McAfee® Network Security Platform (NSP) Intrusion Detection System Security Target

EAL 2 augmented ALC_FLR.2

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Prepared By:	M. McAlister InfoGard Laboratories, Inc.
Prepared For:	McAfee, Incorporated 3965 Freedom Circle Santa Clara, CA 95054

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1 Introduction

This section identifies the Security Target (ST), Target of Evaluation (TOE), conformance claims, ST organization and terminology. It also includes an overview of the evaluated product.

1.1 Identification

TOE Identification: McAfee Network Security Platform Release 5.1

ST Identification: McAfee Network Security Platform (NSP) Intrusion Detection System Security Target EAL 2 augmented ALC_FLR.2

The TOE is identified as one or more of these sensors:

1. McAfee Incorporated NSP Sensors:

M2750 v. 5.1	I-4010 v. 5.1
M1450 v. 5.1	I-4000 v. 5.1
M1250 v. 5.1	I-3000 v. 5.1
M6050 v. 5.1	I-2700 v. 5.1
M4050 v. 5.1	I-1400 v. 5.1
M3050 v. 5.1	I-1200 v. 5.1
M8000 v. 5.1	

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2. Network Security Manager Version 5.1
3. Sensor Software Version 5.1

ST Version: 1.0

ST Publish Date: May 5, 2010

ST Author: InfoGard Laboratories, Inc., McAfee, Inc. et al.

PP Identification: U.S. Government Protection Profile Intrusion Detection System for Basic Robustness Environments, Version 1.7

1.2 Organization

- **Security Target Introduction (Section 1)** – Provides identification of the TOE and ST, an overview of the TOE, an overview of the content of the ST and relevant terminology.

The introduction also provides a description of the TOE security functions as well as the physical and logical boundaries for the TOE, the hardware and software that make up the TOE, and the physical and logical boundaries of the TOE.

- **Conformance Claims (Section 2)** – Provides applicable Common Criteria (CC) conformance claims, Product Profile (PP) conformance claims and Assurance Package conformance claims.
- **Security Problem Definition (Section 3)** – Describes the threats, organizational security policies, and assumptions pertaining to the TOE and the TOE environment.
- **Security Objectives (Section 4)** – Identifies the security objectives for the TOE and its supporting environment as well as a rationale that objectives are sufficient to counter the threats identified for the TOE.
- **Extended Components Definition (Section 5)** – Presents components needed for the ST but not present in Part II or Part III of the Common Criteria Standard.
- **Security Requirements (Section 6)** – Presents the Security Functional Requirements (SFRs) met by the TOE and the security functional requirements rationale. In addition this section presents Security Assurance Requirements (SARs) met by the TOE as well as the assurance requirements rationale. Provides pointers to all other rationale sections, to include the rationale for the selection of IT security objectives, requirements, and the TOE summary specifications as to their consistency, completeness, and suitability.
- **Summary Specification (Section 7)** – Describes the security functions provided by the TOE that satisfy the security functional requirements, provides the rationale for the security functions. It also describes the security assurance measures for the TOE as well as the rationales for the assurance measures.

1.3 Document Terminology

Please refer to CC v3.1 Part 1 Section 4 for definitions of commonly used CC terms.

1.3.1 ST Specific Terminology

Alert	An alert is a notification of a system event, attack, or other incident that triggers the intrusion Detection System.
Authorized Administrator(s)	A general term used in this ST to refer to administrative users holding the Super User, System Administrator or Security Expert roles.
Attack	A set of actions performed by an attacker that poses a threat to the security state of a protected entity in terms of confidentiality, integrity, authenticity, availability, authorization, and access policies.

CIDR	(Classless Inter-Domain Routing) A scheme which allocates blocks of Internet addresses in a way that allows summarization into a smaller number of routing table entries. A CIDR address contains the standard 32-bit IP address but includes information on how many bits are used for the network prefix. For example, in the CIDR address 123.231.121.04/22, the "/22" indicates the first 25 bits are used to identify the unique network leaving the remaining bits to identify the specific host.
Denial of Service	In a Denial of Service (DoS) attack, the attacker attempts to crash a service (or the machine), overload network links, overload the CPU, or fill up the disk. The attacker does not always try to gain information, but to simply act as a vandal to prevent you from making use of your machine. Ping floods and Smurf attacks are examples of DoS attacks.
Distributed DDoS	These attacks usually consist of standard DoS attacks Denial of orchestrated by attackers covertly controlling many, sometimes hundreds, of different machines.
HTTPS	The secure hypertext transfer protocol (HTTPS) is a communications protocol designed to transfer encrypted information between computers over the World Wide Web. HTTPS is http using Secure Socket layer (SSL) or Transport Layer Security (TLS) encryption.
Intrusion	Unauthorized access to, and/or activity in, an information system, usually for the purpose of tampering with or disrupting normal services. See also Attack.
Intrusion Detection	The process of identifying that an intrusion has been attempted, is occurring, or has occurred.
NTP	Network Time Protocol provides a mechanism to synchronize time on computers across an internet. The specification for NTP version 3 is defined in RFC 1305. Such synchronization can be very useful for multi-machine activities that depend upon accurate time stamps.
Policy	A user-configured security rule that determines the permission of traffic across a network. Policies can set rules for protocols (HTTP, UDP), machines (NT, Solaris), operating systems (Unix), and other types of network information. A policy also defines what actions should be taken in the event of non-permissible activity.
Policy Violations	All activities for which the underlying traffic content may not be malicious by itself, but are explicitly forbidden by the usage policies of the network as defined by a security policy. These can include "protocol violations" wherein packets do not conform to

	network protocol standards. (For example, they are incorrectly structured, have an invalid combination of flags set, or contain incorrect values.) Examples might include TCP packets with their SYN and RST flags enabled, or an IP packet whose specified length doesn't match its actual length. A protocol violation can be an indication of a possible attack, but can also be triggered by malfunctioning software, hardware or could be applications/protocols forbidden in the network (e.g. Peer to Peer (P2P)).
Port Cluster	Port Cluster is a more intuitive term for an Interface Group. Interface Group An interface group enables multiple sensor ports to be grouped together for the effective monitoring of asymmetric environments. Interface groups normalize the impact of traffic flows split across multiple interfaces, thus maintaining state to avoid information loss. Once configured, an interface group appears in the Resource Tree as a single interface node (icon) under the sensor where it is located. All of the ports that make up the interface are configured as one logical entity, keeping the configuration consistent.
MySQL Database	A Relational database. Allows the definition of data structures, storage/retrieval operations, and integrity constraints. The data and relations between them are kept in organized tables, which are collections of records and each record in a table contains the same fields.
Roles	A class of user privileges that determines the authorized activities of the various users in the system.
Sensor	The sensor is a network device containing the intrusion detection engine. It analyzes network traffic, searching for signs of unauthorized activity.
Signature	Activities or alterations to an information system indicating an attack or attempted attack, detectable by examination of audit trail logs.
Span Mode	One of the monitoring modes available for an NSP sensor. Functions by mirroring the packet information on a switch or hub and sending the information to a sensor for inspection, while continuing the transmission of traffic with negligible latency. SPAN mode is typically half-duplex, and works through a connection of a sensor to a port on a hub or the SPAN port of a switch.
SPAN Port	On a switch, SPAN mirrors the traffic at one switched segment onto a predefined port, known as a SPAN port.

Threat Analyzer	A graphical user interface for viewing specific attack information in the NSM System. The Threat Analyzer interface is part of the NSM component, and focuses on alert forensic analysis.
TLS	A secure socket layer (TLS) is an encryption protocol invoked on a Web server that uses HTTPS.
Tap	A tap is hardware device that passes traffic unidirectionally from a network segment to the IDS. Traffic is mirrored as it passes through the tap. This mirror image is sent to the IDS for inspection. This prevents traffic passing from being directed at the IDS.
Tap Mode	One of the monitoring modes available for an NSP sensor. Functions by mirroring the packet information and sending the information to a sensor for inspection, while continuing the transmission of traffic with negligible latency. Tap mode works through installation of an external wire tap, a port on a hub, the SPAN port of a switch, or through an internal tap when deploying the I-2600. Also known as passive monitoring mode.
Trojan Horse	A computer program that has a useful function, but which also contains additional hidden, typically malicious functions.
Virtual IDS	An NSM feature that enables you to logically segment a sensor into a large number of virtual sensors, each of which can be customized with its own security policy. Virtual IDS (VIDS) are represented in the NSM as *interfaces* and *sub-interfaces*.
VLAN	Virtual Local Area Network. A logical grouping of two or more nodes which are not necessarily on the same physical network segment, but which share the same network number. This is often associated with switched Ethernet networks.
Vulnerability	Any characteristic of a computer system that will allow someone to keep it from operating correctly, or that will let unauthorized users take control of the system.
Exclusive OR	A logical operator that results in true if one of the operands (not both) is true.

1.3.2 Acronyms

ACM	Access Control Management
AGD	Administrator Guidance Document
CC	Common Criteria
CM	Control Management
CSP	Critical Security Parameters
DAC	Discretionary Access Control
DO	Delivery Operation
EAL	Evaluation Assurance Level
FIPS	Federal Information Processing Standards Publication
GB	Gigabyte
IDS	Intrusion Detection System
IPS	Intrusion Prevention System
I/O	Input/Output
MIB	Management Information Base
NIST	National Institute of Standards and Technology
NSM	Network Security Manager
NSP	Network Security Platform (TOE system)
OCSP	Online Certificate Status Protocol
PP	Protection Profile
SF	Security Functions
SFR	Security Functional Requirements
ST	Security Target
TOE	Target of Evaluation
TSF	TOE Security Functions
TSP	TOE Security Policy
TSC	TSF Scope of Control
VLAN	Virtual Local Area Network
XOR	Exclusive OR

1.4 Common Criteria Product type

The TOE is classified as an **Intrusion Detection System (IDS)** for Common Criteria purposes. The TOE is made up of *hardware and software* components. The TOE consists of two main components that are: the NSP sensor(s) appliance and the Network Security Manager.

1.5 Overview

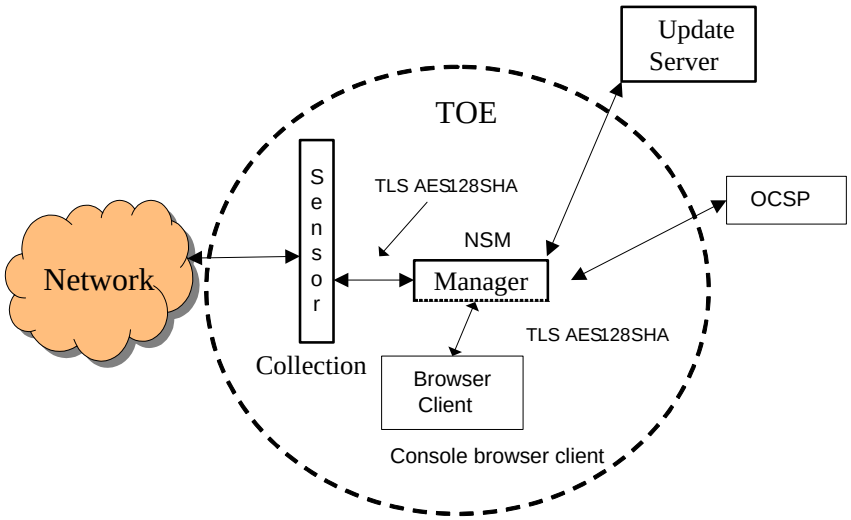


Figure 1: Network Architecture (example)

NSP sensors are content processing appliances that perform stateful inspection on a packet basis to discover and prevent intrusions, misuse, denial of service (DoS) attacks, and distributed denial of service (DDoS) attacks. McAfee Incorporated offers various types of sensor appliances providing different bandwidth and deployment strategies. These include the following organized by aggregate performance:

M-Series	**I-Series**
M8000 v. 5.1 - 10Gbps	I-4010 v. 5.1 - 2 Gbps
M6050 v. 5.1 - 5Gbps	I-4000 v. 5.1 - 2 Gbps
M4050 v. 5.1 - 3Gbps	I-3000 v. 5.1 - 1 Gbps
M3050 v. 5.1 - 1.5Gbps	I-2700 v. 5.1 - 600 Mbps
M2750 v. 5.1 - 600Mbps	I-1400 v. 5.1 - 200 Mbps
M1450 v. 5.1 - 200Mbps	I-1200 v. 5.1 - 100 Mbps
M1250 v. 5.1 - 100Mbps	

All sensor types provide the same security functions.

The Network Security Manager consists of software that is used to configure and manage an NSP deployment. The NSM is a set of applications coupled with an embedded MySQL Database. The MySQL Database is installed during NSM installation and is configured so that it can be accessed only by the NSM application. The MySQL Database must reside on the same platform as does the NSM. The Network System Manager (NSM) is available in three versions: NSM Global Manager, NSM Standard Manager, and NSM Starter Manager. All versions of the NSM are part of the TOE and part of the same core software release. All versions of the NSM operate within an Operational Environment composed of an Intel-based hardware platform with a Windows Server 2003/2008 operating system (OS). The difference between the three versions is one of scalability. The NSM Starter Manager supports up to 2 NSP Sensors, the NSM Standard Manager supports up to 6 NSP sensors and the NSM Global Manager supports an unlimited number of NSP sensors.

The McAfee Incorporated Update Server is a McAfee-owned and operated file server that provides updates to the signature files and software of NSP sensors in customer installations. The Update Server resides at McAfee Incorporated facilities. Note: Software updates beyond signature updates, such as those to update the core NSP software suite, are excluded for the CC Evaluated Configuration.

1.6 Product Type

The NSP system from McAfee Incorporated is a network Intrusion Detection System (IDS) that offers real-time network intrusion detection and prevention against the following types of attacks for enterprise networks:

- network traffic
- detected known vulnerabilities

1.7 Product Description

The NSP IDS product is a combination of network appliances and software built for the detection of intrusions, denial of service (DoS) attacks, distributed denial of service (DDoS) attacks, and network misuse.

The NSP IDS system is composed of a family of sensor appliances and an NSP management platform referred to as an NSM. The sensor appliances are stand-alone appliances from McAfee Incorporated. All other components of the product are software only components that run on a Windows workstation. The NSM management platform is an IDS management solution for managing NSP sensor appliance deployments for large and distributed enterprise networks. Access to the NSM is supported through a McAfee thick client application installed on a Console Machine. Access to the NSM is authenticated using certificate credentials obtained from a Common Access Card (CAC) in the Operational Environment. Certificates presented are checked for revocation status using an OCSP server in the Operational Environment. The NSM

operates with a MySQL Database to persist configuration information and alert data. NSM for Windows Server 2003/2008 includes the MySQL database.

The product software and documentation is provided to the customer through a secure download process.

1.8 Product Features

The TOE implements the following features:

The Sensor Subsystem performs:

- *Traffic Capture* captures packets into a data store for review.
- *Load balancing and protocol verification* makes security decisions such that it can filter packets of no interest.
- *Denial of Service detection and response* detects DoS attacks and provides an alert capability and the capability to drop packets identified that are part of the DoS attack.
- *Signature detection and anomaly detection* performs anomaly detection, logs attack information, and performs response functions. The response functions include the following: alert generation, packet logging, TCP reset, ICMP host unreachable, forward blocking (Quarantine), alert filtering and dropping of packets.
- *Sensor management* is the interface between the sensor and the NSM. It has the responsibility to push policies that have been defined in the Management Subsystem to the appropriate sensor module.

The NSM provides management functions to manage NSP sensor appliance deployments for large and distributed enterprise networks. The NSM is a web-based security management system that manages NSP sensors. It offers features to define, distribute, enforce, and audit security policies to protect critical servers, data centers, individual departments, and distributed branch and remote offices of a global business. The NSM provides a Web-based interface to the sensor referred to as the NSM console. The NSM console is a web-enabled "thick client" application that runs on a client platform. The Threat Analyzer performs real-time alert analysis. This analysis provides intelligent management and analysis of alerts in real time with granular drill-down capabilities and color-coding that enable the administrators to quickly pinpoint the target, source, and severity of network attacks.

The management features provided by the NSM include the following:

- Threat Updates: An Update Server controlled by McAfee Incorporated delivers signature updates without requiring sensor reboots, providing protection against newly-discovered attacks.
- Granular Security Policy Management: Flexible and custom policy management per sensor — from multiple network segments to individual hosts — delivers improved attack detection and prevention.

- Administrative Domains: Scalable security policy administration with role-based access control allows delegation of administrative responsibilities.
- Forensic Analysis: Analysis tools, including enable detailed historical and real-time forensic analysis to determine network attack patterns.
- Response management: A set of response actions — including user-defined responses and notification capabilities — provide proactive attack notification and prevention.

The McAfee Incorporated Update Server is a McAfee Incorporated owned and operated file server that updates the signature files of NSP sensors in McAfee Incorporated customer installations. McAfee Incorporated uses the Update Server to provide signature updates. McAfee Incorporated develops and releases signature updates as they are developed. Since new vulnerabilities are discovered almost daily, signature updates are released on a regular basis. These new signatures are made available to customers through the Internet via the McAfee Incorporated Update Server. Alternatively, signature files may be obtained separate from the NSM platform and manually installed on the NSM to avoid the NSM connecting to the internet.

The TOE also includes a User Defined Signature (UDS) feature in the form of an editor utility that allows Administrative users to create attack instances with signatures for implementation in the Network Security Platform (NSP) policy enforcement process. This allows for the development of custom signatures based on deployment particular threats and circumstances.

Note that other product updates and patches can also be made available via the Update Server. However, such changes to the product would serve to take the product out of its evaluated configuration since it would subsequently be running code that has not been subject to evaluation per this Security Target. As such, *automatic* patch updates must be disabled in the evaluated configuration so that the administrator can selectively apply only signature updates.

1.9 Physical Boundaries

The components of the Network Security Platform are the Collection Subsystem and the NSM Subsystem. An Update Server subsystem is also available, but since it is neither delivered to nor operated by the TOE users, it is outside the TOE boundary. Each subsystem performs dedicated functions. The following figure provides a high-level depiction of the NSP subsystem architecture.

