Policy Driven VNF Orchestration (5/12/17) - A Sub-Project of the Policy Framework

Project Name:

- Proposed name for the project: Policy Driven VNF Orchestration
- Proposed name for the repository:
  - policy/api - Policy CRUD and PEP enforcement client code
  - policy/common - common shared modules
  - policy/pdp - Policy Decision Engines
  - policy/pap - Policy Administration (Backend)
  - policy/gui - Policy Administration GUI (Frontend)
  - policy/docker - Policy docker image

Project description:

Some VNF products have been optimized to take advantage of hardware platform specific capabilities, such as NUMA or CPU pinning in order to maximize their performance and throughput. During VNF development, hardware platform requirements for such VNFs are defined in the "VNF descriptor" (i.e. VNF model) and stored in the VNF package (CSAR) as part of the CSAR metadata. When an "optimized" VNF is on-boarded and subsequently instantiated as part of a network service instance, it has to be deployed on specific compute resources that exhibit required hardware platform capabilities. Furthermore, some VNFs are implemented in a way that allows them to operate both in optimized and non-optimized manner, depending on resource availability, entitlements and licensing. Once instantiated, VNFs may require scaling or other remediation actions in order to maintain service levels. Additional VNF resources may need to be added or removed and existing resources may need to be "re-sized" or entirely replaced, depending on operating events and conditions.

This project will provide Policy Framework extensions to enable use of policy based constraints during instantiation, operation and remediation of VNFs. Given its cross-cutting nature and dependencies on other ONAP projects (see below), we are treating this project as a sub-project within the Policy Framework.

Scope:

This project is limited in scope to changes and additions within the Policy Framework. Project deliverables will include:

- A mechanism to handle ingestion of VNF vendor supplied operational policies specified in the VNF Model, and their federation with Operator-specified policies
- Policy DSL support for specification of VNF centric policy constraints for:
  - Handling of VNF resource inventory/optimization
  - Homing and placement of VNF components
  - Allocation of VNF compute, storage and network resources
  - Handling of VNF remediation actions, including VNF scaling
- This project will implement programmatic and declarative interfaces required to support:
  - Management of VNF related policies, including creation, modification and deletion
  - Ability to override/modify policies supplied as part of the VNF package metadata

Architecture Alignment:

- How does this project fit into the rest of the ONAP Architecture?
What other ONAP projects does this project depend on?

<table>
<thead>
<tr>
<th>Project</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy Framework</td>
<td>Closed loop policy specifications</td>
</tr>
<tr>
<td>Multi-VIM</td>
<td>Discovery of available VIM level compute resource capabilities</td>
</tr>
<tr>
<td>A&amp;AI</td>
<td>Persistence of VIM supplied compute resource hardware platform capabilities. Interfaces for access to persisted data.</td>
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<tr>
<td>SO</td>
<td>Enforcement of VNF instantiation policies</td>
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<td>APP-C</td>
<td>Enforcement of VNF operation and remediation policies</td>
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<tr>
<td>VF-C</td>
<td>Enforcement of VNF instantiation, operation and remediation policies</td>
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<tr>
<td>DCAE/Holmes</td>
<td>Collection of data relevant to health and state of compute resource hardware platform level capabilities</td>
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<tr>
<td>SNIRO</td>
<td>Enforcement of VNF resource optimization policies</td>
</tr>
<tr>
<td>SDC</td>
<td>Extraction and persistence of VNF vendor supplied hardware platform requirements</td>
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</tbody>
</table>

How does this align with external standards/specifications?
- ETSI NFV IFA11
- ETSI NFV SOL01
- ETSI NFV SOL04
- XACML (github.com/att/xacml)
- Drools (drools.org)

Resources:
- Primary Contact Person
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  - Pamela Dragosh - AT&T
- Names, gerrit IDs, and company affiliations of the committers
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Project Roles (include RACI chart, if applicable)

Other Information:

- link to seed code (if applicable)
  - N/A
- 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

Project Name:

- JIRA project name: Policy Driven VNF Orchestration
- JIRA project prefix: policy-vnf

Repo name:
Lifecycle State: incubation
Primary Contact: Alex Vul, Pamela Dragosh
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*Link to TSC approval:

Link to approval of additional submitters: