        Use cases for policy-based resource management in VNF-FG
         draft-xuan-nfvrg-policy-resource-man-vnffg-usecase-00

   Abstract

   This document describes two use cases for policy-based resource
   management in VNF-FG. These two use cases are not covered by two
   documents [irtf-nfvrg-resource-management] and
   [irtf-nfvrg-policy-based-resource-management]. These two use cases
   considers service plan policies in VNF-FG placement and affinity
   policies in Network forwarding path update.

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[1]. Introduction

   In this document, two additional use cases are discussed on policies
   which affect the resource management operations for VNF-FG. These
   policies include service plan policies for customer in case of
   VNF-FG placement and update. Another is affinity policies for VNF-FG
   update.

[2]. Conventions used in this document

   The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
   "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
   document are to be interpreted as described in RFC-2119 [RFC2119].

   The terms about VNF-I, VL, VNF-FG, classifers and MANO are defined
   in [RFC7665] and [ETSI-NFV-MANO]

[3](). Policy-based resource management for VNF-FG

VNF-FG is composed of an ordered sequence of VNFs which provides a
specific services. A network forwarding path (NFP) is an instance of
VNF-FG. NFP is composed by VNF intances (VNF-I), virtual links (VL),
virtual switches (vSW or forwarder), and traffic classifiers. The
NFP composition depends on the resource states, such as availability,
engergy consumption of VNF-I and bandwidth, latency of VL. Two resource
management oprations related to VNF-FG are NFP placement and NFP
update. In the document [irtf-nfvrg-resource-management], some use
uses for resource management include fail-over, load-balancing,
path optimizaton, and engergy efficiency. Here, we present another
use case for policy-based resource management, i.e. service plan.

Service plan: depending on the service plan of each customer,the
NFP will allocated which takes into account the QoS parameters.
For example, a customer with Gold service plan will be served
by the NFP which consists of VNF-I, VL, vSW, and traffic classifiers
satisfying the QoS parameters of that Gold plan.

```
+---------------------------------------------------------------+
| Policy: "A customer with a Gold service plan"                 |
+------+---------------+---------------+----------------+----+
       +               +               +                +
       V               V               V                V
+-------------+  +------------+  +------------+  +------------+
|Compute      |  | Network    |  | Network    |  |Classifier  |
|subsystem    |  | subsystem  |  | subsystem  |  |            |
|             |  |            |  |            |  |            |
|Policy       |  |Policy      |  |Policy      |  | Policy     |
|translation: |  |translation:|  |translation:|  | Translation|
|             |  |            |  |            |  |            |
|Selected     |  |Selected    |  |Selected    |  |Selected    |
|VNF-Is       |  |vSWs        |  |VLs         |  |classifers  |
|has low      |  |has strong  |  |has low     |  |has strong  |
|working load |  |capacity    |  |latency     |  |capacity    |
|low latency  |  |            |  |            |  |            |
|             |  |            |  |            |  |            |
+-------------+  +------------+  +------------+  +------------+
```
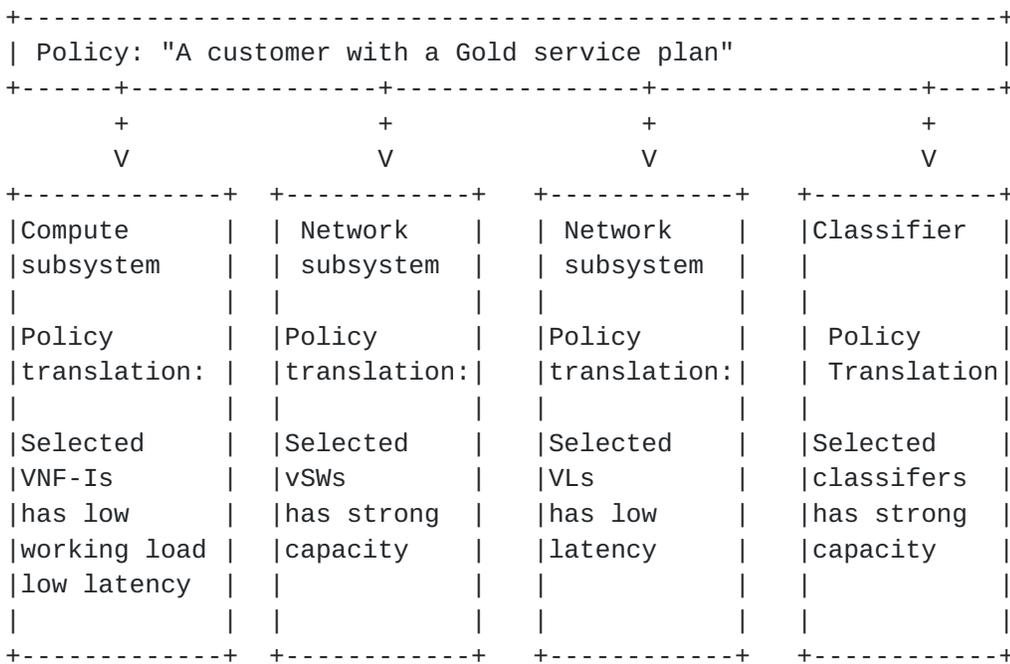
Figure 2. Policy-based NFP placement

+ Affinity and anti-affinity policies: the NFP is updated which
takes into account the affinity or anti-affinity policies. For example,
when a VNF-I in the NFP fails, the replacement VNF-I should satisfy
some anti-affinity policies defined by network operators for achieving
the resiliency. That is, the replacement VNF-I and failed VNF-I
instances should be located in the different physical hosts or
hypervisors or NFVIs.

[4](). Alignment with policy-based resource management document

This document provides two additional examples of policies for resource management operations of VNF-FG.

[5](). Security Considerations
TBD.

[6](). IANA Considerations

TBD.

[7](). References

[7.1](). Normative References

    [ETSI-NFV-MANO]
            ETSI, "Network Function Virtualization (NFV) Management
            and Orchestration V1.1.1", Dec 2014.

    [RFC7665]
            IETF, "Service Function Chaining architecture", [RFC7665]()

[7.2](). Informative References

    [irtf-nfvrg-policy-based-resource-management]
            R. Szabo, Ed. "Policy-based Resource Management"
            [draft-irtf-nfvrg-policy-based-resource-management-01](),
            Jul 2016

    [irtf-nfvrg-resource-management]

            Lee, S., Pack, S., Shin, M., and E. Paik, "Resource
            Management in Service Chaining", [draft-irtf-nfvrg-
            resource-management-service-chain-03](), Mar 2016.

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