1.10 Architecture Description

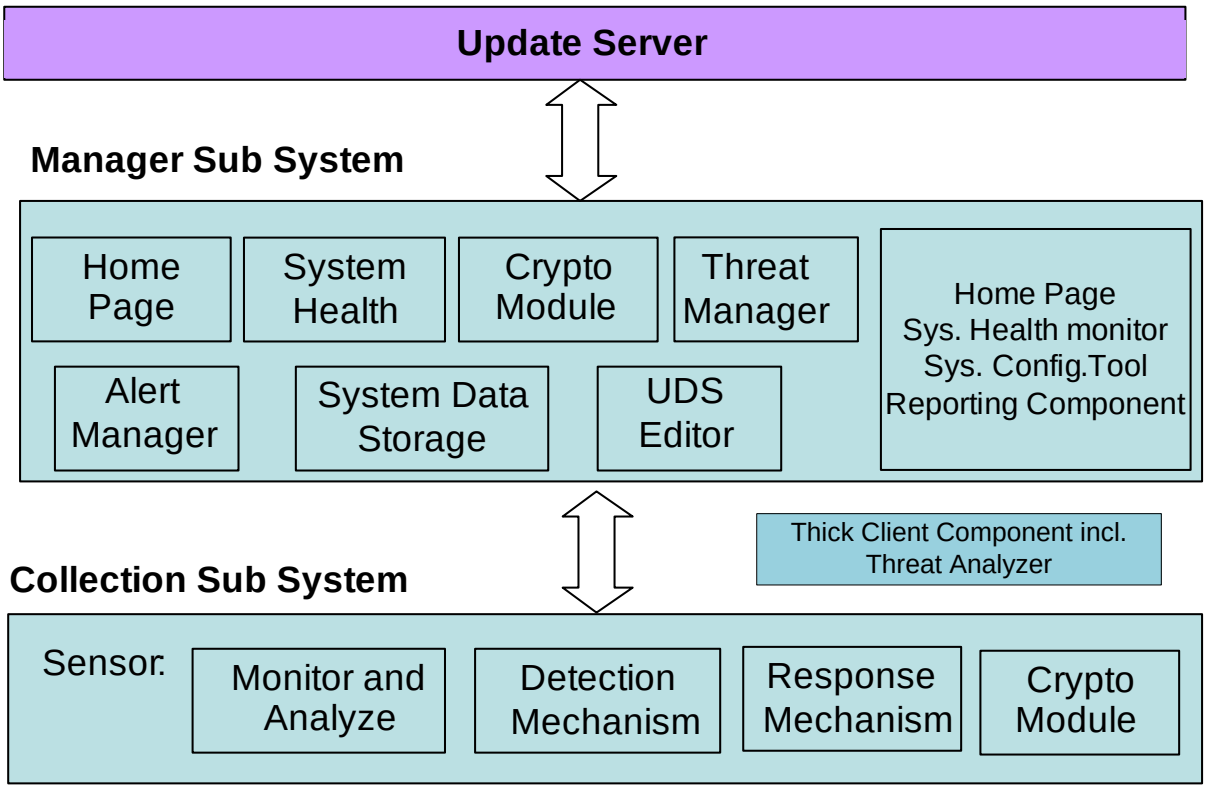


Figure 2: Internal Architecture Concept

The TOE software components are made up of the following Architectural Subsystems:

- Collection Subsystem
- Manager Subsystem (executing on the NSM Server and Console platforms)

Direct TOE support is provided from the following McAfee service in the Operational Environment:

- McAfee Update Server

1.11 Hardware: Sensor Appliances

The following sensor appliances may be configured as part of the NSP TOE based on the individual deployment. Sensor hardware platforms are differentiated by scalability and throughput characteristics.

M-Series Appliance

Sensor	Aggregate Performance	10/100/1000 Base-T Monitoring Port	Interface Module	RJ-45 Response port	Ports Used for failover
M-8000	10 Gbps		16 One Gigabit SFP ports 12 Ten Gigabit XFP ports	1	3A and 3B
M-6050	5 Gbps		8 SFP ports 8 XFP ports	1	4A Note that 4B remains unused.
M-4050	3 Gbps		4 XFP ports 8 SFP ports	1	2A
M-3050	1.5 Gbps		4 XFP ports 8 SFP ports	1	2A
M-2750	600 Mbps		20 SFP ports	1	10A Note that 10B is unused.
M-1450	200 Mbps	8 built-in 10/100/1000 RJ-45 ports		1	4A Note that 4B is unused.
M-1250	100 Mbps	8 built-in 10/100/1000 RJ-45 ports		1	4A Note that 4B is unused.

Other features	M-8000	M-6050	M-4050	M-3050	M-2750	M-1450	M-1250
Internal Taps	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Fail-open Control Ports	14	8	6	6	10	Nil	Nil
Interconnect ports	4 Ten Gigabit XFPs 2 RJ-45 ports	Nil	Nil	Nil	Nil	Nil	Nil
10/100/1000 Management port	1	1	1	1	1	1	1
Console Port	2	1	1	1	1	1	1
Auxiliary Port	2	1	1	1	1	1	1
Redundant power supply	Yes	Yes	Yes	Yes	Yes	Nil	Nil
Fail-closed dongles	0	0	0	0	0	0	0

I-Series Appliance

Sensor	Aggregate Performance	10/100 Base-T Monitoring Port	Interface Module	RJ-45 Response port	Ports Used for failover
I-1200	100 Mbps	2		1	Response port
I-1400	200 Mbps	4		1	Response port
I-2700	600 Mbps	6	2 GBICs	3	4A
I-3000	1 Gbps	12	12 SFP ports	4	6A and 6B
I-4000	2 Gbps		4 GBICs	2	2A and 2B
I-4010	2 Gbps		12 SFP ports	4	6A and 6B

Other features	I-4010	I-4000	I-3000	I-2700	I-1400	I-1200
Internal Taps	Nil	Nil	Nil	Yes	Yes	Yes
Fail-open Control Ports	4	Nil	4	Nil	Nil	Nil
10/100 Management port	1	1	1	1	1	1
Console Port	1	1	1	1	1	1
Auxiliary Port	1	1	1	1	1	1
Redundant power supply	Yes	Yes	Yes	Yes	Nil	Nil
Fail-closed dongles	Nil	Nil	Nil	6	4	2

1.11.1 Collection Subsystem

The Collection Subsystem is provided by the NSP sensor appliance. The primary function of the NSP sensor is to analyze traffic on selected network segments and to respond when an attack is detected. The sensor examines the header and data portion of every network packet; scanning for patterns and behavior in the network traffic that indicates malicious activity. The sensor examines packets according to user-configured *policies*, or rule sets, which determine what attacks to watch for, and how to react with countermeasures if an attack is detected. If an attack is detected, the sensor raises an *alert* to describe the event, and responds according to its configured policy. Sensors can perform many types of attack responses, including generating alerts and packet logs, resetting TCP connections, "scrubbing" malicious packets, and dropping packets entirely before they reach their target. Rule sets are described through a series of Access Control Lists that implement the policies described above.

The NSP system is a network-based Intrusion Prevention System (IPS) that combines network sensor appliances and management software for the accurate detection and prevention of known attacks using signature detection, unknown (first strike) attacks using anomaly detection, denial of service (DoS) attacks, and distributed denial of service (DDoS) attacks. The NSP IPS couples real-time IDS with prevention—the ability to block attacks before they reach their target.

Once the packet is captured, it is analyzed into its corresponding protocol fields. The sensor analyzes a frame completely and thoroughly from OSI layers two through seven, and interprets and evaluates the semantics of the protocol fields; including those at the Application Layer. After it analyzes the protocols, it verifies that the packet conforms to the protocol specification. NSP then passes the parsed packet through its DoS, Signature, and Anomaly detection engines. This enables NSP to be very efficient in terms of packet processing because the packet is deconstructed only once and then forwarded to the corresponding detection engines.

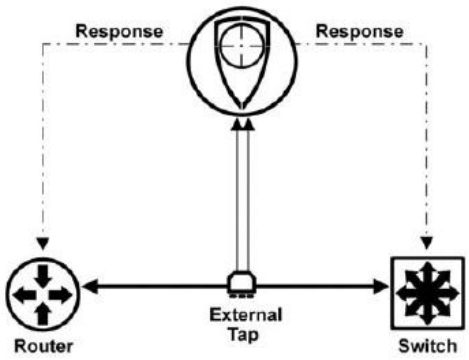
Signature detection techniques systematically scan network traffic looking for signature traffic patterns of known attacks, comparing these patterns against an extensive database of traffic

pattern signatures. Anomaly detection determines a baseline of normal behavior of network traffic, and then attempts to detect intrusions by noting significant departures from normal behavior. Signature-based detection concentrates on known attack patterns, while anomaly detection is best at picking up new or unknown attacks. Denial of Service (DoS) attack detection characterizes normal traffic using pre-programmed thresholds or real-time, self-learning distributions, and then using this data to detect what might constitute a maliciously excessive consumption of network bandwidth, host processing cycles or other resources.

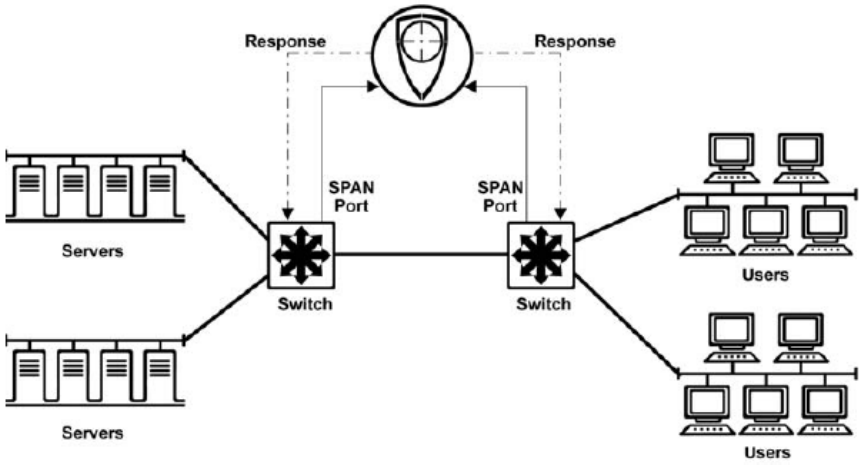
The sensor can operate in three modes:

- Inline: The product is installed as an appliance within the network that applicable traffic must flow through.

- Tap: The network traffic flows between the clients and servers and the data is copied by the tap to the sensor which is essentially invisible to the other network entities. Note that the TOE cannot inject response packets back through an external tap, so NSP sensors offer Response ports through which a response packet (such as a TCP reset) can be injected to close a malicious connection.



- Span: The traffic is *spanned* off either the server side or the client side of a router or switch, copying both the incoming and outgoing traffic from any one of the ports. This requires a special network device that has a span port capability. Note that SPAN mode is also a "sniffing" mode, which—unlike inline mode—does not enable the TOE to prevent attacks from reaching their targets. However, while the TOE can issue response packets via the sensor's response ports, some switches allow response packets to be injected by an IPS back through the SPAN port.



Unlike single-port sensors, a single multi-port NSP sensor can monitor many network segments in any combination of *operating modes*—that is, the *monitoring* or *deployment* mode for the sensor —SPAN mode, tap mode, or in-line mode. Additionally, NSP's Virtual IDS (VIDS) feature enables you to further segment a port on a sensor into many "virtual sensors". A VIDS can be *dedicated* to a specific network port with monitoring rules appropriate for that segment which might be different than the rules used to monitor other segments. Alternately, if a monitored network segment includes the use of Virtual LANs (VLANs) or Classless Inter-Domain Routing (CIDR); one or more VIDS can be directed at monitoring them with VIDS each configured with distinct monitoring rules. Note that VIDS are not particularly security relevant in and of themselves, but rather serve to organize and distinguish monitoring rules.

1.11.2 Manager Subsystem

The NSM is the Manager Subsystem and includes the thick client software for the console platform. The NSM is a dedicated Windows Server 2003/2008 platform running the NSM software. The NSM is also referred to as "The Manager". There are three versions of the NSM:

1. *NSM Global Manager* supports unlimited number of sensors and is best suited for global IDS deployments.
2. *NSM Standard Manager* that supports deployments of up to six sensors.
3. *NSM Starter Manager* that supports up to 2 sensors.

Functionally, the products are otherwise identical. This Security Target uses the term "NSM" to describe any of the three versions which may be deployed.

The NSM software includes a Web-based user interface for configuring and managing the NSP Sensors.

The NSM includes the following components:

- *Home Page (formerly known as Network Console):* Is the first screen displayed after the user logs on to the system. The Home Page displays system health—i.e., whether all components of the system are functioning properly, the number of unacknowledged alerts in the system and the configuration options available to the current user. Options

available within the Network Console are determined by the current user's assigned role(s).

- *System Health Viewer:* Displays the status of the NSM, database, and any deployed sensors, including all system faults.
- *System Configuration Tool:* Provides all system configuration options, and facilitates the configuration of sensors, administrative domains, users, roles, attack policies and responses, user-created signatures, and system reports. Access to various activities, such as user management, system configuration, or policy management is based on the current user's role(s) and privileges.
- *Reporting Component:* Reporting component within the Client application JSP which includes the home page, system health viewer, system configuration tool and reporting functions.
- *Threat Analyzer:* Displays detected security events that violate your configured security policies. The Threat Analyzer provides powerful drill-down capabilities to enable you to see all the details on a particular alert, including its type, source and destination addresses. The Threat Analyzer is deployed as part of the Thick Client.
- *UDS Editor:* User Defined Signature (UDS) editor allows customers to define custom user defined signatures. Similar to the Threat Analyzer, it is a thick client running on the client machine in the operational environment.

Access to the NSM is solely via a thick client application installed on the Console Machine for the CC Evaluated Configuration; local access is excluded.

The keyboard, mouse and screen used for NSM access are customer provided and are not included in the CC Evaluated Configuration.

The NSM operates with a MySQL Database (relational database management system) for storing persistent configuration information and event data. The NSM for Windows Server 2003 SP3/2008 SP1 includes a MySQL Database that is installed during NSM software installation.

1.12 McAfee Operational Environment Support Services

1.12.1 Update Server

As stated in Section 2.3, the Update Server is a McAfee Incorporated owned and operated file server that updates the signature files of NSP sensors in customer installations. McAfee Incorporated uses the Update Server to securely provide signature updates at the request of the NSM (i.e., per administrator direction). When initiated, the NSM polls the McAfee Incorporated Update Server, and compares the file on the Update Server with what is already available in the NSM to determine what it needs to download. Once it has received the update, the NSM then determines what signatures need to be pushed out to sensors based on the policy applied to the sensor.

1.13 Operational Environment Resources

The TOE requires the following support mechanisms in the Operational Environment:

1. McAfee Update Server
2. Console machine running Internet Explorer 6 or later and underlying operating system

1.13.1 Hardware Components

This table identifies hardware components and indicates whether or not each component is in the TOE.

TOE or Env.	Component	Description
TOE	Sensor Models: M2750, v.5.1, M1450 v 5.1, M1250 v5.1, M6050 v5.1,M4050 v.5.1, M3050 v5.1, M8000 v5.1, I-4010 v.5.1, I-4000 v.5.1, I-3000 v.5.1, I-2700 v.5.1, I-1400 v.5.1, I-1200 v.5.1	McAfee Network Security Sensor appliance
Env.	NSM Hardware Platform	Hardware Platform for NSM Management Platform capable of running Windows Server 2003/2008; minimum two network interface cards (nic) available
Env.	Console Workstation	Console Platform supporting browser interface used for accessing NSM GUI sessions
Env.	McAfee Update Server hardware	Hardware platform hosting the McAfee threat signature update service
Env.	Common Access Card (CAC) reader hardware	Reader hardware for use with CAC as applicable based on deployment
Env.	OCSP Server hardware	OCSP server hardware used to support certificate revocation checking

Table 1: Hardware Components

1.13.2 Software Components

This table identifies software components and indicates whether or not each component is in the TOE.

TOE or Env.	Component	Description
TOE	NSM Management Platform software Release 5.1	Software for NSM Management Platform includes (includes FIPS validated OpenSSL object module v1.1.2), client-thick application and threat manager
TOE	Sensor software Release 5.1	Software package release 5.1 for Sensor (includes FIPS validated OpenSSL object module v1.1.2)
Env.	Windows Server 2003 SP3/2008 SP1	Underlying OS for NSM Console platform including RSAENH cryptographic module for TLS session support
Env.	Internet Explorer 6 or later	Browser support for establishing Console sessions with NSM
Env.	McAfee Update Server software	Software running on the McAfee update server supporting the TOE with threat signature updates
Env.	Common Access Card software/drivers	Software to support CAC authentication from the NSM Console as applicable based on deployment.
Env.	OCSP Server software	OCSP server used to support certificate revocation checking

Table 2: Software Components

1.13.3 Guidance Documents

The following guidance documents are provided for download with the TOE software in accordance with EAL 2 requirements and apply to the CC Evaluated configuration:

1.13.3.1 Common Criteria Supplement

1. Network Security Platform (NSP) Common Criteria Supplement EAL2 + ALC_FLR.2 09-1904-R-0077 Version 1.0

1.13.3.2 System Level Guides

1. Getting Started Guide revision 5.0 McAfee® Network Security Platform

   Version 5.1 700-1803-00/ 6.0

2. IPS Configuration Guide McAfee® Network Security Platform Network Security Manager Version 5.1 700-1810-00/ 8.0
3. IPS Deployment Guide Revision 3.0 700-1804-00/ 3.0
4. System Status Monitoring Guide McAfee® Network Security Platform Network Security Manager version 5.1 Revision 5.0 700-1813-00/ 5.0
5. Addendum I to 5.1 Documentation 700-1873-00/ 1.0
6. Addendum II to 5.1 Documentation 700-1874-00/ 1.0

1.13.3.3 Applicable Sensor Quick Start Guides

1. Network Security Platform® M-6050 Quick Start Guide 700-2078-00-G
2. Network Security Platform® M-8000 Quick Start Guide 700-2080-00-G
3. Network Security Platform M-1250/M-1450 Quick Start Guide 700-1880-00
4. Network Security Platform M-2750 Quick Start Guide 700-1879-00
5. Network Security Platform® M-3050/M-4050 Quick Start Guide 700-2079-00-G
6. Intrushield I-2700 Quick Start Guide 700-1063-03-G
7. Intrushield I-4010, I-3000 Quick Start Guide 2.1 700-1013-03-G
8. Intrushield I-4000 Quick Start Guide 2.1 700-1261-00-G
9. Intrushield I-1200, I-1400 Quick Start Guide 2.1 700-1259-00-revB

1.13.3.4 Applicable Product Guides

1. Administrative Domain Configuration Guide revision 5.0 700-1806-00/ 5.0
2. Best Practices Guide revision 4.0 700-1817-00/ 4.0
3. Manager Configuration Basics Guide revision 1.0 700-1805-00/ 1.0
4. Reports Guide revision 3.0 700-1814-00/ 3.0
5. Special Topics Guide-Virtualization revision 3.0 700-1829-00/ 3.0
6. Troubleshooting Guide revision 10.0 700-1818-00/ 10.0
7. User-Defined Signatures Guide revision 2.0 700-1815-00/ 2.0
8. M-1250/M-1450 Sensor Product Guide revision 2.0 700-2395-00/ 2.0
9. M-2750 Sensor Product Guide revision 2.0 700-2391-00/ 2.0
10. M-3050/M-4050 Sensor Product Guide revision 2.0 700-2393-00/ 2.0
11. M-6050 Sensor Product Guide revision 2.0 700-2937-00/ 2.0
12. M-8000 Sensor Product Guide revision 2.0 700-2399-00-G/ 2.0

13. NSP Sensor I-4010 Product Guide revision 2.0 700-2390-00/ 2.0
14. NSP Sensor I-4000 Product Guide revision 1.0 700-2389-00/ 1.0
15. NSP Sensor I-3000 Product Guide revision 2.0 700-2388-00/ 2.0
16. NSP Sensor I-2700 Product Guide revision 1.0 700-2387-00/ 1.0
17. NSP Sensor I-1400 Product Guide revision 2.0 700-2386-00/ 1.0
18. NSP Sensor I-1200 Product Guide revision 2.0 700-2385-00/ 2.0
19. Sensor CLI Guide Version 7.0 700-1808-00/7.0
20. Sensor Configuration Guide Version 6.0 700-1809-00/6.0
21. Manager Installation Guide revision 5.0 700-1801-00/ 5.0
22. Manager Server Configuration Guide revision 4.0 700-1807-00/ 4.0

1.14 Logical Boundaries

This section contains the product features and denotes which are within the logical boundaries of the TOE. The following Security Functions are supported by the Network Security Platform (NSM) TOE:

- Security Audit
- Identification and Authentication
- Security Management
- Protection of the TSF
- Cryptographic Operations
- System Data Collection
- System Data Analysis
- System Data Review, Availability, and Loss

The logical boundaries of the TOE are divided into two broad groups, one related to the administration and security attributes associated with the TOE (Security Audit, Identification and Authentication, Security Management, and Protection of Security Functions), and the other related to the collection and analysis of the network traffic (System Data Collection, Data Analysis and Data Review, Availability, and Loss).

Automatic updates must be disabled in the evaluated configuration to ensure that the evaluated version of the product is not modified or replaced while in operation. As such, the TOE

administrators are expected to configure and use the TOE such that the automatic software update feature will not be used.

1.14.1 Security Audit

The NSP generates audit records related to the administration/management of the TOE and traffic logs for IDS information using the NSM component. The NSM management platform records both the audit and traffic log information into a data store, which is part of the TOE. The data store employed is MySQL. The MySQL Database provides storage and retrieval for audit and traffic log information. This function records attempts to access the system itself, such as successful and failed authentication, as well as the actions taken by the user once authenticated. Auditable actions include changes to the IDS rules and viewing the audit records of both the system access and the IDS traffic log.

The NSP Sensor generates audit records relating to Sensor operation and forwards these logs to the NSM for integration and storage. This includes IDS related events local to the Sensor.

Only Authenticated users holding the Super User or System Administrator roles can view audit records.

1.14.2 Identification and Authentication

The NSM provides an external user interface protected by identification and authentication mechanism. The NSM requires users to provide unique identification and authentication data using Common Access Cards before any access to the TOE is granted.

NSM is compatible with Common Access Card (CAC) authentication systems that are used in conjunction with the NSM browser client installed on the console machine. Upon initiating the TLSv1 based session, the NSM can be configured to request a certificate from the Console browser and the NSM browser client will involve the CAC software to extract the required certificate from the CAC smartcard and send it to the NSM for validation. Revocation checks are performed externally through the use of an OCSP server in the Operational Environment. The NSM does not support the ability to manage certificate revocation internally and depends on the OCSP server in the Operational Environment for this function.

The NSM determines if the certificate has been configured as “trusted” and if valid per revocation checking, the session is successfully established. In the event the certificate is not validated or returns as revoked from the OCSP check, the session request is rejected and a log entry is generated by NSM.

The Sensor component is authenticated by the NSM component through a shared secret that is configured during the initial installation and setup process.

1.14.3 Security Management

The NSM provides a web-based (using https) management interface for all administration, including the IDS rule set, user accounts and roles, and audit functions. This GUI based interface allows for TOE configuration and Intrusion Protection System (IPS) management including Policies, Access Control Lists (ACL), Cryptographic settings, Alert and Quarantine Management, and Database Management/Archiving Utilities.

The Network Security Manager management interface is accessed using an NSP thick client that is downloaded via a session with the Console machine during the initial setup processes. The thick client component, running within a browser session, provides a GUI interface to the NSM and allows management of the NSP system. This client component also includes the Threat Analyzer (TA) application and the User Defined Signature (UDS) editor that allows the creation of threat signatures by administrative users. These sessions are secured using TLSv1.0 as described in Section 1.14.5, Cryptographic Operations.

Once communication can be securely established between the Sensors and the NSM, configuration data can pass between them and they can both be managed using the browser based thick client installed on the console machine. Sensors must initiate communications with the NSM before configuration is complete as the NSM does not detect or search for Sensor appliance presence.

SNMPv3 is supported for NSM monitoring of deployed NSP sensors in the deployed environment by the NSM. These sessions are authenticated using a shared secret.

1.14.4 Protection of TSF

The TOE protects the security functions it provides through a variety of mechanisms. One of the primary protections is that users must authenticate before any administrative operations can be performed on the system.

The Sensor implements multiple configuration, and performance MIB objects. NSM does an SNMP ”GET” on read-only objects while SNMP ”GET/SET” on read/write objects. The MIB configuration between the NSM and the sensor is implemented via SNMPv3. The AES encrypted data (signature and profile files) transferred between the NSM and NSP sensor(s) uses a TLS implementation.

The data communicated between the Update Server and the NSM is also encrypted using TLS Version 1.0.

The NSP sensors components are protected on the monitored network by “hiding” the fact that they are there. This is done primarily by using a non-TCP/IP network stack on the sensors, which prevents it from being accessed as a device on the network. Also, the signature files are protected doubly as the system is configured to not accept any management requests or input from the monitored network.

The NSM management component is installed on a dedicated Windows Server 2003/2008 platform running the NSM software. The NSM software component contains a MySQL Database implementation in which NSM stores the traffic logs as well as the audit of human interaction with the User/Admin interface. The MySQL Database resides on the same platform as does the Network Security Manager (NSM). All MySQL Database tables used for IDS system data are dynamically allocated so that the limit on the recording capacity of the collected information is the limit of the physical disk partition on the platform that is not dedicated to the operating system, the MySQL Database, and the Network Security Manager (NSM). This assures there is always adequate disk space to record current and new data that has been found to match the current rule set. However, as a safety feature, if the IDS system data could not be written to a MySQL Database table, an alarm is presented at the NSM console.

Audit records have an allocated 50,000 row table within the MySQL database that allows for storage of audit records in a circular buffer type arrangement. In the event the allocated rows are exhausted, the older audit records are overwritten and an alarm is presented at the NSM console. A new alarm is presented upon the initial overwrite and all subsequent overwrites.

Note that audit records include time stamps that need to be reliable. The TOE depends on the underlying Operating System of the NSM component (e.g., Windows Server 2003/2008) to provide time information. The TOE ensures reliability by not only obtaining time information from the presumed reliable operating system source, but also by sharing that time information with its associated NSP sensors, so that all parts of the TOE share the same relative time information.

The MySQL Database within NSM can only be accessed through the local host and is further protected by a separate username and password for the MySQL DB which is set up during installation and stored in an obfuscated form within the NSM configuration. The obfuscation is done by performing an "XOR" function on the username/password using a shared secret key. As a result, MySQL is accessible only to the NSM application within the evaluated configuration.

1.14.5 Cryptographic Operations

Cryptographic services are used by the NSP TOE for securing Console to NSM sessions, NSM to Sensor sessions and McAfee Update server to NSM sessions through encryption. These cryptographic functions are supported through an OpenSSL cryptographic module within the Sensor Component; an OpenSSL implementation as the NSM Application Crypto Module and an OpenSSL implementation as the NSM Secure UI Crypto Module.

Cryptographic services within the Sensor component are provided by a Level 2 FIPS 140-2 validated cryptographic module that includes an OpenSSL implementation.

The NSM component utilizes RSA BSafe cryptographic libraries and the NSP Sensor component includes XySSL cryptographic libraries.

In FIPS mode, the cryptographic module within the NSP Sensor supports the following FIPS algorithms based on the referenced certificates:

- AES CBC mode with 128 bits for encryption and decryption (Cert. #880) – TLSv1.0
- RSA with 1024 and 2048 bit keys for signature generation/verification (Cert. #425) – TLS
- SHA-1 and SHA-256 for hashing (Cert. #871)
- ANSI X9.31 RNG with 2-Key Triple-DES ECB (Cert. #505) – TLS
- XYSSL RSA with 2048 bit keys for image verify (Cert. #486)
- XYSSL SHA-1 for hashing (Cert. #970)

In FIPS mode, the NSM Application cryptographic module within the NSM Component of the TOE supports the following FIPS approved algorithms based on the referenced certificates:

- BSafe TLSv1: AES – 128 bits CBC and CFB (Cert. #1237)
- BSafe TLSv1: RSA Verify 1024 bits (Cert. #593)
- BSafe TLSv1 and elsewhere: SHA-1 (Cert. #1135)
- BSafe TLSv1 and elsewhere: RNG FIPS 186-2 –SHA-1 G function. (Cert. #684)
- BSafe TLSv1 and elsewhere: HMAC SHA-1 (Cert. #721)

In FIPS mode, the NSM UI cryptographic module within the NSM Component of the TOE supports the following FIPS approved algorithms based on the referenced certificates:

- Open SSL TLSv1: AES 128 CBC mode (Cert. #1238)
- Open SSL TLSv1: HMAC - SHA-1 (Cert. #722)
- Open SSL TLSv1: SHA-1 (Cert. #1136)
- Open SSL TLSv1: RSA Sign/Verify 1024, 2048 (Cert. #594)
- Open SSL TLSv1 and elsewhere: RNG ANSI X9.31 (Cert. #685)
- BSAFE: HMAC-SHA-1 (Cert. #721)
- BSAFE: SHA-1 (Cert. #1135)

With the cryptographic modules running in FIPS mode, the NSP TOE uses the following FIPS allowed algorithms and protocols:

- RSA with 1024 bit keys for key wrap decryption only (of bulk channel encryption/decryption key) – key wrapping; key establishment methodology provides 80 bits of encryption strength
- NDRNG for seeding the ANSI X9.31 RNG
- TLS v1.0 (with algorithm tested ciphers)

All sessions between TSF components and with the McAfee Update Server in the Operational Environment are conducted over encrypted channels using TLS v1.0. All sessions are symmetrically encrypted using the AES algorithm with 128 bit keys.

Symmetric keys utilized for secure sessions are generated on demand using an OpenSSL based software random number generator (RNG) on board the NSM and NSP Sensor platforms using the 3DES algorithm. Cryptographic operations are also supported by RSA BSafe Cryptographic libraries that are part of the NSM and NSP sensor components within the TOE.

Signature files are signed with a McAfee private key and the NSM uses its corresponding public key to verify the signature is trusted and unmodified. Image integrity checking within NSM is done by the RSA BSafe module cryptographic libraries using RSA 1024.

Once stored within the TOE, Signature .ivu files are processed by "XORing" the data using a shared secret key for the purposes of protecting intellectual properly aspects associated with the signature files.

Keys generated for NSM console browser sessions are generated in the Operational Environment using the Microsoft RSAENH CSP as part of the underlying Windows Server 2003/2008 Operating System.

1.14.6 System Data Collection

The TOE has the ability to set rules to govern the collection of data regarding potential intrusions. While the signatures available on the Update Server contain default rules to detect currently known vulnerabilities and exploits, new rules can be created to detect new vulnerabilities as well as specific network traffic, allowing the administrator complete control over the types of traffic that will be monitored.

The TOE provides many pre-configured rule sets and policies for immediate application in a number of different network areas. Each pre-configured policy is matched with an identically named rule set designed to address the common attacks targeting specific network environments. Existing rule sets cannot be modified but they may be "cloned" and then modified to create a custom rule set.

Attacks coverage by rule sets are managed by the following categories:

- Denial of Service (DoS), including DDoS
- Exploit
- Policy Violation
- Reconnaissance

The following pre-configured rule sets are included:

Rule Sets	Designed to Protect Against:
Default IDS	All attacks.
Default Inline IPS	All attacks and McAfee-recommended blocking of selected attacks
Outside Firewall	All attacks except for Reconnaissance category.
DMZ	All attack types except for those Exploits using TFTP, Telnet, RIP, NETBIOS, NFS, and WINS.
Inside Firewall	All attack types except for those Exploits using TFTP, Telnet, and RIP.
Internal Segment	All attacks except for Exploits using RIP and routing protocol attacks.
Web Server	All Reconnaissance and DoS attacks, generic backdoors, and Exploits using DNS, HTTP, and FTP protocols.
Mail Server	All Reconnaissance and DoS attacks, generic backdoors, and Exploits using DNS, SMTP, POP3, and IMAP protocols.
DNS Server	All Reconnaissance and DoS attacks, generic backdoors, and Exploits using the DNS protocol.
File Server	All Reconnaissance and DoS attacks, generic backdoors, and Exploits using DNS, NFS/RPC, and NETBIOS/SMB protocols.
Windows Server	All attacks where the impacted OS includes Windows.
Solaris Server	All attacks where the impacted OS includes Solaris.
UNIX Server	All attacks where the impacted OS includes UNIX.
Linux Server	All attacks where the impacted OS includes Linux.
Windows and UNIX Server	All attacks where the impacted OS includes Windows or UNIX.
Windows and Solaris Server	All attacks where the impacted OS includes Windows or Solaris.
Windows, Linux, and Solaris Server	All attacks where the impacted OS includes Windows, Linux, or Solaris.
All-Inclusive without Audit	All attacks, including those with known noisy signatures, but omitting Informational severity attacks. This policy differs from Default as it alerts for every attack in the Network Security Platform database, including those with noisy signatures. This enables expert security personnel to fully analyze their network traffic. Informational “attacks” are not enabled.
All-Inclusive with Audit	Similar to above, with the exception that Informational-level alerts are included.

Figure 3: Default Rule Sets

1.14.7 System Data Analysis

The TOE provides tools at the NSM console for menu selection to analyze both IDS traffic log data as well as audit information. The TOE provides two methods of reviewing traffic log information, one is a real-time viewer. The real-time viewer is a “tab” selection at the NSM console. Audit information is reviewed from the console through the user Activities Audit Report.

Data Analysis is conducted using threat signatures that contain characteristics known to be representative of malicious traffic, malware, virus or worm infections. A series of threat signatures are provided and regularly updated to allow the NSP TOE to identify potentially malicious traffic. In addition, the User Defined Signature feature allows Security Expert users to develop custom signatures and use them for traffic analysis.

Logs are generated automatically when traffic matches a threat signature. These are stored in the traffic log repository where authorized users can evaluate the traffic and determine appropriate action.

The Threat Analyzer program, as part of the thick client running on the NSM console, allows Security Experts to perform analysis on alerts generated by NSP Sensors. Using traffic details and the analytical tools within the Threat Analyzer, the user can review data over various time periods to detect patterns that could be indicative of an attack. Also, through analysis of data patterns and characteristics, custom threat signatures can be developed for earlier detection and preventative action.

Report Generation

The TOE allows administrative users holding the Super User, IPS Administrator, System Administrator, Security Expert or Report Generator roles to generate a range of reports for both the alert information reported to the NSM, as well as information pertaining to the Network Security Platform configuration settings.

- IPS reports are summaries of alert information, such as severity, impact category, source/destination IP, time of alert, alert trends, etc.
- Configuration reports detail information such as the current Manager and Sensor software versions, proxy server settings, policy configuration, etc.
- Scheduled reports generate reports at a configured time, and optionally email the reports to specific individuals and/or save them for later viewing.

1.14.8 System Data Review, Availability and Loss

IDS Audit data can only be viewed by authorized users (specific roles). The NSM console provides a user interface for menu selectable data review. The data stores of the raw collection data are limited only by the storage capacity of the platform and table management of the MySQL Database. The TOE monitors the data store to determine when storage is exhausted and alerts are sent to the local console and data is no longer collected.

1.15 Features Excluded from the Common Criteria Evaluated Configuration

The following features are excluded from the Common Criteria Evaluated configuration and therefore are not included in the evaluation:

1. Update of TOE Software (other than threat signature updates)
2. Incident Generator

3. Sensor Failover Functionality; Sensor/Port Clustering (including associated interface groups)
4. Features associated with e-Policy Orchestrator Integration (Host Intrusion Prevention (HIP))
5. Features associated with McAfee Virus Scan (MVS) Integration
6. Network Access Control (NAC) features & integration with MNAC agents/server components
7. TACACS
8. N-450 Sensor Appliance as this model pertains to the (excluded) NAC feature/deployment option
9. Multiple NSM configuration deployments: Manager Disaster Recovery (MDR), hierarchical NSM (Network Security Central Manager)
10. Decrypting SSL for IPS inspection
11. NSM: XML converter tool for ACL rules
12. Sensor Auxiliary Port
13. The Sensor CLI interface is excluded for use from the CC Evaluated configuration.
14. External Authentication server (LDAP/RADIUS) and username/password based authentication to the NSM (CAC only allowed for CC Evaluated configuration)
15. Compact Flash Readers and/or PCMCIA/CardBus interfaces on Sensor Appliances (based on model)

2 Conformance Claims

The TOE is Conformant with Common Criteria (CC) Version 3.1 Revision 3 Part 2 Extended.

