Nessus Manager 8.11.1

Security Target

Version 1.0

04 December 2020

Prepared for:

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1 Security Target Introduction

The Security Target (ST) contains the following additional sections:

- Product and TOE Description (Section 2)
- Security Problem Definition (Section 3)
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- IT Security Requirements (Section 5)
-
- The TLS Package does contain evaluation activities for how to evaluate its SFR claims as part of the evaluation of ASE_TSS.1, AGD_OPE.1, AGD_PRE.1, and ATE_IND.1. All Security Functional Requirements specified by the TLS Package will be evaluated in the manner specified in that package.

- TOE Summary Specification (Section 0)
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- Protection Profile Claims (Section 0)
- This ST is conformant to the *Protection Profile for Application Software, Version 1.3, 1 March 2019* (App PP) and *Functional Package for Transport Layer Security (TLS), Version 1.1, February 12,* 2019 (TLS Package) along with all applicable errata and interpretations from the certificate issuing scheme.

The TOE consists of a software application that runs on a Linux operating system as its platform.

As explained in section 3, Security Problem Definition, the Security Problem Definition of the App PP has been included by reference into this ST.

As explained in section 4, Security Objectives, the Security Objectives of the App PP has been included by reference into this ST.

All claimed SFRs are defined in the App PP and TLS Package. All mandatory SFRs are claimed. No optional or objective SFRs are claimed. Selection-based SFR claims are consistent with the selections made in the mandatory SFRs that prompt their inclusion.

- Rationale (Section 0)
- TOE Usage of Third-Party Components (Appendix A)

1.1 Security Target, TOE and CC Identification

ST Title – Nessus Manager 8.11.1 Security Target

ST Version – Version 1.0

ST Date – 04 December 2020

TOE Identification – Nessus Manager 8.11.1, supported on RHEL 7 and Windows Server 2016

Note that Nessus Manager is the same application as Tenable's Nessus product, with additional features enabled through licensing. Nessus Manager includes all the functionality of Nessus with added support for interaction with Nessus Agent applications in the operational environment.

TOE Developer – Tenable, Inc.

Evaluation Sponsor – Tenable, Inc.

CC Identification – Common Criteria for Information Technology Security Evaluation, Version 3.1, Revision 5, April 2017

1.2 Conformance Claims

This ST and the TOE it describes are conformant to the following CC specifications:

- *Protection Profile for Application Software, Version 1.3, 01 March 2019* (App PP) with the following optional and selection-based SFRs:
  - FCS_CKM.1(1)
  - FCS_CKM.1(3)
  - FCS_CKM.2
  - FCS_COP.1(1)
  - FCS_COP.1(2)
  - FCS_COP.1(3)
  - FCS_COP.1(4)
  - FCS_HTTPS_EXT.1/Server (as specified in NIAP TD0473)
  - FCS_HTTPS_EXT.2 (as specified in NIAP TD0473)
  - FCS_RBG_EXT.2
  - FIA_X509_EXT.1
  - FIA_X509_EXT.2
- *Functional Package for Transport Layer Security (TLS), Version 1.1, February 12, 2019* (TLS Package) with the following optional and selection-based SFRs:
  - FCS_TLSS_EXT.1
  - FCS_TLSS_EXT.2
- The following NIAP Technical Decisions apply to the TOE and have been accounted for in the ST development and the conduct of the evaluation, or were considered to be non-applicable:

  TD0416: Correction to FCS_RBG_EXT.1 Test Activity

- No change to ST; affects only test evaluation activities.

TD0427: Reliable Time Source

- No change to ST; the ST includes the PP's assumptions by reference and therefore any changes to the assumptions are implicitly made.

TD0434: Windows Desktop Applications Test

- No change to ST; affects only evaluation activities.

TD0435: Alternative to SELinux for FPT_AEX_EXT.1.3

- No change to ST; affects only evaluation activities.

TD0437: Supported Configuration Mechanism

- Changes text selection for FMT_MEC_EXT.1.1. This change has been applied to this ST.

TD0442: Updated TLS Ciphersuites for TLS Package

- No change to ST; affects selections in FCS_TLSS_EXT.1 that are not applicable to the TOE.

TD0444: IPsec Selections

- No change to ST; affects selections in FTP_DIT_EXT.1.1 that are not applicable to the TOE.

TD0445: User Modifiable File Definition

- No change to ST; affects the evaluation of FPT_AEX_EXT.1 for the Windows platform version of the TOE.

TD0465: Configuration Storage for .NET Apps

- No change to ST; the TD modifies evaluation activities only.

TD0469: Modification of test activity for FCS_TLSS_EXT.1.1 test 4.1

- No change to ST; the TD modifies evaluation activities only.

TD0473: Support for Client or Server TOEs in FCS_HTTPS_EXT

- Changes FCS_HTTPS_EXT.1. This change has been applied to the ST.

TD0486: Removal of PP-Module for VPN Clients from allowed-with list

- N/A; the TOE does not have VPN Client functionality so no attempt was made to claim the VPN Client PP-Module. This TD modifies selections in FDP_DAR_EXT.1.1, but the ST does not choose any of the modified selections so there is no change to the SFR.

TD0495: FIA_X509_EXT.1.2 Test Clarification

- No change to ST; the TD modifies evaluation activities only.

TD0498: Application Software PP Security Objectives and Requirements Rationale

- No change to ST; the TD modified portions of the App PP that were not reproduced in the ST.

TD0499: Testing with pinned certificates

- N/A; the TOE does not claim FCS_TLSC_EXT.1.

TD0510: Obtaining random bytes for iOS/macOS

- N/A; the TOE does not use iOS or macOS as its platform.

TD0513: CA Certificate loading

- N/A; the TOE does not claim FCS_TLSC_EXT.1.

TD0515: Use Android APK manifest in test

- N/A; the TOE does not include an Android platform version.

TD0519: Linux symbolic links and FMT_CFG_EXT.1

- No change to ST; affects only evaluation activities.

TD0521: Updates to Certificate Revocation (FIA_X509_EXT.1)

- Changes FIA_X509_EXT.1.1. This change has been applied to the ST. Note that the TD also added selections to FIA_X509_EXT.1.1. However, none of these added selections were applicable to the TOE and were therefore not selected.

TD0540: Expanded AES Modes in FCS_COP

- No change to ST; affects selections in FCS_COP.1(1) that are not applicable to the TOE.

TD0543: FMT_MEC_EXT.1 evaluation activity update

- No change to ST; affects only evaluation activities.

TD0544: Alternative testing methods for FPT_AEX_EXT.1.1

- No change to ST; affects only evaluation activities.

TD0548: Integrity for installation tests in AppSW PP 1.3

- No change to ST; affects only evaluation activities.

TD0554: iOS/iPadOS/Android AppSW Virus Scan

- No change to ST; affects only evaluation activities.

- Common Criteria for Information Technology Security Evaluation Part 2: Security functional components, Version 3.1, Revision 5, April 2017.
  - Part 2 Extended
- Common Criteria for Information Technology Security Evaluation Part 3: Security assurance components, Version 3.1 Revision 5, April 2017.
  - Part 3 Extended

1.3 Conventions

The following conventions have been applied in this document:

- Security Functional Requirements – Part 2 of the CC defines the approved set of operations that may be applied to functional requirements: iteration, assignment, selection, and refinement.
    - Iteration: allows a component to be used more than once with varying operations. An iterated SFR is indicated by a number in parentheses placed at the end of the component. For example, FCS_COP.1(1) through FCS_COP.1(4) indicate that the ST includes four iterations of the FCS_COP.1 requirement: (1), (2), (3), and (4).
    - Assignment: allows the specification of an identified parameter. Assignments are indicated using italics and are surrounded by brackets (e.g., [*assignment item*]). Note that an assignment within a selection would be identified in both italics and underline, with the brackets themselves underlined since they are explicitly part of the selection text, unlike the brackets around the selection itself (e.g., [selection item, [*assignment item inside selection*]]).
    - Selection: allows the specification of one or more elements from a list. Selections are indicated using underlines and are surrounded by brackets (e.g., [selection item]).
    - Refinement: allows technical changes to a requirement to make it more restrictive and allows non-technical changes to grammar and formatting. Refinements are indicated using bold, for additions, and strike-through, for deletions (e.g., "… **all** objects …" or "… ~~some~~ **big** things …"). Note that minor grammatical changes that do not involve the addition or removal of entire words (e.g., for consistency of quantity such as changing "meets" to "meet") do not have formatting applied.
- Other sections of the ST – Other sections of the ST use bolding to highlight text of special interest, such as captions.
- The ST does not show operations that have been completed by the PP authors, though it does preserve brackets to show where such operations have been made.

1.3.1 Terminology

The following terms and abbreviations are used in this ST:

Table 1: Terms and Definitions

Term	Definition
Log Correlation Engine	An environmental component that is responsible for collecting log data from a variety of sources and aggregating it into a single collection of results.
Nessus Agent	An environmental component that is installed on an endpoint system to collect details about that system's configuration and behavior.
Nessus Network Monitor	An environmental component that collects and analyzes raw network traffic.
Nessus/Nessus Manager	The TOE; an application that conducts remote scans of systems to collect data about their configuration and behavior and is used to deploy and collect data from remote Nessus Agent instances.
Platform	A general-purpose computer on which the TOE is installed.
Scan	The process by which the TOE actively collects data from a target system.
SecurityCenter or Tenable.sc	An environmental component that functions as a centralized aggregator for data collected by the TOE and by other environmental components.

1.3.2 Acronyms

Table 2: Acronyms

Term	Definition
API	Application Programming Interface
AES	Advanced Encryption Standard
ASLR	Address Space Layout Randomization
CA	Certificate Authority
CAVP	Cryptographic Algorithm Validation Program
CBC	Cipher Block Chaining
CC	Common Criteria for Information Technology Security Evaluation
CCECG	Common Criteria Evaluated Configuration Guidance
CEM	Common Evaluation Methodology for Information Technology Security
CN	Common Name
CTR	Counter (cryptographic mode)
CVE	Common Vulnerabilities and Exposures
DRBG	Deterministic Random Bit Generator
EAR	Entropy Analysis Report
ECC	Elliptic Curve Cryptography
ECDHE	Elliptic Curve Diffie-Hellman (Ephemeral)
ECDSA	Elliptic Curve Digital Signature Algorithm
FIPS	Federal Information Processing Standard
FQDN	Fully Qualified Domain Name
GB	Gigabyte
GCM	Galois/Counter Mode
GUI	Graphical User Interface
HMAC	Hashed Message Authentication Code
LCE	Log Correlation Engine
NIAP	National Information Assurance Partnership
NIST	National Institute of Standards and Technology
NNM	Nessus Network Monitor
OCSP	Online Certificate Status Protocol
OE	Operational Environment
OID	Original Issue Document
OS	Operating System
PBKDF	Password-Based Key Derivation Function
PGP	Pretty Good Privacy
PII	Personally Identifiable Information
PKI	Public Key Infrastructure
PP	Protection Profile
RAM	Random Access Memory

RPC	Remote Procedure Call
RSA	Rivest, Shamir and Adleman (algorithm for public-key cryptography)
SAN	Subject Alternative Name
SAR	Security Assurance Requirement
SFR	Security Functional Requirement
SHA	Secure Hash Algorithm
SSH	Secure Shell
SSL	Secure Sockets Layer
ST	Security Target
TCP	Transmission Control Protocol
TLS	Transport Layer Security
TOE	Target of Evaluation
TSF	TOE Security Function
WMI	Windows Management Instrumentation
XML	Extensible Markup Language

2 Product and TOE Description

2.1 Introduction

Nessus Manager 8.11.1 (Nessus Manager) is a software product that is designed to perform remote system scanning to determine configuration and patch levels that may indicate potential vulnerability risks to those systems. It is also designed to deploy, manage, and coordinate instances of the Nessus Agent application that is installed on endpoint systems to collect more detailed scan data than remote scanning can achieve on its own.

In addition to interacting with Nessus Agent applications in its operational environment, Nessus Manager also connects to an environmental instance of Tenable.sc (SecurityCenter) which serves as a single point to aggregate and analyze data collected from various Tenable applications, including Nessus Manager.

The TOE conforms to the App PP and TLS Package. As such, the security-relevant functionality of the product is limited to the claimed requirements in those standards. The security-relevant functionality is described in sections 2.3 and 2.4. The product overview in section 2.2 below is intended to provide the reader with an overall summary of the entire product so that its intended usage is clear. The subset of the product functionality that is within the evaluation scope is subsequently described in the sections that follow it.

2.2 Product Overview

Nessus Manager is a vulnerability management product that is designed to provide visibility into system assets. The product is used to discover and scan assets such as servers, endpoints, network devices, operating systems, databases, and applications. It can do this on its own through remote scanning. However, Nessus Manager can also be used to deploy, configure, and collect data from environmental Nessus Agent applications that are installed on endpoint systems to collect more detailed system data through local scanning. Regardless of how it is obtained, information connected by Nessus Manager can be fed to the environmental Tenable.sc product for centralized aggregation, analysis, and reaction.

Nessus Manager is the same application as Nessus, which is also developed by Tenable. The additional features that Nessus Manager provides are activated by licensing. The primary difference between Nessus and Nessus Manager is that Nessus Manager has the ability to configure, manage, and collect data from Nessus Agents, whereas Nessus can only perform agentless remote scanning.

Nessus Manager also supports plugins, which can be downloaded and added to the product to detect specific vulnerabilities.

2.3 TOE Overview

The Target of Evaluation (TOE) for Nessus Manager consists of the mandatory functionality prescribed by the App PP and TLS Package, as well as some selection-based functionality where needed.

The logical boundary is summarized in section 2.4.2 below. In general, the following Nessus Manager capabilities are considered to be within the scope of the TOE:

- **Protection of sensitive data at rest:** the TOE uses encryption to protect credentials and other sensitive data.
- **Protection of data in transit:** the TOE secures data in transit between itself and its operational environment using TLS and HTTPS.

- **Trusted updates:** the TOE provides visibility into its current running version and the vendor distributes updates to it that are digitally signed so that administrators can securely maintain up-to-date software.
- **Remote administration:** the TOE provides a Web GUI to administer its security functions. Note however that the bulk of the product's administration functions are outside the scope of the App PP and TLS Package and are therefore not part of the TOE.
- **Cryptographic services:** the TOE includes an implementation of OpenSSL with NIST-validated algorithm services that it uses to secure data at rest and in transit.
- **Secure interaction with operating system:** the TOE is designed to interact with underlying host operating system platforms in such a way that the TOE cannot be used as an attack vector to compromise an operating system.

The TOE's scanning and data collection capabilities are outside the scope of the TOE (aside from the trusted channel used to transmit the collected data), as is any other product behavior that is not described in the App PP or TLS Package. The content and execution of plugins is similarly excluded from the TOE, although they are discussed in the context of network communications because the TSF must use platform network resources to acquire them.

2.4 TOE Architecture

The Nessus Manager TOE consists of the Nessus Manager application, which is a C/C++ application with a PHP/JavaScript web front-end running on a proprietary web server. The TOE has both Linux and Windows platform versions.

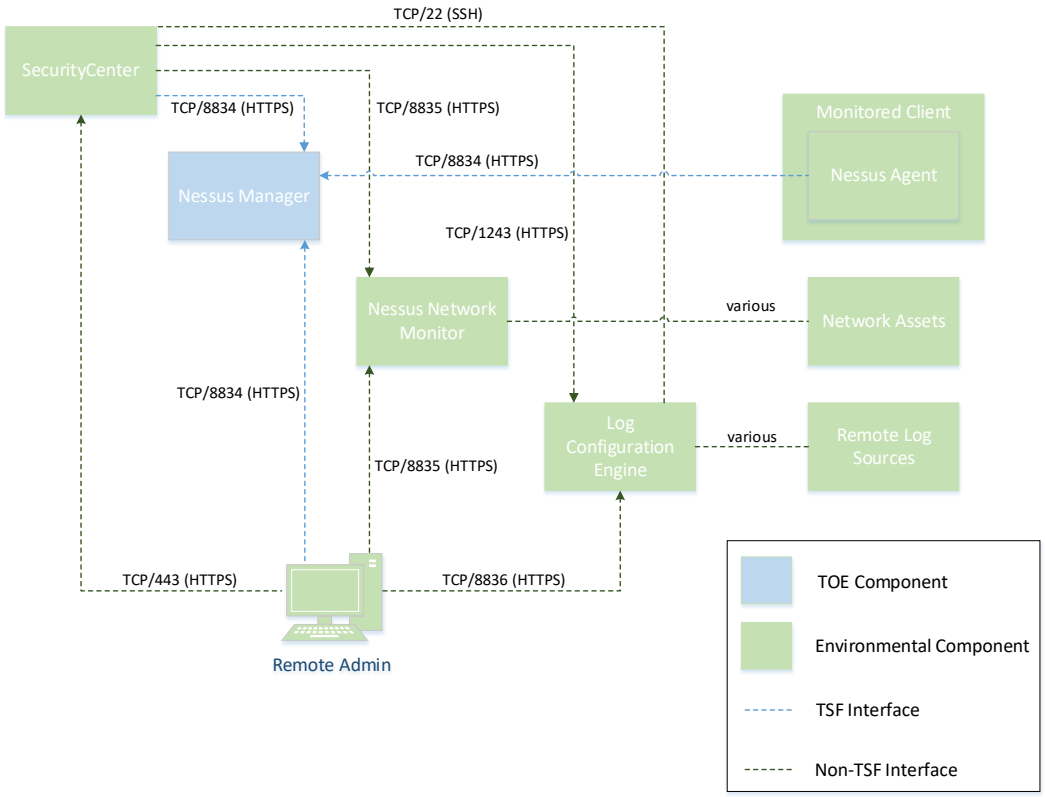
2.4.1 Physical Boundary

The TOE consists of the following component, as shown in Figure 1 below:

- Nessus Manager 8.11.1

Figure 1 shows the TOE in a sample deployment with other Tenable applications in its operational environment.

Figure 1 - TOE Boundary



TSF-relevant remote interfaces are shown in Figure 1. Note that the TOE consists of exactly one instance of Nessus Manager.

The TOE has the following system requirements for its host platform:

- 4x 2GHz cores
- 16 GB RAM
- 30 GB disk storage (direct-attached storage required)

These system requirements reflect the lightest usage scenarios for the TOE. Additional factors such as network size and storage retention requirements will affect the system requirements for a particular deployment. Refer to the relevant TOE documentation (as referenced in section 2.5) for the specific system requirements that apply to a given deployment.

There are no fixed network ports that must always be open for the TOE to function. Some network ports must be open, but these are configurable if the default ports cannot be used. The connections and their default ports are as follows:

- TCP/8834 (for administrator communications, communications with Tenable.sc, and communications with Nessus Agents)

Nessus Manager will perform unautheticated remote scans against target systems on various ports to determine whether services are available on those systems. This functionality is not within the scope of the TOE because it is not "sensitive data" but it is necessary for the product to function as advertised. In particular, if network configuration between Nessus and a target system blocks traffic to that system, it may result in a false negative if a service is actually running on the target system but cannot be detected by Nessus because of network configuration. The remote scan may also require Nessus Manager to invoke the OS platform's SSH client to communicate with a remote system using SSH. This is not a TSF interface so it is outside the scope of this ST.

The TOE's operational environment includes the following:

- Other Tenable components (an instance of Tenable.sc and one or more instance of Nessus Agent applications—Nessus Network Monitor and Log Correlation Engine are expected to be present in the TOE's operational environment because they also interface with Tenable.sc but the TOE does not interact with these applications directly).
- Platform (hardware and software) on which the TOE is hosted.
    - The TOE is capable of running on a general-purpose Windows or Linux operating system on standard consumer-grade hardware on either a physical or virtual machine. For the evaluated configuration, the TOE was tested on virtualized instances of Windows Server 2016 and RHEL 7, each running on VMware ESXi 6.5 on a system using an AMD Ryzen Threadripper 1950X processor with the Zen microarchitecture.
- Full disk encryption is required for the TOE platform to ensure adequate data-at-rest protection.
- Web browser, used to access the GUI interface.

2.4.2 Logical Boundary

This section summarizes the security functions provided by the TOE:

- Timely Security Updates
- Cryptographic Support
- User Data Protection
- Identification and Authentication
- Security Management
- Privacy
- Protection of the TSF
- Trusted Path/Channels

2.4.2.1 Timely Security Updates

The TOE developer has internal mechanisms for receiving reports of security flaws, tracking product vulnerabilities, and distributing software updates to customers in a timely manner.

2.4.2.2 Cryptographic Support

The TOE implements cryptography to protect data at rest and in transit.

For data at rest, the TOE stores credential data used to log in to the TOE as well as passphrase data used to protect PKI certificates that the TOE uses to authenticate to environmental components. This stored data is encrypted using AES or a PBKDF, depending on the data that is being stored.

For data in transit, the TOE implements TLS/HTTPS as a server. The TOE implements a TLS server for its administrative interface and to receive communications from other Tenable components in the operational environment.

The TOE implements all cryptography used for these functions using its own implementations of OpenSSL with NIST-approved algorithms. The TOE's DRBG is seeded using entropy from the underlying OS platform.

2.4.2.3 User Data Protection

The TOE uses cryptographic mechanisms to protect sensitive data at rest. The key used by the TOE to encrypt and decrypt sensitive data is cryptographically protected by the TOE platform.

The TOE relies on the network connectivity and system log capabilities of its host OS platform. The TOE supports user-initiated, externally-initiated, and application-initiated uses of the network. The TOE also access various system resources as part of conducting system scans. Specifically, the TOE supports remote scanning of a variety of target host systems from network devices to PCs running general-purpose operating systems. For the target system, the TOE can examine externally-visible ports and services. If provided credentials (either by receiving them from Tenable.sc or by direct administrator input), the TOE can authenticate to the target system and utilize platform specific tools such as apt, yum, and WMI to collect more detailed information about the system.

2.4.2.4 Identification and Authentication

The TOE supports X.509 certificate validation as part of establishing TLS and HTTPS connections. The TOE supports various certificate validity checking methods and can also check certificate revocation status using OCSP. If the validity status of a certificate cannot be determined, the certificate will be accepted. All other cases where a certificate is found to be invalid will result in rejection without an administrative override.

2.4.2.5 Security Management

The TOE itself and the configuration settings it uses are stored in locations recommended by the platform vendor for both Windows and Linux application versions.

The TOE includes a web GUI. This interface enforces username/password authentication using locally-stored credentials that are created using the TOE. The TOE does not include a default user account to access its management interface.

The security-relevant management functions supported by the TOE relate to configuration of transmission of system data (through execution of remote scanning) and configuration of transmission of application state information.

2.4.2.6 Privacy

The TOE does not handle personally identifiable information (PII) of any individuals.

2.4.2.7 Protection of the TSF

The TOE enforces various mechanisms to prevent itself from being used as an attack vector to its host OS platform. Each TOE platform version (Windows and Linux) implements address space layout randomization (ASLR), does not allocate any memory with both write and execute permissions, does not write user-modifiable files to directories that contain executable files, is compiled using stack overflow protection, and is compatible with the security features of its host OS platform.

Each TOE platform version contains libraries and invokes system APIs that are well-known and explicitly identified.

The TOE has a mechanism to determine its current software version. Software updates to the TOE can be acquired by leveraging its OS platform. The format of the software update is dependent on the TOE platform version. All updates are digitally signed to guarantee their authenticity and integrity.

2.4.2.8 Trusted Path/Channels

The TOE encrypts sensitive data in transit between itself and its operational environment using TLS and HTTPS. It facilitates the transmission of sensitive data from remote users over TLS and HTTPS.

2.5 TOE Documentation

Tenable provides the following product documentation in support of the installation and secure use of the TOE:

- Nessus 8.11.x User Guide, Last Revised: October 29, 2020

3 Security Problem Definition

This ST includes by reference the Security Problem Definition, composed of threats and assumptions, from the App PP, including the inclusion of A.PLATFORM as required by TD0427. The Common Criteria also provides for organizational security policies to be part of a security problem definition, but no such policies are defined in the App PP.

As a functional package, the TLS Package does not contain a Security Problem Definition. The TOE's use of TLS is intended to mitigate the T.NETWORK_ATTACK and T.NETWORK_EAVESDROP threats defined by the App PP.

In general, the threat model of the App PP is designed to protect against the following:

- Disclosure of sensitive data at rest or in transit that the user has a reasonable expectation of security for.
- Excessive or poorly-implemented interfaces with the underlying platform that allow an application to be used as an intrusion point to a system.

This threat model is applicable to the TOE because aggregated and analyzed vulnerability scan results could show an attacker what system weaknesses are present in the environment if they were able to obtain this data. It is also applicable because the TOE is a collection of executable binaries that an attacker could attempt to use to compromise the underlying OS platform if it was designed in such a manner that this exploitation was possible.

4 Security Objectives

Like the Security Problem Definition, this ST includes by reference the security objectives defined in the App PP. This includes security objectives for the TOE (used to mitigate threats) and for its operational environment (used to satisfy assumptions).

As a functional package, the TLS Package does not contain a Security Problem Definition. The TOE's use of TLS is intended to satisfy the O.PROTECTED_COMMS objective of the App PP by implementing a specific method by which network communications are protected.

5 IT Security Requirements

This section defines the Security Functional Requirements (SFRs) and Security Assurance Requirements (SARs) that serve to represent the security functional claims for the Target of Evaluation (TOE) and to scope the evaluation effort.

The SFRs have all been drawn from the following Protection Profiles (PP) and Functional Packages:

- *Protection Profile for Application Software*, Version 1.3, March 1, 2019
- *Functional Packages for Transport Layer Security (TLS),* Version 1.1, February 12, 2019

As a result, any selection, assignment, or refinement operations already performed by that PP on the claimed SFRs are not identified here (i.e., they are not formatted in accordance with the conventions specified in section 1.3 of this ST). Formatting conventions are only applied on SFR text that was chosen at the ST author's discretion.

5.1 Extended Requirements

All of the extended requirements in this ST have been drawn from the App PP and TLS Package. These documents define the following extended SAR and extended SFRs; since they have not been redefined in this ST, the App PP and TLS Package should be consulted for more information regarding these extensions to CC Parts 2 and 3.

Defined in App PP:

- ALC_TSU_EXT.1 Timely Security Updates
- FCS_CKM_EXT.1 Cryptographic Key Generation Services
- FCS_CKM.1(3) Password Conditioning
- FCS_HTTPS_EXT.1/Server HTTPS Protocol (as specified in NIAP TD0473)
- FCS_HTTPS_EXT.2 HTTPS Protocol with Mutual Authentication (as specified in NIAP TD0473)
- FCS_RBG_EXT.1 Random Bit Generation Services
- FCS_RBG_EXT.2 Random Bit Generation from Application
- FCS_STO_EXT.1 Storage of Credentials
- FDP_DAR_EXT.1 Encryption of Sensitive Application Data
- FDP_DEC_EXT.1 Access to Platform Resources
- FDP_NET_EXT.1 Network Communications
- FIA_X509_EXT.1 X.509 Certificate Validation
- FIA_X509_EXT.2 X.509 Certificate Authentication
- FMT_CFG_EXT.1 Secure by Default Configuration
- FMT_MEC_EXT.1 Supported Configuration Mechanism
- FPR_ANO_EXT.1 User Consent for Transmission of Personally Identifiable Information
- FPT_AEX_EXT.1 Anti-Exploitation Capabilities
- FPT_API_EXT.1 Use of Supported Services and APIs
- FPT_IDV_EXT.1 Software Identification and Versions
- FPT_LIB_EXT.1 Use of Third Party Libraries
- FPT_TUD_EXT.1 Integrity for Installation and Update
- FPT_TUD_EXT.2 Integrity for Installation and Update
- FTP_DIT_EXT.1 Protection of Data in Transit

Defined in TLS Package:

- FCS_TLS_EXT.1 TLS Protocol
- FCS_TLSS_EXT.1 TLS Server Protocol
- FCS_TLSS_EXT.2 TLS Server Support for Mutual Authentication

5.2 TOE Security Functional Requirements

The following table identifies the SFRs that are satisfied by the TOE.

