PP-Module for Software-Defined Networking Controllers

Version: 1.0
2026-04-20
National Information Assurance Partnership

Revision History

Version	Date	Comment
1.0	2026-04-20	Initial release

Contents

1 Introduction

1.1 Overview

The scope of this Protection Profile Module (PP-Module) is to describe the security functionality of a software-defined network (SDN) controller in terms of [CC] and to define functional and assurance requirements for such products.

An SDN controller is a central component of an SDN system and is available as a logical or physical device. An SDN controller manages and distributes network policies, collects network routing and payload information from the control and data planes, and interfaces with user applications in the management plane for functions such as configuration and logging. Each of the planes in an SDN system is composed of multiple logical or physical components. The SDN controller logically separates the data plane from the control plane and centralizes control which enhances network flexibility and scalability through more efficient network management.

This PP-Module is intended for use with the following Base-PP.

- collaborative Protection Profile for Network Devices, Version 4.0

This Base-PP is valid because an SDN controller is a specific implementation of a network device. Specifically, an SDN controller is one of many components of an SDN networking architecture. An SDN controller manages and distributes network policies, collects routing and payload information from the data plane, and interfaces with user applications in the management plane. Each of the planes in an SDN system is composed of multiple logical or physical components. SDN controllers logically centralize the network intelligence and state in the control plane.

1.2 Terms

The following sections list Common Criteria and technology terms used in this document.

1.2.1 Common Criteria Terms

Assurance	Grounds for confidence that a TOE meets the SFRs [CC].
Base Protection Profile (Base-PP)	Protection Profile used as a basis to build a PP-Configuration.
Collaborative Protection Profile (cPP)	A Protection Profile developed by international technical communities and approved by multiple schemes.
Common Criteria (CC)	Common Criteria for Information Technology Security Evaluation (International Standard ISO/IEC 15408).
Common Criteria Testing Laboratory	Within the context of the Common Criteria Evaluation and Validation Scheme (CCEVS), an IT security evaluation facility accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) and approved by the NIAP Validation Body to conduct Common Criteria-based evaluations.
Common Evaluation Methodology (CEM)	Common Evaluation Methodology for Information Technology Security Evaluation.

Direct Rationale	A type of Protection Profile, PP-Module, or Security Target in which the security problem definition (SPD) elements are mapped directly to the SFRs and possibly to the security objectives for the operational environment. There are no security objectives for the TOE.
Distributed TOE	A TOE composed of multiple components operating as a logical whole.
Operational Environment (OE)	Hardware and software that are outside the TOE boundary that support the TOE functionality and security policy.
Protection Profile (PP)	An implementation-independent set of security requirements for a category of products.
Protection Profile Configuration (PP-Configuration)	A comprehensive set of security requirements for a product type that consists of at least one Base-PP and at least one PP-Module.
Protection Profile Module (PP-Module)	An implementation-independent statement of security needs for a TOE type complementary to one or more Base-PPs.
Security Assurance Requirement (SAR)	A requirement to assure the security of the TOE.
Security Functional Requirement (SFR)	A requirement for security enforcement by the TOE.
Security Target (ST)	A set of implementation-dependent security requirements for a specific product.
Target of Evaluation (TOE)	The product under evaluation.
TOE Security Functionality (TSF)	The security functionality of the product under evaluation.
TOE Summary Specification (TSS)	A description of how a TOE satisfies the SFRs in an ST.

1.2.2 Technical Terms

Administrator	An administrator is responsible for management activities, including setting policies that are applied by the enterprise on the operating system. This administrator could be acting remotely through a management server, from which the system receives configuration policies. An administrator can enforce settings on the system which cannot be overridden by non-administrator users.
Application	Software that runs on a platform and performs tasks on behalf of the user or owner of the platform, as well as its supporting documentation.
Application Programming Interface (API)	A specification of routines, data structures, object classes, and variables that allows an application to make use of services provided by another software component, such as a library. APIs are often provided for a set of libraries included with the platform.
Control Plane	A logical entity that receives instructions or requirements from the SDN application layer through its northbound interface and relays them to the data plane through its southbound

	interface. The controller extracts information about the network from the data plane and communicates back to the SDN application layer with an abstract view of the network, including statistics and events about what is happening.
Credential	Data that establishes the identity of a user (e.g., a cryptographic key or password).
Data Plane	Controls the forwarding and data processing capabilities for the network. This includes forwarding and processing of the data path.
Management Plane	Composed of programs that communicate behaviors and needed resources with the SDN controller via APIs. In addition, the applications can build an abstracted view of the network by collecting information from the controller for decision-making purposes. These applications could include networking management, analytics, or business applications used to run large data centers. For example, an analytics application might be built to recognize suspicious network activity for security purposes. This is sometimes also referred to as the Orchestration Layer.
Northbound	Communications between an SDN and applications in the management plane.
Southbound	Communications between an SDN and network devices in the data plane.

1.3 Compliant Targets of Evaluation

A conformant TOE decouples its data and control planes such that data traffic and control traffic are restricted to their respective planes. It also enforces centralization of control so that all components of the SDN environment are under its control. This can expand across multiple distributed controllers for large, complex, or geographically dispersed networks. Compliant TOEs will implement the following functionality.

- Ability to support secure remote administration.
- Ability to apply software or firmware updates from a trusted source.
- Secure interfaces to remote entities such as applications, VMs, and other devices (zone of trust).
- Reporting of all security-relevant events.
- Logical separation of the management, control, and data planes.
- Protection of data that is collected by the control plane and distributed to the data plane, such as flow tables and configuration.
- Protection of data that is collected by the control plane and distributed to the management plane, such as auditable events and traffic or packet statistics.
- Protection of data that is collected, distributed, and shared within the control plane, such as when multiple SDN controllers exist in the architecture.

1.3.1 TOE Boundary

The TOE boundary for an SDN controller is one or more physical or virtual devices. An SDN controller may be a distributed TOE, as defined by the Base-PP.

- In a physical standalone SDN controller device, the device's hardware, firmware, and software define the evaluation boundary.
- In a virtual SDN controller, the software of the Virtual Machine (VM) defines the evaluation boundary. The Base-PP includes guidance on whether the evaluation boundary includes the virtualization system on which the VM runs.
- All security functionality is contained and executed within the evaluation boundary of the SDN controller.

The following figure shows the logical position of the SDN controller between the management and data planes within the SDN infrastructure. This is a simplified diagram of the TOE's position in an SDN deployment. Other dependencies that are necessary to meet security requirements, such as an audit server, remote management interface, or source of certificate revocation information are not shown.

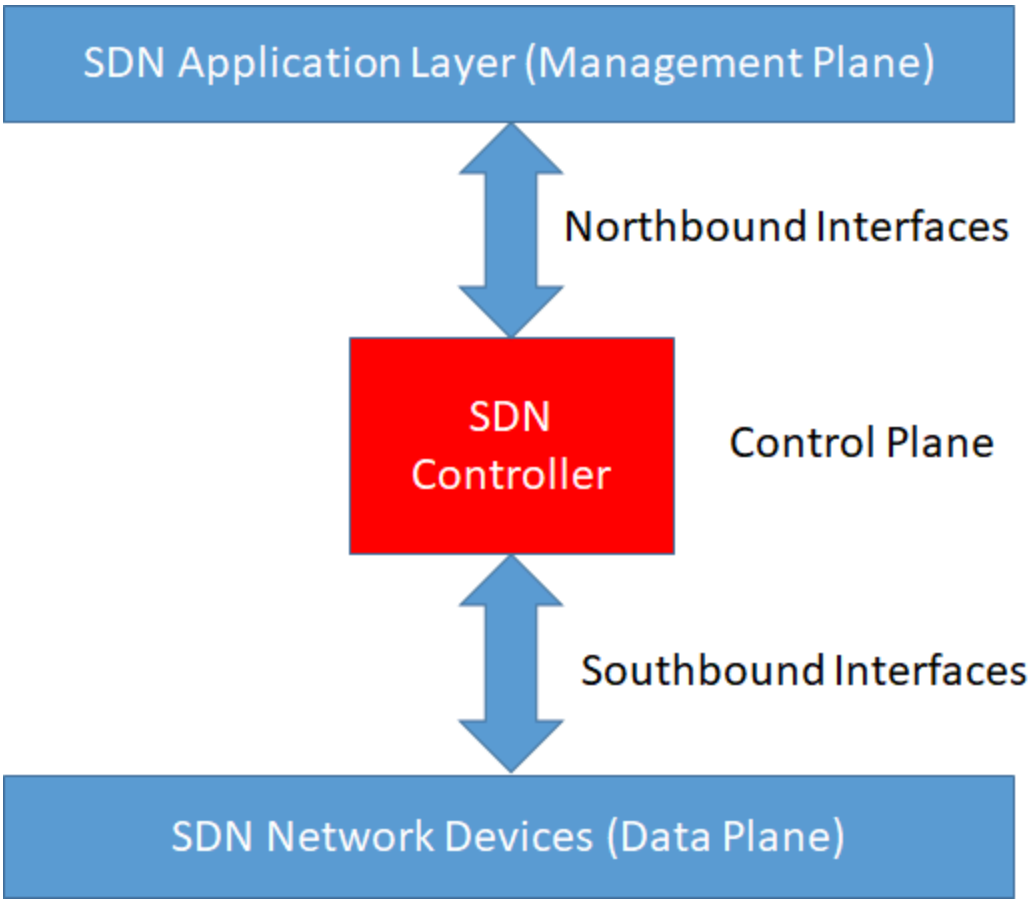


Figure 1: High-Level SDN Representation

The following elements of an SDN controller are outside the scope of this PP-Module and are therefore considered to be non-interfering with respect to its security, even if they are included as part of a compliant product.

- Examination of data plane content, such as virus or email scanning.
- Intrusion detection or prevention capabilities.
- Network Address Translation (NAT) as a security function.
- If the TOE boundary is a standalone virtual machine, the hardware or firmware of the underlying platform.
- If the TOE boundary is a standalone virtual machine, the host operating system or runtime environment.
- Specific security functionality that is not global to all SDN controllers (e.g., firewall, load balancing).
- Other objects belonging in the data plane.

Other PP-Modules may exist to allow for other functions such as these to be defined as part of the TOE boundary.

1.4 Use Cases

Requirements in this PP-Module are designed to address the security problems in at least the following use cases. These use cases are intentionally very broad, as many specific use cases exist for an SDN controller. These use cases may also overlap with one another. An SDN controller's functionality may even be effectively extended by privileged applications installed on it. However, these are out of scope of this PP-Module.

[USE CASE 1] Physical Device

The TOE is one or more physical appliances that provide SDN controller functionality. The TOE boundary includes the entire software and firmware running on these appliances; a software-only device where the boundary does not include the underlying operating system is not a valid use case.

[USE CASE 2] Virtual Device

The TOE is a virtual machine that provides SDN controller functionality. The TOE boundary is either limited to the virtual machine or includes the hypervisor and underlying physical hardware, depending on whether or

not the hypervisor may include virtual machines that are not part of the SDN controller or if the hypervisor itself includes functionality necessary for the TOE to implement the required security functionality. As with the physical device use case above, the TOE boundary for a virtual device must include an entire virtual machine and not just a collection of applications or services running on an environmental operating system.

[USE CASE 3] Cluster (stand-alone or virtual)

Regardless of whether the TOE is physical, virtual, or both, it may include multiple distinct instances (i.e., multiple connected physical appliances or VMs) that are combined into a distributed cluster.

2 Conformance Claims

Conformance Statement

An ST must claim exact conformance to this PP-Module.

The evaluation methods used for evaluating the TOE are a combination of the workunits defined in [CEM] as well as the Evaluation Activities for ensuring that individual SFRs and SARs have a sufficient level of supporting evidence in the Security Target and guidance documentation and have been sufficiently tested by the laboratory as part of completing ATE_IND.1. Any functional packages this PP claims similarly contain their own Evaluation Activities that are used in this same manner.

CC Conformance Claims

This PP-Module is conformant to Part 2 (extended) and Part 3 (conformant) of Common Criteria CC:2022, Revision 1.

PP Claim

This PP claims conformance to the following Protection Profiles:

- collaborative Protection Profile for Network Devices, v4.0

The following PPs and PP-Modules are allowed to be specified in a PP-Configuration with this PP-Module:

- collaborative Protection Profile Module for Stateful Traffic Filter Firewalls, version 2.0
- PP-Module for Authentication Servers, version 2.0
- PP-Module for MACsec Ethernet Encryption, version 2.0
- PP-Module for VPN Gateways, version 2.0

Package Claim

- This PP-Module is Functional Package for TLS, version 2.1 conformant.
- This PP-Module is Functional Package for Secure Shell, version 2.0 conformant.
- This PP-Module does not conform to any assurance packages.

The functional packages to which the PP conforms may include SFRs that are not mandatory to claim for the sake of conformance. An ST that claims one or more of these functional packages may include any non-mandatory SFRs that are appropriate to claim based on the capabilities of the TSF and on any triggers for their inclusion based inherently on the SFR selections made.

3 Security Problem Definition

The security problem is described in terms of the threats that the TOE is expected to address, assumptions about the operational environment, and any organizational security policies that the OS is expected to enforce.

3.1 Threats

T.INSECURE_NORTHBOUND_API

A malicious user or process may invoke insecure application programming interfaces (APIs) to inject malicious code to the TOE on a northbound interface or to retrieve sensitive information from it. Executing improper or unauthorized API functions or providing malicious input to achieve unintended or improper results from proper or authorized API functions can compromise network services. This can also result in sensitive data leakage.

3.2 Assumptions

All assumptions from the Base-PP also apply to the TOE's environment when it includes this PP-Module in its conformance claims. This document does not define any additional assumptions.

3.3 Organizational Security Policies

An organization deploying the TOE is expected to satisfy the organizational security policy listed below in addition to all organizational security policies defined by the claimed Base-PP.

This document does not define any additional OSPs.

4 Security Objectives

4.1 Security Objectives for the Operational Environment

All environmental security objectives from the Base-PP also apply to the TOE's environment when it includes this PP-Module in its conformance claims.

5 Security Requirements

This chapter describes the security requirements which have to be fulfilled by the product under evaluation. Those requirements comprise functional components from Part 2 and assurance components from Part 3 of [CC]. The following conventions are used for the completion of operations:

- **Refinement** operation (denoted by **bold text** or ~~strikethrough text~~): Is used to add details to a requirement or to remove part of the requirement that is made irrelevant through the completion of another operation, and thus further restricts a requirement.
- **Selection** (denoted by *italicized text*): Is used to select one or more options provided by the [CC] in stating a requirement.
- **Assignment** operation (denoted by *italicized text*): Is used to assign a specific value to an unspecified parameter, such as the length of a password. Showing the value in square brackets indicates assignment.
- **Iteration** operation: Is indicated by appending the SFR name with a slash and unique identifier suggesting the purpose of the operation, e.g. "/EXAMPLE1."

5.1 Collaborative Protection Profile for Network Devices Security Functional Requirements Direction

In a PP-Configuration that includes the NDcPP, the TOE is expected to rely on some of the security functions implemented by the Network Device as a whole and evaluated against the NDcPP. The following sections describe any modifications that the ST author must make to the SFRs defined in the NDcPP in addition to what is mandated by Section 5.2 TOE Security Functional Requirements.

5.1.1 Modified SFRs

The SFRs listed in this section are defined in the NDcPP and relevant to the secure operation of the TOE.

5.1.1.1 Class FTP: Trusted Path/Channels

FTP_ITC.1: Inter-TSF Trusted Channel

This SFR has been modified from its definition in the NDcPP to define external interfaces to environmental entities that are particular to this specific technology type.

The text of the requirement is replaced with:

FTP_ITC.1.1 The TSF shall be capable of using [**selection:** *IPsec, SSH as defined in the Functional Package for SSH, TLS as defined in the Functional Package for TLS, DTLS as defined in the Functional Package for TLS, HTTPS*] to provide a trusted communication channel between itself and authorized IT entities supporting the following capabilities: audit server, **northbound components, southbound components,** [**selection:** *authentication server,* ***external east/west components*** *[**assignment:** other capabilities], no other capabilities*] that is logically distinct from other communication channels and provides assured identification of its endpoints and protection of the channel data from disclosure and detection of modification of the channel data.

FTP_ITC.1.2 The TSF shall permit [**selection:** *the TSF, the authorized IT entities*] to initiate communication via the trusted channel.

FTP_ITC.1.3 The TSF shall initiate communication via the trusted channel for [**assignment:** *list of services for which the TSF is able to initiate communications*].

Application Note: This PP-Module modifies this SFR to allow for the specification of any northbound, southbound, or east/west environmental components with which the TSF may implement protected communications. A conformant TOE may implement a distributed east/west configuration rather than the east/west entities being in the OE; in this case, the ST would define the TOE boundary as a distributed TOE in accordance with the NDcPP and use FPT_ITT.1 to define the interface between east/west distributed TOE components.

5.2 TOE Security Functional Requirements

The following section describes the SFRs that must be satisfied by any TOE that claims conformance to this PP-Module. These SFRs must be claimed regardless of which PP-Configuration is used to define the TOE.

5.2.1 Auditable Events for Mandatory SFRs

Table 1: Auditable Events for Mandatory Requirements

Requirement	Auditable Events	Additional Audit Record Contents
FAU_GEN.1/SDN	No events specified	N/A
FDP_ACC.1	No events specified	N/A
FDP_ACF.1	No events specified	N/A
FMT_API_EXT.1	Successful and failed definition or modification of API template	Identification of template (if successful)
FMT_MOF.1/SDN	No events specified	N/A
FMT_SMF.1/SDN	No events specified	N/A
FMT_SMR.2/SDN	Assignment of user to role	Identification of subject and assigned role

5.2.2 Class FAU: Security Audit

FAU_GEN.1/SDN Audit Data Generation (SDN)

FAU_GEN.1.1/SDN

The TSF shall **implement functionality** to generate audit data of the following **SDN** auditable events:

a. Start-up and shutdown of the audit functions;
b. All auditable events for [*not specified*] level of audit;
[
c. All unauthorized usage of all API endpoints, including create, read, update, and delete.
d. All authorized usage of all API endpoints, including create, read, update, and delete.

e. *Full HTTP REST request parameters and values of any API requests sent to the SDN controller API.*
f. *All HTTP Response Codes returned from any HTTP API requests sent to the SDN controller API.*
g. *All error codes and error messages from usage of the API.*
h. *All auditable events for mandatory SFRs specified in Table 1*
]

FAU_GEN.1.2/SDN

The TSF shall record within the **SDN** audit data at least the following information:

a. Date and time of the event, type of event, subject identity, (if applicable) the outcome (success or failure) of the event;
b. For each auditable event type, based on the auditable event definitions of the functional components included in the PP, PP-Module, functional package, or ST, [*Additional Audit Record Contents as specified in Table 1*].

Application Note: This SFR mandates that audit data be generated for start-up and shutdown of the audit functions, which is a duplicate of FAU_GEN.1.1 in the Base-PP. If the TOE has one single audit mechanism, then the events used to conform to the Base-PP requirement also suffice here. Start-up and shutdown of the audit functions in the context of the SDN controller portion of the TOE only need to be logged separately if the SDN controller has a different logging mechanism from what the Base-PP uses.

Note also that in many cases the start-up and shutdown of the audit functions cannot be forced on its own because the audit functions may be operational by default. In this case, logging for start-up and shutdown of the TOE itself is sufficient. The purpose of this part of the requirement is to ensure that a malicious user cannot disable auditing to evade detection of other malicious use of the TOE.

The auditable events for the 'not specified' level of audit is intended to communicate that this PP-Module does not claim one of the pre-defined audit levels specified in CC Part 2; this is inherently satisfied by demonstrating that the TSF generates appropriate audit data for all events that are explicitly required by the PP-Module.

5.2.3 Class FDP: User Data Protection

FDP_ACC.1 Subset Access Control

FDP_ACC.1.1

The TSF shall enforce the [*API access control policy*] on [*all APIs used to access the TSF*].

Application Note: The intent of this requirement is for the TOE to have a means to enforce access control on the invocation of APIs. The specific rules that comprise the policy itself are defined in FDP_ACF.1 below. It is not expected that the TOE have a construct explicitly called the "API access control policy," only that enforcement mechanisms exist to construct such a policy.

FDP_ACF.1 Security Attribute-Based Access Control

FDP_ACF.1.1

The TSF shall enforce the [*API access control policy*] to objects based on the following: [*supported operations that can be performed on or by API objects, the*

validity of the API call being issued, whether the API call is authorized based on the subject's role].

Application Note: The purpose of the API access control policy is to identify the API objects that are controlled by the TOE, the various types of access that can be performed against this object, and whether that access is permitted based on either the validity of the request itself or the entity requesting that access.

FDP_ACF.1.2

The TSF shall enforce the following rules to determine if an operation among controlled subjects and controlled objects is allowed: [*an API call that is valid with respect to an allowlisted API template can manipulate an object if allowing this manipulation has been configured*].

FDP_ACF.1.3

The TSF shall explicitly authorize access of subjects to objects based on the following additional rules: [**assignment**: *rules, based on security attributes, that explicitly allow access of subjects to objects*].

Application Note: The purpose of this requirement is to define an override mechanism where an allowlist may explicitly authorize some API access that would not otherwise be permitted by the API access control policy. It may be the case that no explicit denylist is supported and the policy as defined in FDP_ACF.1.2 always defines what is allowed and denied with no exceptions. If this is the case, the ST author may complete the assignment with "no additional rules."

This is intended to support the potential for operations that may be authorized on the basis of permissions; it is not intended to authorize API calls that are invalid regardless of permissions.

FDP_ACF.1.4

The TSF shall explicitly deny access of subjects to objects based on the following additional rules: [**assignment**: *rules, based on security attributes, that explicitly deny access of subjects to objects*].

Application Note: The purpose of this requirement is to define an override mechanism where a denylist may explicitly prohibit some API access that would not otherwise be permitted by the API access control policy. It may be the case that no explicit denylist is supported and the policy as defined in FDP_ACF.1.2 always defines what is allowed and denied with no exceptions. If this is the case, the ST author may complete the assignment with "no additional rules."

5.2.4 Class FMT: Security Management

FMT_API_EXT.1 Management of API Behavior

FMT_API_EXT.1.1

The TSF shall provide the ability to define the following API templates [**assignment**: *list of API templates*] against the following API objects [**assignment**: *list of API objects*].

FMT_API_EXT.1.2

The TSF shall permit API templates to be defined if they meet the following specified rules: [**assignment**: *rules determining allowable templates*].

Application Note: The intent of this requirement is to require the ST to define API endpoints that the SDN controller exposes for administering the SDN controller itself, and for inducing the SDN controller to administer the network devices that it manages. This could include, but is not limited to, APIs for the following behavior:

- Endpoints that modify the SDN controller's own configuration, including any changes to:
  - System settings
  - Operational parameters
- Endpoints that cause the SDN controller to modify network configurations, such as:
  - Routing settings
  - Switching settings
- Endpoints that change the SDN controller's power state, including:
  - Power on and off
  - Reboot operations
- Endpoints that cause the SDN controller to change the power state of managed network devices, including:
  - Power on and off
  - Reboot operations
- Endpoints that modify the SDN controller's security or hardening settings, including:
  - Security policies
  - Hardening configurations
- Endpoints that cause the SDN controller to modify security or hardening settings on managed network devices.
- Endpoints that change authentication or authorization controls on the SDN controller.
- Endpoints that change authentication or authorization controls on managed network devices.

FMT_MOF.1/SDN Management of Functions Behavior (SDN)

FMT_MOF.1.1/SDN

The TSF shall restrict the ability to [*modify the behaviour of*] the functions [*API access function as defined by FDP_ACC.1*, *API validity function as defined by FMT_API_EXT.1*] to [*API administrator*].

Application Note: The restriction of modifying API access and validity functions to the API administrator is intended to imply that the API user does not have the ability to modify API functions. The API user role having read-only access to these functions is not precluded by this requirement, as this requirement only relates to the ability to modify the behavior of the API.

FMT_SMF.1/SDN Specification of Management Functions (SDN)

FMT_SMF.1.1/SDN

The TSF shall be capable of performing the following management functions: [*API access control as defined by FDP_ACF.1*, *API validity as defined by FMT_API_EXT.1*].

Application Note: API access control refers to configuring the allowlist for the permitted API templates. API validity refers to the ability to defining the templates for how API calls must be performed to access API objects. The intent of this requirement is for the TSF to have the ability to define both when and how a given API can be invoked.

FMT_SMR.2/SDN Restrictions on Security Roles (SDN)

FMT_SMR.2.1/SDN

The TSF shall maintain the roles: [*API user*, *API administrator*].

FMT_SMR.2.2/SDN

The TSF shall be able to associate users with roles.

FMT_SMR.2.3/SDN

The TSF shall ensure that the conditions [*API user and API administrator roles cannot be held simultaneously*] are satisfied.

Application Note: The Base-PP defines FMT_SMR.2 for the "Security Administrator" role that must be available on a network device in general. This iteration supplements that by making sure that API user and API administrator roles exist for SDN functionality but are logically separated. The security administrator as defined by that SFR may also be an API administrator as defined by this iteration, or management of general security functionality may be separated from API administration such that they are granted by different roles.

5.3 TOE Security Functional Requirements Rationale

The following rationale provides justification for each SFR for the TOE, showing that the SFRs are suitable to address the specified threats:

Table 2: SFR Rationale

Threat	Addressed by	Rationale
T.INSECURE_NORTHBOUND_API	FAU_GEN.1/SDN	Mitigates the threat by generating audit records of activities performed on or by the TSF that could affect the northbound interface.
	FDP_ACC.1	Mitigates the threat by enforcing access control on the APIs offered by the TOE.
	FDP_ACF.1	Mitigates the threat by defining the mechanism for how API access control is enforced.
	FMT_API_EXT.1	Mitigates the threat by allowing API templates to be defined against objects based on a set of defined rules.
	FMT_MOF.1/SDN	Mitigates the threat by limiting the ability to modify API functions.
	FMT_SMF.1/SDN	Mitigates the threat by identifying the management functions subject to access restrictions.

FMT_SMR.2/SDN	Mitigates the threat by defining a role separation mechanism for administrators to enforce least privilege.
FTP_ITC.1 (modified from ND PP)	Mitigates the threat by defining the trusted communications channel used for SDN functionality.

5.4 TOE Security Assurance Requirements

This PP-Module does not define any Security Assurance requirements. The SARs from the Base-PP must be satisfied.

6 Consistency Rationale

6.1 Collaborative Protection Profile for Network Devices

6.1.1 Consistency of TOE Type

When this PP-Module is used to extend the NDcPP, the TOE type for the overall TOE is still a network device. The TOE boundary is simply extended to include SDN controller functionality that is provided by the network device.

6.1.2 Consistency of Security Problem Definition

The threats defined by this PP-Module (see section 3.1) supplement those defined in the NDcPP as follows:

Table 3: Consistency of Security Problem Definition (NDcPP base)

PP-Module Threat, Assumption, OSP	Consistency Rationale
T.INSECURE_NORTHBOUND_API	This threat represents the same attack scenario as T.UNAUTHORISED_ADMINISTRATOR_ACCESS and T.UNTRUSTED_COMMUNICATION_CHANNELS, but applies to the north-south interface that is outside the scope originally defined by the Base-PP.

6.1.3 Consistency of OE Objectives

This PP-Module does not define any environmental objectives beyond those already defined in the NDcPP.

6.1.4 Consistency of Requirements

This PP-Module identifies several SFRs from the NDcPP that are needed to support Software-Defined Networking Controller functionality. This is considered to be consistent because the functionality provided by the NDcPP is being used for its intended purpose. The rationale for why this does not conflict with the claims defined by the NDcPP are as follows:

Table 4: Consistency of Requirements (NDcPP base)

PP-Module Requirement	Consistency Rationale
Modified SFRs	
FTP_ITC.1	This PP-Module expands the Base-PP SFR to define additional entities for trusted channels.
Additional SFRs	
This PP-Module does not add any requirements when the NDcPP is the base.	
Mandatory SFRs	

FAU_GEN.1/SDN	This SFR iterates the Base-PP to account for if the SDN controller has a different logging mechanism from the Base-PP use.
FDP_ACC.1	This SFR defines access control policies that are specific to the PP-Module.
FDP_ACF.1	This SFR defines access control policies to subjects and objects based on a set of rules and is specific to the PP-Module.
FMT_API_EXT.1	This SFR defines API templates and the set of rules they must follow, which is specific to this PP-Module.
FMT_MOF.1/SDN	This SFR iterates the Base-PP to add specific abilities of the API administrator to modify API function behavior.
FMT_SMF.1/SDN	This SFR iterates the Base-PP to add management functions for API access control and validity, which is not defined in the Base-PP.
FMT_SMR.2/SDN	This SFR iterates the Base-PP to define specific roles for the API user and administrator, which is not defined in the Base-PP.
Optional SFRs	
This PP-Module does not define any Optional requirements.	
Objective SFRs	
This PP-Module does not define any Objective requirements.	
Implementation-dependent SFRs	
This PP-Module does not define any Implementation-dependent requirements.	
Selection-based SFRs	
This PP-Module does not define any Selection-based requirements.	

