

National Information Assurance Partnership
Common Criteria Evaluation and Validation Scheme



Validation Report

Protection Profile for Application Software, Version 1.2,
April 20, 2017

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Base and Additional Requirements

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1 Executive Summary

This report documents the assessment of the National Information Assurance Partnership (NIAP) validation team of the evaluation of the Protection Profile for Application Software, Version 1.2 (PPAPP1.2). It presents a summary of the PPAPP1.2 and the evaluation results.

In order to promote thoroughness and efficiency, the evaluation of the PPAPP1.2 was performed concurrent with the first product evaluation against the PP's requirements. In this case the Target of Evaluation (TOE) for this first product was the Splunk's Enterprise Version 6.4.5 (Version Code 2). The evaluation was performed by Booz Allen Hamilton Common Criteria Testing Laboratory (CCTL) in Annapolis Junction, Maryland, in the United States and was completed in March 2017. This evaluation addressed the base requirements of the PPAPP1.2, as well as a few of the optional, selection-based and objective requirements contained in the Appendices.

The information in this report is largely derived from the Assurance Activity Report (AAR), written by Booz Allen Hamilton.

The evaluation determined that the PPAPP1.2 is both Common Criteria Part 2 Extended and Part 3 Extended. The PP identified in this Validation Report has been evaluated at a NIAP approved Common Criteria Testing Laboratory using the Common Methodology for IT Security Evaluation (Version 3.1, Rev 4) for conformance to the Common Criteria for IT Security Evaluation (Version 3.1, Rev 4). Because the ST contains only material drawn directly from the PPAPP1.2, performance of the majority of the ASE work units serves to satisfy the APE work units as well. Where this is not the case, the lab performed the outlying APE work units as part of this evaluation.

The evaluation has been conducted in accordance with the provisions of the NIAP Common Criteria Evaluation and Validation Scheme (CCEVS) and the conclusions of the testing laboratory in the evaluation technical report are consistent with the evidence provided.

The validation team found that the evaluation showed that the PPAPP1.2 meets the requirements of the APE components. These findings were confirmed by the VR author. The conclusions of the testing laboratory in the assurance activity report are consistent with the evidence produced.

2 Identification

The CCEVS is a joint National Security Agency (NSA) and National Institute of Standards and Technology (NIST) effort to establish commercial facilities to perform trusted product evaluations. Under this program, security evaluations are conducted by commercial testing laboratories called Common Criteria Testing Laboratories (CCTLs). CCTLs evaluate products against Protection Profile containing Assurance Activities, which are interpretations of CEM work units specific to the technology described by the PP.

In order to promote thoroughness and efficiency, the evaluation of the PPAPP1.2 was performed concurrent with the first product evaluation against the PP. In this case the TOE for this first product was the Splunk Enterprise Version 6.4.5 (Version Code 2), provided by Booz Allen Hamilton Common Criteria Testing Laboratory (CCTL) in Annapolis Junction, in the United States and was completed in March 2017.

The PPAPP1.2 contains a set of "base" requirements that all conformant STs must include as well as "additional" requirements that are either optional, selection-based, or objective depending

on the requirement in question. The vendor may choose to include such requirements in the ST and still claim conformance to this PP. If the vendor's TOE performs capabilities that are governed by any additional requirements, that vendor is expected to claim all of the additional requirements that relate to these capabilities.

Because these additional requirements may not be included in a particular ST, the initial use of the PP will address (in terms of the PP evaluation) the base requirements that are incorporated into that initial ST.

The following identifies the PP subject to the evaluation/validation, as well as the supporting information from the base evaluation performed against this PP, as well as subsequent evaluations that address additional requirements in the PPAPP1.2.

Protection Profile	<i>Protection Profile for Application Software, Version 1.2, April 22, 2016</i>
ST (Base)	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
Assurance Activity Report (Base)	Assurance Activity Report Splunk Enterprise Version 6.4.5 (Version Code 2) Version 1.0, February 1, 2017
CC Version	Common Criteria for Information Technology Security Evaluation, Version 3.1, Revision 4
Conformance Result	CC Part 2 Extended, CC Part 3 Extended
CCTL (base and additional)	Booz Allen Hamilton, 304 Sentinel Drive, Annapolis Junction, MD USA
CCEVS Validators (base)	Paul Bicknell, MITRE Sheldon Durrant, MITRE Patrick Mallett, MITRE Lisa Mitchell, MITRE Linda Morrison, MITRE
CCEVS Validators (Additional)	

3 PPAPP1.2 Description

The requirements in the PPAPP1.2 apply to application software which runs on mobile devices ("apps"), as well as on desktop and server platforms. Some application types are covered by more specific PPs, which may be expressed as Extended Packages of this PP. Such applications are subject to the requirements of both this PP and the Extended Package that addresses their special functionality. PPs for some particularly specialized applications may not be expressed as EPs at this time, though the requirements in this document should be seen as objectives for those highly specialized applications.

4 Security Problem Description and Objectives

4.1 Assumptions

The specific conditions listed in the following subsections are assumed to exist in the TOE's environment. These assumptions include both practical realities in the development of the TOE security requirements and the essential environmental conditions on the use of the TOE.

Assumption Name	Assumption Definition
A.PLATFORM	The TOE relies upon a trustworthy computing platform for its execution. This includes the underlying platform and whatever runtime environment it provides to the TOE.
A.PROPER_USER	The user of the application software is not willfully negligent or hostile, and uses the software in compliance with the applied enterprise security policy.
A.PROPER_ADMIN	The administrator of the application software is not careless, willfully negligent or hostile, and administers the software within compliance of the applied enterprise security policy.

Table 1: Assumptions

4.2 Threats

Threat Name	Threat Definition
T.NETWORK_ATTACK	An attacker is positioned on a communications channel or elsewhere on the network infrastructure. Attackers may engage in communications with the application software or alter communications between the application software and other endpoints in order to compromise it.
T.NETWORK_EAVESDROP	An attacker is positioned on a communications channel or elsewhere on the network infrastructure. Attackers may monitor and gain access to data exchanged between the application and other endpoints.
T.LOCAL_ATTACK	An attacker can act through unprivileged software on the same computing platform on which the application executes. Attackers may provide maliciously formatted input to the application in the form of files or other local communications.
T.PHYSICAL_ACCESS	An attacker may try to access sensitive data at rest.

Table 2: Threats

4.3 Organizational Security Policies

The APP PP does not define organizational security policies.

4.4 Security Objectives

The following table contains security objectives for the TOE.

TOE Security Obj.	TOE Security Objective Definition
O.INTEGRITY	Conformant TOEs ensure the integrity of their installation and update packages, and also leverage execution environment-based mitigations. Software is seldom if ever shipped without errors, and the ability to deploy patches and updates to fielded software with integrity is critical to enterprise network security. Processor manufacturers, compiler developers, execution environment vendors, and operating system vendors

TOE Security Obj.	TOE Security Objective Definition
	have developed execution environment-based mitigations that increase the cost to attackers by adding complexity to the task of compromising systems. Application software can often take advantage of these mechanisms by using APIs provided by the runtime environment or by enabling the mechanism through compiler or linker options.
O.QUALITY	To ensure quality of implementation, conformant TOEs leverage services and APIs provided by the runtime environment rather than implementing their own versions of these services and APIs. This is especially important for cryptographic services and other complex operations such as file and media parsing. Leveraging this platform behavior relies upon using only documented and supported APIs.
O.MANAGEMENT	To facilitate management by users and the enterprise, conformant TOEs provide consistent and supported interfaces for their security-relevant configuration and maintenance. This includes the deployment of applications and application updates through the use of platform-supported deployment mechanisms and formats, as well as providing mechanisms for configuration.
O.PROTECTED_STORAGE	To address the issue of loss of confidentiality of user data in the event of loss of physical control of the storage medium, conformant TOEs will use data-at-rest protection. This involves encrypting data and keys stored by the TOE in order to prevent unauthorized access to this data.
O.PROTECTED_COMMS	To address both passive (eavesdropping) and active (packet modification) network attack threats, conformant TOEs will use a trusted channel for sensitive data. Sensitive data includes cryptographic keys, passwords, and any other data specific to the application that should not be exposed outside of the application.