Table 3: TOE Security Functional Components

Requirement Class	Requirement Component
FCS: Cryptographic Support	FCS_CKM.1(1) Cryptographic Asymmetric Key Generation
	FCS_CKM.1(3) Password Conditioning
	FCS_CKM.2 Cryptographic Key Establishment
	FCS_CKM_EXT.1 Cryptographic Key Generation Services
	FCS_COP.1(1) Cryptographic Operation – Encryption/Decryption
	FCS_COP.1(2) Cryptographic Operation – Hashing
	FCS_COP.1(3) Cryptographic Operation – Signing
	FCS_COP.1(4) Cryptographic Operation – Keyed-Hash Message Authentication
	FCS_HTTPS_EXT.1/Server HTTPS Protocol
	FCS_HTTPS_EXT.2 HTTPS Protocol with Mutual Authentication
	FCS_RBG_EXT.1 Random Bit Generation Services
	FCS_RBG_EXT.2 Random Bit Generation from Application
	FCS_STO_EXT.1 Storage of Credentials
	FCS_TLS_EXT.1 TLS Protocol (TLS Package)
	FCS_TLSS_EXT.1 TLS Server Protocol (TLS Package)
	FCS_TLSS_EXT.2 TLS Server Support for Mutual Authentication (TLS Package)
FDP: User Data Protection	FDP_DAR_EXT.1(1) Encryption of Sensitive Application Data (by TOE)
	FDP_DAR_EXT.1(2) Encryption of Sensitive Application Data (by OE)
	FDP_DEC_EXT.1 Access to Platform Resources
	FDP_NET_EXT.1 Network Communications
FIA: Identification and authentication	FIA_X509_EXT.1 X.509 Certificate Validation
	FIA_X509_EXT.2 X.509 Certificate Authentication
FMT: Security Management	FMT_CFG_EXT.1 Secure by Default Configuration
	FMT_MEC_EXT.1 Supported Configuration Mechanism
	FMT_SMF.1 Specification of Management Functions
FPR: Privacy	FPR_ANO_EXT.1 User Consent for Transmission of Personally Identifiable Information
FPT: Protection of the TSF	FPT_AEX_EXT.1 Anti-Exploitation Capabilities
	FPT_API_EXT.1 Use of Supported Services and APIs
	FPT_IDV_EXT.1 Software Identification and Versions
	FPT_LIB_EXT.1 Use of Third Party Libraries

Requirement Class	Requirement Component
	FPT_TUD_EXT.1 Integrity for Installation and Update
	FPT_TUD_EXT.2 Integrity for Installation and Update
FTP: Trusted Path/Channels	FTP_DIT_EXT.1 Protection of Data in Transit

5.2.1 Cryptographic Support (FCS)

5.2.1.1 FCS_CKM.1(1) Cryptographic Asymmetric Key Generation

FCS_CKM.1.1(1) The application shall [

- implement functionality

] to generate asymmetric cryptographic keys in accordance with a specified cryptographic key generation algorithm [

- [ECC schemes] using ["NIST curves" P-256, P-384 and [no other curves]] that meet the following: [FIPS PUB 186-4, "Digital Signature Standard (DSS)", Appendix B.4]

].

5.2.1.2 FCS_CKM.1(3) Password Conditioning

FCS_CKM.1.1(3) A password/passphrase shall perform [Password-based Key Derivation Functions] in accordance with a specified cryptographic algorithm as specified in FCS_COP.1(4), with [*10000*] iterations, and output cryptographic key sizes [128] that meet the following [NIST SP 800-132].

FCS_CKM.1.2(3) The TSF shall generate salts using a RBG that meets FCS_RBG_EXT.1 and with entropy corresponding to the security strength selected for PBKDF in FCS_CKM.1.1(3).

5.2.1.3 FCS_CKM.2 Cryptographic Key Establishment

FCS_CKM.2.1 The application shall [implement functionality] to perform cryptographic key establishment in accordance with a specified cryptographic key establishment method: [

- [Elliptic curve-based key establishment schemes] that meet the following: [NIST Special Publication 800-56A, "Recommendation for Pair-Wise Key Establishment Schemes Using Discrete Logarithm Cryptography"]

].

5.2.1.4 FCS_CKM_EXT.1 Cryptographic Key Generation Services

FCS_CKM_EXT.1.1 The application shall [

- Implement asymmetric key generation

].

5.2.1.5 FCS_COP.1(1) Cryptographic Operation – Encryption/Decryption

FCS_COP.1.1(1)[1] The application shall perform encryption/decryption in accordance with a specified cryptographic algorithm [

- AES-CBC (as defined in NIST SP 800-38A) mode,
- AES-GCM (as defined in NIST SP 800-38D) mode,
- AES-XTS (as defined in NIST SP 800-38E) mode

] and cryptographic key sizes [128-bit, 256-bit].

5.2.1.6 FCS_COP.1(2) Cryptographic Operation – Hashing

FCS_COP.1.1(2) The application shall perform cryptographic hashing services in accordance with a specified cryptographic algorithm [

- SHA-256,
- SHA-384

] and message digest sizes [

- 256,
- 384

] bits that meet the following: FIPS Pub 180-4.

5.2.1.7 FCS_COP.1(3) Cryptographic Operation – Signing

FCS_COP.1.1(3) The application shall perform cryptographic signature services (generation and verification) in accordance with a specified cryptographic algorithm [

- RSA schemes using cryptographic key sizes of 2048-bit or greater that meet the following: FIPS PUB 186-4, "Digital Signature Standard (DSS)", Section 4

].

5.2.1.8 FCS_COP.1(4) Cryptographic Operation – Keyed-Hash Message Authentication

FCS_COP.1.1(4) The application shall perform keyed-hash message authentication in accordance with a specified cryptographic algorithm

- HMAC-SHA-256

and [

- SHA-384

] with key sizes [*256 bits, 384 bits*] and message digest sizes 256 and [384] bits that meet the following: FIPS Pub 198-1 *The Keyed-Hash Message Authentication Code* and FIPS Pub 180-4 *Secure Hash Standard*.

[1] This SFR is modified by TD0543 but this ST does not claim any of the selections that were added by the TD.

5.2.1.9 FCS_HTTPS_EXT.1/Server HTTPS Protocol[2]

FCS_HTTPS_EXT.1.1/Server The application shall implement the HTTPS protocol that complies with RFC 2818.

FCS_HTTPS_EXT.1.2/Server The application shall implement HTTPS using TLS as defined in the TLS package.

5.2.1.10 FCS_HTTPS_EXT.2 HTTPS Protocol with Mutual Authentication[3]

FCS_HTTPS_EXT.2.1 The application shall [not establish the connection] if the peer certificate is deemed invalid.

5.2.1.11 FCS_RBG_EXT.1 Random Bit Generation Services

FCS_RBG_EXT.1.1 The application shall [

- implement DRBG functionality

] for its cryptographic operations.

5.2.1.12 FCS_RBG_EXT.2 Random Bit Generation from Application

FCS_RBG_EXT.2.1 The application shall perform all deterministic random bit generation (DRBG) services in accordance with NIST Special Publication 800-90A using [CTR_DRBG (AES)].

FCS_RBG_EXT.2.2 The deterministic RBG shall be seeded by an entropy source that accumulates entropy from a platform-based DRBG and [

- no other noise source

] with a minimum of [

- 256 bits

] of entropy at least equal to the greatest security strength (according to NIST SP 800-57) of the keys and hashes that it will generate.

5.2.1.13 FCS_STO_EXT.1 Storage of Credentials

FCS_STO_EXT.1.1 The application shall [

- implement functionality to securely store [*Web GUI authentication credentials, PKI certificate passphrases*] according to [FCS_COP.1(1), FCS_CKM.1(3)]

] to non-volatile memory.

[2] As specified in NIAP TD0473.

[3] As specified in NIAP TD0473.

5.2.1.14 FCS_TLS_EXT.1 TLS Protocol (TLS Package)

FCS_TLS_EXT.1.1 The product shall implement [

- TLS as a server

].

5.2.1.15 FCS_TLSS_EXT.1 TLS Server Protocol (TLS Package)

FCS_TLSS_EXT.1.1[4] The product shall implement TLS 1.2 (RFC 5246) and [no earlier TLS versions] as a server that supports the cipher suites [

- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256 as defined in RFC 5289,
- TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 as defined in RFC 5289,
- TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384 as defined in RFC 5289,
- TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384 as defined in RFC 5289]

and also supports functionality for [

- mutual authentication

].

FCS_TLSS_EXT.1.2 The product shall deny connections from clients requesting SSL 2.0, SSL 3.0, TLS 1.0 and [TLS 1.1].

FCS_TLSS_EXT.1.3 The product shall perform key establishment for TLS using [

- ECDHE parameters using elliptic curves [secp256r1, secp384r1] and no other curves

].

5.2.1.16 FCS_TLSS_EXT.2 TLS Server Support for Mutual Authentication (TLS Package)

FCS_TLSS_EXT.2.1 The product shall support authentication of TLS clients using X.509v3 certificates.

FCS_TLSS_EXT.2.2 The product shall not establish a trusted channel if the client certificate is invalid.

FCS_TLSS_EXT.2.3 The product shall not establish a trusted channel if the Distinguished Name (DN) or Subject Alternative Name (SAN) contained in a certificate does not match one of the expected identifiers for the client.

[4] This SFR is modified by TD0442 but this ST does not claim any of the selections that were added by the TD.

5.2.2 User Data Protection (FDP)

5.2.2.1 FDP_DAR_EXT.1(1)Encryption of Sensitive Application Data (by TOE)

FDP_DAR_EXT.1.1(1)[5] The application shall [

- protect sensitive data in accordance with FCS_STO_EXT.1

] in non-volatile memory.

Application Note: *"Sensitive data" includes both the credential data specified in FCS_STO_EXT.1 as well as system scan, network traffic, and log data that is collected from the Operational Environment. This data is not credential data, but it is still protected using the methods specified in FCS_STO_EXT.1. This is because all sensitive data, regardless of whether or not it is credential data, is stored in an encrypted database.*

5.2.2.2 FDP_DAR_EXT.1(2)Encryption of Sensitive Application Data (by OE)

FDP_DAR_EXT.1.1(2)[6] The application shall [

- leverage platform-provided functionality to encrypt sensitive data

] in non-volatile memory.

Application Note: *The database encryption referenced in FDP_DAR_EXT.1(1) requires a secret key to be stored on the platform. This is considered to be sensitive data and is therefore protected using platform-provided means.*

5.2.2.3 FDP_DEC_EXT.1 Access to Platform Resources

FDP_DEC_EXT.1.1 The application shall restrict its access to [

- network connectivity

].

FDP_DEC_EXT.1.2 The application shall restrict its access to [

- system logs,
- [*system configuration*]

].

5.2.2.4 FDP_NET_EXT.1 Network Communications

FDP_NET_EXT.1.1 The application shall restrict network communication to [

[5] This SFR is modified by TD0486 but this ST does not claim any of the selections that were added by the TD.

[6] This SFR is modified by TD0486 but this ST does not claim any of the selections that were added by the TD.