The TOE is Common Criteria (CC) Version 3.1 Revision 3 Part 3 Conformant at EAL 2 + augmented ALC_FLR.2.

The TOE is compliant with International Interpretations with effective dates on or before 24 August 2009.

This Security Target is conformant with the following Protection Profile:

- U.S. Government Protection Profile Intrusion Detection System For Basic Robustness Environments, Version 1.7

This Security Target includes all applicable assumptions, organizational policies, security objectives, and threats statements described in the PP, verbatim with the following exceptions:

2.1 Threats and Security Objectives not applicable

The following Threats and Security objectives included in the applicable PP are not applicable to the TOE based on the following rationale:

2.1.1 Scanner not applicable

The following threats and security objectives were excluded due to the TOE not having scanner component:

- T.SCNCFG
- T.SCNMLC
- T.SCNVUL
- O.IDSCAN

2.1.2 No Transfer of IDS data to non-TOE components

The following Security Objective is excluded from this Security Target:

O.EXPORT When any IDS component makes its data available to another IDS component; the TOE will ensure the confidentiality of the System data.

Since the TOE only provides these functions between TOE components, no external IT products are necessary, and therefore this requirement is not applicable.

This requirement applies to the transfer of information between trusted products. There is no such transfer with the NSP TOE.

2.2 Added Assumptions

The following assumptions are additional to the referenced Protection Profile requirements:

A.OCSP

A.OCSP/OE.OCSP requires that an OCSP Server is provided in the Operational Environment for the purpose of verifying the revocation status of certificates on behalf of the TOE. This provides an additional requirement on the environment from that of the PP, but does not reduce or otherwise affect the existing requirements placed on the TOE by the applicable PP.

2.3 Added Organizational Security Policies

The following OSPs were added to the ST in addition that those reflected in the applicable PP:

P.SYSADMIN/OE.SYSADMIN

P.SYSADMIN/OE.SYSADMIN places a requirement on the deployment of the NSM platform to assure that only the System Admin user holds credentials allowing access to the underlying OS file system. This requirement simply adds additional deployment instructions to the PP requirement: A.LOCATE which requires that unauthorized access to the platform is prevented. In preventing access to unauthorized persons, the credentials established for the NSM platform in the Operational Environment limit the underlying OS access to a single, highly privileged role, in order to better prevent unauthorized access.

2.4 Security Functional Requirements

This Security Target includes all of the Security Functional Requirements from the PP, except those exclusively related to authenticating external IT products. Specifically:

- FPT_ITA.1 – This requirement is intended to specify how audit and System data are made available to external (trusted) IT products that would provide audit and data services. Since the TOE provides these functions as internally, no external IT products are necessary, and therefore this requirement is not applicable. This SFR is associated with the O.EXPORT exclusion above.

This requirement applies to the transfer of information between trusted products. There is no such transfer with NSP. This requirement was replaced with FPT_ITT.1 of the transfer of information between the TOE components.

Refinement

- FMT_MOF.1.1a – This requirement was refined to include the required administrative roles that have permissions to modify the behavior of the functions of System data collection, analysis and reaction. The permission is limited to authorized administrator known as Super User, Security Expert, and System Administrator.

Iterations

- FAU_STG.2.3 - This requirement is intended to satisfy the need for the TSF to ensure that all "already recorded" audit records will be maintained when failure, attack occurs and that "newly generated" audit records will be maintained when the storage exhaustion occurs.

Exclusions

- As included and refined within the referenced Protection Profile, the FIA_AFL.1.1 and FIA_AFL.1.2 security requirements were intended to detect attempts by untrusted external IT products to access the TOE. The TOE does not allow access to itself from external IT products; only authorized users may access the TOE. Therefore, this requirement is not applicable.

3 Security Problem Definition

The TOE is intended to be used either in environments in which, at most, sensitive, but unclassified information is processed. This section contains assumptions regarding the security environment and the intended usage of the TOE and threats on the TOE and the Operational Environment.

U.S. Government Protection Profile Intrusion Detection System for Basic Robustness Environments Version 1.7

3.1 Assumptions

This section contains assumptions regarding the security environment and the intended usage of the TOE.

A.ACCESS The TOE has access to all the IT System data it needs to perform its functions.

A.DYNMIC The TOE will be managed in a manner that allows it to appropriately address changes in the IT System the TOE monitors.

A.ASCOPE The TOE is appropriately scalable to the IT System the TOE monitors.

A.PROTCT The TOE hardware and software critical to security policy enforcement will be protected from unauthorized physical modification.

A.LOCATE The processing resources of the TOE will be located within controlled access facilities, which will prevent unauthorized physical access.

A.MANAGE There will be one or more competent individuals assigned to manage the TOE and the security of the information it contains.

A.NOEVIL The authorized administrators are not careless, willfully negligent, or hostile, and will follow and abide by the instructions provided by the TOE documentation.

A.NOTRST The TOE can only be accessed by authorized users.

A.OCSP An OCSP Server will be available in the Operational Environment for the purpose of verifying the revocation status of certificates on behalf of the TOE.

3.2 TOE Threats

The threats discussed below are addressed by the McAfee NSP TOE. The threat agents are either unauthorized persons or external IT entities not authorized to use the TOE itself.

T.COMINT An unauthorized user may attempt to compromise the integrity of the data collected and produced by the TOE by bypassing a security mechanism.

T.COMDIS An unauthorized user may attempt to disclose the data collected and produced by the TOE by bypassing a security mechanism.

T.LOSSOF An unauthorized user may attempt to remove or destroy data collected and produced by the TOE.

T.NOHALT An unauthorized user may attempt to compromise the continuity of the System's collection and analysis functions by halting execution of the TOE.

T.PRIVIL An unauthorized user may gain access to the TOE and exploit system privileges to gain access to TOE security functions and data.

T.IMPCON An unauthorized user may inappropriately change the configuration of the TOE causing potential intrusions to go undetected.

T.INFLUX An unauthorized user may cause malfunction of the TOE by creating an influx of data that the TOE cannot handle.

T.FACCNT Unauthorized attempts to access TOE data or security functions may go undetected.

T.EAVESDROP A malicious user or process may observe or modify TSF data transmitted between a separate part of the TOE or between the TOE and a trusted IT Entity.

3.3 IT System Threats

The following identifies threats to the IT System that may be indicative of vulnerabilities in or misuse of IT resources.

T.FALACT The TOE may fail to react to identified or suspected vulnerabilities or inappropriate activity.

T.FALREC The TOE may fail to recognize vulnerabilities or inappropriate activity based on IDS data received from each data source.

T.FALASC The TOE may fail to identify vulnerabilities or inappropriate activity based on association of IDS data received from all data sources.

T.MISUSE Unauthorized accesses and activity indicative of misuse may occur on an IT System the TOE monitors.

T.INADVE Inadvertent activity and access may occur on an IT System the TOE monitors.

T.MISACT Malicious activity, such as introductions of Trojan horses and viruses, may occur on an IT System the TOE monitors.

3.4 Organizational Security Policies

P.DETECT Static configuration information that might be indicative of the potential for a future intrusion or the occurrence of a past intrusion of an IT System or events that are indicative of inappropriate activity that may have resulted from misuse, access, or malicious activity of IT System assets must be collected.

P.ANALYZ Analytical processes and information to derive conclusions about intrusions (past, present, or future) must be applied to IDS data and appropriate response actions taken.

P.MANAGE The TOE shall only be managed by authorized users.

P.ACCESS All data collected and produced by the TOE shall only be used for authorized purposes.

P.ACCACT Users of the TOE shall be accountable for their actions within the IDS.

P.INTGTY Data collected and produced by the TOE shall be protected from modification.

P. PROTCT The TOE shall be protected from unauthorized accesses and disruptions of TOE data and functions.

P. SYSADMIN The NSM platform shall be configured such that only the System Admin user has access to the underlying Operating System file system.

4 SECURITY OBJECTIVES

This section describes the security objectives for the TOE and the TOE's operating Environment. The security objectives are divided between TOE Security Objectives and Security Objectives for the Operating Environment.

The following are the IT security objectives for the TOE:

O.CRYPTO	The TOE shall provide cryptographic functions (i.e., encryption/decryption) to maintain the confidentiality and allow for detection of modification of TSF data that is transmitted between physically separated portions of the TOE, or between the TOE and trusted IT Entities.
O.PROTCT	The TOE must protect itself from unauthorized modifications and access to its functions and data.
O.IDSENS	The Sensor must collect and store information about all events that are indicative of inappropriate activity that may have resulted from misuse, access, or malicious activity of IT System assets and the IDS.
O.IDANLZ	The Analyzer must accept data from IDS Sensors or IDS Scanners and then apply analytical processes and information to derive conclusions about intrusions (past, present, or future).
O.RESPON	The TOE must respond appropriately to analytical conclusions.
O.EADMIN	The TOE must include a set of functions that allow effective management of its functions and data.
O.ACCESS	The TOE must display an advisory warning message upon startup and allow authorized users to access only appropriate TOE functions and data.
O.IDAUTH	The TOE must be able to identify and authenticate users prior to allowing access to TOE functions and data.
O.OFLOWS	The TOE must appropriately handle potential audit and System data storage overflows.
O.AUDITS	The TOE must record audit records for data accesses and use of the System functions.
O.INTEGR	The TOE must ensure the integrity of all audit and System data.

4.1 Security Objectives for the Environment

The following security objectives apply to the Operational Environment and are satisfied by technical means by Operational Environment hardware/software:

OE.AUDIT_PROTECTION	The Operational Environment will provide the capability to protect audit information.
OE.TSF_PROTECTION	The Operational Environment will provide the capability to protect TSF data in transit between distributed TOE components.
OE.AUDIT_SORT	The Operational Environment will provide the capability to sort the audit information
OE.TIME	The Operational Environment will provide reliable timestamps to the TOE.
OE.INTROP	The TOE is interoperable with the IT System it monitors.
OE.OCSP	The Operational Environment will provide an OCSP Server in the Operational Environment for the purpose of verifying the revocation status of certificates on behalf of the TOE.

These non-IT security objectives, in addition to corresponding assumptions, are to be satisfied without imposing technical requirements on the TOE. These objectives are satisfied through the application of procedural or administrative measures:

OE.INSTAL	Those responsible for the TOE must ensure that the TOE is delivered, installed, managed, and operated in a manner which is consistent with IT security.
OE.PHYCAL	Those responsible for the TOE must ensure that those parts of the TOE critical to security policy are protected from any physical attack.
OE.CREDEN	Those responsible for the TOE must ensure that all access credentials are protected by the users in a manner which is consistent with IT security.
OE.PERSON	Personnel working as authorized administrators shall be carefully selected and trained for proper operation of the System.
OE.SYSADMIN	The TOE must be configured such that only the System Admin users hold credentials necessary to access the underlying Operating System file system on the NSM platform.

4.2 Mapping of Security Environment to Security Objectives

The following table represents a mapping of the threats to the security objectives defined in this ST.

	O.CRYPTO	O.PROTCT	O.IDSCAN	O.IDSENS	O.IDANLZ	O.RESPON	O.EADMIN	O.ACCESS	O.IDAUTH	O.OFLOWS	O.AUDITS	O.INTEGR	OE.INSTAL	OE.PHYCAL	OE.OCSP	OE.CREDEN	OE.PERSON	OE.INTROP	OE.TIME	OE.AUDIT_SORT	OE.AUDIT_PROTECTION	OE.TSF_PROTECTION	OE.SYSADMIN
A.ACCESS																		X					
A.DYNMIC																	X	X					
A.ASCOPE																		X					
A.PROTCT														X									
A.LOCATE														X									
A.MANAGE																	X						
A.NOEVIL													X	X		X							
A.NOTRUST														X		X							
A.OCSP															X								
T.EAVESDROP	X																						
T.COMINT		X						X	X			X											
T.COMDIS		X						X	X														
T.LOSSOF		X						X	X			X											
T.NOHALT			X	X	X			X	X														
T.PRIVIL		X						X	X														
T.IMPCON							X	X	X				X										
T.INFLUX										X													
T.FACCNT											X												
T.SCNCFG			X																				
T.SCNMLC			X																				
T.SCNVUL			X																				
T.FALACT						X																	
T.FALREC					X																		
T.FALASC					X																		
T.MISUSE				X																			
T.INADVE				X																			
T.MISACT				X																			
P.DETECT			X	X							X								X				
P.ANALYZ					X																		
P.MANAGE		X					X	X	X				X			X	X						
P.ACCESS		X						X	X												X		
P.ACCACT									X		X								X	X			
P.SYSADMIN																							X
P.INTGTY												X											
P.PROTCT										X				X								X	
T.MISUSE				X																			

Table 3: Summary of Mappings between Threats and IT Security

4.3 Rationale for IT SECURITY OBJECTIVES

T.EAVESDROP A malicious user or process may observe or modify TSF data transmitted between separate part of the TOE or between the TOE and a trusted IT Entity.

O.CRYPTO mitigates this threat by providing for the use of cryptographic functions to detect when information has been modified.

T.COMINT An unauthorized user may attempt to compromise the integrity of the data collected and produced by the TOE by bypassing a security mechanism.

The O.IDAUTH objective provides for authentication of users prior to any TOE data access. The O.ACCESS objective builds upon the O.IDAUTH objective by only permitting authorized users to access TOE data and providing an advisory message upon session startup. The O.INTEGR objective ensures no TOE data will be modified. The O.PROTCT objective addresses this threat by providing TOE self-protection.

T.COMDIS An unauthorized user may attempt to disclose the data collected and produced by the TOE by bypassing a security mechanism.

The O.IDAUTH objective provides for authentication of users prior to any TOE data access. The O.ACCESS objective builds upon the O.IDAUTH objective by only permitting authorized users to access TOE data. The O.PROTCT objective addresses this threat by providing TOE self-protection.

T.LOSSOF An unauthorized user may attempt to remove or destroy data collected and produced by the TOE.

The O.IDAUTH objective provides for authentication of users prior to any TOE data access. The O.ACCESS objective builds upon the O.IDAUTH objective by only permitting authorized users to access TOE data. The O.INTEGR objective ensures no TOE data will be deleted. The O.PROTCT objective addresses this threat by providing TOE self-protection.

T.NOHALT An unauthorized user may attempt to compromise the continuity of the System's collection and analysis functions by halting execution of the TOE.

The O.IDAUTH objective provides for authentication of users prior to any TOE function accesses. The O.ACCESS objective builds upon the O.IDAUTH objective by only permitting authorized users to access TOE functions. The O.IDSCAN, O.IDSENS, and O.IDANLZ objectives address this threat by requiring the TOE to collect and analyze System data, which includes attempts to halt the TOE.

T.PRIVIL An unauthorized user may gain access to the TOE and exploit system privileges to gain access to TOE security functions and data.

The O.IDAUTH objective provides for authentication of users prior to any TOE function accesses. The O.ACCESS objective builds upon the O.IDAUTH objective by only permitting authorized users to access TOE functions. The O.PROTCT objective addresses this threat by providing TOE self-protection.

T.IMPCON An unauthorized user may inappropriately change the configuration of the TOE causing potential intrusions to go undetected.

The OE.INSTAL objective states the authorized administrators will configure the TOE properly. The O.EADMIN objective ensures the TOE has all the necessary administrator functions to manage the product. The O.IDAUTH objective provides for authentication of users prior to any TOE function accesses. The O.ACCESS objective builds upon the O.IDAUTH objective by only permitting authorized users to access TOE functions.

T.INFLUX An unauthorized user may cause malfunction of the TOE by creating an influx of data that the TOE cannot handle.

The O.OFLOWS objective counters this threat by requiring the TOE handle data storage overflows.

T.FACCNT Unauthorized attempts to access TOE data or security functions may go undetected.

The O.AUDITS objective counters this threat by requiring the TOE to audit attempts for data accesses and use of TOE functions.

T.SCNCFG Improper security configuration settings may exist in the IT System the TOE monitors.

The O.IDSCAN objective counters this threat by requiring a TOE that contains a Scanner, collect and store static configuration information that might be indicative of a configuration setting change. The ST will state whether this threat must be addressed by a Scanner.

T.SCNMLC Users could execute malicious code on an IT System that the TOE monitors which causes modification of the IT System protected data or undermines the IT System security functions.

The O.IDSCAN objective counters this threat by requiring a TOE that contains a Scanner, collect and store static configuration information that might be indicative of malicious code. The ST will state whether this threat must be addressed by a Scanner.

T.SCNVUL Vulnerabilities may exist in the IT System the TOE monitors.

The O.IDSCAN objective counters this threat by requiring a TOE that contains a Scanner, collect and store static configuration information that might be indicative of vulnerability. The ST will state whether this threat must be addressed by a Scanner.

T.FALACT The TOE may fail to react to identified or suspected vulnerabilities or inappropriate activity.

The O.RESPON objective ensures the TOE reacts to analytical conclusions about suspected vulnerabilities or inappropriate activity.

T.FALREC The TOE may fail to recognize vulnerabilities or inappropriate activity based on IDS data received from each data source.

The O.IDANLZ objective provides the function that the TOE will recognize vulnerabilities or inappropriate activity from a data source.

T.FALASC The TOE may fail to identify vulnerabilities or inappropriate activity based on association of IDS data received from all data sources.

The O. IDANLZ objective provides the function that the TOE will recognize vulnerabilities or inappropriate activity from multiple data sources.

T.MISUSE Unauthorized accesses and activity indicative of misuse may occur on an IT System the TOE monitors.

The O.AUDITS and O.IDSENS objectives address this threat by requiring a TOE, that contains a Sensor, collect audit and Sensor data.

T.INADVE Inadvertent activity and access may occur on an IT System the TOE monitors.

The O.AUDITS and O.IDSENS objectives address this threat by requiring a TOE, that contains a Sensor, collect audit and Sensor data.

