

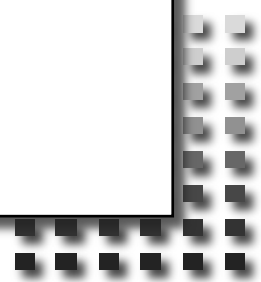


NMRG Meeting

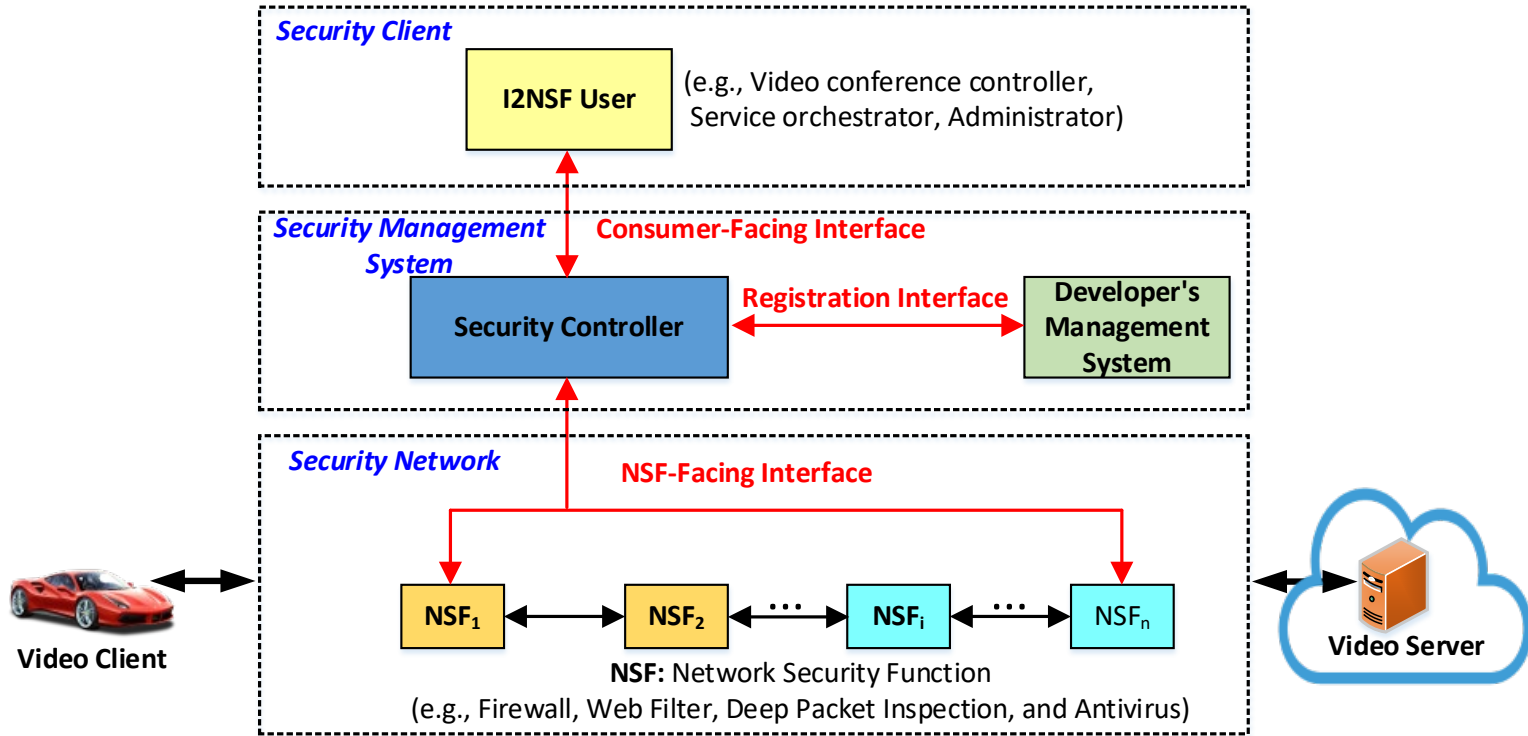
IETF Hackathon: I2NSF Framework Project

IETF 108
July 20-24, 2020
Online

Champion: Jaehoon Paul Jeong
Computer Science & Engineering
Sungkyunkwan University
pauljeong@skku.edu