- User-initiated communication for [
  - *access to Web GUI,*
  - *checking for and downloading plugin updates*]
- Respond to [
  - *collection of scan results from Nessus Agents,*
  - *retrieval of scan results by Tenable.sc,*
  - *receipt of pushed plugin updates from Tenable.sc*]
- [*application-initiated network communication for*
  - *checking for and diownloading plugin updates,*
  ]

].

5.2.3 Identification and Authentication (FIA)

5.2.3.1 FIA_X509_EXT.1 X.509 Certificate Validation

FIA_X509_EXT.1.1[7] The application shall [implement functionality] to validate certificates in accordance with the following rules:

- RFC 5280 certificate validation and certificate path validation.
- The certificate path must terminate with a trusted CA certificate.
- The application shall validate a certificate path by ensuring the presence of the basicConstraints extension, that the CA flag is set to TRUE for all CA certificates, and that any path constraints are met.
- The application shall validate that any CA certificate includes caSigning purpose in the key usage field.
- The application shall validate the revocation status of the certificate using [the Online Certificate Status Protocol (OCSP) as specified in RFC 2560].
- The application shall validate the extendedKeyUsage (EKU) field according to the following rules:
  - Certificates used for trusted updates and executable code integrity verification shall have the Code Signing purpose (id-kp 3 with OID 1.3.6.1.5.5.7.3.3) in the extendedKeyUsage field.
  - Server certificates presented for TLS shall have the Server Authentication purpose (id-kp 1 with OID 1.3.6.1.5.5.7.3.1) in the extendedKeyUsage field.
  - Client certificates presented for TLS shall have the Client Authentication purpose (id-kp 2 with OID 1.3.6.1.5.5.7.3.2) in the extendedKeyUsage field.
  - S/MIME certificates presented for email encryption and signature shall have the Email Protection purpose (id-kp 4 with OID 1.3.6.1.5.5.7.3.4) in the extendedKeyUsage field.

[7] As specified in NIAP TD0521.

- OCSP certificates presented for OCSP responses shall have the OCSP Signing purpose (id-kp 9 with OID 1.3.6.1.5.5.7.3.9) in the extendedKeyUsage field.
- Server certificates presented for EST shall have the CMC Registration Authority (RA) purpose (id-kp-cmcRA with OID 1.3.6.1.5.5.7.3.28) in the extendedKeyUsage field.

FIA_X509_EXT.1.2 The application shall treat a certificate as a CA certificate only if the basicConstraints extension is present and the CA flag is set to TRUE.

5.2.3.2 FIA_X509_EXT.2 X.509 Certificate Authentication

FIA_X509_EXT.2.1 The application shall use X.509v3 certificates as defined by RFC 5280 to support authentication for [HTTPS, TLS].

FIA_X509_EXT.2.2 When the application cannot establish a connection to determine the validity of a certificate, the application shall [accept the certificate].

5.2.4 Security Management (FMT)

5.2.4.1 FMT_CFG_EXT.1 Secure by Default Configuration

FMT_CFG_EXT.1.1 The application shall provide only enough functionality to set new credentials when configured with default credentials or no credentials.

FMT_CFG_EXT.1.2 The application shall be configured by default with file permissions which protect the application's binaries and data files from modification by normal unprivileged users.

5.2.4.2 FMT_MEC_EXT.1 Supported Configuration Mechanism

FMT_MEC_EXT.1.1 The application shall [invoke the mechanisms recommended by the platform vendor for storing and setting configuration options].[8]

5.2.4.3 FMT_SMF.1 Specification of Management Functions

FMT_SMF.1.1 The TSF shall be capable of performing the following management functions [

- enable/disable the transmission of any information describing the system's hardware, software, or configuration,
- enable/disable transmission of any application state (e.g. crashdump) information,

].

[8] Modified from original App PP definition by TD0437

5.2.5 Privacy (FPR)

5.2.5.1 FPR_ANO_EXT.1 User Consent for Transmission of Personally Identifiable Information

FPR_ANO_EXT.1.1 The application shall [

- not transmit PII over a network

].

5.2.6 Protection of the TSF (FPT)

5.2.6.1 FPT_AEX_EXT.1 Anti-Exploitation Capabilities

FPT_AEX_EXT.1.1 The application shall not request to map memory at an explicit address except for [*no exceptions*].

FPT_AEX_EXT.1.2 The application shall [

- not allocate any memory region with both write and execute permissions

].

FPT_AEX_EXT.1.3 The application shall be compatible with security features provided by the platform vendor.

FPT_AEX_EXT.1.4 The application shall not write user-modifiable files to directories that contain executable files unless explicitly directed by the user to do so.

FPT_AEX_EXT.1.5 The application shall be compiled with stack-based buffer overflow protection enabled.

5.2.6.2 FPT_API_EXT.1 Use of Supported Services and APIs

FPT_API_EXT.1.1 The application shall use only documented platform APIs.

5.2.6.3 FPT_IDV_EXT.1 Software Identification and Versions

FPT_IDV_EXT.1.1 The application shall be versioned with [[*semantic versioning (SemVer)*]].

5.2.6.4 FPT_LIB_EXT.1 Use of Third Party Libraries

FPT_LIB_EXT.1.1 The application shall be packaged with only [*third-party libraries listed in Appendix A.2*].

Application Note: *The TOE uses a large number of third-party libraries so this information has been provided in an Appendix for readability purposes.*

5.2.6.5 FPT_TUD_EXT.1 Integrity for Installation and Update

FPT_TUD_EXT.1.1 The application shall [leverage the platform] to check for updates and patches to the application software.

FPT_TUD_EXT.1.2 The application shall [provide the ability, leverage the platform] to query the current version of the application software.

FPT_TUD_EXT.1.3 The application shall not download, modify, replace, or update its own binary code.

FPT_TUD_EXT.1.4 The application installation package and its updates shall be digitally signed such that its platform can cryptographically verify them prior to installation.

FPT_TUD_EXT.1.5 The application is distributed [as an additional software package to the platform OS].

5.2.6.6 FPT_TUD_EXT.2 Integrity for Installation and Update

FPT_TUD_EXT.2.1 The application shall be distributed using the format of the platform-supported package manager.

FPT_TUD_EXT.2.2 The application shall be packaged such that its removal results in the deletion of all traces of the application, with the exception of configuration settings, output files, and audit/log events.

5.2.7 Trusted Path/Channels (FTP)

5.2.7.1 FTP_DIT_EXT.1 Protection of Data in Transit

FTP_DIT_EXT.1.1 The application shall [

- encrypt all transmitted [sensitive data] with [HTTPS in accordance with FCS_HTTPS_EXT.1**/Server**, TLS as defined in the TLS Package]

] between itself and another trusted IT product.

Application Note: *HTTPS server functionality also implements mutual authentication (FCS_HTTPS_EXT.2).*

5.3 TOE Security Assurance Requirements

The security assurance requirements for the TOE are included by reference to the App PP.

Table 4: Assurance Components

Requirement Class	Requirement Component
ADV: Development	ADV_FSP.1 Basic Functional Specification
AGD: Guidance Documentation	AGD_OPE.1 Operational User Guidance
	AGD_PRE.1 Preparative Procedures
ALC: Life-cycle Support	ALC_CMC.1 Labeling of the TOE
	ALC_CMS.1 TOE CM coverage
	ALC_TSU_EXT.1 Timely Security Updates
ATE: Tests	ATE_IND.1 Independent Testing – Conformance
AVA: Vulnerability Assessment	AVA_VAN.1 Vulnerability Survey

As a functional package, the TLS Package does not define its own SARs. The expectation is that all SARs required by the App PP will apply to the entire TOE, including the portions addressed by the TLS Package. Consequently, the evaluation activities specified in the App PP apply to the entire TOE evaluation,

including any changes made to them by subsequent NIAP Technical Decisions as summarized in section 1.2 above.

The TLS Package does contain evaluation activities for how to evaluate its SFR claims as part of the evaluation of ASE_TSS.1, AGD_OPE.1, AGD_PRE.1, and ATE_IND.1. All Security Functional Requirements specified by the TLS Package will be evaluated in the manner specified in that package.

6 TOE Summary Specification

This chapter describes the security functions of the TOE:

- Timely Security Updates
- Cryptographic Support
- User Data Protection
- Identification and Authentication
- Security Management
- Privacy
- Protection of the TSF
- Trusted Path/Channels

6.1 Timely Security Updates

Tenable supports a timely security update process for the TOE In addition to their own internal research, the product vendor supports disclosure of potential issues using community forums, direct engagement, encrypted email (PGP) from customers and researchers, and the Tenable support channel. For issues where there is a potential security concern, the support channel uses HTTPS for secure disclosure.

When an issue is reported, Tenable will determine its applicability to the product. The length of time needed to make this determination depends on the complexity of the issue and the extent to which it can be reproduced; well-documented issues such as exposure to a published CVE can be made quickly. If found to be a security issue, a patch is released within 30 days. Tenable monitors the third-party components used by the TOE for potential security issues as well. However, an issue with a dependent component may not be addressed if found not to be applicable to the TOE. For example, security issues are frequently found within the PHP image library but Tenable does not install this library as part of the Nessus Manager distribution.

Security updates to the TOE are delivered as regular update packages in the same manner as a functional update. This process is described in section 6.7 below.

6.2 Cryptographic Support

The TOE uses cryptography to secure data in transit between itself and its operational environment.

All TOE cryptographic services are implemented by the OpenSSL cryptographic library. The TOE uses OpenSSL 1.1.1d. The cryptographic algorithms supplied by the TOE are NIST-validated. The following table identifies the cryptographic algorithms used by the TSF, the associated standards to which they conform, and the NIST certificates that demonstrate that the claimed conformance has been met.

