I2NSF Framework Project
@ IETF-105 Hackathon

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Introduction (1/2)

Goals of IETF-105 I2NSF Hackathon

1. Implementation of the I2NSF Framework for NSF in OpenStack Environment with
   - Registration Interface via NETCONF/YANG
   - Consumer-Facing Interface via RESTCONF/YANG
   - NSF-Facing Interface via NETCONF/YANG
   - Security Policy Translator in Security Controller

2. Integration of I2NSF Security Controller with ETRI’s Public Cloud Control Platform (SoA: Security-on-Air) based on SoA Controller for WYSWYG Network Configuration

3. Application of Commercial Firewall (from Wins) and Open-Source Web Filter (from Suricata)
Introduction (2/2)

Build Environment

1. OS
   - Ubuntu 18.04 LTS

2. ConfD
   - 6.6 Version

3. MySQL
   - 14.14 Version

4. Apache2
   - 2.4.7 Version

5. Django
   - 1.11.14 Version

6. OpenStack
   - Mitaka

7. Suricata
   - 3.2.1 RELEASE

8. Jetconf
   - Python Open API for RESTCONF
I2NSF Internet Drafts for Hackathon

- NSF Capability Data Model
  ✓ draft-ietf-i2nsf-capability-data-model-04

- Consumer-Facing Interface Data Model
  ✓ draft-ietf-i2nsf-consumer-facing-interface-dm-05

- NSF-Facing Interface Data Model
  ✓ draft-ietf-i2nsf-nsf-facing-interface-dm-06

- Registration Interface Data Model
  ✓ draft-ietf-i2nsf-registration-interface-dm-04

- Security Policy Translation
  ✓ draft-yang-i2nsf-security-policy-translation-03
I2NSF Hackathon Project Poster

I2NSF (Interface to Network Security Functions) Framework Project
Champions: Jaehoon Paul Jeong (SKKU) and Jong-Hyun Kim (ETRI)

Where to get code
• Github – Source Code
  ✓ https://github.com/kimjinyong/i2nsf-framework

What to pull down to set up an environment
• OS: Ubuntu 18.04 LTS
• ConfD for NETCONF: 6.6 Version
• JetConf for RESTCONF
• Apache2: 2.4.7 Version
• MySQL: 14.14 Version
• Django: 1.11.14 Version
• OpenStack: Mitaka

Manual for Operation Process
• Detailed description about operation process in Manual.txt (It can be found in Open Source Project folder.)

Contents of Implementation
• I2NSF Framework for Network Security Functions (NSFs)
  ✓ Registration Interface via NETCONF/YANG
  ✓ NSF-Facing Interface via NETCONF/YANG
  ✓ I2NSF Framework in OpenStack NFV Environment
  ✓ NSF Database Management via Consumer-Facing Interface
  ✓ Interface Data Model Auto-Adoption
• Network Security Functions
  ✓ Commercial Firewall(Wins) and Web-filter(Suricata)
• Advanced Functions
  ✓ Security Policy Translation
  ✓ Application of Wins commercial Firewall for Network Security Function (New Feature)
  ✓ Integration of Security on Air(SoA) and I2NSF Services (New Feature)
I2NSF System using NSF Framework
1. Application of **Commercial Firewall (from Wins)** as an NSF
Implementation of I2NSF Hackathon Project (2/2)

2. Integration of I2NSF Security Controller with ETRI’s Public Cloud Control Platform (SoA: Security-on-Air)
Hackathon Demonstration (1/5)

• Registration Interface via NETCONF/YANG

Register the security capabilities: ‘VoIP VoLTE filter’, ‘General Firewall’ and etc.
Hackathon Demonstration (2/5)

• Consumer-Facing Interface via RESTCONF/YANG
Hackathon Demonstration (3/5)

• NSF-Facing Interface via NETCONF/YANG

When the service topology is created completely, check each instance information.
Hackathon Demonstration (4/5)

- **Scenario Case 1:** Block the access to SNS during office hours

Blocking accesses the SNS during office hours using the Suricata’s URL filter.
Hackathon Demonstration (5/5)

- **Scenario Case 2**: Block the access to all the websites
Proof of Concept (POC) of I2NSF Framework
- I2NSF Framework on NFV Framework
- I2NSF Interfaces (Consumer-Facing, NSF-Facing, and Registration Interfaces)
- I2NSF Security Policy Translator

Integration of I2NSF to Commercial Platform
- Application of a Commercial Vendor’s NSF (e.g., Wins Firewall)
- Integration of I2NSF Security Controller into a Commercial Security Cloud Platform (called SOA)
Information of I2NSF Hackathon Project (1/2)

YouTube for Video Demonstration

- https://www.youtube.com/watch?v=jD4ndqzN0is

Intention based Network Security Functions for the Cloud System

Demonstration of I2NSF Framework with Security on Air
GitHub for I2NSF Hackathon Source Code

- https://github.com/kimjinyong/i2nsf-framework