

SMO - Service Management and Orchestration

Please see new O-RAN-SC Project: [Service Management and Orchestration \(SMO\)](#) ...

... and consider this page as outdated.

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From O-RAN point of view, the SMO terminates O1, O2 interfaces, and the A1 interface (in the Non-RealTime RIC).

The O2 interface was out of scope of this page previously, but is considered in scope as of the July 2020 train. (Please update, if you have publicly available information, it is assumed that all SMO software components can be deployed as [docker](#) containers. Larger SMO deployments may use [kubernetes](#), smaller may use [docker-compose](#))

- A1 termination: is covered by the [O-RAN-SC Non-RT-RIC project](#)
- O1 termination is covered by the [O-RAN-SC OAM project](#)









While A1 uses [REST](#) as communication protocol, O1 uses [NetConf/YANG](#) for configuration (GET and SET) and [REST/VES](#) for asynchronous notifications from O-RAN components.

Therefore we can say that as a bare minimum an SMO for O-RAN includes:


- A1 termination (REST Client)
- O1 NetConf/YANG termination (NetConf-Client)
- O1 VES termination (HTTP/REST/VES-server - also called VES collector)


All these O-RAN interface terminations on the SMO require communication between each other. In order to avoid the architectural and maintenance complexity of several point-to-point interfaces, a message bus between the SMO components is preferred. In order to view details and function, several dashboards would be beneficial and also a persistent database cluster and a certification server and logging capabilities. All the mentioned components should be dockerized for easy deployment and dynamic scaling.

SMO internal software components and its mapping to existing open-source project - proposed components for an O-RAN-SC SMO distribution highlighted.

SMO component	Protocol		Target release for deployment	O-RAN	MANO	OpenNMS	ONAP	others
A1 Policy Agent		mandatory	Bronze  OAM-34 - What is an SMO? DONE	Non-RT-RIC				
A1 REST client	REST client	mandatory	Bronze  OAM-34 - What is an SMO? DONE	Non-RT-RIC			ODL/CCSDK /SDNC (Amber)	
A1 dashboard	Web application	preferred	Bronze  OAM-34 - What is an SMO? DONE	RIC dashboard (non-rt-ric, near-rt-ric)				
O1 NetConf/YANG termination	NetConf /YANG client	mandatory	Bronze  OAM-34 - What is an SMO? DONE				ODL/CCSDK /SDNC	OpenDaylight Apache Karaf
O1 VES termination	VES server	mandatory	Bronze  OAM-34 - What is an SMO? DONE				VES collector HV-VES collector (optional)	
O1 dashboard	Web application	preferred	Bronze  OAM-34 - What is an SMO? DONE				ODLUX	
Message bus		mandatory	Bronze  OAM-34 - What is an SMO? DONE		Apache Kafka	Apache Kafka	DMaaP	Apache Kafka
Persistent database	database cluster (no-sql, sql)	mandatory	Bronze  OAM-34 - What is an SMO? DONE		Mongo DB mySql	ElasticSearch	ElasticSearch for FCAPS mariaDB in general	ElasticSearch mariaDB
Service provisioning		preferred	Cherry or later				SO	
Optimization		preferred	Cherry or later				OOF	

Related Jiras

 [OAM-34](#) - What is an SMO? [DONE](#)

 [OAM-48](#) - Add Elasticsearch and Kibana to SMO Development [DONE](#)

Policy		prefer red	Cherry or later				Policy	
Data analytics		prefer red	Cherry or later				DCAE	Acumos
Inventory	REST (AAI-API)	prefer red	Cherry or later				A&AI	ElasticSearch
Certification server		prefer red	Cherry or later		keystore		AAF	
Logging		prefer red	Bronze <input checked="" type="checkbox"/> GAM-48 - Add Elasticsearch and Kibana to SMO Development DONE				Elastic	ElasticSerach, Kibana
Logging dashboard	Web application	prefer red	Bronze <input checked="" type="checkbox"/> GAM-48 - Add Elasticsearch and Kibana to SMO Development DONE				Kibana	