T.MISACT Malicious activity, such as introductions of Trojan horses and viruses, may occur on an IT System the TOE monitors.

The O.AUDITS and O.IDSENS objectives address this threat by requiring a TOE, that contains a Sensor, collect audit and Sensor data.

P.DETECT Static configuration information that might be indicative of the potential for a future intrusion or the occurrence of a past intrusion of an IT System or events that are indicative of inappropriate activity that may have resulted from misuse, access, or malicious activity of IT System assets must be collected.

The O.AUDITS, O.IDSENS, and O.IDSCAN objectives address this policy by requiring collection of audit, Sensor, and Scanner data.

P.ANALYZ Analytical processes and information to derive conclusions about intrusions (past, present, or future) must be applied to IDS data and appropriate response actions taken.

The O.IDANLZ objective requires analytical processes are applied to data collected from Sensors and Scanners.

P.MANAGE The TOE shall only be managed by authorized users.

The OE.PERSON objective ensures competent administrators will manage the TOE and the O.EADMIN objective ensures there is a set of functions for administrators to use. The OE.INSTAL objective supports the OE.PERSON objective by ensuring administrator follow all provided documentation and maintain the security policy. The O.IDAUTH objective provides for authentication of users prior to any TOE function accesses. The O.ACCESS objective builds upon the O.IDAUTH objective by only permitting authorized users to access TOE functions. The

OE.CREDEN objective requires administrators to protect all authentication data. The O.PROTCT objective addresses this policy by providing TOE self-protection.

P.ACCESS All data collected and produced by the TOE shall only be used for authorized purposes.

The O.IDAUTH objective provides for authentication of users prior to any TOE function accesses. The O.ACCESS objective builds upon the O.IDAUTH objective by only permitting authorized users to access TOE functions. The O.PROTCT objective addresses this policy by providing TOE self-protection.

P.ACCACT Users of the TOE shall be accountable for their actions within the IDS.

The O.AUDITS objective implements this policy by requiring auditing of all data accesses and use of TOE functions. The O.IDAUTH objective supports this objective by ensuring each user is uniquely identified and authenticated.

P.INTGTY Data collected and produced by the TOE shall be protected from modification.

The O.INTEGR objective ensures the protection of data from modification.

P. PROTCT The TOE shall be protected from unauthorized accesses and disruptions of TOE data and functions.

The O.OFLOWS objective counters this policy by requiring the TOE handle disruptions. The OE.PHYCAL objective protects the TOE from unauthorized physical modifications. The OE.TSF_PROTECTION objective protects TSF data in transit between distributed TOE components.

4.4 Rationale for Assumption Coverage

This section provides a justification that for each assumption and the security objectives for the environment which cover that assumption.

A.ACCESS The TOE has access to all the IT System data it needs to perform its functions.

The OE.INTROP objective ensures the TOE has the needed access.

A.DYNMIC The TOE will be managed in a manner that allows it to appropriately address changes in the IT System the TOE monitors.

The OE.INTROP objective ensures the TOE has the proper access to the IT System. The OE.PERSON objective ensures that the TOE will be managed appropriately.

A.ASCOPE The TOE is appropriately scalable to the IT System the TOE monitors.

The OE.INTROP objective ensures the TOE has the necessary interactions with the IT System it monitors.

A.PROTCT The TOE hardware and software critical to security policy enforcement will be protected from unauthorized physical modification.

The OE.PHYCAL provides for the physical Protection of the TSF hardware and software.

A.LOCATE The processing resources of the TOE will be located within controlled access facilities, which will prevent unauthorized physical access.

The OE.PHYCAL provides for the physical Protection of the TSF.

A.MANAGE There will be one or more competent individuals assigned to manage the TOE and the security of the information it contains.

The OE.PERSON objective ensures all authorized administrators are qualified and trained to manage the TOE.

A.NOEVIL The authorized administrators are not careless, willfully negligent, or hostile, and will follow and abide by the instructions provided by the TOE documentation.

The OE.INSTAL objective ensures that the TOE is properly installed and operated and the OE.PHYCAL objective provides for physical Protection of the TSF by authorized administrators. The OE.CREDEN objective supports this assumption by requiring protection of all authentication data.

A.NOTRST The TOE can only be accessed by authorized users.

The OE.PHYCAL objective provides for physical Protection of the TSF to protect against unauthorized access. The OE.CREDEN objective supports this assumption by requiring protection of all authentication data.

A.OCSP An OCSP Server will be available in the Operational Environment for the purpose of verifying the revocation status of certificates on behalf of the TOE.

The OE.OCSP security objective requires that an OCSP Server is provided in the Operational Environment for the purpose of verifying the revocation status of certificates on behalf of the TOE.

5 Extended Components Definition

The following Extended Component Class/Family is derived from has been based on the Extended Components Requirements contained in the applicable Protection Profile in order to conform to Common Criteria 3.1 R2 requirements.

Class IDS: Intrusion Detection Systems

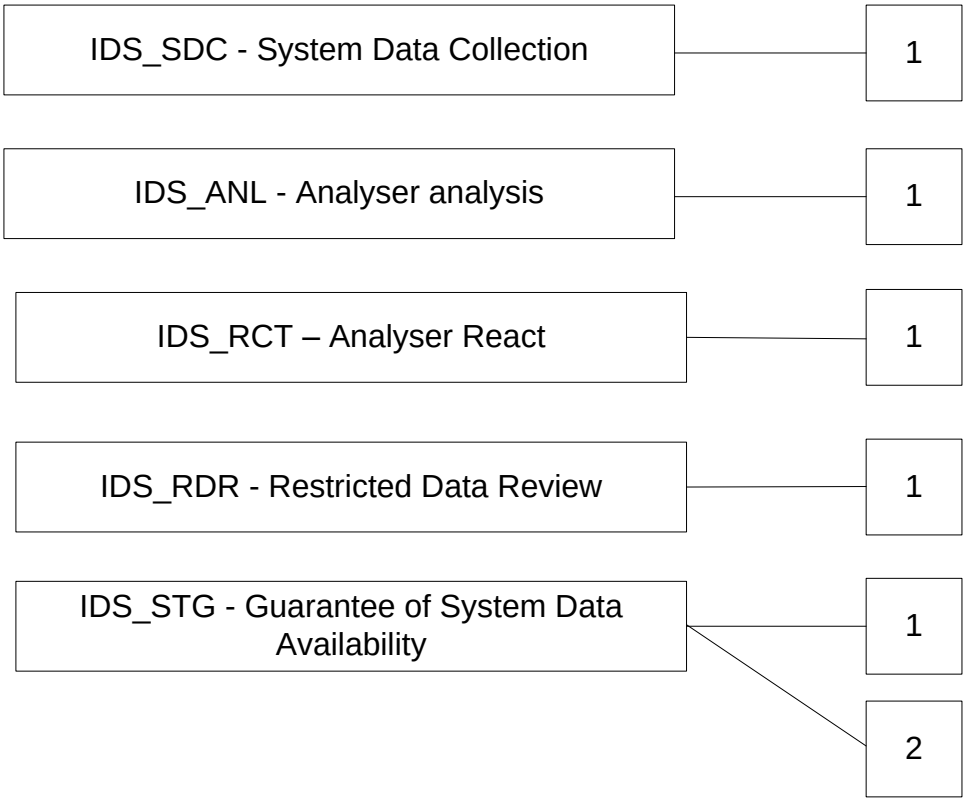


Figure 4: IDS: Intrusion Detection System Class Decomposition

System Data Collection (IDS_SDC)

Family Behavior

This family defines the collection of data from a system monitored by an IDS system.

Component Leveling

At IDS_SDC.1 the TSF shall be able to collect information from targeted IT Resource(s) and a list is specified for what information is collected by an IDS system based on a selection; referred to collectively as “System Data”.

Management: IDS_SDC.1

The following actions could be considered for the management functions in FMT:

a) Modifications made to the manner in which the TOE Collects IDS data – TSF behavior (FMT_MOF.1)

Audit: IDS_SDC.1

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

a) There are no auditable events foreseen.

Hierarchical to: No other components

Dependencies: None

IDS_SDC.1 System Data Collection (EXT)

IDS_SDC.1.1 The System shall be able to collect the following information from the targeted IT System resource(s):

a) [selection: Start-up and shutdown, identification and authentication events, data accesses, service requests, network traffic, security configuration changes, data introduction, detected malicious code, access control configuration, service configuration, authentication configuration, accountability policy configuration, detected known vulnerabilities]; and

b) [assignment: other specifically defined events]. (EXT)

IDS_SDC.1.2 At a minimum, the System shall collect and record the following information:

a) Date and time of the event, type of event, subject identity, and the outcome (success or failure) of the event; and

b) [assignment]: other information (EXT)

System Data Analysis (IDS_ANL)

Family Behavior

This family defines the analysis functions performed on data collected from a system monitored by an IDS system.

Component Leveling

At IDS_ANL.1 analysis functions are specified and analytical records are defined.

Management: IDS_ANL.1

The following actions could be considered for the management functions in FMT:

a) Modifications made to the manner in which the TOE Analyzes IDS data – TSF behavior (FMT_MOF.1).

Audit: IDS_ANL.1

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

a) There are no auditable events foreseen.

Hierarchical to: No other components

Dependencies: None

IDS_ANL.1 Analyzer Analysis (EXT)

IDS_ANL.1.1 The System shall perform the following analysis function(s) on all IDS data received:

a) [selection: statistical, signature, integrity]; and

b) [assignment: other analytical functions].

IDS_ANL.1.2 The System shall record within each analytical result at least the following information:

a) Date and time of the result, type of result, identification of data source; and

b) [assignment: other security relevant information about the result]. (EXT)

System Analyzer React (IDS_RCT)

Family Behavior

This family defines the Analyzer React (alarm) functions performed based on System Data Analysis performed by an IDS system.

Component Leveling

At IDS_RCT.1 alarm functions are specified and conditions by which alarms are triggered are defined.

Management: IDS_RCT.1

The following actions could be considered for the management functions in FMT:

a) Modifications made to the manner in which the TOE reacts to analyzed IDS data (alarms) – TSF behavior (FMT_MOF.1).

Audit: IDS_RCT.1

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

a) There are no auditable events foreseen.

Hierarchical to: No other components

Dependencies: None

IDS_RCT.1 Analyzer React (EXT)

IDS_RCT.1.1 The System shall send an alarm to [assignment: alarm destination] and take [assignment: appropriate actions] when an intrusion is detected. (EXT)

Family Application Note: Available results from any component evaluation may be applicable to this requirement.

Restricted Data Review (IDS_RDR)

Family Behavior

This family defines the controls implemented to restrict access to IDS data.

Component Leveling

At IDS_RDR.1 access to IDS is restricted to the listed roles and the ability for the IDS system to present IDS data is specified.

Management: IDS_RDR.1

The following actions could be considered for the management functions in FMT:

a) There are no management actions foreseen.

Audit: IDS_RDR.1

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

a) There are no auditable events foreseen.

Hierarchical to: No other components.

Dependencies: None

IDS_RDR.1 Restricted Data Review (EXT)

IDS_RDR.1.1 The System shall provide [assignment: authorized users] with the capability to read [assignment: list of System data] from the System data. (EXT)

IDS_RDR.1.2 The System shall provide the System data in a manner suitable for the user to interpret the information. (EXT)

IDS_RDR.1.3 The System shall prohibit all users read access to the System data, except those users that have been granted explicit read-access. (EXT)

Family Application Note: Available results from any component evaluation may be applicable to this requirement. Each component must protect its data while it controls the data. Additional analysis would be

required to address any new data, beyond that previously defined in individual components.

Guarantee of System Data Availability (IDS_STG)

Family Behavior

This family defines the measures taken to protect IDS System Data from deletion, modification and to specify metrics for the availability of IDS System Data under specified conditions.

Component Leveling

At IDS_STG.1 System IDS data must be protected from deletion, modification and must be preserved to the assigned availability metric under the selected conditions. At IDS_STG.2, the IDS System specifies the selected action and sends an alarm if the storage capacity has been reached.

Management: IDS_STG.1, IDS_STG.2

The following actions could be considered for the management functions in FMT:

a) There are no management actions foreseen.

Audit: IDS_STG.1, IDS_STG.2

The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST:

a) There are no auditable events foreseen.

IDS_STG.1	Guarantee of System Data Availability (EXT)
Hierarchical to:	No other components
Dependencies:	None
IDS_STG.1.1	The System shall protect the stored System data from unauthorised deletion. (EXT)
IDS_ STG.1.2	The System shall protect the stored System data from modification. (EXT)
IDS_ STG.1.3	The System shall ensure that [assignment: metric for saving System data] System data will be maintained when the following conditions occur: [selection: System data storage exhaustion, failure, attack]. (EXT) _
IDS_STG.2	Prevention of System data loss (EXT)
Hierarchical to:	No other components
Dependencies:	None
IDS_STG.2.1	The System shall [selection: 'ignore System data', 'prevent System data, except those taken by the authorized user with special rights', 'overwrite

the oldest stored System data '] and send an alarm if the storage capacity has been reached.

Family Application Note: Available results from any component evaluation may be applicable to this requirement. However, the System must take into account the relationships between components and address how the reaction of any given IDS component may affect any other in the System context.

Note from the referenced PP:

A family of IDS requirements was created to specifically address the data collected and analyzed by an IDS. The audit family of the CC (FAU) was used as a model for creating these requirements. The purpose of this family of requirements is to address the unique nature of IDS data and provide for requirements about collecting, reviewing and managing the data. These requirements have no dependencies since the stated requirements embody all the necessary security functions.

6 Security Requirements

The security requirements that are levied on the TOE are specified in this section of the ST. These security requirements are defined in Sections 6.2.

6.1 Conventions

The CC defines four operations on security functional requirements. The conventions below define the conventions used in this ST to identify these operations.

Assignment: **indicated with bold text**

Selection: indicated with underlined text

Refinement: ***additions indicated with bold text and italics***

deletions indicated with strike-through ~~bold text and italics~~

Iteration: indicated with typical CC requirement naming followed by a lower case letter for each iteration (e.g., FMT_MSA.1a)

The explicitly stated requirements claimed in this ST are denoted by the IDS class prefix in the unique short name for the explicit security requirement.

TOE Security Functional Requirements	
Audit	
FAU_GEN.1	Audit data generation
FAU_SAR.1	Audit review
FAU_SAR.2	Restricted audit review
FAU_SAR.3	Selectable audit review
FAU_SEL.1	Selective audit
FAU_STG.2a	Guarantees of audit data availability - ***"already recorded"***
FAU_STG.2b	Guarantees of audit data availability - ***"newly generated"***
FAU_STG.4	Prevention of audit data loss
Cryptographic Operations	
FCS_CKM.1a	Cryptographic Key Generation - ***Symmetric Keys***
FCS_CKM.1b	Cryptographic Key Generation - ***Asymmetric Keys***

FCS_CKM.4	Cryptographic Key Destruction
FCS_COP.1a	Cryptographic Operations - ***Console Sessions***
FCS_COP.1b	Cryptographic Operations- ***Update Server Sessions***
FCS_COP.1c	Cryptographic Operations - ***Sensor to NSM Management Platform sessions***
FCS_COP.1d	Cryptographic Operations - ***Hashing***
FCS_COP.1e	Cryptographic Operations - ***RSA Key Wrapping/Digital Signature verification***
Identification and Authentication	
FIA_UAU.1	Timing of authentication
FIA_ATD.1	User attribute definition
FIA_UID.1	Timing of identification
Security Management	
FMT_MOF.1a	Management of security functions behaviour
FMT_MOF.1b	Management of security functions behaviour
FMT_MTD.1	Management of TSF data
FMT_SMR.1	Security roles
Protection of the TSF	
FPT_ITC.1	Inter-TSF confidentiality during transmission
FPT_ITI.1	Inter-TSF detection of modification
FPT_ITT.1	Basic internal transfer protection
FPT_STM.1	Reliable Time Stamps
TOE Access	
FTA_TAB.1	Default TOE Access Banner
Intrusion Detection System (EXT)	
IDS_SDC.1	System Data Collection (EXT)
IDS_ANL.1	Analyzer analysis (EXT)
IDS_RCT.1	Analyzer react (EXT)
IDS_RDR.1	Restricted Data Review (EXT)

IDS_STG.1	Guarantee of System Data Availability (EXT)
IDS_STG.2	Prevention of System data loss (EXT)

Table 4: Functional Requirements

6.2 TOE Security Functional Requirements

The SFRs defined in this section are taken from Part 2 of the CC.

6.2.1 SECURITY AUDIT (FAU)

6.2.1.1 FAU_GEN.1 Audit data generation

FAU_GEN.1.1 The TSF shall be able to generate an audit record of the following auditable events:

a) Start-up ~~***and shutdown***~~ of the audit functions;*

b) All auditable events for the basic level of audit; and

c) **Access to the System and access to the TOE and System data.**

*The audit function cannot be shutdown

FAU_GEN.1.2 The TSF shall record within each audit record at least the following information:

a) Date and time of the event, type of event, subject identity, and the outcome (success or failure) of the event; and

b) For each audit event type, based on the auditable event definitions of the functional components included in the ST, **the additional information specified in the Details column of Table 5: Audited Events**

Component	Event	Details
FAU_GEN.1	**Access to System**	
FAU_GEN.1	**Access to the TOE and System data**	
FAU_SAR.1	**Reading of information from the audit records**	**Object IDS, Requested access**
FAU_SAR.2	**Unsuccessful attempts to read information from the audit records**	
FAU_SEL.1	**All modifications to the audit configuration that occur while the audit collection functions are operating**	
FCS_CKM.1a, b	**Success/Failure of Key Generation function**	
FCS_COP.1a, b, c, d, e	**Success/Failure of the Cryptographic operation**	
FCS_CKM.4	**Zeroization of Cryptographic CSPs**	

FIA_UAU. 1	**All use of the authentication mechanism**	**User identity, location**
FIA_UID.1	**All use of the user identification mechanism**	**User identity, location**
FMT_MOF.1a,b	**All modifications in the behavior of the functions of the TSF**	
FMT_MTD.1	**All modifications to the values of TSF data**	
FMT_SMR.1	**Modifications to the group of users that are part of a role**	**User identity**
FPT_ITI.1	**Action taken upon detection of modification of transmitted TSF data.**	

Table 5: Audited Events

6.2.1.2 FAU_SAR.1 Audit review

FAU_SAR.1.1 The TSF shall provide **Super User (authorized administrator), Systems Administrator (authorized system administrator)** with the capability to read **all Audit data** from the audit records.

