

Support for Intent Framework and Intent Modeling

Use Case Overview & Description

Note: 'Support for Intent Framework and Intent Modeling' might be viewed as Honolulu POC (TSC 2020-11-05).

In R7, Intent technology was proposed as a proof-of-concept (REQ-329). It can be viewed as one of most promising solutions towards autonomous network.

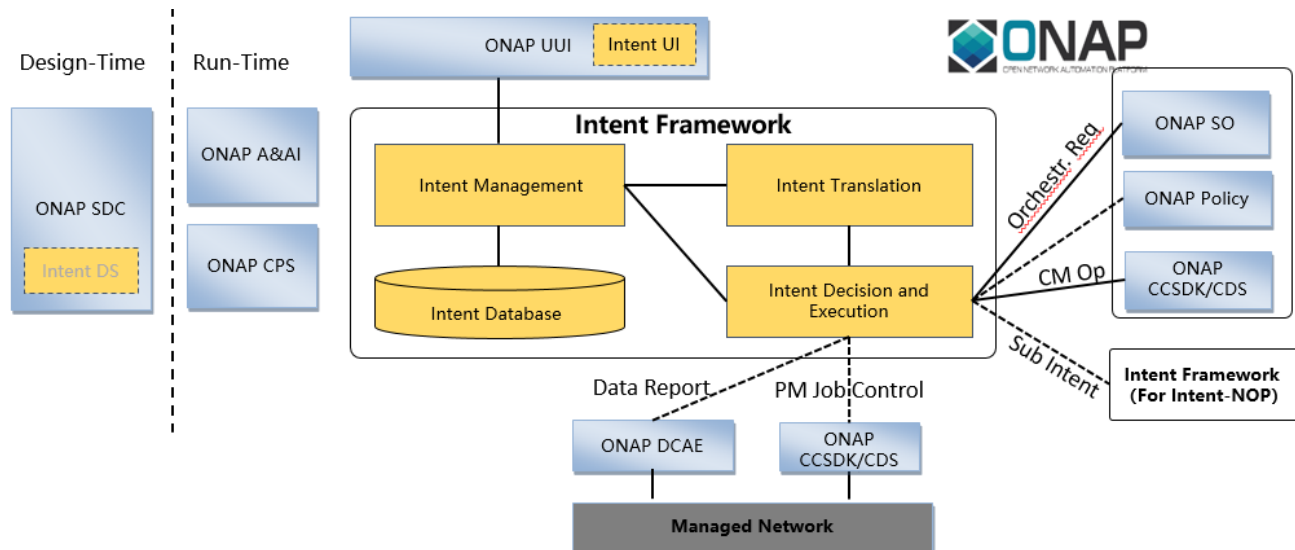
This requirement propose to enhance ONAP with an general-purpose intent framework, which may contains intent translation, intent execution and intent decision and execution etc. We would like to provide more POCs around it, and propose to be one of ONAP component or sub-component in the future. In R8, the requirement will provide the internal reference architecture and interacting with other ONAP components, and also introduce intent modeling for specific use cases, such as intelligent radio capacity optimization and intelligent slicing management.

Introduction to Intent Framework

Intent framework is a system that helps to implement and operate networks that can improve network availability and agility. It takes a high-level business goal (intent) as input, converts it to the necessary network configurations and applies the network changes via network automation and/or network orchestration. Continuously monitoring the status of the network under control, the system validates in real time that the intent is being met, and can take corrective actions when desired intent is not met.

It contains following functional blocks (to be discussed in Honolulu release):

- Intent UI (Covered in ONAP UI by [REQ-453 - Smart Operator Intent Translation in UI based on IBN - R8 5G Slicing Support](#) DONE)
- Intent Management
 - Providing NBI for consumers, including intent schema and instance management in a general way
- Intent Translation
 - Translate high-level of abstraction to a more concrete form in order to be validated and processed.
 - The system takes a higher-level business goal (what) as input from end users and converts it to the necessary network configuration or orchestration request (how).
- Intent Decision and Execution
 - Decide which, if any, candidate solution shall be executed in response to a request by another managed entity for a set of governance actions.
 - Execute one of translated intent solution by sending request to other component, such as SO, CDS, Policy, or external low-level intent system (intent framework).
- Intent Database
 - Store intent schema, intent instance and intent knowledge



Requirement Summary

1. Intent Framework architecture definition

- Functional blocks and interfaces between them
- Initial Implementation as a separate component with multiple micro services.