I2NSF Framework: Architecture



Reference: RFC 8329: Framework for Interface to Network Security Functions (I2NSF)
<https://www.rfc-editor.org/rfc/rfc8329.html>

I2NSF Framework: Interfaces

- Registration Interface

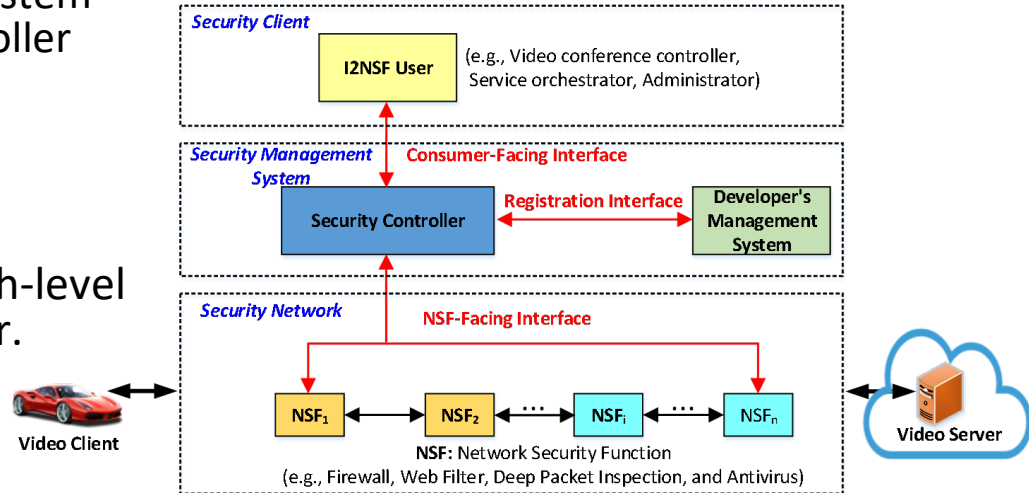
- Used for Developer's Management System to register an NSF into Security Controller with the NSF's capability.

- Consumer-Facing Interface

- Used for I2NSF User to deliver a high-level security policy to Security Controller.