Table 5: Cryptographic Functions

Functions	Standards	Certificates
FCS_CKM.1(1) Cryptographic Asymmetric Key Generation		
ECC key pair generation (NIST curves P-256, P-384)	FIPS PUB 186-4	CAVP cert # C1600
FCS_CKM.2 Cryptographic Key Establishment		

Functions	Standards	Certificates
ECDSA based key establishment	NIST SP 800-56A	CAVP cert # C1601
FCS_COP.1(1) Cryptographic Operation – Encryption/Decryption		
AES-CBC, AES-GCM, AES-XTS (128, 256 bits)	CBC as defined in NIST SP 800-38A GCM as defined in NIST SP 800-38D XTS as defined in NIST SP 800-38E	CAVP cert # C1600
FCS_COP.1(2) Cryptographic Operation – Hashing		
SHA-256 and SHA-384 (digest sizes 256 and 384 bits)	FIPS PUB 180-4	CAVP cert # C1600
FCS_COP.1(3) Cryptographic Operation – Signing		
RSA (2048-bit or greater)	FIPS PUB 186-4, Section 4	CAVP cert # C1600
FCS_COP.1(4) Cryptographic Operation – Keyed Hash Message Authentication		
HMAC-SHA-256 and SHA-384	FIPS PUB 198-1 FIPS PUB 180-4	CAVP cert # C1600
FCS_RBG_EXT.2 Random Bit Generation from Application		
CTR_DRBG DRBG (256 bits)	NIST SP 800-90A NIST SP 800-57	CAVP cert # C1600

The TOE generates asymmetric keys in support of trusted communications. The TSF generates ECC keys using P-256 and P-384. These keys are generated in support of the ECDHE key establishment schemes that are used for TLS/HTTPS communications. To ensure sufficient key strength, the TOE also implements DRBG functionality for key generation, using the AES-CTR_DRBG. The proprietary Entropy Analysis Report (EAR) describes how the TSF extracts random data from software-based sources to ensure that an amount of entropy that is at least equal to the strength of the generated keys is present (i.e., at least 256 bits when the largest supported keys are generated) when seeding the DRBG for key generation purposes. The Windows platform version of the TOE relies on a third-party entropy source provided by the platform vendor. The Linux platform version of the TOE relies on the OS platform entropy source as well. Specifically, random numbers are obtained from the following platform APIs, depending on the platform used:

- Windows: SystemPRNG
- Linux: invocation of /dev/random pseudo-device

In both cases, it is assumed that these platforms provide at least 256 bits of entropy.

The TOE uses TLS 1.2 for server communications. In the case where the TOE acts as a TLS server, all other TLS versions are rejected. The TLS server implementation support the following TLS cipher suites in the TOE's evaluated configuration:

- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256
- TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA256
- TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384
- TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384

All supported ciphersuites use elliptic curves as the method of key establishment. The TSF presents secp256r1 and secp384r1 as the supported values in the Supported Groups extension and uses the same NIST curves for key establishment.

As part of certificate validation in the establishment of TLS connectivity, the TOE will validate the reference identifier of a presented server certificate. For all TOE usage of mutual TLS authentication, the TSF will perform the same verification of a presented client certificate. This is done through validation of the Common Name (CN) and Subject Alternative Name (SAN) certificate fields, the latter of which is expected to contain the FQDN of the external system that is presenting the certificate to the TOE. The reference identifier is established by configuration. IP addresses are not supported. Wildcards are only supported for the left-most label immediately preceding the public suffix. Certificate pinning is not supported. All digital signatures used for the establishment of TLS communications use 2048-bit RSA.

The TOE uses TLS server functionality for communications between the TOE and other Tenable applications (Tenable.sc and Nessus Agent) and from remote administrators to the Web GUI interface. All uses of the TOE's TLS server support mutual authentication. The TOE's implementation of HTTPS conforms to RFC 2818. The connection will be rejected if certificate validation fails.

The TOE also uses OpenSSL to secure credential data at rest. Specifically, the TOE stores the following credentials:

- Web GUI authentication credentials: username and hashed password data for locally-defined users.
- Passphrases for certificate encryption: used to encrypt PKI certificates that the TOE uses for communications with remote administrators and with environmental Tenable applications when using TLS mutual authentication.

The TOE may receive system credential data from Tenable.sc in its operational environment to initiate an authenticated scan of a target system, but the TSF does not maintain this data persistently and it is purged from memory after use.

Passphrases for certificate encryption are encrypted by the TOE using AES-XTS and administrative credentials to the TOE are encrypted using PBKDF2. The TOE uses the DRBG specified in FCS_RBG_EXT.2 to generate salts that contain at least as many entropy bits as the output key length. The TOE's PBKDF2 implementation performs 10,000 iterations and outputs a 128-bit strength key. Password-based derived keys are formed using a 128-bit salt that is randomly generated by the TOE's DRBG. This is input to the PBKDF function along with the password and specified hashing algorithm, which is SHA-512.

The TOE does not maintain a key hierarchy; the TOE's usage of PBKDF is to generate a hash.

The Cryptographic Support security function is designed to satisfy the following security functional requirements:

- FCS_CKM.1(1) – The TOE uses a NIST-validated implementation to generate asymmetric keys in support of TLS communications.
- FCS_CKM.1(3) – The TOE performs password-based key derivation in support of secure storage of credentials.
- FCS_CKM.2 – The TOE performs NIST-validated key establishment in support of TLS communications.

- FCS_CKM_EXT.1 – The TOE implements its own cryptographic functionality.
- FCS_COP.1(1) – The TOE uses a NIST-validated implementation to perform AES encryption and decryption in support of both TLS communications and secure storage of credentials.
- FCS_COP.1(2) – The TOE uses a NIST-validated implementation to perform cryptographic hashing in support of TLS communications.
- FCS_COP.1(3) – The TOE uses a NIST-validated implementation to generate and verify RSA digital signatures in support of TLS communications.
- FCS_COP.1(4) – The TOE uses a NIST-validated implementation to perform HMAC functions in support of TLS communications and the pseudo-random function used for password-based key derivation.
- FCS_HTTPS_EXT.1/Server – The TOE implements HTTPS as a server to secure data in transit.
- FCS_HTTPS_EXT.2 – The TOE implements mutual authentication when acting as an HTTPS server.
- FCS_RBG_EXT.1 – The TOE implements its own random bit generation services.
- FCS_RBG_EXT.2 – The TOE uses a NIST-validated implementation to generate pseudo-random bits and this implementation is seeded with sufficiently strong entropy collected from the operational environment.
- FCS_STO_EXT.1 – The TOE uses its own cryptographic functions to secure credential data at rest.
- FCS_TLS_EXT.1 – The TOE implements TLS to secure data in transit.
- FCS_TLSS_EXT.1 – The TOE implements TLS as a server.
- FCS_TLSS_EXT.2 – The TOE's TLS server implementation supports mutual authentication.

6.3 User Data Protection

The App PP defines 'sensitive data' as follows: "Sensitive data may include all user or enterprise data or may be specific application data such as emails, messaging, documents, calendar items, and contacts. Sensitive data must minimally include PII, credentials, and keys. Sensitive data shall be identified in the application's TSS by the ST author."

The table below lists the data that is considered to be 'sensitive data' for this TOE along with where that data resides.

Table 6: Sensitive Data

Sensitive Data	Exchange	Protection at Rest	Protection in Transit
GUI credentials	Admin's browser to TOE over browser connection	FCS_STO_EXT.1 (PBKDF)	HTTPS
Remote system scan credentials	Tenable.sc to TOE; TOE to remote system	N/A – data only exists ephemerally and is not stored persistently	TLS; native protocol used by applicable OE authentication mechanism
Passphrase for PKI certificate encryption	None	FCS_STO_EXT.1 (AES)	N/A

Sensitive Data	Exchange	Protection at Rest	Protection in Transit
Collected system scan data	Nessus Agent to TOE and TOE to Tenable.sc	FCS_STO_EXT.1 (AES)	HTTPS
Database encryption key (used for all AES operations listed above)	None	FDP_DAR_EXT.1(2)	N/A

The database encryption key is generated by the TOE's DRBG as part of the initial setup process. The key is stored as a read-only file owned by root or SYSTEM, depending on platform. The administrator has the ability to optionally set a passphrase to unlock the use of this key; if this option is chosen, they must enter the passphrase when the TOE first starts. The database encryption key is protected cryptographically by the platform's use of full disk encryption.

The underlying platform functionality that the TOE interacts with includes network connectivity, system configuration, and system logs. The TOE uses network connectivity for remote management, connections to environmental components, and remote scanning of target systems. The TOE accesses system configuration to collect data about a remote system and to generate a diagnostic report of local system configuration for troubleshooting purposes. The TOE accesses system logs on the local system (/var/log/messages or Windows Event Log) to record data about its own behavior.

The TOE uses environmental network capabilities in various ways. All communications between the TOE and environmental Tenable components are encrypted, as is administrative access. The following table highlights the TOE's network usage.

Table 7: TOE Network Usage

Component	User-Initiated	Externally-Initiated	TOE-Initiated
Nessus Manager	Access to Web GUI	Collection of scan results from Nessus Agents	Check for and download of plugin updates
	Check for and download of plugin updates	Retrieval of scan results by Tenable.sc	
		Retrieve pushed plugin updates from Tenable.sc	
			Check for and download of binary and plugin updates from Nessus Manager

The User Data Protection security function is designed to satisfy the following security functional requirements:

- FDP_DAR_EXT.1(1) – Sensitive data at rest is protected by the TOE's implementation of AES.
- FDP_DAR_EXT.1(2) – the AES key used by the TOE to protect sensitive data at rest is protected in turn by the platform's use of full disk encryption.
- FDP_DEC_EXT.1 – The TOE's use of platform services is well understood by users prior to authorizing the TOE activity.
- FDP_NET_EXT.1 – The TOE communicates over the network for well-defined purposes. Depending on the function, the use of network resources is user-initiated directly through the TSF, remotely

initiated by a user performing an action in the operational environment, or initiated by the TOE itself.