2. External interface to other existing ONAP Components

- UI, SO, CDS, AAI/CPS, etc

3. Discussion of general Intent modeling, and giving some concrete intent data model for specific use cases
4. Demo of Intent Framework

Use Case Key Information

TOPIC	DESCRIPTION	WIKI PAGE
Requirements Proposal	This is a link to the requirements proposal made on the Requirements Sub-committee Nov 9th, 2020	REQ-467 - Intent framework and intent modeling DONE
Architecture S/C info	Information on the Architecture sub-committee presentation. 2020-11-24 ONAP Architecture Meeting	
Prior Project "Base" Wiki	Link to the "base" wiki for the Use Case, or work from a prior release.	
Requirements Jira (REQ-###) Ticket	Link to the REQ Jira ticket for this use case	REQ-467 - Intent framework and intent modeling DONE
Key Use Case Leads & Contacts	USE CASE LEAD: Lei Huang Huang ZongHe yaoguang wang USE KEY CONTACTS:	
Meetings Register & Recordings	Link to Use Case Team meetings.	

BUSINESS DRIVER

This section describes Business Drivers needs. These business drivers are presented on the Requirements Sub-committee and should also be put into the release requirements sub-committee page.

Executive Summary - In R7, Intent technology was proposed as a proof-of-concept (REQ-329). It can be viewed as one of most promising solutions towards autonomous network. This requirement propose to enhance ONAP with an general-purpose intent framework, which may contains intent translation, intent execution and intent decision and execution etc. We would like to provide more POCs around it, and propose to be one of ONAP component or sub-component in the future. In R8, the requirement will provide the internal reference architecture and interacting with other ONAP components, and also introduce intent modeling for specific use cases, such as intelligent radio capacity optimization and intelligent slicing management.

Business Impact - It is a valuable business function that can furthermore reduce the operation expense in terms of automation management.

Business Markets - All operators and service providers that want to use ONAP for network management.

Funding/Financial Impacts - Reduction in operations expense from using procedural while complex operations to using intent-driven declarative operations.

Organization Mgmt, Sales Strategies - (It is suggested that you use the following wording): *There is no additional organizational management or sales strategies for this use case outside of a service providers "normal" ONAP deployment and its attendant organizational resources from a service provider.* (This would typically describe the "WHO", but because use cases are all deployed with ONAP itself, these two areas come with the actual ONAP deployment and uses the organizational management and sales strategies of a particular service provider's ONAP deployment)