- NSF-Facing Interface

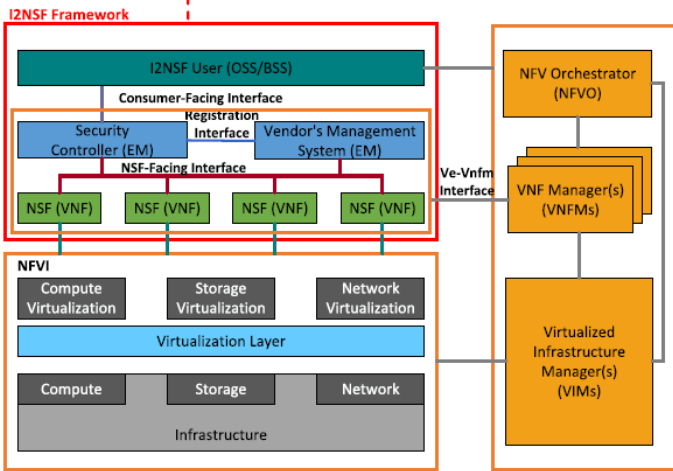
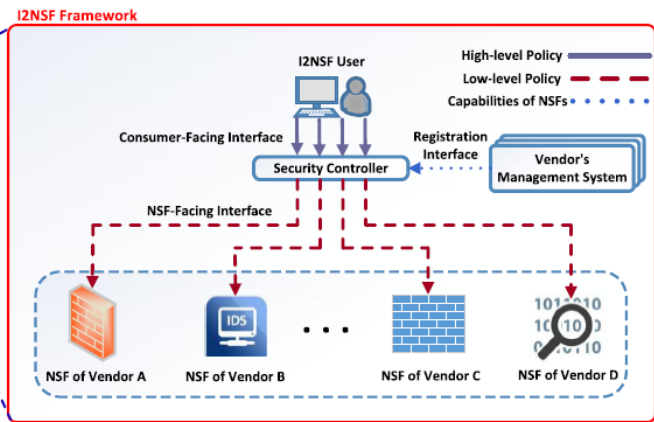
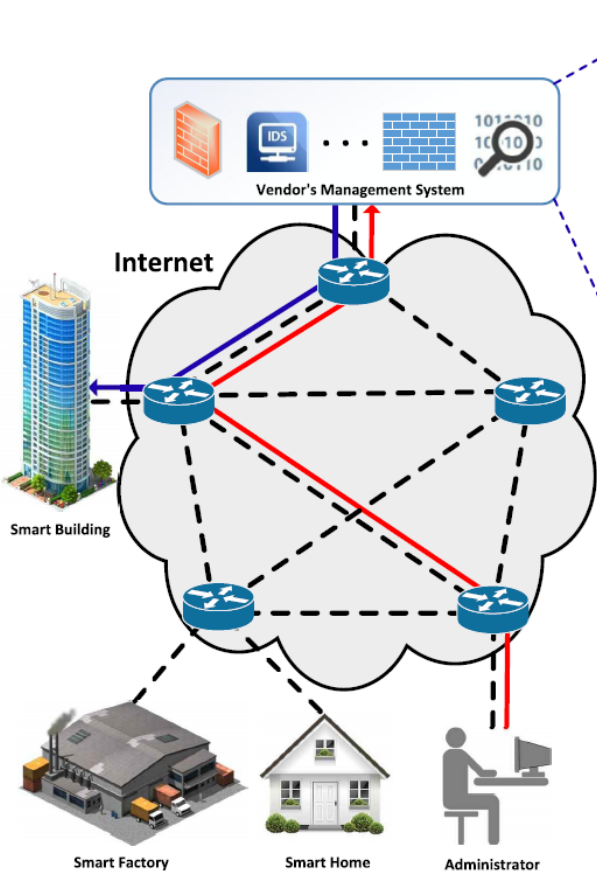
- Used for Security Controller to deliver a low-level security policy to an NSF.
- Note: Security Controller translates the received high-level security policy into the corresponding low-level security policy.



Hackathon Plan

- ❖ The Reflection of the Revision of the following drafts in the OpenStack-based I2NSF System:
 - draft-ietf-i2nsf-capability-data-model-06
 - draft-ietf-i2nsf-consumer-facing-interface-dm-09
 - draft-ietf-i2nsf-nsf-facing-interface-dm-09
 - draft-ietf-i2nsf-registration-interface-dm-08
 - draft-yang-i2nsf-security-policy-translation-06

