Consumer-Facing Interface YANG Data Model for Interface to Network Security Functions

(draft-jeong-i2nsf-consumer-facing-interface-dm-01)

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Jaehoon Paul Jeong*, Mahdi Daghmehchi,
Tae-Jin Ahn, Rakesh Kumar, and Susan Hares

Contents

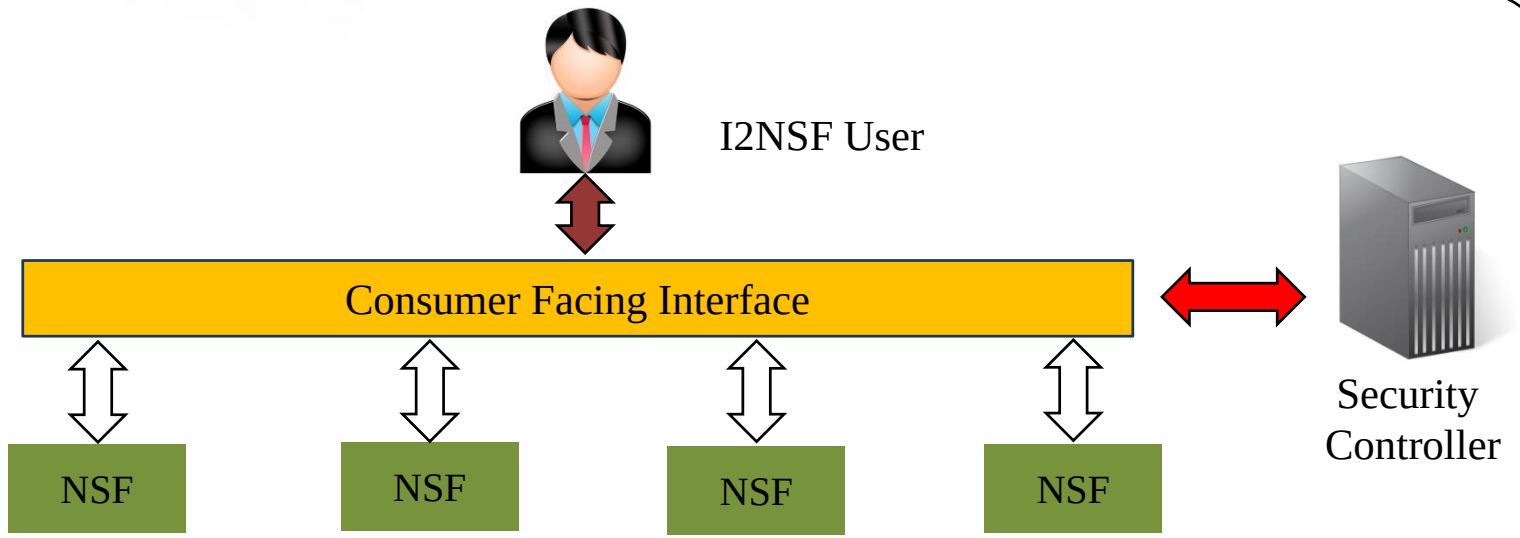
Introduction (1/2)

- This document describes a data model for security management based on I2NSF framework by using NFV