Development Status

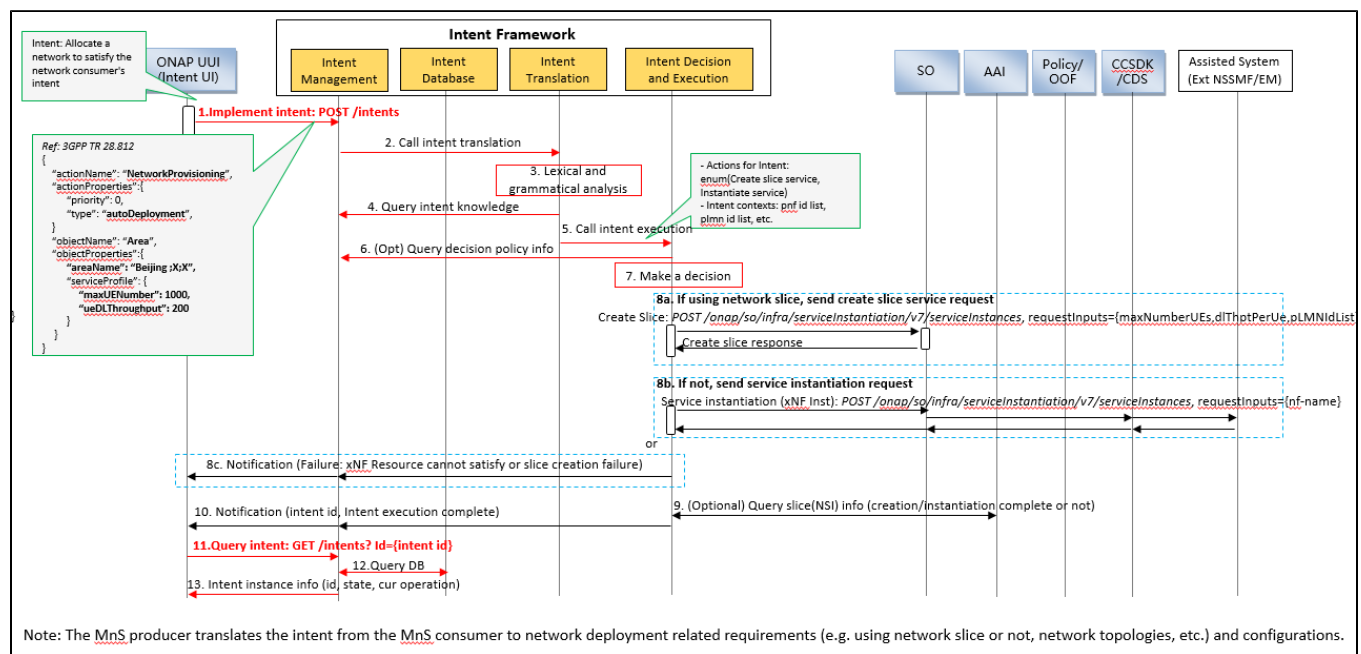
PROJECT	PTL	User Story / Epic	Requirement
A&AI	William Reehil		
AAF	Jonathan Gathman		
APPC	Takamune Cho		
CLAMP	Gervais-Martial Ngueko		
CC-SDK	Dan Timoney		
DCAE	Vijay Venkatesh Kumar		
DMaaP	Mandar Sawant		
External API	Adrian OSullivan		

HOLMES	Guangrong Fu		
MODELING	Hui Deng		
Multi-VIM / Cloud	Bin Yang		
OOF	krishna moorthy		
OOM	Sylvain Desbureaux		
POLICY	Jim Hahn		
PORTAL	Sunder Tattavarada		
SDN-C	Dan Timoney		
SDC	Christophe Closset		
SO	Seshu Kumar Mudiganti		
VID	Ikram Ikramullah		
VF-C	Yuanhong Deng		
VNFRQTS	Steven Wright		
VNF-SDK	Weitao Gao		
CDS	Yuriy Malakov		

List of PTLs: [Approved Projects](#)

*Each Requirement should be tracked by its own User Story in JIRA

USE CASE DIAGRAM



Use Case Functional Definitions

Use Case Title	Network Provision
Actors (and System Components)	Network Operator
Description	Network Provision