I2NSF Framework for IBN-Based Security Services

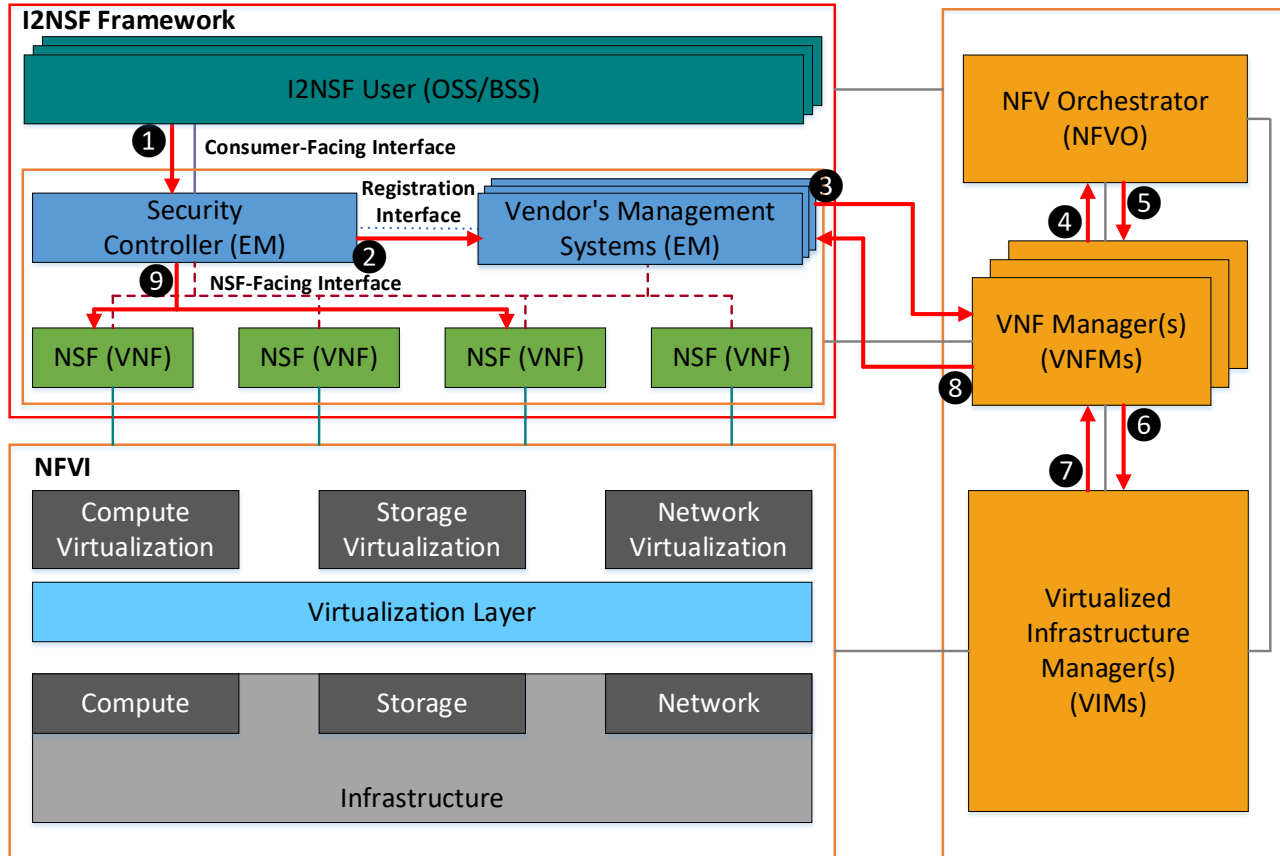


Reference:

