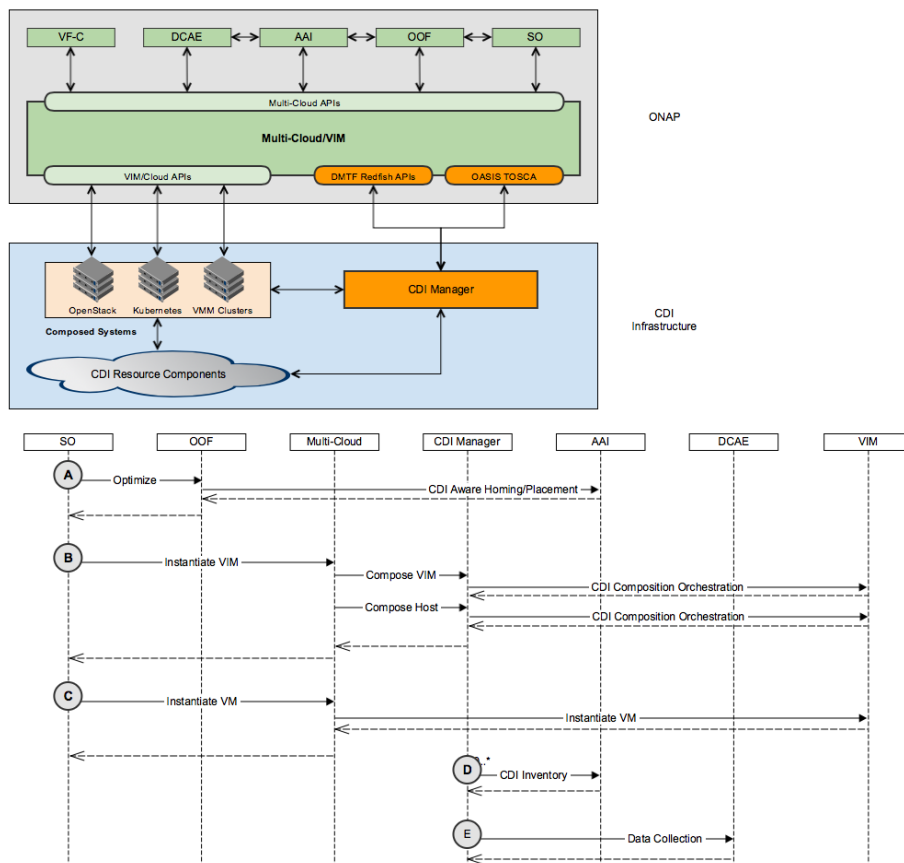
## Architecture Alignment:

The following diagram illustrates how project functionality fits in with the rest of ONAP components. The "CDI Infrastructure Management Adapter" component, shown in the diagram, contains the bulk of the implementation and consists of "glue code" required to interaction between ONAP components' native interfaces, DMTF Redfish APIs and TOSCA templates.

## CDI Infrastructure Manager...



## CDI Flows...



## Project Dependencies

The project depends on the following ONAP components:

	Component	Dependency	Release
1	AAI	Inventory and capacity data integration	Dublin
2	DCAE	Telemetry integration	Dublin (stretch)
3	SO	Resource and/or virtual infrastructure environment optimization and scaling during instantiation	-
4	APPC	Resource and/or virtual infrastructure environment optimization and scaling during operation and remediation	-
5	VF-C	Resource and/or virtual infrastructure environment optimization and scaling during instantiation, operation and remediation	-
6	OOF	Resource optimization	-

This project aligns with the following standards and information models:

- DMTF Redfish Information Model
- DMTF Redfish REST APIs
- OASIS TOSCA Simple YAML Profile

The project has no dependencies on other open source projects.

## Other Information:

- Link to seed code - None
- Vendor Neutral - Yes
- Meets Board policy (including IPR) - Yes

Use the above information to create a key project facts section on your project page

## Key Project Facts:

Facts	Info
PTL (first and last name)	<a href="#">Bin Yang</a>
Jira Project Name	TBD
Jira Key	TBD
Project ID	TBD
Link to Wiki Space	TBD

## Release Components Name:

Note: refer to existing [project for details](#) on how to fill out this table

Components Name	Components Repository name	Maven Group ID	Components Description
		org.onap.	

## Resources committed to the Release:

Note 1: No more than 5 committers per project. Balance the committers list and avoid members representing only one company. Ensure there is at least 3 companies supporting your proposal.

Note 2: It is critical to complete all the information requested, that will help to fast forward the onboarding process.

Role	First Name Last Name	Linux Foundation ID	Email Address	Location
PTL				
Committers				

Contributors				