FAU_SAR.1.2 The TSF shall provide the audit records in a manner suitable for the user to interpret the information.

6.2.1.3 FAU_SAR.2 Restricted audit review

FAU_SAR.2.1 The TSF shall prohibit all users read access to the audit records, except those users that have been granted explicit read-access.

6.2.1.4 FAU_SAR.3 Selectable audit review

FAU_SAR.3.1 The TSF shall provide the ability to perform **sorting** of audit data based on **date and time, subject identity, type of event, and success or failure of related event.**

6.2.1.5 FAU_SEL.1 Selective audit

FAU_SEL.1.1 The TSF shall be able to include or exclude auditable events from the set of audited events based on the following attributes:

a) event type;

b) **threat signature type**

6.2.1.6 FAU_STG.2a Guarantees of audit data availability – *"already recorded"*

FAU_STG.2.1a The TSF shall protect the stored audit records ***in the audit trail*** from unauthorized deletion.

FAU_STG.2.2a The TSF shall be able to prevent modifications to the audit records ***in the audit trail***.

FAU_STG.2.3a The TSF shall ensure that ***all "already recorded"*** **audit** records will be maintained when the following conditions occur: failure, attack.

6.2.1.7 FAU_STG.2b Guarantees of audit data availability – *"newly generated"*

FAU_STG.2.1b The TSF shall protect the ***newly generation*** stored audit records from unauthorized deletion.

FAU_STG.2.2b The TSF shall be able to prevent modifications to the ***"newly generated"*** audit records.

FAU_STG.2.3b The TSF shall ensure that ***"newly generated"*** audit records will be maintained when the following conditions occur: audit storage exhaustion.

6.2.1.8 FAU_STG.4 Prevention of audit data loss

FAU_STG.4.1 The TSF shall overwrite the oldest stored audit records **and generate and present an alarm at the NSM console** if the audit trail is full.

6.2.2 Cryptographic Operations (FCS)

6.2.2.1 FCS_CKM.1a Cryptographic key generation – Symmetric Keys

FCS_CKM.1.1a The TSF shall generate cryptographic keys in accordance with a specified cryptographic key generation algorithm **software DRNG** and specified cryptographic key **168 bits (3DES), 128 bits (AES)** that meet the following: **ANSI X9.31 (Sensor), FIPS 140-2 FIPS 186-2 (NSM).***

*provided by the OpenSSL cryptographic modules within the Sensor components and the OpenSSL and Bsafe cryptographic modules within the NSM.

FCS_CKM.1b Cryptographic key generation – Asymmetric Keys

FCS_CKM.1.1b The TSF shall generate asymmetric cryptographic keys in accordance with a specified cryptographic key generation algorithm **software DRNG** and specified cryptographic key sizes **1024, 2048** that meet the following: **ANSI X9.31 (RSA), FIPS 140-2.**

6.2.2.2 FCS_CKM.4 Cryptographic Key Destruction

FCS_CKM.4.1 The ***Sensor component of the*** TSF shall destroy cryptographic keys in accordance with a specified key destruction method **cryptographic key zeroization method** that meets the following: **The Key Zeroization Requirements in FIPS PUB 140-2 Key Management Security Level 2.**

6.2.2.3 FCS_COP.1a Cryptographic operation – *Console Sessions*

FCS_COP.1.1a The TSF shall perform **encryption/decryption of NSM Console TLS Sessions** in accordance with a specified cryptographic algorithm **AES using RSA key exchange** and cryptographic key sizes **(AES) 128 bits; 1024/2048 bits (RSA)** that meet the following: **FIPS 140-2.**

6.2.2.4 FCS_COP.1b Cryptographic operation – Update Server Sessions

FCS_COP.1.1b The TSF shall perform **Update Server TLS based sessions** in accordance with a specified cryptographic algorithm **AES using RSA key exchange**

and cryptographic key sizes **(AES) 128 bits; 1024/2048 bits (RSA)** that meet the following: **FIPS 140-2.**

6.2.2.5 FCS_COP.1c Cryptographic operation: *Sensor to NSM Management Platform sessions*

FCS_COP.1.1c The TSF shall perform **encryption/decryption of NSP Sensor to NSM TLS sessions** in accordance with a specified cryptographic algorithm **AES using RSA key exchange** and cryptographic key sizes **(AES) 128 bits; 1024/2048 bits (RSA)** that meet the following: **FIPS 140-2.**

6.2.2.6 FCS_COP.1d Cryptographic operation: *Hashing*

FCS_COP.1.1d The TSF shall perform **hashing** in accordance with a specified cryptographic algorithm **SHA256, SHA1** and ***~~cryptographic key~~ message digest*** sizes **160 bits SHA1, 256 bits SHA256 t**hat meet the following: **FIPS 140-2 (SHA1, SHA256).**
*SHA1 used for TLS integrity checking,

6.2.2.7 FCS_COP.1e Cryptographic operation – *RSA Key Wrapping/Digital Signature Verification*

FCS_COP.1.1e The TSF shall perform **RSA Key Wrapping/Digital Signature verification** in accordance with a specified cryptographic algorithm **RSA** and cryptographic key sizes **1024, 2048 bits** that meet the following: **FIPS 140-2.**

6.2.3 Identification and Authentication (FIA)

6.2.3.1 FIA_UAU.1 Timing of authentication

FIA_UAU.1.1 The TSF shall allow **no action** on behalf of the user to be performed before the user is authenticated.

FIA_UAU.1.2 The TSF shall require each user to be successfully authenticated before allowing any other TSF-mediated actions on behalf of that user.

6.2.3.2 FIA_ATD.1 User attribute definition

FIA_ATD.1.1 The TSF shall maintain the following list of security attributes belonging to individual users:

a) User identity (Common Name);*

b) Authentication data (Trusted CAs);*

c) Authorizations;

*Since the TOE supports only CAC based authentication, the user identity refers to the Common Name and the authentication data refers to the certificate trusted status.

6.2.3.3 FIA_UID.1 Timing of identification

FIA_UID.1.1 The TSF shall allow **no action** on behalf of the user to be performed before the user is identified.

FIA_UID.1.2 The TSF shall require each user to be successfully identified before allowing any other TSF-mediated actions on behalf of that user.

6.2.4 SECURITY MANAGEMENT (FMT)

6.2.4.1 FMT_MOF.1a Management of security functions behavior

FMT_MOF.1.1a The TSF shall restrict the ability to modify the behavior of the functions of **System data collection, analysis and reaction** to **Super User (authorized administrator), Security Expert, IPS Administrator and Systems Administrator.**

6.2.4.2 FMT_MOF.1b Management of security functions behavior

FMT_MOF.1.1b The TSF shall restrict the ability to determine the behavior of, disable, enable, modify the behavior of **functions listed in Table 6** to **Roles defined in Table 6.**

6.2.4.3 FMT_MTD.1 Management of TSF data

FMT_MTD.1.1 The TSF shall restrict the ability to **operations listed in Table 6** to **Roles defined in Table 6.**

TSF Data Access Privileges

	IPS Admin	Super User	Report Generator	System Admin	NOC Operator	Security Expert
Configure Device List RW		X		X		
Configure Manager RW		X		X		
Operational Status RW		X		X		X
Reports IPS RW	X	X	X	X		X
TA Summary Dashboard	X	X		X	X	X
Configure Integration RO				X		
Configure IPS Settings RO				X		
General RO				X	X	
Operational Status RO					X	
TA Alerts RO				X	X	
TA Hosts RO				X	X	
Configure Admin Domain RW	X	X				
User Creation RW		X				
Configure Guest Portal	X	X				
Configure Integration RW	X	X				X
Configure IPS Settings RW	X	X				X
General RW	X	X				X
TA Alerts RW	X	X				X
TA Hosts RW	X	X				X
Manually update NSM		X		X		

signatures						
Backup/restore audit records		X		X		
Configure Admin User Accounts RO				X		
Configure Admin User Accounts R/W		X				
Configure Device List RO						X
IPS RW	X	X				X
IDS System Data R/W	X	X				X
IDS System Data RO				X	X	
(NSM) OCSP Server Configure R/W				X		
Sensor Configure Password policy settings R/W				X		
Configure NSM banner RW		X		X		
Configure Sensor banner RW		X		X		
Configure Sensor banner RO						X

Table 6: TSF Data/Operations by Access Role

6.2.4.4 FMT_SMR.1 Security roles

FMT_SMR.1.1 The TSF shall maintain the **following roles:**

- **Super User (authorized administrator)**
- **Systems Administrator (authorized system administrator)**
- **Security Expert**
- **NOC Operator**
- **Report Generator**
- **IPS Administrator**

FMT_SMR.1.2 The TSF shall be able to associate users with roles.

6.2.5 PROTECTION OF THE TSF (FPT)

6.2.5.1 FPT_ITC.1 Inter-TSF confidentiality during transmission

FPT_ITC.1.1 The TSF shall protect all TSF data transmitted from the TSF to a remote trusted IT product from unauthorized disclosure during transmission.

6.2.5.2 FPT_ITI.1 Inter-TSF detection of modification

FPT_ITI.1.1 The TSF shall provide the capability to detect modification of all TSF data during transmission between the TSF and a remote trusted IT product within the following metric: **a single failed integrity check.**

FPT_ITI.1.2 The TSF shall provide the capability to verify the integrity of all TSF data transmitted between the TSF and a remote trusted IT product and perform **resend affected packets** if modifications are detected.

6.2.5.3 FPT_ITT.1 Basic internal TSF data transfer protection

FPT_ITT.1.1 The TSF shall protect TSF data from modification when it is transmitted between separate parts of the TOE.

6.2.5.4 FPT_STM.1 Reliable time stamps

FPT_STM.1.1 The TSF shall be able to provide reliable time stamps for its own use.

6.2.6 TOE Access (FTA)

6.2.6.1 FTA_TAB.1 Default TOE access banners

FTA_TAB.1.1 Before establishing a user session, the TSF shall display an advisory warning message regarding unauthorized use of the TOE.

6.3 Extended TOE Security Functional Requirements

The SFRs defined in this section are explicitly stated and are derived from similar requirements in Part 2 of the CC.

6.3.1 IDS COMPONENT REQUIREMENTS (IDS)

6.3.1.1 IDS_SDC.1 System Data Collection (EXT)

IDS_SDC.1.1 The System shall be able to collect the following information from the targeted IT System resource(s):

a) network traffic, detect known vulnerabilities; and

b) **No other events**.

IDS_SDC.1.2 At a minimum, the System shall collect and record the following information:

a) Date and time of the event, type of event, subject identity, and the outcome (success or failure) of the event; and

b) The additional information specified in the Details column of **Table 7: System Events**

Component	Event	Details
IDS_SDC.1	**Network traffic**	**Protocol, source address, destination address**
IDS_SDC.1	**Detect vulnerabilities**	**Identification of known vulnerability**

Table 7: System Events

6.3.1.2 IDS_ANL.1 Analyser analysis (EXT)

IDS_ANL.1.1 The System shall perform the following analysis function(s) on all IDS data received:

a) signature and

b) configured thresholds, statistical based anomaly, protocol anomaly-based detection (parameter length check), authorized administrator created rules/signatures

IDS_ANL.1.2 The System shall record within each analytical result at least the following information:

a) **Date and time of the result, type of result, identification of data source**; and

b) **none**

6.3.1.3 IDS_RCT.1 Analyser react (EXT)

IDS_RCT.1.1 The System shall send an alarm to **the administrator** and take **log an alert and perform one or more of the following:**

- **drop packet**
- **send TCP reset**
- **Quarantine the host (block)**
- **send ICMP host unreachable**
- **log packet**
- **Filter alert**

when an intrusion is detected.

6.3.1.4 IDS_RDR.1 Restricted Data Review (EXT)

IDS_RDR.1.1 The System shall provide **Super User (authorized administrator), Systems Administrator (authorized system administrator), Security Expert, NOC Operator, IPS Administrator** with the capability to read **captured IDS data** from the System data.

IDS_RDR.1.2 The System shall provide the System data in a manner suitable for the user to interpret the information.

IDS_RDR.1.3 The System shall prohibit all users read access to the System data, except those users that have been granted explicit read-access.

6.3.1.5 IDS_STG.1 Guarantee of System Data Availability (EXT)

IDS_STG.1.1 The System shall protect the stored System data from unauthorised deletion.

IDS_ STG.1.2 The System shall protect the stored System data from modification.

IDS_ STG.1.3 The System shall ensure that **all "already recorded"** System data will be maintained when the following conditions occur: failure, attack, storage exhaustion.

6.3.1.6 IDS_STG.2 Prevention of System data loss (EXT)

IDS_STG.2.1 The System shall ignore System data and send an alarm if the storage capacity has been reached.

6.4 Rationale for Extended Security Requirements

As the extended Security Functionality Requirements were derived from the following reference PP:

U.S. Government Protection Profile Intrusion Detection System for Basic Robustness Environments, Version 1.7

The applicable rationale from the PP is listed below:

RATIONALE FOR EXTENDED REQUIREMENTS

"A family of IDS requirements was created to specifically address the data collected and analyzed by an ID. The audit family of the CC (FAU) was used as a model for creating these requirements. The purpose of this family of requirements is to address the unique nature of IDS data and provide for requirements about collecting, reviewing and managing the data. These requirements have no dependencies since the stated requirements embody all the necessary security functions."

6.5 Rationale for TOE Security Requirements

	O.CRYPTO	O.PROTCT	O.IDSCAN	O.IDSENS	O.IDANLZ	O.RESPON	O.EADMIN	O.ACCESS	O.IDAUTH	O.OFLOWS	O.AUDITS	O.INTEGR	OE.TIME	OE.AUDIT_SORT	OE.AUDIT_PROTECTION
FAU_GEN.1											X				
FAU_SAR.1							X								
FAU_SAR.2								X	X						
FAU_SAR.3							X								
FAU_SEL.1							X							X	
FAU_STG.2a		X						X	X	X		X			X
FAU_STG.2b		X						X	X	X		X			X
FAU_STG.4										X	X				
FIA_UAU.1								X	X						
FIA_ATD.1									X						
FIA_UID.1								X	X						
FCS_CKM.1a	X														
FCS_CKM.4	X														
FCS_COP.1a,b,c,d,e	X														
FMT_MOF.1a,b								X	X						
FMT_MTD.1		X						X	X			X			
FMT_SMR.1									X						
FPT_ITC.1												X			
FPT_ITI.1												X			
FPT_ITT.1												X			
FTA_TAB.1								X							
ADV_ARC.1		X					X		X		X	X			
FPT_STM.1											X		X		
IDS_SDC.1			X	X											
IDS_ANL.1					X										
IDS_RCT.1						X									
IDS_RDR.1							X	X	X						
IDS_STG.1		X						X	X	X		X			
IDS_STG.2a,b												X			

Table 8: Summary of Mappings between Security Functions and IT Security Objectives

6.5.1 TOE Security Functional Requirements Rationale

The security requirements are derived according to the general model presented in Part 1 of the Common Criteria. Specifically, Table 8: Summary of Mappings between Security Functions and IT Security Objectives illustrates the mapping between the security requirements and the security objectives and Table 3: Summary of Mappings between Threats and IT Security demonstrates the relationship between the threats, policies and IT security objectives. The functional and assurance requirements presented in this Security Target are mutually supportive and their combination meets the stated security objectives.

Security Objective	Mapping Rationale
O.CRYPTO	The TOE is required to protect TSF data from Eavesdropping when TSF data is sent between separate parts of the TOE or to a trusted IT Entity. FCS_CKM.1a is a requirement that a crypto module generate symmetric keys. Such keys are used by the AES encryption/decryption functionality specified in FCS_COP.1a, b, c. FCS_CKM.1b is a requirement that a crypto module generate asymmetric keys (public/private keypairs) for use in FCS_COP.1c FCS_COP.1a specifies that AES be used to perform encryption and decryption operations for TLS based sessions between the Console and the NSM TOE component. FCS_COP.1b requires that the TSF perform encryption/decryption of TLS sessions between the NSM and the McAfee Update Server in accordance with the referenced algorithms/standards. FCS_COP.1c requires that the TSF perform encryption/decryption of TLS sessions between the Sensor and the NSM TOE components in accordance with the referenced algorithms/standards. FCS_COP.1d requires that the TSF provide hashing services using a NIST-approved implementation of the Secure Hash Algorithm. FCS_COP.1e requires that the TSF provide RSA key wrap/unwrap services using the RSA algorithm and key sizes 1024, 2048 bits. FCS_CKM.4 provides the functionality for ensuring key and key material is zeroized. This applies not only to key that resides in the TOE, but also to intermediate areas (physical memory, page files, memory dumps, etc.) where key may appear.
O.PROTCT	The TOE is required to protect the audit data from deletion as well as guarantee the availability of the audit data in the event of storage exhaustion, failure or attack [FAU_STG.2a, b]. The System is required to protect the System data from any modification and unauthorized deletion, as well as guarantee the availability of the data in the event of storage exhaustion, failure or attack [IDS_STG.1]. The TOE is required to provide the ability to restrict managing the behavior of functions of the TOE to authorized users of the TOE [FMT_MOF.1a, b]. Users can read, write or create TSF data based on the type of data and assigned role. [FMT_MTD.1].
O.IDSCAN	A System containing a Scanner is required to collect and store static configuration information of an IT System. The type of configuration information collected must be defined in the ST [IDS_SDC.1].
O.IDSENS	A System containing a Sensor is required to collect events indicative of inappropriate activity that may have resulted from misuse, access, or malicious activity of IT System assets of an IT System. These events must be defined in the ST [IDS_SDC.1].
O.IDANLZ	The Analyzer is required to perform intrusion analysis and generate conclusions [IDS_ANL.1].
O.RESPON	The TOE is required to respond accordingly in the event an intrusion is detected [IDS_RCT.1].