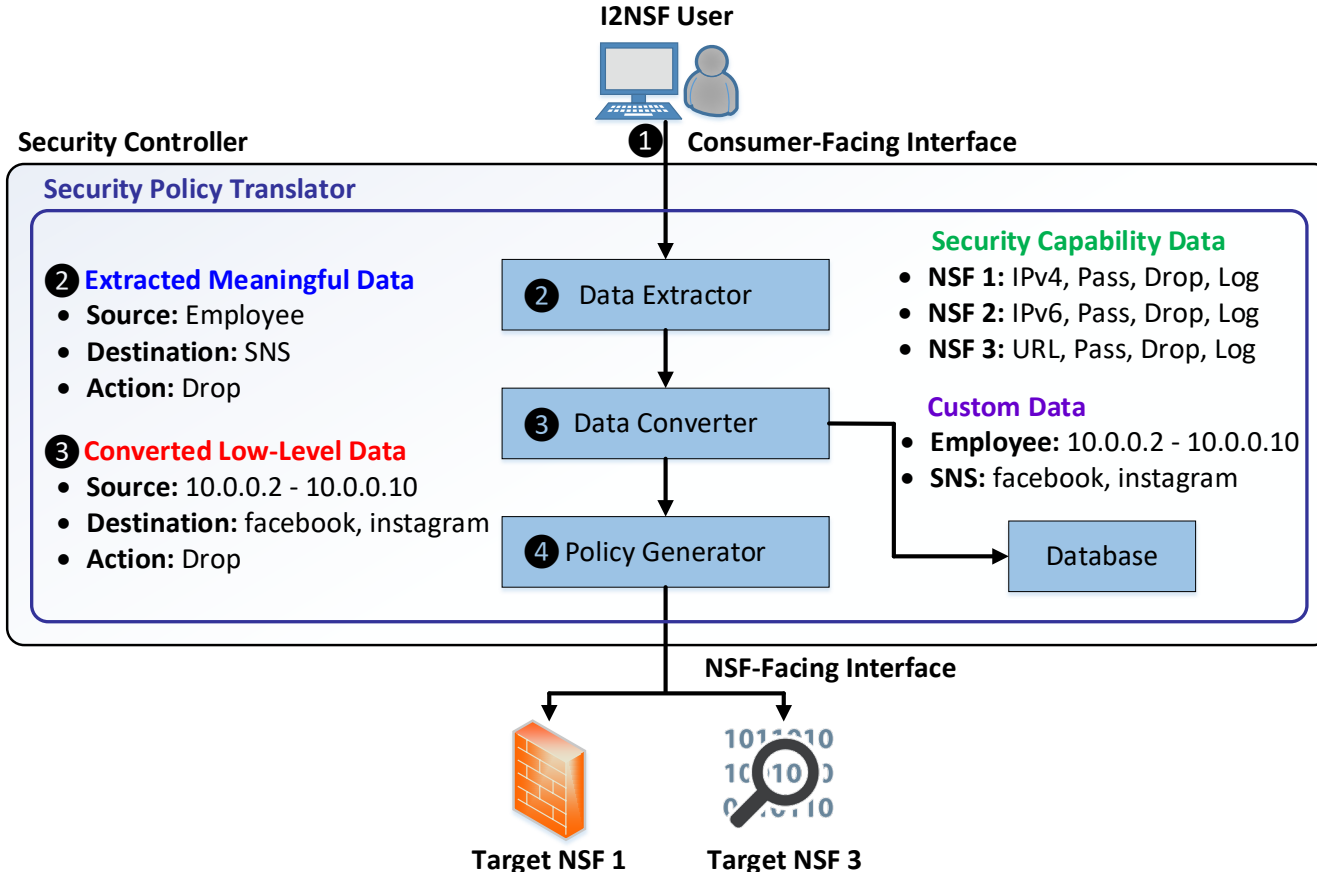
“IBCS: Intent-Based Cloud Services for Security Applications”, IEEE Communications Magazine, Vol. 58, Issue 4, April 2020.