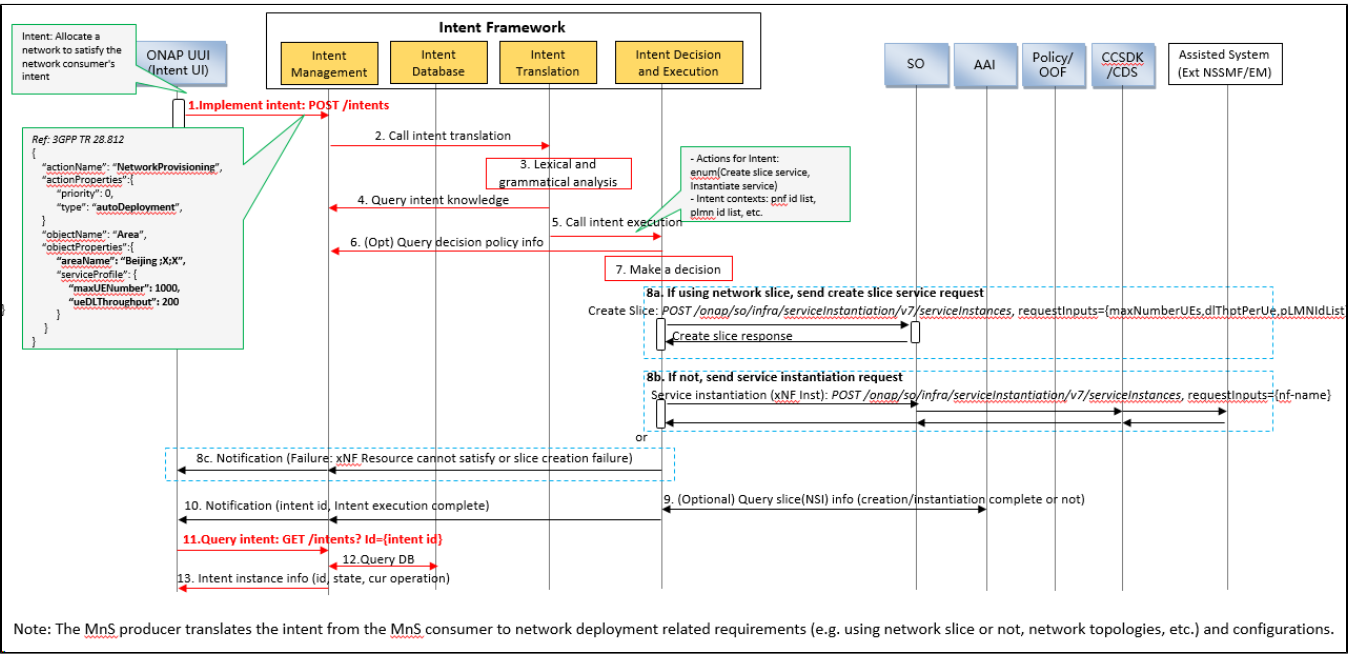
Points of Contact	
Preconditions	Network operator input Intent as : Allocate a network to satisfy the network consumer's intent
Triggers / Begins when	
Steps / Flows (success)	show as the above figure
Post-conditions	
Alternate / Exception Paths	Description of any exceptions or special process that could occur during Use Case
Related Use Cases	
Assumptions	
Tools / References / Artifacts	Swagger API/ ONAP SO / AAI/ Policy/SDC

Supporting materials

TEST Report

Test Case

Network Provision Test Flow



Offered APIs by Intent Framework	
Implement intent	POST /intents Request Body: {"immediate": true, "expression": "xx"} Response: {"id": "intent id"}
Query intent	GET /intents?id={intent id} Response: jsonObject, e.g. {"id": "intent id", "state": "active", "createTime": "xx", "expression": "xx", "fulfillmentInfo": "FULFILLED", "operationList": "CreateSliceService"}

Consumed APIs by Intent Framework	
Create slice service	POST /onap/so/infra/serviceInstantiation/v7/serviceInstances Request Body: jsonObject, <code>{"requestParameters":{....., "requestInputs": {"maxNumberUEs":100, "pLMNIDList":"xx", "coverageAreaList":"xx"}}</code>
Service instantiation	POST /onap/so/infra/serviceInstantiation/v7/serviceInstances Request Body: jsonObject, <code>{"requestParameters": {"userParams":{{"resources":{"pnfs":{"instanceName":{"nf_instance_name"}}}}}}</code>

Test Process

TBD

Test Cases and Status

1	There should be a test case for each item in the sequence diagram	COMPLETE
2	create additional requirements as needed for each discreet step	COMPLETE
3	Test cases should cover entire Use Case	PARTIALLY COMPLETE