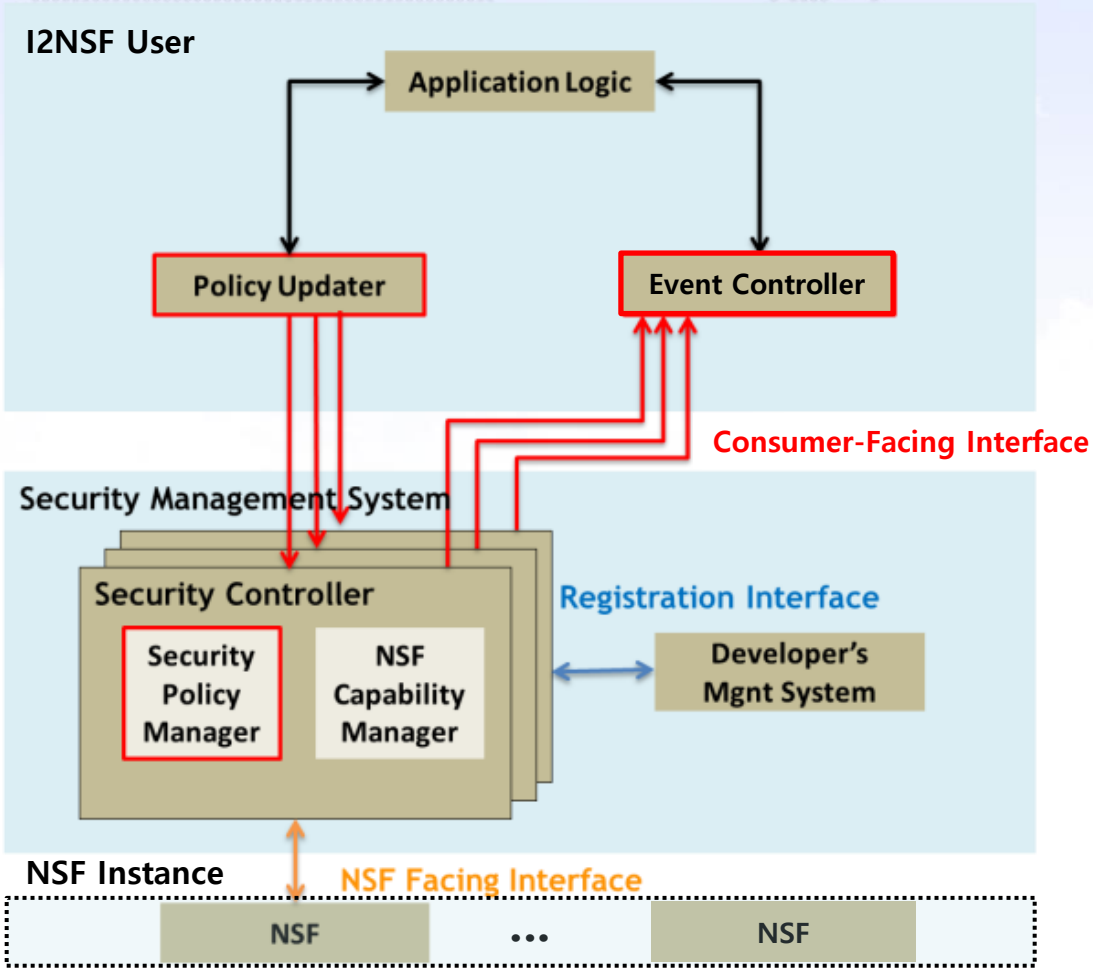
- A data model to perform VoIP-VoLTE security service

Introduction (2/2)

- Defining high-level policies and translate them to several low-level policies
- Updating low-level policies based on NSF capabilities
- Monitoring network's events and implementing security functions based on NFV

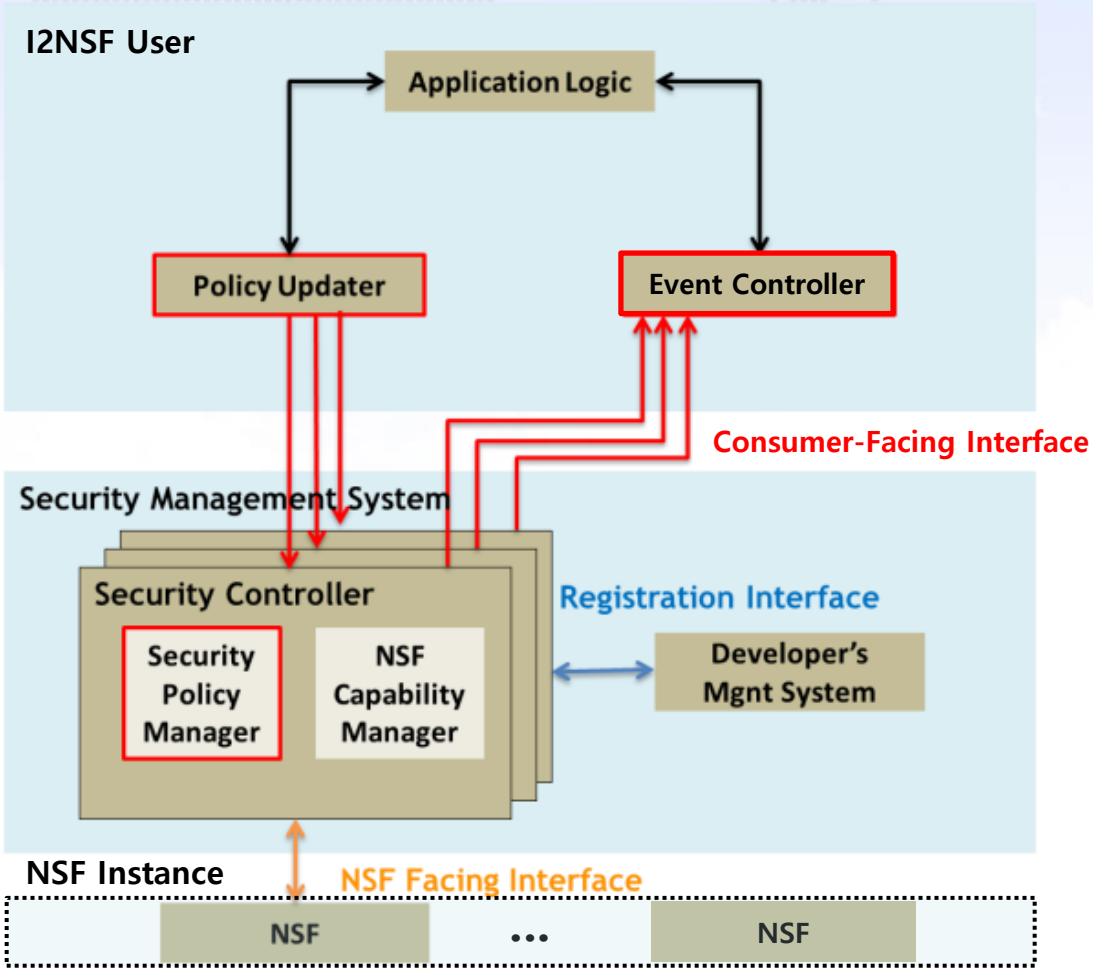


Security Management Architecture (1/3)



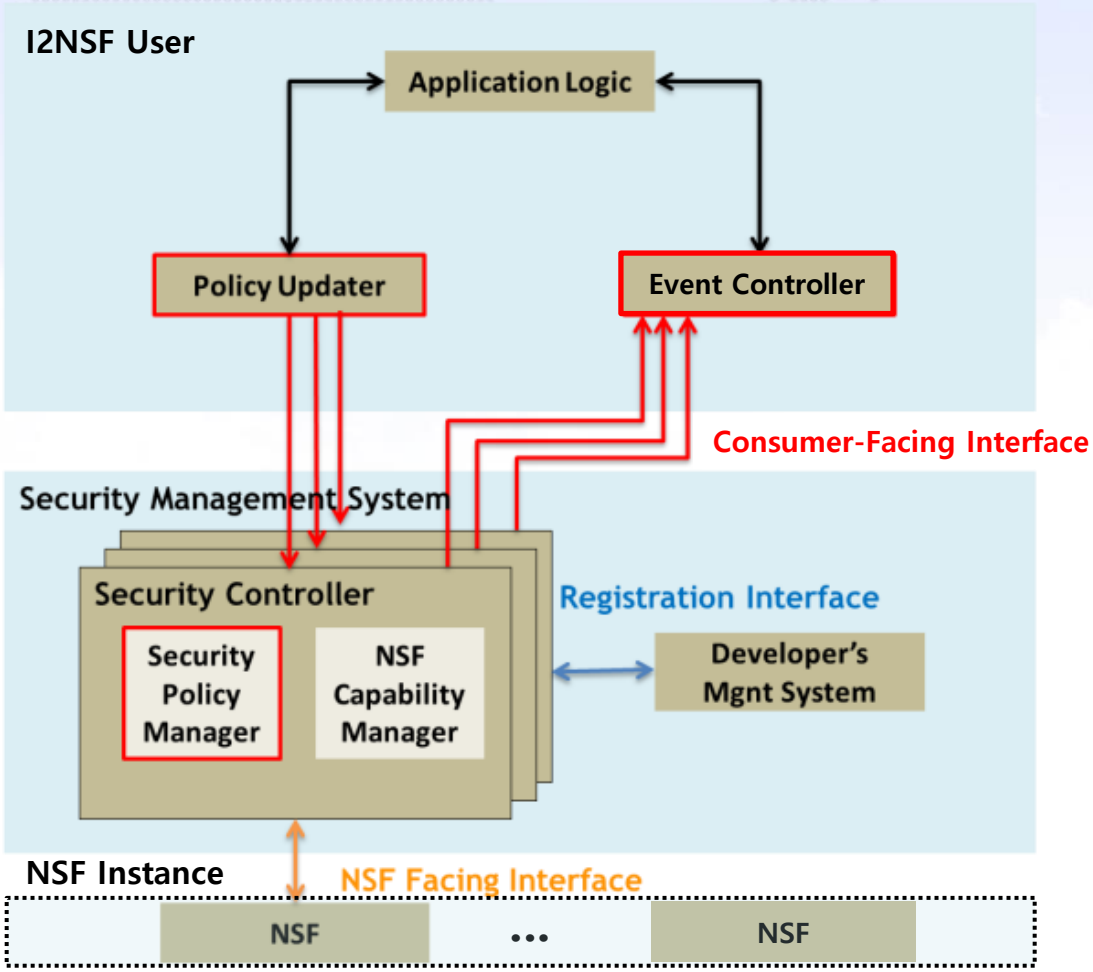
- **Application Logic**
  Generating high-level security policies
- **Event Controller**
  Event monitoring and sending to Application logic
- **Policy Updater**
  Distributing high-level policies to the Security Controller

Security Management Architecture (2/3)



- **Security Policy Manager**
  - Mapping high-level policies into several low-level policies
  - Delivering low level policies to NSF(s)
- **NSF capability manager**
  Storing the NSF's capability and sharing it with Security policy manager
- **Developer's Mgnt system**
  Registering new NSF's capabilities into NSF capability manager

Security Management Architecture (3/3)



- **NSF Instance**
  Exploiting low-level policies delivered by the Security policy manager

Security Management for VoLTE

VoLTE/VoIP security management: Application Logic

- Defining security conditions
  (e.g., blacklists of IP addresses & source ports, expire time, user agents)
- Updating the illegal devices information (manually/automatically)
- Generating new high-level security policies
- Updating the VoIP-VoLTE database based on the NSF's anomalous detection

Information model for Consumer-Facing Interface *

Information Model for:

- Threat Prevention
  To reduce the attack surface (e.g., Botnet)
- Policy endpoint groups
  Where a security policy is to be applied
- Policy Instance
  A complete information for any policy instance (e.g., where/when a policy need to be applied)

* draft-kumar-i2nsf-client-facing-interface-im-01

Update of Version

Update of Version (1/3)

- The changes from draft-jeong-i2nsf-consumer-facing-interface-dm-00:
  - Addition of a new component (Update for NSF's feedback) and its description in data model.
  - Implementation of the corrected data model based on YANG model.
- draft-jeong-i2nsf-consumer-facing-interface-dm-01 defines an overall structure of consumer-facing interface and its YANG data model.

Update of Version (2/3)

