National Information Assurance Partnership

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Common Criteria Evaluation and Validation Scheme Validation Report

CyberArk Privileged Access Security – Windows Components including PSM v10.04, CPM v10.04, and PVWA v10.04

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National Institute of Standards and Technology
Information Technology Laboratory
100 Bureau Drive
Gaithersburg, MD 20899

Department of Defense
National Security Agency
9800 Savage Road
Fort Meade, MD 20755-6940

ACKNOWLEDGEMENTS

Validation Team

Daniel Faigin

Marybeth Panock

Evaluation Team

Eve Pierre

Cheryl Dugan

Common Criteria Testing Laboratory

DXC
10830 Guilford Road, Suite 307
Annapolis Junction, Maryland 20701

1. EXECUTIVE SUMMARY

This report is intended to assist the end-user of this product and any security certification Agent for the end-user with determining the suitability of this Information Technology (IT) product in their environment. End-users should review both the Security Target (ST), which is where specific security claims are made, in conjunction with this Validation Report (VR), which describes how those security claims were evaluated.

This report documents the assessment by the National Information Assurance Partnership (NIAP) validation team of the evaluation of the CyberArk Privileged Access Security – Windows Components including PSM v10.04.100.25, CPM v10.04.10.7, and PVWA v10.04.10.4, the Target of Evaluation (TOE), performed by DXC. It presents the evaluation results, their justifications, and the conformance results. This report is not an endorsement of the TOE by any agency of the U.S. government, and no warranty is either expressed or implied.

The evaluation was performed by DXC of Annapolis Junction, MD in accordance with the United States evaluation scheme and completed on September 27, 2019. The information in this report is largely derived from the ST, the Evaluation Technical Report (ETR) and the functional testing report. The evaluation was performed to conform to the requirements of the Common Criteria for Information Technology Security Evaluation, Version 3.1, Revision 4, dated September 2012 at Evaluation Assurance Level 1, and the Common Evaluation Methodology for IT Security Evaluation (CEM), Version 3.1, Revision 4, September 2012 – and the NIAP Protection Profile for Application Software v1.2; April 22, 2016.

CyberArk Privileged Access Security – Windows Components including PSM v10.04.100.25, CPM v10.04.10.7, and PVWA v10.04.10.4, the TOE, which contains the Privileged Session Manager (PSM), Central Policy Manager (CPM), and Password Vault Web Access (PVWA) software, all of which run on a Windows Server operating system (OS).

The TOE enables organizations to secure, provision, control, and monitor all activities associated with the privileged identities used in enterprise systems.

The Evaluation Team performed an analysis of the international interpretations of the CC, CEM and determined that none of the international interpretations issued by the Common Criteria Interpretations Management Board (CCIMB) were applicable to this evaluation.

The TOE is also compliant with all International interpretations with effective dates on or before June 1, 2019.

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, commercial testing laboratories called Common Criteria Testing Laboratories (CCTLs) using the Common Evaluation Methodology (CEM) for Evaluation Assurance Level (EAL) 1 through EAL 4 in accordance with National Voluntary Laboratory Assessment Program (NVLAP) accreditation conduct security evaluations.

The NIAP Validation Body assigns Validators to monitor the CCTLs to ensure quality and consistency across evaluations. Developers of IT products desiring a security evaluation contract with a CCTL and pay a fee for their product's evaluation. Upon successful completion of the evaluation, the product is added to NIAP's Validated Products List.

Table 1 provides information needed to completely identify the product, including:

- The Target of Evaluation (TOE): the fully qualified identifier of the product as evaluated;
- The Security Target (ST), describing the security features, claims, and assurances of the product;
- The conformance result of the evaluation;
- Any Protection Profile to which the product is conformant;
- The organizations participating in the evaluation.

