IETF-115 I2NSF WG Meeting

I2NSF WG Re-Chartering

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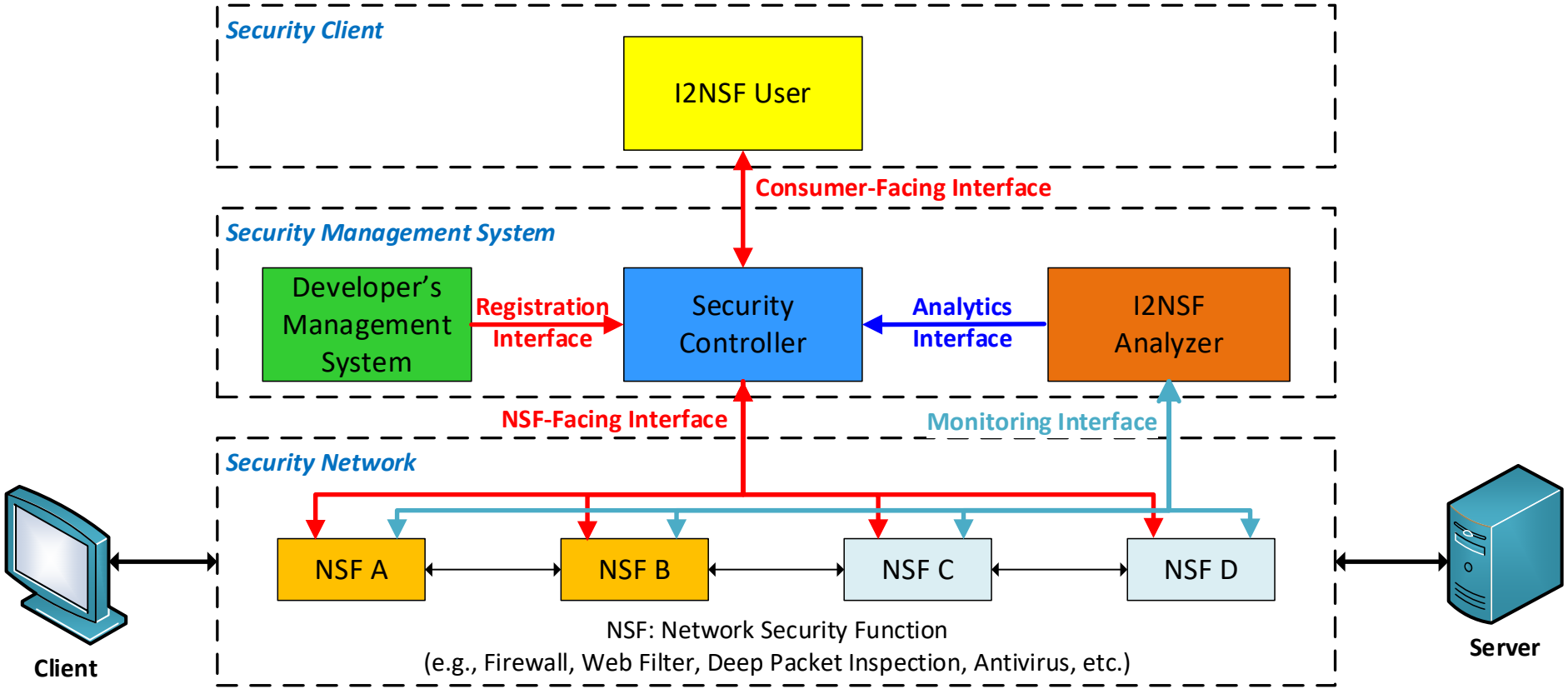
Authors: Jaehoon (Paul) Jeong (SKKU) and Diego Lopez (Telefonica I+D)
(Email: pauljeong@skku.edu, diego.r.lopez@telefonica.com)

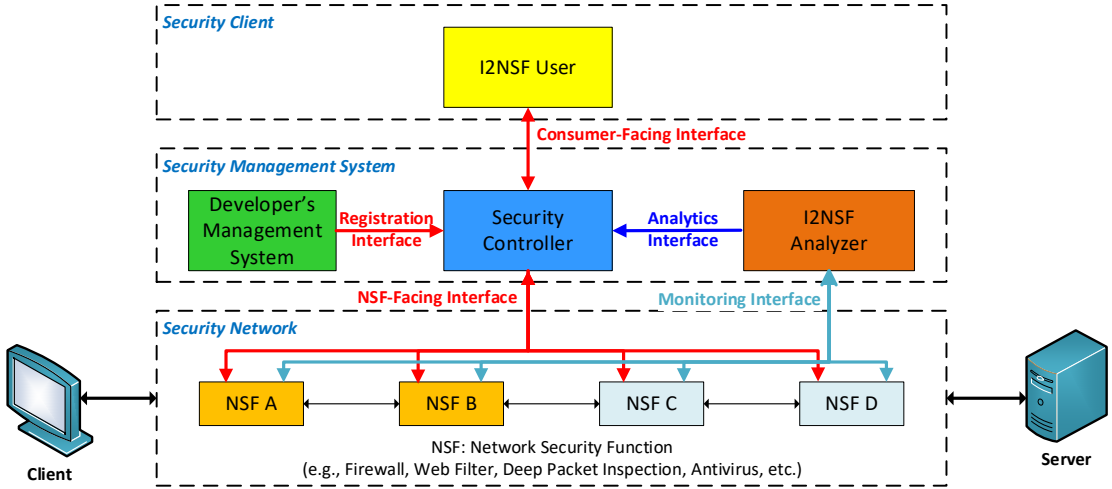
Security Management Automation in I2NSF



Source: An Extension of I2NSF Framework for Security Management Automation in Cloud-Based Security Services, draft-jeong-i2nsf-security-management-automation-04.