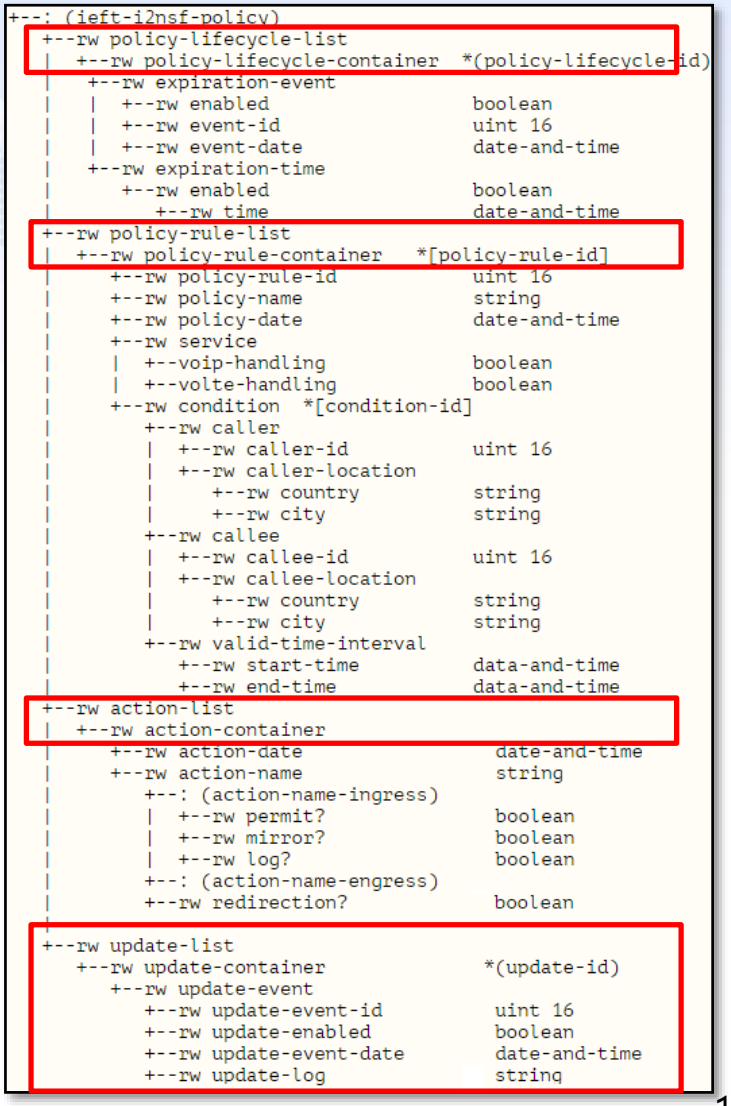
Data Model for VoLTE Security Service

High-level policies basements:

- Blacklisting countries
- Time interval specification
- Caller's priority levels

The data model consists of:

- Policy life cycle management
- Policy rule
- Action
- Update (NSF's Feedback or Unexpected Event)



Update of Version (3/3)

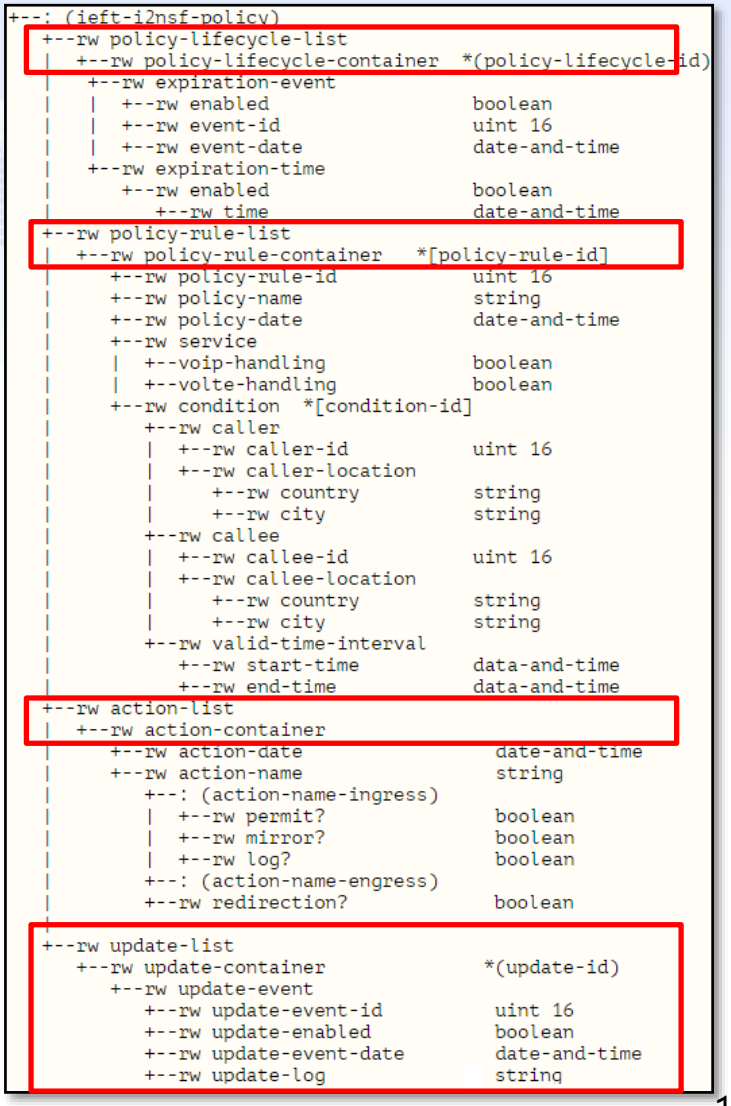
Data Model for VoLTE Security Service

Policy life cycle management
Specifies an expiration time and/or event to determine the life-time of the policy itself

Policy rule
Represents the specific information about a high-level policy
e.g., service types, conditions and valid time interval

Action
Specifies the actions which should be performed when a policy rule is matched by NSF

Update
Update a policy to reflect upon the event triggered by NSFs.



Next Step

- **Generic YANG Data Model**
  Modify current data model to be a Generic model

- **Implementation of more use cases**
  e.g., Untrusted domain (malware distributer) detecting, and access control function (time/location depended)