O.EADMIN	The TOE must provide the ability to review and manage the audit trail of the System [FAU_SAR.1, FAU_SEL.1]. The System must provide the ability for authorized administrators to view all System data collected and produced [IDS_RDR.1]. The TOE must ensure that all functions are invoked and succeed before each function may proceed.
O.ACCESS	The TOE is required to restrict the review of audit data to those granted with explicit read-access [FAU_SAR.2]. The System is required to restrict the review of System data to those granted with explicit read-access [IDS_RDR.1]. The TOE is required to protect the audit data from deletion as well as guarantee the availability of the audit data in the event of storage exhaustion, failure or attack [FAU_STG.2a, b]. The System is required to protect the System data from any modification and unauthorized deletion [IDS_STG.1]. Users authorized to access the TOE are defined using an identification and authentication process [FIA_UID.1, FIA_UAU.1]. The TOE is required to provide the ability to restrict managing the behavior of functions of the TOE to authorized users of the TOE [FMT_MOF.1a, b]. Only authorized administrators of the System may query and add System and audit data, and authorized administrators of the TOE may query and modify all other TOE data [FMT_MTD.1] The TOE presents an advisory message when starting a user session [FTA_TAB.1].
O.IDAUTH	The TOE is required to restrict the review of audit data to those granted with explicit read-access [FAU_SAR.2]. The System is required to restrict the review of System data to those granted with explicit read-access [IDS_RDR.1]. The TOE is required to protect the stored audit records from unauthorized deletion [FAU_STG.2a, b]. The System is required to protect the System data from any modification and unauthorized deletion, as well as guarantee the availability of the data in the event of storage exhaustion, failure or attack [IDS_STG.1]. Security attributes of subjects use to enforce the authentication policy of the TOE must be defined [FIA_ATD.1]. Users authorized to access the TOE are defined using an identification and authentication process [FIA_UID.1, FIA_UAU.1] The TOE is required to provide the ability to restrict managing the behavior of functions of the TOE to authorized users of the TOE [FMT_MOF.1a, b]. Users can read, write or create TSF data based on the type of data and assigned role [FMT_MTD.1]. The TOE must be able to recognize the different administrative and user roles that exist for the TOE [FMT_SMR.1].
O.OFLOWS	The TOE is required to protect the audit data from deletion as well as guarantee the availability of the audit data in the event of storage exhaustion, failure or attack [FAU_STG.2a, b]. The TOE must prevent the loss of audit data in the event its audit trail is full [FAU_STG.4]. The System is required to protect the System data from any modification and unauthorized deletion, as well as guarantee the availability of the data in the event of storage exhaustion, failure or attack [IDS_STG.1]. The System must prevent the loss of audit data in the event the audit trail is full [IDS_STG.2a, b].
O.AUDITS	Security-relevant events must be defined and auditable for the TOE [FAU_GEN.1]. The TOE must provide the capability to select which security-relevant events to audit [FAU.SEL.1]. The TOE must prevent the loss of collected data in the event its audit trail is full [FAU_STG.4]. Time stamps associated with an audit record must be reliable [FPT_STM.1].
O.INTEGR	The TOE is required to protect the audit data from deletion as well as guarantee the availability of the audit data in the event of storage exhaustion, failure or attack [FAU_STG.2a, b]. The System is required to protect the System data from any modification and unauthorized deletion [IDS_STG.1]. Specified roles can read, write or create TSF data based on the type of data [FMT_MTD.1]. The TOE encrypts and integrity checks TSF data sent from the McAfee update server to the TOE when receiving threat signature updates [FPT_ITC.1, FPT_ITI.1].
OE.TIME	The Operational Environment will provide reliable time stamps to the TOE and the TOE shall provide accurate time stamps to the application for use in audit records. Time stamps associated with an audit record must be reliable [FPT_STM.1].

OE.AUDIT_SORT	The Operational Environment must provide the ability to review and manage the audit trail of the System to include sorting the audit data [FAU_SAR.3].
OE.AUDIT_PROTECTION	The TOE is required to protect the audit data from deletion as well as guarantee the availability of the audit data in the event of storage exhaustion, failure or attack [FAU_STG.2a, b].

6.6 Rationale For IT Security Requirement Dependencies

This section includes a table of all the security functional requirements and their dependencies and a rationale for any dependencies that are not satisfied.

Functional Component	Dependency	Included/Rationale
FAU_GEN.1	FPT_STM.1	Yes
FAU_SAR.1	FAU_GEN.1	Yes
FAU_SAR.2	FAU_SAR.1	Yes
FAU_SAR.3	FAU_SAR.1	Yes
FAU_SEL.1	FAU_GEN.1, FMT_MTD.1	Yes
FAU_STG.2a	FAU_GEN.1	Yes
FAU_STG.2b	FAU_GEN.1	Yes
FAU_STG.4	FAU_STG.2	Yes
FCS_CKM.1a,b	FCS_CKM.4, FCS_COP.1	Yes, except FCS_CKM.4 not met for NSM
FCS_COP.1a,b,c,d,e	FCS_CKM.1a,b	Yes
FCS_CKM.4	FCS_CKM.1a,b	Yes
FIA_UAU.1	FIA_UID.1	Yes
FIA_ATD.1	None	None
FIA_UID.1	None	None
FMT_MOF.1a,b	FMT_SMR.1	Yes
FMT_MTD.1	FMT_SMR.1	Yes
FMT_SMR.1	FIA_UID.1	Yes
FPT_ITC.1	None	None
FPT_ITI.1	None	None
FPT_ITT.1	None	None
FPT_STM.1	None	None
FTA_TAB.1	None	None
IDS_SDC.1	None	None
IDS_ANL.1	None	None
IDS_RCT.1	None	None
IDS_RDR.1	None	None
IDS_STG.1	None	None
IDS_STG.2	None	None

Table 9: SFR Dependencies

6.7 Rationale for TOE Dependencies Not Satisfied

The dependency for FCS_CKM.4 associated with FCS_CKM.1a, b is not satisfied on the NSM component of the TOE. Key material on this platform may be destroyed by "by uninstalling the

application, formatting the hard drive and power cycling the device" as described in the following FIPS-140-2 Security Policy for the applicable NSM cryptographic module: *NSM Application Cryptographic Module Security Policy Version 1.2.*

6.8 TOE Security Assurance Requirements

EAL 2 + ALC_FLR.2 was chosen to provide a "basic" level of independently assured security. The chosen assurance level is consistent with the threat environment. Specifically, that the threat of malicious attacks is not greater than "enhanced basic" and the product will have undergone a search for obvious flaws and a focused vulnerability analysis.

The assurance security requirements for this Security Target are taken from Part 3 of the CC. These assurance requirements compose an Evaluation Assurance Level 2 augmented (EAL 2 + ALC_FLR.2) as defined by the CC. The assurance components are summarized in the following table.

Assurance Class	Assurance Components	Assurance Components Description
Development	ADV_ARC.1	Architectural Design with domain separation and non-bypassability
	ADV_FSP.2	Security-enforcing Functional Specification
	ADV_TDS.1	Basic design
Guidance Documents	AGD_OPE.1	Operational user guidance
	AGD_PRE.1	Preparative User guidance
Life Cycle Support	ALC_CMC.2	Use of a CM system
	ALC_CMS.2	Parts of the TOE CM coverage
	ALC_DEL.1	Delivery procedures
	ALC_FLR.2	**Flaw Reporting Procedures**
Tests	ATE_COV.1	Evidence of coverage
	ATE_FUN.1	Functional testing
	ATE_IND.2	Independent testing - conformance
Vulnerability Assessment	AVA_VAN.2	Vulnerability analysis

Table 10: Assurance Requirements: EAL 2 + ALC_FLR.2

6.9 Rationale for TOE Security Functions

This section provides a table demonstrating the tracing of TOE security functions back to aspects of the security functional requirements (SFRs).

	Security Audit	Identification and Authentication	Security Management	Protection of the TSF	Cryptographic Operations	System Data Collection	System Data Analysis	System Data Review, Availability and Loss
FAU_GEN.1	X							
FAU_SAR.1	X							
FAU_SAR.2	X							
FAU_SAR.3	X							
FAU_SEL.1	X							
FAU_STG.2a	X							
FAU_STG.2b	X							
FAU_STG.4	X							
FCS_CKM.1a,b					X			
FCS_COP.1a,b,c,d,e					X			
FCS_CKM.4					X			
FIA_UAU.1		X						
FIA_ATD.1		X						
FIA_UID.1		X						
FMT_MOF.1a,b			X					
FMT_MTD.1			X					
FMT_SMR.1			X					
FPT_ITC.1				X				
FPT_ITI.1				X				
FPT_ITT.1				X				
FPT_STM.1	X							
FTA_TAB.1		X						
IDS_SDC.1						X		

IDS_ANL.1							X	
IDS_RCT.1								X
IDS_RDR.1								X
IDS_STG.1								X
IDS_STG.2a,b								X

Table 11: TOE Security Function to SFR Mapping

7 TOE Summary Specification

7.1 TOE Security Functions

The TOE's security functionality is characterized through the following Security Functions:

- Security Audit
- Identification and Authentication
- Security Management
- Protection of the TSF
- Cryptographic Operations
- System Data Collection
- System Data Analysis
- System Data Review, Availability and Loss

7.1.1 Security Audit

FAU_GEN.1

The NSM management platform generates audit records for Console Administrative sessions and stores them into the MySQL database, running on the same dedicated platform as does the NSM management software. The MySQL Database provides storage and retrieval for audit log information. This function records attempts to access the system itself, such as successful and failed authentication, as well as the actions taken by the user once authenticated. Auditable actions include changes to the IDS rules and viewing the audit records.

The NSP Sensor also generates audit records based on Sensor detected events and forwards these logs to the NSM platform where they may be integrated into a single (NSP) log resource stored on the MySQL database platform.

Auditing is the recording of events within the system. The NSM records the audit information into a data store within the MySQL database. Events logged in audit records include the items listed in Table 5: Audited Events and are categorized by the following event types:

- Admin Domain Action
- User Action
- Manager Action
- Sensor Action
- Policy Action

- Report Action
- Update Server Action
- System Health Action
- Alert Action

The following information about an audited event is stored in the audit log whenever that audited event is recorded in the audit information:

a) Date and time of the event,

b) Type (i.e., category and action) of event,

c) Subject (i.e., user and domain) identity,

d) Result (success or failure) of the event, and

e) Description (where applicable access mode, target object, etc.).

The actions that can be performed at the NSM Management Console are audited. This includes the following:

a) Startup and shutdown of the audit function (modification of audit settings and NSM startup and shutdown);

b) Access to the TOE and System data that includes the object ID's and the requested access (starting the audit , attempts to read the audit log, and alert acknowledgement and deletion);

c) All modification to the audit configuration that occur during collection (modification of audit settings);

d) All authentication attempts, including the user and location where authentication was attempted (all login attempts as well as user logoff events);

e) All modification to the behavior of the TSF (modification of audit settings, creation of policies, updating signatures, and NSM startup and shutdown)

f) All modifications to TSF data values (modification of audit settings, creation of policies, and updating signatures); and,

g) Modification of user accounts, creation, deletion, and modifications (create user, delete user, assign roles, and update roles).

h) Cryptographic Operations relating to establishing secure sessions between TOE components or the McAfee update server.

Audit records may be backed up in the form of a file through the NSM console. This invokes a MySQL database backup routine that places these records in a backup file on a storage resource. Files can also be restored to the NSM through the console using a database restore function.

Cryptographic functions within the NSM and Sensor components are audited including cryptographic operations, cryptographic key generation and destruction of cryptographic keys.

Review of Audit Records FAU_SAR.1

The NSM provides the ability for the authenticated users to view security audit data for the system. The TSF enforces that only the Super User and System Administrator have access to read information from the audit records. The audit logs are viewable through the standard web-based management interface provided by the NSM and accessed via the Console Browser client.

FAU_SAR.2 Restricted Audit Review
No security related actions can be taken without a successful user authentication therefore only authorized users who have been authenticated to an NSM role can view the audit records.

FAU_SAR.3 Selectable Audit Review
While viewing the security audit records from the NSM resource, it is possible to sort and filter the data based upon the following properties:

- Date and time
- User
- Type of event
- Success or failure of the event

FAU_SEL.1 Selectable Audit

The NSM allows a user with the Super User role to set the types of auditable events by their type. The NSM allows the Super User to include or exclude auditable events from the set of audited events based on the event type.

Similarly, a person assigned to the Security Expert role can include or exclude recorded events in the traffic log that match a specific signature.

FAU_STG.2a, b Guarantees of Data Availability

Access to audit records is limited to authenticated NSM console TLS sessions. Local access to the NSM platform is excluded from the CC Evaluated Configuration. The TOE provides protection for the security audit records primarily by TSF interface identification and authentication mechanisms. There are no TSF interface options available to disable audit or delete/modify audit records. The audit function starts automatically when the TOE is installed. Once recorded, audit data cannot be modified except, in the case where the audit log reach its capacity. Under these circumstances new audit data will overwrite the oldest audit data. This occurrence will also cause a system fault message to be posted to the system fault log. Only TSF interfaces to the audit mechanism allow the creation of an audit log, viewing audit information, backing up and restoring audit log information.

The TSF ensures that all “already recorded” audit records will be maintained when the following conditions occur: failure or attack. It does so by protecting the existing audit trail from unauthorized access.

The TSF ensures that "newly generated" audit records will be maintained when the following conditions occurs storage exhaustion. It does so by deleting the oldest audit records as necessary to make space in order to store new audit records.

Note that the NSM relies on the underlying Windows Server 2003/2008 operating system to protect the files as a storage repository for the TOE audit records.

FAU_STG.4 Prevention of Audit Data Loss

The NSM records the audit log information into a data store. The data store employed is a part of the NSM.

The data store within the NSM database allocates 50,000 rows for the purposes of storing audit records. In the event that the audit log storage resources are exhausted, an alarm is presented at the NSM console and the oldest data stored in the audit log is overwritten with the newest data.

7.1.2 Identification and Authentication

FIA_ATD.1 User Attribute Definition

User accounts in the TOE have the following attributes:

A X.509 certificate (derived from a CAC) that is passed to the NSM during the session negotiation process and, within that certificate, a Common Name that is extracted and checked against a user list on the NSM. The certificate also is required to be signed by a trusted CA as configured during NSP system setup.

User Identification and Authentication – FIA_UID.1, FIA_UAU.1

Identification and authentication is required for access to the NSM by requiring the user to provide a certificate derived from their CAC.

When a Common Access Card (smartcard) is presented for NSM user authentication, a digital certificate is required by NSM prior to establishing the user session. NSM requests the certificate from the NSM browser client which invokes the necessary CAC software calls to extract the certificate from the smartcard. Once the certificate is obtained by the browser client, it is sent to NSM which verifies that the certificate is signed by a trusted Certificate Authority (CA). If the CA is verified successfully, NSM parses the x.509 formatted certificate, extracts the Common Name and performs a lookup to verify the Common Name is included in the user database as holding a valid account. If successful, the user's session is initiated under the assigned role. If unsuccessful, the authentication attempt fails and connection is immediately terminated.

TOE Access Banners – FTA_TAB.1

The TOE NSM and Sensor components both present an advisory access banner prior to establishing a user session that may be configured to include a custom deployment specific warning about unauthorized access and use of resources and organizational graphics.

7.1.3 Security Management

The NSM provides a detailed security management interface used to configure and manage the NSP TOE as well as provide a report and analysis utility for investigating traffic events.

The GUI based interface is divided into tabs based on the service available on respective pages of the display. The following tab categories are provided:

IPS Settings – Allows the configuration of IPS policies, Alert filters, Access Control Lists (ACL), Cryptographic settings, Quarantine configuration and Alert notifications

Summary – Provides a detailed view of all configured policies and their status

Policies – Provides a Policy Editor and Reconnaissance Policy editor for policy development, Policy Assignment section, HTTP response scanning settings.

Advanced Policies – Allows the configuration of policy rule sets, User Defined Signature editor

Alert Filters – Provides for Editing, Managing, Importing/Exporting Alert Filters

ACLs – Allows for viewing and management of Access Control Lists, including import/export options

IPS Quarantine – Allows configuration of IPS Quarantine within Policy Editors, Access Domains, IPS Sensors and Threat Analyzer.

Archiving – Supports Data Archive functions including auto archive scheduling

Maintenance – Provides an interface for Database management

Alert Notification – Allows the user to view/manage Alert settings

NSP Sensor SNMPv3 Interface

The NSP Sensor SNMPv3 interface facilitates the exchange of management information between itself and the NSM platform. Performance statistics, configuration data and management information can be queried through this interface.

Communications between the NSM and the Sensor are made via the secure channel using TLSv1-AES128-SHA1.

NSM SNMPv3 Interface

The NSM provides an SNMP interface for the purpose of reporting trap related information to devices in the Operational Environment. This interface is configured to be read-only for the CC Evaluated configuration. SNMPv3 traps are sent over the secure TLSv1 session.

FMT_MOF.1a, b - Management of Security Functions Behavior

The NSM requires user authentication before any actions can be performed (other than identification and authentication) on the TOE, security-related or otherwise. Therefore only authorized users can access any functions on the system. Signatures are updated by McAfee Incorporated on a protected server with a controlled space and/or by an administrative user with the Security Expert role. Only users with “System Administrator” privileges can implement rules on the NSP TOE. System Administrators can also create, delete, and modify existing rules on the

system. System Administrator is the only role that can manage the security settings on the system, such as user accounts and audit settings.

FMT_MTD.1, FMT_SMR.1 Management of TSF Data & Security Roles

The TSF is capable of maintaining the following roles: Super User, IPS Administrator, Report Generator, System Administrator, NOC Operator, and Security Expert.

The Authorized administrator role as defined in the applicable PP is also known within this ST as the Super User role and the authorized System Administrator (PP reference) is known as System Administrator within this ST.

