

# ARC OOF Component Description - Guilin (R7) Release (Copy)

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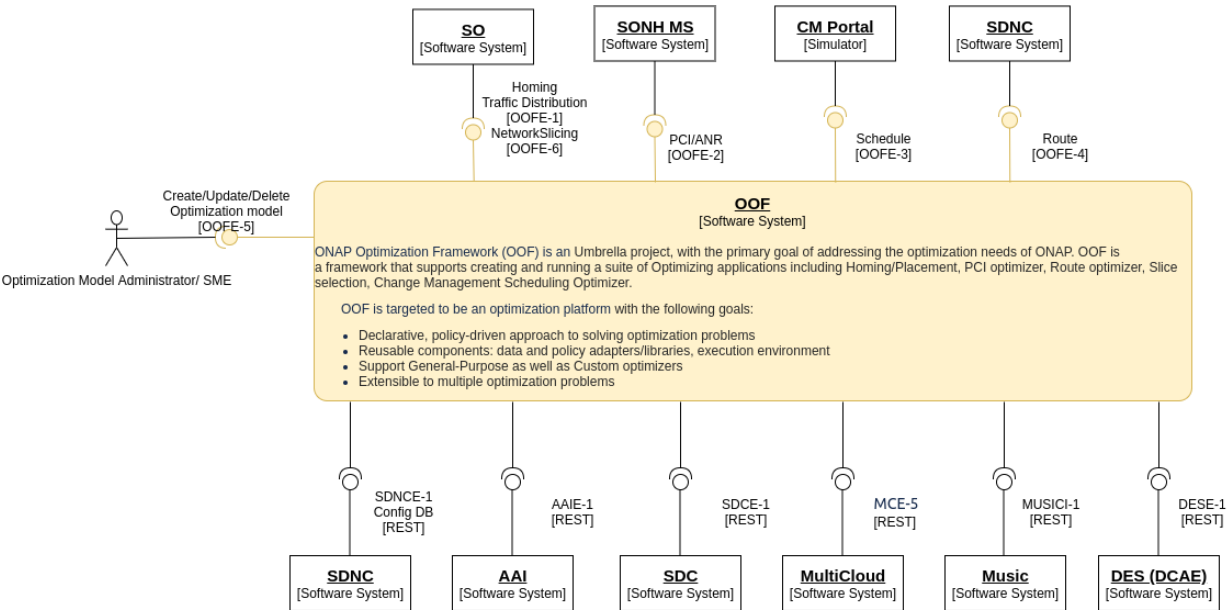
Component Status: Pending PTL Updates and ArchCom Review

Last Reviewed on: 04 Aug 2020

Certified by: krishna moorthy

## OOF (ONAP Optimization Framework):

### 1. High Level Component Definition and Architectural Relationships



Guilin-R7

## 2. API definitions

OOF provides the following interfaces:

Interface Name	Interface Definition	Interface Capabilities	API Spec (Swagger)
OOF-1	<ul style="list-style-type: none"><li>Homing</li><li>Traffic Distribution</li></ul>	It enables placement based on a wide variety of policy constraints including capacity, location, platform capabilities, and other service specific constraints.	<a href="https://docs.onap.org/projects/onap-optf-osdf/en/latest/sections/offeredapis.html">https://docs.onap.org/projects/onap-optf-osdf/en/latest/sections/offeredapis.html</a>
OOF-2	PCI/ANR Optimization	Enables PCI/ANR optimization API for SON.	<a href="https://docs.onap.org/projects/onap-optf-osdf/en/latest/sections/offeredapis.html">https://docs.onap.org/projects/onap-optf-osdf/en/latest/sections/offeredapis.html</a>
OOF-3	Schedule Optimization	a policy driven workflow schedule optimizer for change management planning. This interface schedule workflows in time to maximize parallel change management activities, while respecting dependency between the workflows.	<a href="https://docs.onap.org/projects/onap-optf-cmsf/en/latest/sections/offeredapis.html">https://docs.onap.org/projects/onap-optf-cmsf/en/latest/sections/offeredapis.html</a>