Table 3: Security Objectives for the TOE

The following table contains objectives for the Operational Environment.

TOE Security Obj.	TOE Security Objective Definition
OE.PLATFORM	The TOE relies upon a trustworthy computing platform for its execution. This includes the underlying operating system and any discrete execution environment provided to the TOE.
OE.PROPER_USER	The user of the application software is not willfully negligent or hostile, and uses the software within compliance of the applied enterprise security policy.
OE.PROPER_ADMIN	The administrator of the application software is not careless, willfully negligent or hostile, and administers the software within compliance of the applied enterprise security policy.

Table 4: Security Objectives for the Operational Environment

5 Requirements

As indicated above, requirements in the PPAPP1.2 are comprised of the “base” requirements. The following table contains the “base” requirements that were validated as part of the evaluation activity referenced above.

Requirement Class	Requirement Component	Verified By
FCS: Cryptographic Support	FCS_RBG_EXT.1 Random Bit Generation Services	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FCS_STO_EXT.1 Storage of Secrets	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
FDP: User Data Protection	FDP_DAR_EXT.1: Encryption Of Sensitive Application Data	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FDP_DEC_EXT.1: Access to Platform Resources	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FDP_NET_EXT.1: Network Communications	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
FMT: Security Management	FMT_CFG_EXT.1: Secure by Default Configuration	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FMT_MEC_EXT.1: Supported Configuration Mechanism	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FMT_SMF.1: Specification of Management Functions	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
FPR: Privacy	FPR_ANO_EXT.1.1	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
FPT: Protection of the TSF	FPT_AEX_EXT.1: Anti-Exploitation Capabilities	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FPT_API_EXT.1: Use of Supported Services and APIs	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FPT_LIB_EXT.1: Use of Third Party Libraries	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FPT_TUD_EXT.1: Integrity for Installation and Update	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
FTP: Trusted Path/Channels	FTP_DIT_EXT.1: Protection of Data in Transit	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017

Table 5: Base Requirements

The following table contains the additional optional requirements contained in Appendix A, and an indication of what evaluation those requirements were verified in (from the list in the *Identification* section above). Requirements that do not have an associated evaluation indicator have not yet been evaluated. These requirements are included in an ST if associated selections are made by the ST authors in requirements that are levied on the TOE by the ST.

Requirement Class	Requirement Component	Verified By
FCS: Cryptographic Support	FCS_CKM.1(2): Cryptographic Symmetric Key Generation	PP evaluation
	FCS_TLSC_EXT.2: TLS Client Protocol	PP evaluation

Table 6: Optional Requirements

The following table contains the additional selection-based requirements contained in Appendix B, and an indication of what evaluation those requirements were verified in (from the list in the *Identification* section above). Requirements that do not have an associated evaluation indicator have not yet been evaluated. These requirements are included in an ST if

associated selections are made by the ST authors in requirements that are levied on the TOE by the ST.

Requirement Class	Requirement Component	Verified By
FCS: Cryptographic Support	FCS_CKM.1(1): Cryptographic Asymmetric Key Generation	PP evaluation
	FCS_CKM.2: Cryptographic Key Establishment	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FCS_CKM_EXT.1: Cryptographic Key Generation Services	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FCS_COP.1(1) Cryptographic Operation - Encryption/Decryption	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FCS_COP.1(2) Cryptographic Operation - Hashing	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FCS_COP.1(3) Cryptographic Operation - Signing	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FCS_COP.1(4) Cryptographic Operation - Keyed Hash Message Authentication	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FCS_DTLS_EXT.1: DTLS Implementation	PP evaluation
	FCS_HTTPS_EXT.1: HTTPS Protocol	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FCS_RBG_EXT.2: Random Bit Generation from Application	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FCS_TLSC_EXT.1: TLS Client Protocol	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FCS_TLSC_EXT.4: TLS Client Protocol	PP evaluation
	FCS_TLSS_EXT.1: TLS Server Protocol	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	FIA: Identification and Authentication	FIA_X509_EXT.1: X.509 Certificate Validation
FIA_X509_EXT.2: X.509 Certificate Authentication		Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017

Table 7: Selection-Based Requirements

The following table contains the objective requirements that specify security functionality that is desirable that are contained in Annex C. It is expected that these requirements will

transition from objective requirements to baseline requirements in future versions of this PP.