The following table describes the NSM roles supported for management of the NSP TOE and the applicable access level to data objects:

Role	General Description	Specific Read/Write Access
Super User	NSM Full Access User: Super Users must manage themselves within the domain(s) they reside. They can read, modify, delete and push policy. Super Users can also administer other administrators and their roles, adding, maintaining, and deleting users and role assignments.	Configure Admin Domain RW Configure Admin User Accounts RW Configure Manager RW Configure Integration RW Configure Device List RW Configure IPS Settings RW Configure Guest Portal User Creation RW Reports IPS RW Operational Status RW TA Summary Dashboard IPS RW TA Summary Dashboard General RW TA Alerts RW TA Hosts RW
IPS Administrator	Administers the Intrusion Prevention Environment An IPS Administrator has read-only access to Threat Analyzer data. They cannot read configuration information.	Configure IPS Settings RW Reports IPS RW Operational Status RW TA Summary Dashboard IPS RW TA Summary Dashboard General RW TA Alerts RW TA Hosts RW
System Administrator	Administer the Manager and Device List: Manager, Sensors, Sensor_Name, and Failover Pairs node actions (interfaces and sub-interfaces included). System Administrators do not control Super Users, and can change own role to anything but Super User. System Administrators can add, maintain, and delete admin domains, read Alert data, read Audit data.	Configure Admin Domain RW Configure Admin User Accounts RO Configure Manager RW Configure Integration RO Configure Device List RW Configure IPS Settings RO Reports IPS RW Operational Status RW TA Summary Dashboard IPS RO TA Summary Dashboard General RO TA Alerts RO TA Hosts RO
NOC Operator	Reporting only. Run and analyze reports.	Reports IPS RO Operational Status RO TA Summary Dashboard IPS RO TA Summary Dashboard General RO TA Alerts RO TA Hosts RO

Security Expert	Responsible for Policy configuration and application, software/signature updates, and alert monitoring (Threat Analyzer).	Configure Integration RW Configure Device List RO Configure IPS Settings RW Reports IPS RW Operational Status RW TA Summary Dashboard IPS RW TA Summary Dashboard General RW TA Alerts RW TA Hosts RW

Table 12: NSM Access by Authenticated Role

7.1.4 Protection of the TSF

FPT_ITT.1 Basic internal TSF data transfer protection

The McAfee Incorporated Sensors and NSM management platform all protect TSF data from disclosure and modification, when it is transmitted between separate parts of the TOE, by communicating using TLS version 1.0 connections.

The Sensor communicates with the NSM management platform through its dedicated 10M/100M/1G Ethernet, out-of-band management port using TCP/IP. This communications uses secure channels; providing link privacy using encryption and mutual authentication using public key authentication. The ciphers suites used for this communications are TLSv1 (AES 128 SHA1). It is recommended that NSM use a separate, dedicated management subnet to interconnect with the sensor.

FPT_ITC.1, FPT_ITI.1 TSF data confidentiality and integrity protection

Sessions between the McAfee Update Server and the NSM component of the TOE are secured using AES, 128 bit encryption over a TLS tunnel. Message integrity checking is provided by a SHA1 hash. Further, the Threat Signature payload is secured using a McAfee Update Server private key and is unwrapped upon receipt using the corresponding public key, held by the NSM.

There is no communication between the sensor and Update Server.

FPT_STM.1 Reliable Time Stamps

The TOE uses Windows Time Services provided by the Windows Server 2003/2008 operating system to provide time stamps for the TSF to write time stamps for audit records, both the security records and the System Data records. The NSM receives time stamps from the Windows Server 2003/2008, which is part of the operational environment, ensuring they are reliable by consistently obtaining time information from the well-defined and presumed trusted and reliable source.

Each Sensor receives a time reference from the NSM management platform. The NSM management platform periodically passes a timestamp reference to the sensors. This occurs: On power up when establishing the crypto channels to NSM and upon every re-establishment due to link/network issues to NSM. Regardless, time is updated every 2 minutes post establishment.

Each Sensor uses this timestamp to synchronize its own independent timing mechanism synchronizing at regular intervals per the timestamps sent from the NSM management platform.

7.1.5 Cryptographic Operations

FCS_COP.1a, b, c, d, e; FCS_CKM.4

The NSP system utilizes symmetric key cryptography to secure communications between TOE components and with the McAfee Update Server in the Operational Environment. All sessions, except SNMPv3, are conducted using TLSv1 and leverage an OpenSSL Module. Key exchange between the Console browser client and the NSM and the NSM and NSP Sensor is performed using RSA public/private key exchange. Cryptographic library support is provided for the NSM by an RSA BSafe cryptographic library and for the NSP Sensor by XySSL library. OpenSSL and both cryptographic libraries are contained within NSP software release packages. When TLS Administration sessions are closed, the OpenSSL module within the Sensor component zeroizes all cryptographic keys used for the sessions.

SNMPv3 sessions are secured using the AES algorithm 128 bit key size.

Key Generation FCS_CKM.1a, b

Symmetric keys utilized for TSL based secure sessions between TSF components are generated on demand using an OpenSSL based deterministic software random number generator (DRNG) using the 3DES algorithm.

The NSM and NSP Sensor components generate asymmetric (public/private) keypairs using an OpenSSL based software RNG and either the RSA or DSA algorithm and 1024/2048 bit key sizes.

The OpenSSL implementation used for the TOE utilizes a software based DRNG that is compliant with ANSI X9.31.

Console Sessions – FCS_COP.1a

Administrative User browser sessions between the NSM Console and the NSM Server platform are symmetrically encrypted using the AES algorithm and 128 bit keys. These sessions are conducted using Transport Layer Security (TLSv1). NSM hosts user console sessions using an Apache web server and cryptographic support is provided through an OpenSSL module interacting with an RSA BSafe cryptographic library.

NSP Sensor to NSM Sessions- FCS_COP.1c

All TSF data passed between NSP sensors and the NSM platform are secured using TLSv1 sessions. The AES algorithm is used for these sessions with 128 bit symmetric keys. Message integrity is assured using a SHA1 hash. A shared secret is configured between the NSP Sensor and NSM components during initial configuration to establish a trust relationship.

NSM to McAfee Update Server Sessions– FCS_COP.1b

The McAfee Update Server provides threat signature updates to the NSM platform for the purpose of providing the most up to date threat knowledge for use in detection processes. These sessions are secured over TLSv1 sessions using AES, 128 bit keys. The Update Server authenticates to the NSM Server using a certificate prior to establishing the session.

Hashing – FCS_COP.1d

The TOE performs hashing for integrity checking of TLSv1 session data between TOE components and the McAfee Update server using the SHA1 hashing algorithm.

RSA Key Wrap/Unwrap – FCS_COP.1e

The NSP Sensor unwraps MIB objects passed to it during SNMPv3 session using RSA.

RSA key wrap is also used as part of the RSA key exchange that takes place during the TLSv1 negotiation process for Console sessions with NSM and for NSM to NSP Sensor communications.

7.1.6 System Data Collection

IDS_SDC.1 System Data Collection

The collection subsystem is used to detect events while monitoring the target network. Upon detection of such events, the collection subsystem shall generate data, which is then sent to the NSM for storage in the system database. The types of events that can be detected are shown in the table below. For each event detected the collection subsystem records and the NSM stores date and time of the event, type of event, subject identity, and the outcome (success or failure) of the event along with additional details for each event.

The Update Server stores default signatures to detect currently known vulnerabilities and exploits of interest in network traffic. The NSM component allows the Security Expert role to establish new rules to detect new vulnerabilities as well as specific network traffic, allowing the Security Expert complete control over the types of traffic that will be monitored and to set rules to govern the collection of data regarding potential intrusions. For Network Traffic Events Protocol, Source Address and Destination Addressed are collected in audit records. For Vulnerability Detection Events the identifier of the known vulnerability is listed in the audit records.

7.1.7 System Data Analysis

IDS_ANL.1 Analyzer Analysis

To analyze the data collected by the McAfee Incorporated Sensor, the NSM management platform uses signatures, protocol standards criteria, and configured rules to identify potential malicious activity. A signature is the protection profile term for a rule as defined by the TOE. They are patterns of traffic that can be used to detect attacks or exploits.

The TOE comes with default signatures for known exploits, and the administrator can add new signatures or detection rules at any time. New signatures are obtained from the Update Server as they are created and are downloaded. New signatures also can be manually created by an administrator authenticated in the Security Expert role. This gives the administrator control over the detection of traffic, allowing customization for the intended environment.

Exploit detection may include “protocol violations” where packets do not conform to network protocol standards. (For example, they are incorrectly structured, have an invalid combination of flags set, or contain incorrect values.) Examples might include TCP packets with their SYN and

RST flags enabled, or an IP packet whose specified length doesn't match its actual length. This determination is done through parameter checking techniques such as parameter length checks.

When a pattern of traffic has been matched to a signature, protocol anomaly or detection rule, the specific event is recorded in the traffic log where it can be viewed and analyzed by users authenticated in the Security Expert role. The events are logged with the following information: the category of event and signature match, the time of the event, the data source and a copy of the packets used to identify the pattern.

A pattern of traffic that meets a signature is called an "alert." The graphical interface to view alerts and alert analysis is the "Threat Analyzer." The Threat Analyzer is used for the analysis of the alerts detected by NSP Sensors. Alert details include transmission information such as source and destination IP addresses in the packet, as well as security analysis information (performed by the sensor) such as attack severity and type. Alerts are backed up to the database and archived in order of occurrence.

For detailed analysis of alert information, the Threat Analyzer provides a "Drill Down" graphical administrative interface. Drill Down provides the administrator with the capability to review statistical, signature, threshold, and anomaly-based functions by port scan. Alert information is organized by category of alert as follows:

- Severity: by severity,
- Attack: by attack name,
- Source IP: by source IP addresses,
- Destination IP: by destination (target) IP addresses,
- Interface: by the sensor interface where alerts were captured,
- Domain: by admin domain where alerts were captured,
- Type: by attack type,
- Sensor: by the sensors where alerts were captured, and
- Application Protocol: by the application protocol of the detected attack

For each category of alert, the administrator may continue to drill down to get more detailed information. Drill Down allows the administrator to review alert category information by time, or details.

The "Time View" provides a view of the alert count during a specific time period. Time periods are expressed in date/time range. Threat Analyzer provides an interface to view alerts in real time, as they occur, as well as a historical view. The historical view sets the filter to retrieve information for both acknowledged and unacknowledged alerts archived in the database during a specified time. The historical view does not refresh with new alerts as they occur, thus you can focus on analyzing all alerts within the time frame you requested.

The Threat Analyzer provides a view to analyze an individual alert called the "Alert Details." The Alert Details interface lists all of the alerts for the selected time span in order of occurrence, with most recent being listed first. Alert details are presented in multiple named columns, known as *attributes*. The attributes represent packet fields such as source and destination IP, as well as sensor analysis fields such as attack severity and type.

The attributes in the Alert Details are as follows:

- Acknowledged: for Historical View, indicates state of recognition. If unchecked by an administrator, then the alert has not been manually acknowledged,
- Deleted: for Historical View, indicates if the alert has been selected for deletion during current analysis session,
- Time: time when the alert occurred. Alerts are listed from most (top of the list) to least (bottom) recent,
- Severity: system impact severity posed by the attack,
- Attack: specific name of the attack that triggered the alert,
- Source IP: IP address where the attack originated,
- Source IP Port: port on source machine where attack originated,
- Destination IP: IP address the attack was targeting,
- Destination IP Port: port on target machine where attack was destined,
- Domain: admin domain in which the attack was detected,
- Sensor: ID (*name*) of the sensor from where the alert was generated,
- Interface: sensor interface where the attack was detected, and
- Type: the type of attack. The choices are:
    - Exploit: an attack matching a known exploit attack signature.
    - Host Sweep: a reconnaissance attack attempting to see which IP addresses have live systems attached to them.
    - Port Scan: a reconnaissance attack attempting to see what services a particular system is offering.
    - Simple Threshold: denial of service attack against a set threshold limits.
    - Statistical: denial of service attack based on a learning statistical traffic profile.
- Throttle: a number of the same Signature attack occurring that exceeded an established limit suppression threshold in a designated period.

Report Generator Application

The Report Generator is an application that runs on the NSP console machine and is part of the thick client package that is uploaded from the NSM during initial configuration. Read/Write access is limited to authenticated users holding the Super User, IPS Administrator, System Administrator, Security Expert or Report Generator roles Report Generator role. All authenticated users can read reports.

IPS Reports

The Report Generator's IPS reports detail the network alerts generated by NSP Sensors. Alert reports are summaries based on specific types of information such as the source/destination IP of an attack, attack name, or time of alert. The TOE includes several pre-formatted reports for simple information gathering, including an Executive Summary report, which provides a high-level view of alert activity.

These IPS reports provide information on the alerts generated from the installed NSP Sensors. The generated alert information can include source and destination IP of the attack, time when attack occurred, the Sensor that detected the attack. The multiple reports in this category provide various, concentrated views according to the specific parameters of each report. Each report lists alerts from most to least common detected.

All IPS reports can be viewed in either HTML or PDF format. Specific reports can also be viewed in bar graph or pie chart format.

Configuration Reports

Configuration reports provide information on the settings configured using the Configuration page. The Report Generator role user can generate reports to view your current software and signature versions, the status of a Sensor, policy and rule set configurations, or your proxy server settings. These reports provide a snapshot of the system's current configuration.

Scheduled Reports

Scheduled reports automate IPS report generation for convenient forensic analysis of the alerts generated by your Sensors. Report can be scheduled to be generated and emailed on a daily or weekly basis. The tool allows templates to be created consisting of the information to include and the schedule can be configured to run either weekly or daily. When the scheduled time arrives, a report is generated based on the template and mailed to the configured recipient list.

IDS_RCT.1 Analyzer React

When signature matches are found, they can either be logged for later use or set to trigger an alarm. Current log entries can be viewed in real time by setting the "Real-time Log Viewer" values at the NSM console. Real-time viewing displays a limited number of entries as logged to the database. The number of entries to view can be selected as well as the refresh rate to refresh the console screen.

The NSM provides an interface to establish IDS security policies. A *security policy*, or IDS policy, is a set of rules that governs what traffic is permitted across your network, and how to respond to misuse of the network. An NSM *policy* is a set of rules/instructions defining the

malicious activity that can be detected and the response. Creating a policy enables an administrator in the Security Expert role to define an environment to protect by the different operating systems (OSs), applications, and protocols in the network. These environment parameters, or *rules*, relate to all of the well-known attacks defended against by NSM.

All activities for which the underlying traffic content can violate an NSM policy may not be malicious, but may be explicitly forbidden by the usage policies of the network as defined by a security policy. A protocol violation can be an indication of a possible attack, but can also be triggered by malfunctioning software or hardware. Policy violations trigger alerts that are displayed on the NSM console.

Alerts are asynchronous notifications sent when a system event or attack triggers the IDS. When a transmission violating a security policy is detected by a sensor, the sensor compiles information about the offending transmission and sends the information to the NSM in the form of an alert. An alert contains a variety of information on the incident that triggered it—such as the type of attack, its source and destination IP addresses, its source and destination ports, as well as security analysis information (performed by the sensor) such as attack severity and type. In addition to the alert that is generated, the IDS policy may be configured to ensure that the sensor responds by doing one or more of the following:

- Drop further packets (In-line mode only) — Dropping the specific attack packets is a key advantage of in-line mode. When detecting in-line (real time), the packets that trigger signatures and (optionally) all subsequent packets related to that connection are dropped before they reach the intended target system.

- Send an alert (default) — When traffic violates a Sensor policy, an alert is generated and sent to the NSM to be viewed using the Threat Analyzer. Alerts can be examined for content and sorted by key fields such as severity level, source and destination IP addresses etc.

- Host Quarantine action — Sensor performs the quarantine of infected host, by isolating the host for a specified period of time. Received packets from this host are dropped.

- Packet log — Sends a log, or copy, of the packet information to the NSM; this information acts as a record of the actual flow of traffic that triggered the attack and can be used for detailed packet analysis using Threat Analyzer.

- TCP reset — For TCP connections only. TCP uses the RST (Reset) bit in the TCP header to reset a TCP connection. Resets are sent in response to a connection that carries traffic which violates the security policy of the domain. The user can configure reset packets to be sent to the source and/or destination IP address.

- Alert filters — Alert filtering enables you to filter out alerts based on the source or the destination of the security event.

- ICMP host unreachable — ICMP Host Unreachable packets can be sent in response to the source of UDP or ICMP attacks.

7.1.8 System Data Review, Availability and Loss

IDS_RDR.1 Restricted Data Review

The NSM provides an interface where only successfully authenticated users can access the TOE, and then those users that have access to the Threat Analyzer (i.e., all except NOC Operator) can view the traffic log data collected and analyzed by sensor as indicated in the table for FMT_SMR.1 above. The data gathered by a sensor is transferred to the NSM and then saved in a MySQL Database table. The NSM provides a Graphical User Interface (GUI) menu driven tool to interpret and review log data based on specific search criteria.

IDS_STG.1 Guarantee of System Data Availability

IDS system data collected and analyzed by the NSP system is stored in a data store within the MySQL database and is protected from unauthorized deletion through the role based authentication functionality as described in Section 7.1.2. All authenticated users may read IDS system data, however, only authorized users holding the Super User, Security Expert or IPS Administrator role may delete IDS data. TSF mechanisms prohibit any user from modifying IDS data stored with the NSM.

IDS_STG.2 Prevention of System Data Loss

The NSM records the system data into a data store. The data store employed is running on the same dedicated platform as does the NSM. The MySQL Database provides storage and retrieval for the system data.

All MySQL Database tables used for TSF data are dynamically allocated so that the limit on the recording capacity of the information is the limit of the physical disk partition on the platform dedicated to the MySQL Database data store. This assures there is always adequate disk space to record current and new data that has been found to match the current rule set. Storage capacity monitors do not monitor actual disk space but rather a percentage of the configured value as noted below.

When the storage capacity reaches 50%, 70%, and 90% of the configured IDS data monitoring limit (default 30M lines), an alarm is presented at the NSM console. The authorized administrator may then take action by using a graphical interface to copy the IDS data to another storage media. Read/Write access to IDS system data is limited to the Super User, Security Expert and IPS Administrator roles, all other roles have Read-Only access. This monitor registers the percentage of the configured “allocation” and not the actual drive space available which may be dynamically adjusted to make more storage available to the database.

If the MySQL Database tables on a dedicated disk partition that stores the system data ever becomes exhausted, new system data will be ignored and an alert is generated to the Console.