OOF-4	Route Optimization	Provides an interface for Router Optimization and <a href="#">inter-domain route optimization</a> .	<a href="https://docs.onap.org/projects/onap-optf-osdf/en/latest/sections/offeredapis.html">https://docs.onap.org/projects/onap-optf-osdf/en/latest/sections/offeredapis.html</a>  <a href="#">Inter-domain swagger Reference</a> (This review will show the added new API. This can also be found under the docs above)
OOF-5	OOF Model Administrator	This is for the OOF Model Administrator API. This API is a way to dynamically change the optimization models that will be used to find solutions for various optimization problems. This API will be used to Create, Update, or Delete Models.	<a href="https://docs.onap.org/projects/onap-optf-osdf/en/latest/sections/offeredapis.html">https://docs.onap.org/projects/onap-optf-osdf/en/latest/sections/offeredapis.html</a>
OOF-6	<a href="#">Network Slicing</a>	This interface enables slice selection recommendations (NST, NSI, NSSI, Slice Profiles), as well as <a href="#">slice termination recommendations</a> (NSI, NSSI).	<a href="https://docs.onap.org/projects/onap-optf-osdf/en/latest/sections/offeredapis.html">https://docs.onap.org/projects/onap-optf-osdf/en/latest/sections/offeredapis.html</a>  <a href="#">Slicing swagger reference</a> (This review will show the changes done to the API. This can also be found under the docs above)

Note: xxxl interface is a Component internal interface. xxxxE interface is a component external interface

The current API documents can be found at:

- The OOF user guide can be found at: [OOF latest user guide](#)
- OOF internal APIs can be found: [OOF API specification](#)

OOF consumes the following Interfaces:

Interface Name	Purpose Reason For Use	API Spec (Swagger)
SDNCE-1	For PCI/ANR optimization, OOF Retrieves the Cellsite inventory details from the configdb API, which is hosted as part of the SDNC/R component	<a href="https://github.com/onap-oof-pci-poc/sdnc/blob/master/ConfigDB/swagger-json/swagger.json">https://github.com/onap-oof-pci-poc/sdnc/blob/master/ConfigDB/swagger-json/swagger.json</a>
AAIE-1	OOF interfaces with AAI to retrieve the inventory	OOF consumes a wide variety of inventories from AAI. It can be found under the API section of AAI  <a href="https://docs.onap.org/projects/onap-aai-aai-common/en/latest/platform/offeredapis.html">https://docs.onap.org/projects/onap-aai-aai-common/en/latest/platform/offeredapis.html</a>
MCE-5	OOF queries Multicloud for real-time available capacity information	<a href="https://docs.onap.org/projects/onap-multicloud-framework/en/latest/MultiCloud-APIv0-Specification.html">https://docs.onap.org/projects/onap-multicloud-framework/en/latest/MultiCloud-APIv0-Specification.html</a>
MUSICI-1	OOF interfaces with MUSIC to persist service state.	
<a href="#">SDCE-1</a>	<a href="#">OOF interfaces with SDC to retrieve slice template information</a>	<a href="https://docs.onap.org/projects/onap-sdc/en/latest/offeredapis.html">https://docs.onap.org/projects/onap-sdc/en/latest/offeredapis.html</a>
<a href="#">DESE-1</a>	<a href="#">OOF interfaces with DES to retrieve the PM/KPI data of the cells for ML-based decision making.</a>	<a href="#">DES Swagger reference</a>

### 3. Component Description:

ONAP Optimization Framework (OOF) is an Umbrella project, with the primary goal of addressing the optimization needs of ONAP. OOF is a framework that supports creating and running a suite of Optimizing applications including:

- Change Management Scheduling optimizer
- Homing/Placement optimizer
- PCI optimizer
- Route optimizer
- Slice selection

OOF is targeted to be an optimization platform with the following goals:

- Declarative, policy-driven approach to solving optimization problems
- Reusable components: data and policy adapters/libraries, execution environment
- Support General-Purpose as well as Custom optimizers
- Extensible to multiple optimization problems

Internally, OOF has the following components:

- OSDF: Optimization Service Design Framework, which is a collection of APIs and libraries, along with a generic runtime optimizer
  - Status: Part of ONAP since Beijing Release.
- HAS: Homing and Allocation Service, which provides a policy based constraint driven selection optimizer
  - Status: Part of ONAP since Beijing Release.

