Use cases for policy-based resource management in VNF-FG
draft-xuan-nfvr-g-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-nfvr-g-resource-management] and
[irtf-nfvr-g-policy-based-resource-management]. These two use cases
consider 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, classifiers 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 service. A network forwarding path (NFP) is an instance of VNF-FG. NFP is composed by VNF instances (VNF-I), virtual links (VL), virtual switches (vSW or forwarder), and traffic classifiers. The NFP composition depends on the resource states, such as availability, energy consumption of VNF-I and bandwidth, latency of VL. Two resource management operations related to VNF-FG are NFP placement and NFP update. In the document [irtf-nfvrg-resource-management], some uses for resource management include fail-over, load-balancing, path optimization, and energy 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 allocate 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 V V V V V V V V V V V V V V V V V V V V V V V V V V V V |
| Compute subsystem | Network subsystem | Network subsystem | Classifier |
| Selected VNF-I selected vSWs | Selected VNF-I selected vSWs | Selected VNF-I selected vSWs |
| has low working load capacity | has strong working load capacity | has low working load capacity |
| has low latency | has strong latency | has 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]

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

7.2. Informative References

[irtf-nfvrge-policy-based-resource-management]
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[irtf-nfvrge-resource-management]
Authors’ Addresses

Truong-Xuan Do
Soongsil University
Changui Bldg. 403,
(156-743) 511 Sangdo-Dong, Dongjak-Gu, Seoul, Korea

Phone: +82 10 4473 6869
Email: thespring1989@gmail.com

Younghan Kim
Soongsil University
11F Hyungnam Engineering Bldg. 1107,
(156-743) 511 Sangdo-Dong, Dongjak-Gu, Seoul, Korea

Phone: +82-2-820-0904
Email: younghak@ssu.ac.kr