6.4 Identification and Authentication

The TOE uses X.509 certificates for authentication of the following trusted communications: validation of administrator TLS client certificate, validation of Nessus Agent TLS client certificates, and validation of Tenable.sc TLS client certificate.

The TOE implements the following functional behavior for all uses of X.509 certificates:

- Certificate validation and certificate path validation is performed in accordance with RFC 5280.
- The certificate path is checked to ensure that it terminates with a trusted CA certificate.
- The certificate path is validated by ensuring the presence of the basicConstraints extension, that the CA flag is set to TRUE for all CA certificates, and that any path constraints are met.
- Any CA certificate is validated by ensuring that the key usage field includes the caSigning purpose.
- Revocation status is checked using OCSP in accordance with RFC 2560.
- The application shall validate the extendedKeyUsage field according to the following rules:
  - Certificates used for trusted updates and executable code integrity verification shall have the Code Signing purpose (id-kp 3 with OID 1.3.6.1.5.5.7.3.3) in the extendedKeyUsage field.
  - Server certificates presented for TLS shall have the Server Authentication purpose (id-kp 1 with OID 1.3.6.1.5.5.7.3.1) in the extendedKeyUsage field.
  - Client certificates presented for TLS shall have the Client Authentication purpose (id-kp 2 with OID 1.3.6.1.5.5.7.3.2) in the extendedKeyUsage field.
  - S/MIME certificates presented for email encryption and signature shall have the Email Protection purpose (id-kp 4 with OID 1.3.6.1.5.5.7.3.4) in the extendedKeyUsage field.

In the event that the revocation status of a certificate cannot be verified (i.e. the OCSP responder cannot be reached), the TOE will accept the certificate.

Because the TOE's use of the certificate validation function is to validate the authenticity of remote endpoints, the TSF chooses what certificates to use based on what is presented to it as part of establishing the TLS session. The TOE is only assigned one certificate for its own use, so there is only one certificate that it will present in cases where a remote entity may need to validate it.

The Identification and Authentication security function is designed to satisfy the following security functional requirements:

- FIA_X509_EXT.1 – X.509 certificates are validated by the TSF when establishing trusted communications.
- FIA_X509_EXT.2 – X.509 certificates are used for TLS. When revocation status of a certificate cannot be determined, the TSF accepts the certificate by default.

6.5 Security Management

The TOE provides a web-based graphical user interface (GUI) that requires user authentication to access. As part of initial setup of the TOE, the administrator performing the install must specify an initial username/password that is used to log on to the web GUI; the TOE is not pre-loaded with "default" administrator credentials. These credentials are stored locally and protected by the TSF as per FCS_STO_EXT.1. Following the initial installation, additional accounts can be created.

During general operations, an administrator will typically interact with the TOE only through the environmental instance of Tenable.sc. However, Tenable.sc does not include the ability to directly modify the initial configuration settings of the TOE, or to configure the behavior of environmental Nessus Agents.

The TOE is installed into the following locations, depending on the platform version:

- Windows: C:\Program Files\Tenable\nessus
- Linux: /opt/nessus

All directories containing TOE software and data are configured by default in such a manner that nothing is world-writable on Linux and Administrator privileges are required to access them on Windows. Configuration settings that affect the TOE's interaction with the host OS platform are stored in /etc for Linux and the Windows Registry for Windows.

The TOE supports the following security-relevant management functions:

- Configuration of transmission of system's hardware, software, or configuration information
  - Conducts remote scanning of target systems and creates scan jobs for managed Nessus Agents to perform when scheduled
- Configuration of transmission of application state (crashdump) information
  - Includes a diagnostics utility that is manually-initiated and is used to collect application state information that can be sent to Tenable for troubleshooting purposes

The Security Management security function is designed to satisfy the following security functional requirements:

- FMT_CFG_EXT.1 – The TOE requires credentials to be defined before administrative use. The TOE is protected from direct modification by untrusted users via its host OS platform.
- FMT_MEC_EXT.1 – Configuration settings for the TOE are stored in appropriate locations for each supported host OS platform.
- FMT_SMF.1 – Administrators can use the TSF to configure the collection of system data from the TOE's operational environment or to collect application state information that is used for troubleshooting.

6.6 Privacy

The TOE's primary function is to examine organizational assets for configuration or operational states that may indicate the presence of a vulnerability or misuse of organizational resources. To this end, the TOE collects data about system configuration and tranmits it to the environmental Tenable.sc application for aggregation, analysis, and reporting. The TOE is not responsible for the collection or transmission of PII. The TOE accepts administrative credentials as part of the GUI login process but user account information is not considered to be PII.

The Privacy security function is designed to satisfy the following security functional requirements:

- FPR_ANO_EXT.1 – The TOE prevents the unnoticed/unauthorized transmission of PII across a network by not having functionality that is intended for such transmissions.

6.7 Protection of the TSF

The TOE implements several mechanisms to protect against exploitation. The TOE implements address space layout randomization (ASLR) through the use of the /DYNAMICBASE (Windows) and –fPIC (Linux) compiler flags and rely fully its underlying host platforms to perform memory mapping. The TOE also does not use both PROT_WRITE and PROT_EXEC on the same memory regions. There is no situation where the TSF maps memory to an explicit address. The TOE is written in C and C++. The TOE is compiled with stack overflow protection whether it is intended for use on Linux or Windows. The Linux platform version is compiled with –fstack-protector-strong and the Windows platform version is compiled with /GS. The TOE has a web-based front-end, based on PHP and JavaScript. This is interpreted code to which compilation instructions do not apply.

Both platform versions of the TOE are designed to run on host OS platforms where platform security features have been enabled (e.g. Windows Defender Export Guard, SELinux enabled and enforcing). The TOE uses only documented platform APIs. Appendix A.1 lists the APIs used by the TOE. The TOE also makes use of third-party libraries. Appendix A.2 lists the libraries used by the TOE. The TOE is versioned using semver (Semantic Versioning) in the format x.y(.z) where x is the major version, y is the minor version, and the optional z is the patch version; SWID is not used. The TOE is a standalone application that is not natively bundled as part of a host OS.

The TOE can identify its current running versions through both platform and TSF-mediated methods. The Linux platform version of the TOE is installed as an RPM and will identify its version in RPM itself. The TOE will also return its version information if its binary is invoked with the –v flag on the OS platform regardless of which platform version it is. An administrator can also check the version of the TOE by logging into its Web GUI, or they can use the environmental instance of Tenable.sc that is connected to the TOE to check the TOE's version.

The TOE can leverage its OS platform to check for software updates and acquire them if they are available. In this case, candidate updates are obtained by the administrator downloading them directly from Tenable's website or through a package manager such as yum. The TOE will not download, modify, replace, or update its own binary code. The TOE is packaged as an .rpm file for Linux and an .exe file for Windows. Each are digitally signed by Tenable using 2048-bit RSA. Removing (uninstalling) the product will remove all executable code from the host system.

The Protection of the TSF security function is designed to satisfy the following security functional requirements:

- FPT_AEX_EXT.1 – The TOE interacts with its host OS platform in a manner that does not expose the system to memory-related exploitation.
- FPT_API_EXT.1 – The TOE uses documented platform APIs.
- FPT_IDV_EXT. 1 – The TOE is versioned using semver.
- FPT_LIB_EXT.1 – The set of third-party libraries used by the TOE is well-defined.
- FPT_TUD_EXT.1 – There is a well-defined method for checking what version of the TOE is currently installed and whether updates to it are available. Updates are signed by the vendor and validated by the host OS platform prior to installation.
- FPT_TUD_EXT.2 – The TOE can be updated through installation packages.

6.8 Trusted Path/Channels

In the evaluated configuration, the TOE its own cryptographic implementation to encrypt sensitive data in transit. Listed below are the various external interfaces to the TOE that rely on trusted communications.

Between TOE and operational environment:

- Between administrator and TOE Web GUI
  - Communications use mutually authenticated TLS/HTTPS (TOE is server)
  - Configurable TCP port, 8834 is default
  - Used to secure administrator interactions with the TOE

Between TOE and environmental Tenable components:

- Between Tenable.sc and TOE
  - Communications use XML RPCs over mutually-authenticated TLS/HTTPS (Tenable.sc is client and TOE is server)
  - Configurable TCP port, 8834 is default
  - Used by Tenable.sc to retrieve Nessus/Nessus Agent scan results from the TOE.
- Between TOE and Nessus Agent
  - Communications use TLS/HTTPS (Nessus Agent is client and TOE is server)
  - Configurable TCP port, 8834 is default
  - Used by TOE to collect local scan results from the connected Nessus Agent

Note that remote acquisition of system data from the operational environment is not necessarily captured in an encrypted format because the TOE captures this data in the native formats used by the target systems. As such this is not considered to be 'sensitive data' requiring data-in-transit protection.

The Trusted Path/Channels security function is designed to satisfy the following security functional requirements:

- FTP_DIT_EXT.1 – The TOE relies on its own mechanisms to secure data in transit between itself and its operational environment.

7 Protection Profile Claims

This ST is conformant to the *Protection Profile for Application Software, Version 1.3, 1 March 2019* (App PP) and *Functional Package for Transport Layer Security (TLS), Version 1.1, February 12,* 2019 (TLS Package) along with all applicable errata and interpretations from the certificate issuing scheme.

The TOE consists of a software application that runs on a Linux operating system as its platform.

As explained in section 3, Security Problem Definition, the Security Problem Definition of the App PP has been included by reference into this ST.

As explained in section 4, Security Objectives, the Security Objectives of the App PP has been included by reference into this ST.

All claimed SFRs are defined in the App PP and TLS Package. All mandatory SFRs are claimed. No optional or objective SFRs are claimed. Selection-based SFR claims are consistent with the selections made in the mandatory SFRs that prompt their inclusion.