An Augmented I2NSF Framework: Interfaces

- Registration Interface
  - Developer's Management System (DMS) registers an NSF with Security Controller.
- Consumer-Facing Interface
  - I2NSF User delivers a high-level security policy to Security Controller.
- NSF-Facing Interface
  - Security Controller delivers a low-level security polity to an NSF.
- Monitoring Interface
  - An NSF delivers its monitoring data to I2NSF Analyzer.
- Analytics Interface
  - I2NSF Analyzer delivers its analytics information to Security Controller for policy (re)configuration.



I2NSF WG Re-chartering (1/10)

- **Introduction**

Interface to Network Security Functions (I2NSF) provides security function vendors, users, and operators with a standard framework and interfaces for cloud-based security services. The I2NSF framework for those security services consists of I2NSF User, Security Controller, Network Security Functions (NSF), Developer's Management System (DMS), and I2NSF Analyzer.

I2NSF WG Re-chartering (2/10)

- **Goals**

I2NSF Working Group (WG) will standardize a framework and interfaces for security management automation in an autonomous security system. For this goal, it is necessary to have a closed-loop security control consisting of security policy configuration, monitoring, notification, data analysis, analytics information delivery, and security policy (re)configuration. However, the following are needed for I2NSF:

I2NSF WG Re-chartering (3/10)

- **Goals (Con't)**

1. The I2NSF framework needs to be extended to provide Security Management Automation to a target network through a closed-loop security control. For this Security Management Automation, I2NSF WG needs to identify which system components and interfaces are required. Also, it enumerates and analyzes what services are required for the I2NSF system.

I2NSF WG Re-chartering (3/10)

- **Goals (Con't)**

2. The I2NSF framework needs a new interface (called Analytics Interface) to deliver feedback messages for a security policy from I2NSF Analyzer to Security Controller, or to share them among collaborating domains. In addition, a proper translation of the planned actions for a given security policy onto NSF capabilities requires a well-defined model for representing these actions in Security Controller.

I2NSF WG Re-chartering (4/10)

- **Goals (Con't)**

3. The I2NSF framework needs Security Policy Translation from a high-level security policy to a low-level security policy. To build a security policy translator, a fundamental understanding is required for the relationship of Consumer-Facing Interface and NSF-Facing Interface. An exemplary architecture and procedure will be used for security policy translator.

I2NSF WG Re-chartering (5/10)

- **Goals (Con't)**

4. I2NSF is vulnerable to insider and supply chain attacks. The security system may collapse if there is a malicious attack to the NSF capabilities registration, the I2NSF user security policies declaration, the Security Controller, or the monitoring data from an NSF. To prevent this malicious activity from happening in the I2NSF framework or detect the root of a security attack, all the activities in the I2NSF framework should be logged for auditing in a security audit system (e.g., remote attestation).

I2NSF WG Re-chartering (5/10)

- **Goals (Con't)**

5. I2NSF needs to support the establishment of an IPsec tunnel between two remote NSFs belonging to two different administration domains (called cross-domain environments). For this support, I2NSF needs a new interface between two security controllers called Security Controller-Facing Interface (SFI). This SFI can support network and security parameter exchange for a BGP policy, security policy, and IPsec parameters. Through SFI, two remote NSFs belonging to different domains can set up an IPsec tunnel between them.

I2NSF WG Re-chartering (5/10)

- **Goals (Con't)**

6. I2NSF needs to support recently developed protocols such as QUIC and HTTP/3. For this support, the I2NSF YANG data models, which are Capability, Consumer-Facing Interface (CFI), NSF-Facing Interface (NFI), Registration Interface (RI), and Monitoring Interface(MI), need to be extended to accommodate those recently developed protocols.

I2NSF WG Re-chartering (6/10)

- **Program of Work**

1. A single document for Security Management Automation in I2NSF Framework. This document will initially be used to enhance I2NSF framework for security management automation. It can be used as an applicability document for security management automation in real environments.

2. A YANG data model document for I2NSF Analytics Interface to deliver analytics information from I2NSF Analyzer to Security Controller.

I2NSF WG Re-chartering (7/10)

- **Program of Work (Con't)**

3. A single document for Guidelines for Security Policy Translation to support the mapping between a high-level YANG module and a low-level YANG module. This document can give feedback to discussions by NETMOD and OPSAWG.

4. A YANG data model document for Remote Attestation for I2NSF Components, based on the work of the RATS WG.

I2NSF WG Re-chartering (8/10)

- **Program of Work (Con't)**

5. A single document for I2NSF Security Controller-Facing Interface YANG Data Model for Cross-Domain Security Parameter Exchange. This Security Controller-Facing Interface (SFI) supports network and security parameter exchange (e.g., BGP, security policy, and IPsec).

6. Documents for the Revision of I2NSF YANG Data Model Documents to support the latest features such as HTTP/3 and QUIC.

I2NSF WG Re-chartering (9/10)

- **Milestones**

1. March 2023: Adopt Security Management Automation in I2NSF Framework as a WG document

2. March 2023: Adopt a YANG Data Model for I2NSF Analytics Interface as a WG document

3. March 2023: Adopt Guidelines for Security Policy Translation as a WG document

4. July 2023: Adopt a YANG Data Model for Remote Attestation Interface as a WG document

I2NSF WG Re-chartering (10/10)

- **Milestones**

5. July 2023: Adopt a YANG Data Model for I2NSF Security Controller-Facing Interface as a WG document

6. July 2023: Adopt Revisions of YANG Data Models for I2NSF Capability and Interfaces (i.e., CFI, NFI, RI, and MI) for HTTP/3 and QUIC as WG documents