Appendix A - Optional SFRs

A.1 Strictly Optional Requirements

This PP-Module does not define any Strictly Optional SFRs or SARs.

A.2 Objective Requirements

This PP-Module does not define any Objective SFRs.

A.3 Implementation-dependent Requirements

This PP-Module does not define any Implementation-dependent SFRs.

Appendix B - Selection-based Requirements

This PP-Module does not define any Selection-based SFRs.

Appendix C - Extended Component Definitions

This appendix contains the definitions for all extended requirements specified in the PP-Module.

C.1 Extended Components Table

All extended components specified in the PP-Module are listed in this table:

Table 5: Extended Component Definitions

Functional Class	Functional Components
Class FMT: Security Management	FMT_API_EXT Management of API Behavior

C.2 Extended Component Definitions

C.2.1 Class FMT: Security Management

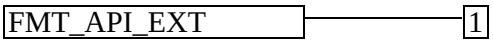
This PP-Module defines the following extended components as part of the class originally defined by CC Part 2:

C.2.1.1 FMT_API_EXT Management of API Behavior

Family Behavior

This family defines requirements for management of API behavior.

Component Leveling



FMT_API_EXT.1, Management of API Behavior, requires the TSF to define API templates and determine whether they meet specified rules.

Management: FMT_API_EXT.1

There are no management activities foreseen.

Audit: FMT_API_EXT.1

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP, PP-Module, functional package, or ST:

- Successful and failed definition of API template.

FMT_API_EXT.1 Management of API Behavior

Hierarchical to: No other components.

Dependencies to: FCS_CKM.6 Timing and Event of Cryptographic Key Destruction

FMT_API_EXT.1.1

The TSF shall provide the ability to define the following API templates [**assignment**: *list of API templates*] against the following API objects [**assignment**: *list of API objects*].

FMT_API_EXT.1.2

The TSF shall permit API templates to be defined if they meet the following specified rules: [**assignment**: *rules determining allowable templates*].

Appendix D - Acronyms

Table 6: Acronyms

Acronym	Meaning
API	Application Programming Interface
Base-PP	Base Protection Profile
CC	Common Criteria
CEM	Common Evaluation Methodology
cPP	Collaborative Protection Profile
DRBG	Deterministic Random Bit Generator
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
IP	Internet Protocol
IT	Information Technology
OE	Operational Environment
OMB	Office of Management and Budget
OS	Operating System
PP	Protection Profile
PP-Configuration	Protection Profile Configuration
PP-Module	Protection Profile Module
RBAC	Role-Based Access Control
RBG	Random Bit Generator
REST	Representational State Transfer
RFC	Request for Comment
SAR	Security Assurance Requirement
SDN	Software-Defined Networking
SFR	Security Functional Requirement

ST	Security Target
TLS	Transport Layer Security
TOE	Target of Evaluation
TSF	TOE Security Functionality
TSFI	TSF Interface
TSS	TOE Summary Specification
USB	Universal Serial Bus
VM	Virtual Machine
VPN	Virtual Private Network
XOR	Exclusive Or

Appendix E - Bibliography

Table 7: Bibliography

Identifier	Title
[CC]	Common Criteria for Information Technology Security Evaluation - • Part 1: Introduction and general model, CCMB-2022-11-001, CC:2022, Revision 1, November 2022. • Part 2: Security functional requirements, CCMB-2022-11-002, CC:2022, Revision 1, November 2022. • Part 3: Security assurance requirements, CCMB-2022-11-003, CC:2022, Revision 1, November 2022. • Part 4: Framework for the specification of evaluation methods and activities, CCMB-2022-11-004, CC:2022, Revision 1, November 2022. • Part 5: Pre-defined packages of security requirements, CCMB-2022-11-005, CC:2022, Revision 1, November 2022.
[CEM]	Common Methodology for Information Technology Security Evaluation - • Evaluation methodology, CCMB-2022-11-006, CC:2022, Revision 1, November 2022.
[NDcPP]	collaborative Protection Profile for Network Devices, Version 4.0, December 22, 2025