8 Rationale

This Security Target includes by reference the App PP Security Problem Definition, Security Objectives, and Security Assurance Requirements. The Security Target does not add, remove, or modify any of these items. Security Functional Requirements have been reproduced with the Protection Profile operations completed. All selections, assignments, and refinements made on the claimed Security Functional Requirements have been performed in a manner that is consistent with what is permitted by the App PP and TLS Package. The proper set of selection-based requirements have been claimed based on the selections made in the mandatory requirements. Consequently, the claims made by this Security Target are sufficient to address the TOE's security problem. Rationale for the sufficiency of the TOE Summary Specification is provided below.

8.1 TOE Summary Specification Rationale

This section in conjunction with Section 0, the

The TLS Package does contain evaluation activities for how to evaluate its SFR claims as part of the evaluation of ASE_TSS.1, AGD_OPE.1, AGD_PRE.1, and ATE_IND.1. All Security Functional Requirements specified by the TLS Package will be evaluated in the manner specified in that package.

TOE Summary Specification, provides evidence that the security functions meet the TOE security requirements. Each description includes rationale indicating which requirements the corresponding security functions satisfy. The combined security functions work together to satisfy all of the security requirements. The security functions described in Section 6 are necessary for the TSF to enforce the required security functionality. Table 8 demonstrates the relationship between security requirements and functions.

Table 8: Security Functions vs. Requirements Mapping

	Cryptographic Support	User Data Protection	Identification and Authentication	Security Management	Privacy	Protection of the TSF	Trusted Path/Channels
FCS_CKM.1(1)	X						
FCS_CKM.1(3)	X						
FCS_CKM.2	X						
FCS_CKM_EXT.1	X						
FCS_COP.1(1)	X						
FCS_COP.1(2)	X						
FCS_COP.1(3)	X						
FCS_COP.1(4)	X						
FCS_HTTPS_EXT.1/Server	X						
FCS_HTTPS_EXT.2	X						
FCS_RBG_EXT.1	X						
FCS_RBG_EXT.2	X						
FCS_STO_EXT.1	X						
FCS_TLS_EXT.1	X						
FCS_TLSS_EXT.1	X						
FCS_TLSS_EXT.2	X						
FDP_DAR_EXT.1(1)		X					
FDP_DAR_EXT.1(2)		X					
FDP_DEC_EXT.1		X					
FDP_NET_EXT.1		X					
FIA_X509_EXT.1			X				
FIA_X509_EXT.2			X				
FMT_CFG_EXT.1				X			
FMT_MEC_EXT.1				X			
FMT_SMF.1				X			

	Cryptographic Support	User Data Protection	Identification and Authentication	Security Management	Privacy	Protection of the TSF	Trusted Path/Channels
FPR_ANO_EXT.1					X		
FPT_AEX_EXT.1						X	
FPT_API_EXT.1						X	
FPT_IDV_EXT.1						X	
FPT_LIB_EXT.1						X	
FPT_TUD_EXT.1						X	
FPT_TUD_EXT.2						X	
FTP_DIT_EXT.1							X

Appendix A TOE Usage of Third-Party Components

This Appendix lists the platform APIs and third-party libraries that are used by the TOE.

A.1 Platform APIs

Listed below are the platform APIs used by the TOE. Note that these APIs do not necessarily relate to the TOE functionality claimed in the Security Target; however, since they are bundled with the product itself they are disclosed since a vulnerability in outside the logical boundary of the product could still present an exploitable vulnerability.

Windows:

CrtSetDbgFlag,_heapmin,_set_invalid_parameter_handler,_strtoi64,_unix2windows_64,_wtoi,_wtoi64, accept, AllocateAndInitializeSid,bind, CheckTokenMembership, CloseHandle, CloseServiceHandle,closesocket, CoCreateInstance, CoInitializeEx, CoInitializeSecurity, CompareStringW,connect, ControlService, CoSetProxyBlanket, CoUninitialize, CreateEvent, CreateFile, CreateFileA, CreatePipe, CreateProcess, CreateService, CreateThread, CreateToolhelp32Snapshot,ctime_s, DeleteFileA, DeleteService, EnterCriticalSection, EnumServicesStatus, FileTimeToSystemTime, FindClose, FindFirstFileA, FindNextFile, FormatMessage, FreeLibrary, FreeSid, GetComputerNameA, GetConsoleMode, GetCurrentProcess, GetCurrentProcessId, GetCurrentThreadId,getenv, GetExitCodeProcess, GetFileAttributes, GetFileSize, GetFileVersionInfoExW, GetFileVersionInfoSizeExW, GetLastError, GetModuleHandle, GetProcAddress, GetProcessHeap, GetProcessId, GetSecurityDescriptorControl, GetSecurityInfo, GetServiceDisplayNameA,getsockname, GetStdHandle, GetSystemTimeAsFileTime, GetTcpTable, GetTimeZoneInformation, GetUserName, GetVersionEx, GetWindowsDirectoryA, GlobalMemoryStatusEx, HeapAlloc, HeapFree, HeapLock, HeapReAlloc, HeapSetInformation, HeapUnlock, HeapWalk,htonl,htons, IEnumWbemClassObject_Next, IEnumWbemClassObject_Release, IsValidSecurityDescriptor, IsWindowsServer, IWbemCallResult_GetCallStatus, IWbemCallResult_GetResultObject, IWbemCallResult_Release, IWbemClassObject_BeginEnumeration, IWbemClassObject_EndEnumeration, IWbemClassObject_Get, IWbemClassObject_GetMethod, IWbemClassObject_Next, IWbemClassObject_Put, IWbemClassObject_QueryInterface, IWbemClassObject_Release, IWbemClassObject_SpawnInstance, IWbemLocator_ConnectServer, IWbemLocator_Release, IWbemServices_AddRef, IWbemServices_ExecMethod, IWbemServices_ExecQuery, IWbemServices_GetObject, IWbemServices_Release, LeaveCriticalSection,listen, LoadLibrary, LocalFree,localtime_s, LsaClose, LsaEnumerateAccountsWithUserRight, LsaFreeMemory, LsaLookupNames, LsaLookupSids, LsaOpenPolicy, LsaQueryDomainInformationPolicy, LsaQueryInformationPolicy,lstrlenW,memset, Module32First, Module32Next, MultiByteToWideChar, NetApiBufferFree, NetGroupGetUsers, NetLocalGroupGetMembers, NetServerEnum, NetServerGetInfo, NetSessionEnum, NetShareEnum, NetUserGetGroups, NetUserGetInfo, NetUserGetLocalGroups, NetUserModalsGet, NetWkstaGetInfo, NetWkstaUserEnum, OpenProcess, OpenSCManagerA, OpenService, PdhAddCounterA, PdhCollectQueryData, PdhOpenQueryA, poll, QueryServiceObjectSecurity, QueryServiceStatus, RaiseException, ReadConsole, ReadFile, recv, RegCloseKey, RegCreateKeyExA, RegEnumKeyA, RegEnumKeyExA, RegEnumValueA, RegGetKeySecurity, RegOpenKeyA, RegOpenKeyExA, RegQueryInfoKeyA, RegQueryValueExA, RegSetValueExA, SafeArrayAccessData, SafeArrayCreateVector, SafeArrayGetDim, SafeArrayGetLBound, SafeArrayGetUBound, SafeArrayUnaccessData,

SamCloseHandle, SamConnect, SamFreeMemory, SamOpenDomain, SamQueryInformationDomain, saturate, send, SetConsoleCtrlHandler, SetConsoleMode, SetFilePointer, SetHandleInformation, SetLastError, setsockopt, SetStdHandle, SetUnhandledExceptionFilter, SHGetFolderPath, Sleep, socket, StackWalk64, StartService, SysAllocStringByteLen, SysAllocStringLen, SysFreeString, SysStringLen, SystemTimeToFileTime, SystemTimeToTzSpecificLocalTime, TerminateProcess, time, TzSpecificLocalTimeToSystemTime, VariantClear, VerQueryValueA, vsnprintf_s, w32_change_privilege, WaitForSingleObject, WideCharToMultiByte, WriteFile, WSACleanup, WSAGetLastError, WSAStartup, ZeroMemory

Linux:

Used by plugins:

cat, grep, echo, wc, find, ps, type, uname, ls, awk, sysinfo, sysctl, which, strings, head, echo, test, read, readlink, rm, chmod, od, tr, sh, cut, sort, tee, chown, do, while, if, hexdump, strcat, tail, sed, xargs, dd, netstat, ifconfig, ip, hostname

Used by plugins, to test specific platforms/applications:

init, unzip, nwmgr, lanscan, docker, cli, dhcpd, unzip, equery, xl, sqlite3, db2ls, db2level, db2, md5sum, sha256sum, sha1sum, yara, lsof, cmdagent, nails, sc, sc4, vmware-view, loginsight, bash, dmidecode, wget, curl, rpm, cfservd, prelink, netstat, rmsock, inpcb, proctree, service, dpkg, iptables, lsmod, openssl, splunk, namei, java, dd

Used by Nessus bug report generator:

uname, dmesg, tail, killall, sh, uptime, ls, ps, grep, xargs, netstat, arp, df, cat, tail, rpm, free, ifconfig, du, tar

A.2 Third-Party Libraries

Listed below are the third-party libraries used by the TOE. Note that these libraries do not necessarily relate to the TOE functionality claimed in the Security Target; however, since they are bundled with the product itself they are disclosed since a vulnerability in outside the logical boundary of the product could still present an exploitable vulnerability.

Apache FOP, chart.js, DataTables, expat, Flatiron Director, Font Awesome, GLYPHICONS, Handlebars, jemalloc, jQuery, jQuery Cookie, jQuery FileUpload, jQuery HotKeys, jQuery scroll.To, jQuery tipsy, jQuery UI, JSONSL, less.js, libbzip2, libjpeg, libpcap, libpcre, libxml2, libxmlsec, libxslt, List.js, moment, OpenSSL, SEE, Select2, Snappy, snprintf.c, SQLite, Underscore,js, WinPCAP, ZIPVFS, zlib