Requirement Class	Requirement Component	Verified By
FCS: Cryptographic Support	FCS_TLSC_EXT.3: TLS Client Protocol	PP evaluation
FPT: Protection of the TSF	FPT_API_EXT.2: Use of Supported Services and APIs	PP evaluation
	FPT_IDV_EXT.1 Software Identification and Versions	PP evaluation

Table 8: Objective Requirements

6 Assurance Requirements

The following are the assurance requirements contained in the PPAPP1.2:

Requirement Class	Requirement Component	Verified By
ADV: Development	ADV_FSP.1 Basic Functional Specification	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
AGD: Guidance documents	AGD_OPE.1: Operational User Guidance	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	AGD_PRE.1: Preparative Procedures	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
ALC: Life-cycle support	ALC_CMC.1: Labeling of the TOE	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	ALC_CMS.1: TOE CM Coverage	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
	ALC_TSU_EXT.1: Timely Security Updates	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
ATE: Tests	ATE_IND.1: Independent Testing - Sample	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
AVA: Vulnerability Assessment	AVA_VAN.1: Vulnerability Survey	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017

Table 9: Assurance Requirements

7 Results of the evaluation

The CCTL produced an ETR that contained the following results. Note that for APE elements and work units that are identical to APE elements and work units, the lab performed the APE work units concurrent to the ASE work units.

APE Requirement	Evaluation Verdict	Verified By
APE_CCL.1	Pass	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
APE_ECD.1	Pass	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
APE_INT.1	Pass	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017

APE_OBJ.2	Pass	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017
APE_REQ.1	Pass	Splunk Enterprise Version 6.4.5 Security Target Version 1.0 January 20, 2017

Table 10: Evaluation Results

8 Glossary

The following definitions are used throughout this document:

- **Common Criteria Testing Laboratory (CCTL).** An IT security evaluation facility accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) and approved by the CCEVS Validation Body to conduct Common Criteria-based evaluations.
- **Conformance.** The ability to demonstrate in an unambiguous way that a given implementation is correct with respect to the formal model.
- **Evaluation.** The assessment of an IT product against the Common Criteria using the Common Criteria Evaluation Methodology as interpreted by the supplemental guidance in the PPAPP1.2 Assurance Activities to determine whether or not the claims made are justified.
- **Evaluation Evidence.** Any tangible resource (information) required from the sponsor or developer by the evaluator to perform one or more evaluation activities.
- **Feature.** Part of a product that is either included with the product or can be ordered separately.
- **Target of Evaluation (TOE).** A group of IT products configured as an IT system, or an IT product, and associated documentation that is the subject of a security evaluation under the CC.
- **Validation.** The process carried out by the CCEVS Validation Body leading to the issue of a Common Criteria certificate.
- **Validation Body.** A governmental organization responsible for carrying out validation and for overseeing the day-to-day operation of the NIAP Common Criteria Evaluation and Validation Scheme.

9 Bibliography

The Validation Team used the following documents to produce this Validation Report:

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- [3] Common Criteria Project Sponsoring Organizations. *Common Criteria for Information Technology Security Evaluation: Part 3: Security Assurance Requirements*, Version 3.1, Revision 2, dated: September 2007.

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- [5] Common Criteria, Evaluation and Validation Scheme for Information Technology Security, *Guidance to Validators of IT Security Evaluations*, Scheme Publication #3, Version 1.0, January 2002.
- [6] Splunk Corporation, Splunk Enterprise Version *Security Target* Version 1.0, January 20, 2017
- [7] Splunk Corporation, Splunk Enterprise Version *Assurance Activity Report* Version 1.0, February 1, 2017
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