- CMSO: Change Management Schedule Optimizer, providing schedule optimization
  - Status: Seed code up-streamed in R3
- FGPS: Fine Grained Placement Service
  - Status: Seed code up-streamed, POC in Frankfurt

## 4. Known system limitations

Please find the known system limitations in the following links

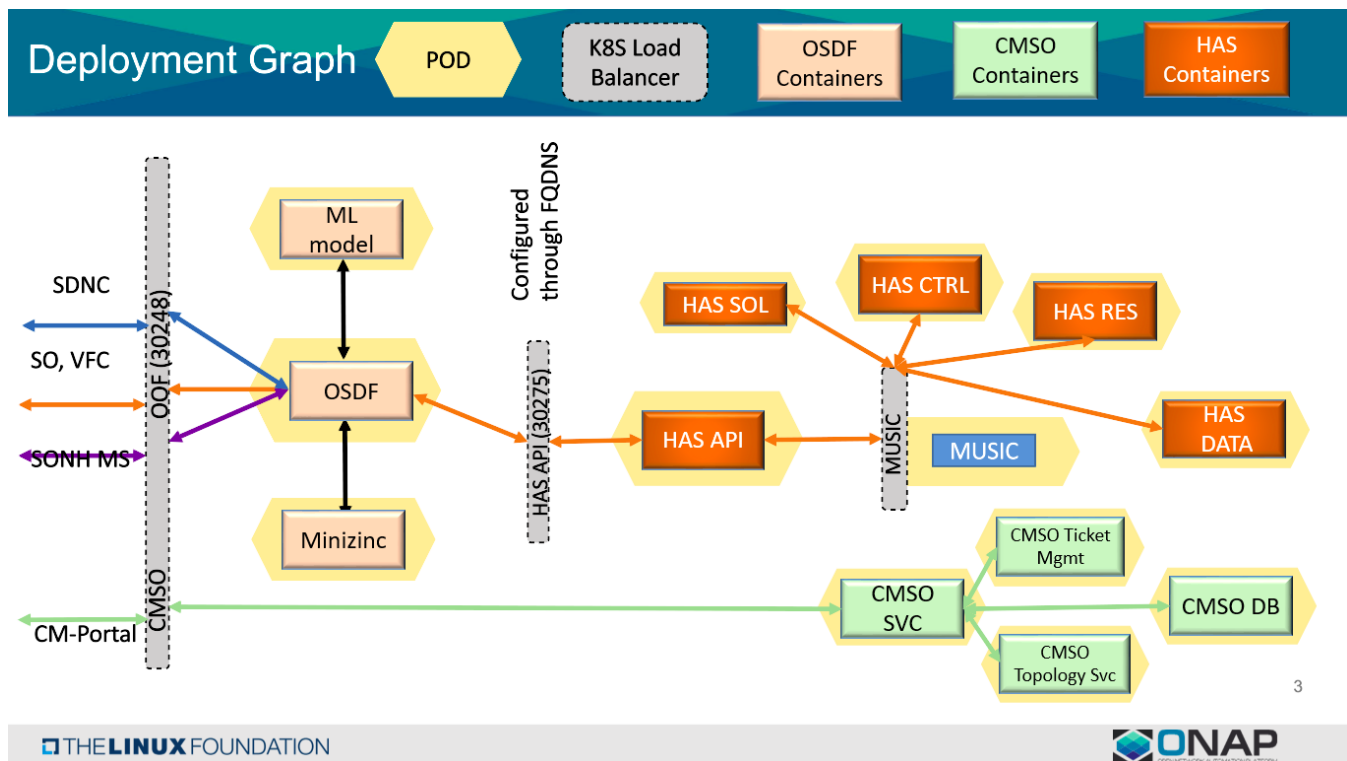
- [has release notes](#)
- [osdf release notes](#)
- [cmso release notes](#)

## 5. Used Models

OOF doesn't directly create models, but indirectly consumes them via AAI, Policy and Multi Cloud.

- Service and Resource Info, from: AAI
- Network Topology for CM: AAI
- HPA Flavors/Capabilities/CapacityInfo, from : AAI
- Policy Models (homing, PCI) from: Policy
- Infrastructure Metrics Info (capacity), from: MultiCloud
- Cloud agnostic Intent Info, from: MultiCloud
- AZ level capacity Info, from: MultiCloud (for F-GPS)
- PCI configuration data (not yet a part of SDNC model)
- Slice/Subnet Profile and Slice/Subnet Instance models, from AAI

## 6. System Deployment Architecture



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## 7. New Capabilities in this Release

- Updates to E2E Network Slicing (refer OOF-6)
- Support for inter-domain route optimization (refer OOF-4)
- Introduction of offline trained ML model for the SON use case (refer OOF-2 which has not changed, as well as DESE-1)
- Integrate Generic Optimization Engine into OOF Helm charts (refer OOF-5)

# 8. References

[OOF Guilin \(R7\) Architecture Review](#)