<https://ieeexplore.ieee.org/document/9071988>

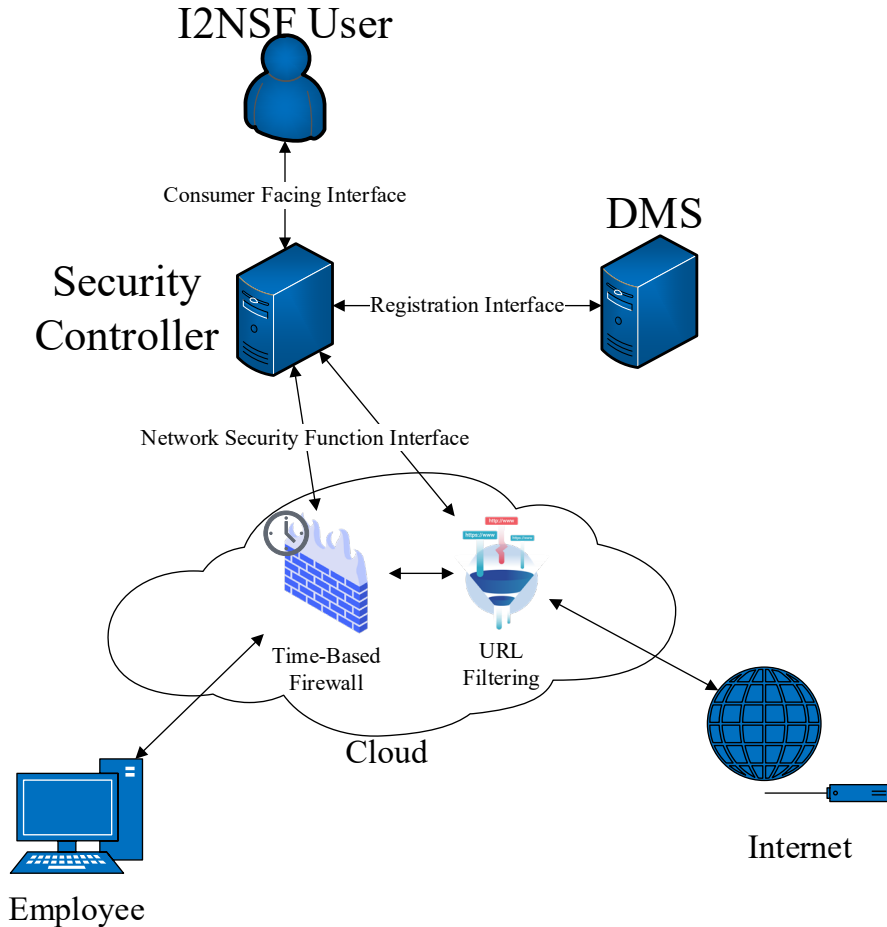
I2NSF in NFV Environment



Security Policy Translation in I2NSF



Network Topology for Hackathon Project



- **Open Source:**

- ✓ **OS:** Ubuntu 16.04 LTS
- ✓ **ConfD:** 6.6 Version
- ✓ **MySQL:** 14.14 Version
- ✓ **OpenStack:** Queens
- ✓ **Suricata:** 3.2.1 RELEASE
- ✓ **RestConf:** JETCONF Server

- **Minimum Specification for OpenStack:**

- ✓ **RAM:** 4 ~ 8 GB
- ✓ **Storage:** 10 GB
- ✓ **CPU:** 2 ~ 4 cores @ 2.4 GHz

What got done

- Restoration of I2NSF Framework on top of OpenStack
 - Web-based I2NSF User
 - Console-based Security Controller and DMS
 - Security Policy Translator in Security Controller
- Reflection of the Latest Revision of YANG Data Models
 - Consumer-Facing Interface over RESTCONF/YANG
 - NSF-Facing Interface over NETCONF/YANG (Partially)

What we learned

- We recognized the necessity of a security policy translator to support the following for IBN-based security services:
 - Automatic mapping between High-level YANG attributes and Low-level YANG attributes
 - Installation of Low-level YANG production rules for the generation of the Low-level security policy
- Next Steps
 - Reflection of the Latest Registration Interface YANG Data Model
 - Implementation of the I2NSF Monitoring YANG Data Model
 - Enhancement of Security Policy Translator for Automatic Setup

Wrap Up

Hackathon Team:

- **Champion:**
 - Jaehoon Paul Jeong (SKKU)
- **Members:**
 - Patrick Lingga (SKKU)
 - Chaehong Chung (SKKU)
 - Yoseop Ahn (SKKU)
- **Participants:**
 - Younghan Kim (SSU)
 - Hyunsik Yang (SSU)
 - Kyungsik Kim (KNU)
 - Benson Muite (Kichakkato Kizito)

• **Open Source Project:**

<https://github.com/jaehoonpaul/i2nsf-framework/tree/master/Hackathon-108>

• **Demo Video Clip:**

<https://youtu.be/dAA1WTGhIXE>