Table 1: Evaluation Identifiers

Item	Identifier
Evaluation Scheme	United States NIAP Common Criteria Evaluation and Validation Scheme
Target of Evaluation	CyberArk Privileged Access Security – Windows Components including PSM v10.04.100.25, CPM v10.04.10.7, and PVWA v10.04.10.4
Protection Profile	Protection Profile for Application Software v1.2; April 22, 2016
Security Target	CyberArk Software Ltd. Privileged Access Security – Windows Components including Privileged Session Manager (PSM) v10.4, Central Policy Manager (CPM) v10.4, and Password Vault Web Access (PVWA) v10.4 Security Target, version 0.15, September 27, 2019
Date of evaluation	September 30, 2019
Evaluation Technical Report	CyberArk Software Ltd. Privileged Access Security – Windows Components including Privileged Session Manager (PSM) v10.4, Central Policy Manager (CPM) v10.4, and Password Vault Web Access (PVWA) v10.4 Evaluation Technical Report, v0.5, September 27, 2019
Assurance Activity Report	Assurance Activity Report for CyberArk Privileged Account Security - CyberArk Software Ltd. Privileged Access Security – Windows Components including Privileged Session Manager (PSM) v10.4, Central Policy Manager (CPM) v10.4, and Password Vault Web Access (PVWA) v10.4, 0.3 September 2019
Conformance Result	1. Common Criteria for Information Technology Security Evaluation, Part 1: Introduction and General Model, CCMB-2012-09-001, Version 3.1 Revision 4, September 2012. 2. Common Criteria for Information Technology Security Evaluation, Part 2: Security Functional Components, CCMB-2012-09-002, Version 3.1 Revision 4, September 2012. 3. Common Criteria for Information Technology Security Evaluation, Part 3: Security Assurance Components, CCMB-2012-09-003, Version 3.1 Revision 4, September 2012. 4. Common Methodology for Information Technology Security Evaluation, Evaluation Methodology, CCMB-2012-09-004, Version 3.1, Revision 4, September 2012. The following CC conformance: • Part 2 extended • Part 3 extended • Protection Profile for Application Software v1.2; April 22, 2016 conformant.
Common Criteria version	Common Criteria for Information Technology Security Evaluation Version 3.1, Revision 4, September 2012

Item	Identifier
Common Evaluation Methodology (CEM) version	CEM version 3.1R4, September 2012
Sponsor	CyberArk Software
Developer	CyberArk Software
Evaluators	Eve Pierre, Cheryl Dugan
Validation Team	Daniel Faigin, Marybeth Panock

3. SECURITY POLICY

The TOE is a software-only TOE and is comprised of the Privileged Session Manager (PSM), Central Policy Manager (CPM), and Password Vault Web Access (PVWA) software and is a part of CyberArk's Privileged Access Security (PAS) Solution. PSM, CPM, and PVWA are installed on a single instance of Microsoft Windows Server 2012 R2. Internet Information Service (IIS) in the operating environment (OE) is used by PVWA for serving its web interface. PSM requires Remote Desktop Protocol (RDP) services and RDP client in the OE for communicating with users and targets. An instance of EPV is part of the OE and is installed on a standalone Windows 2012 R2 server for access control usage by PSM, CPM, and PVWA.

Any data leakage across the TOE may cause severe damage to the organization and therefore must be prevented.

4. SECURITY PROBLEM DEFINITION

Assumptions

The ST identified the following security assumptions:

TABLE 1: TOE ASSUMPTIONS

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.

Threats

The ST identified the following threats addressed by the TOE:

TABLE 2: TOE 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.

Organizational Security Policies

The Security Target identifies the following Organizational Security Policies (OSPs) to which the TOE must comply.

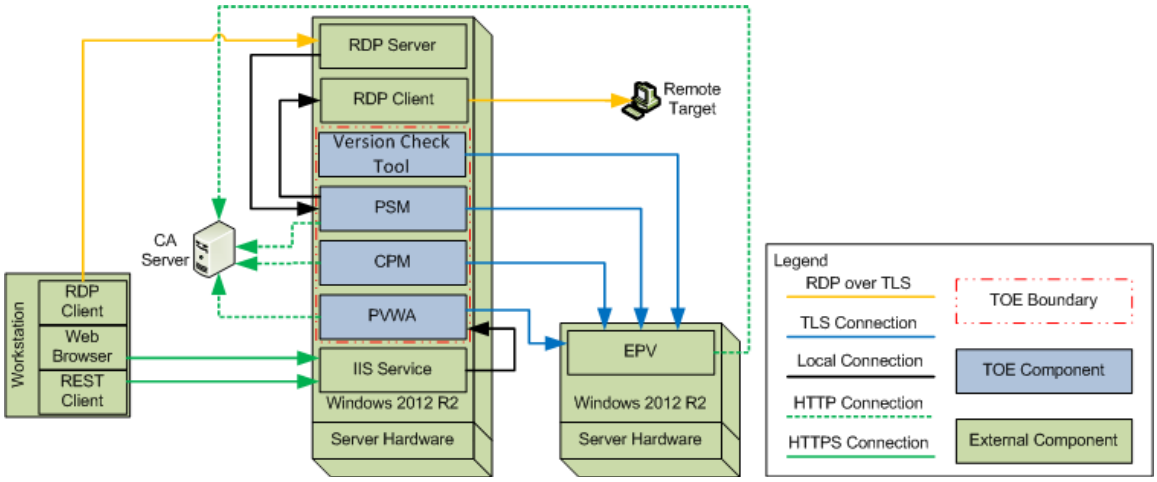
TABLE 3: ORGANIZATIONAL SECURITY POLICIES

There are no Organizational Security Policies for the application.

5. ARCHITECTURAL INFORMATION

Physical Scope and Boundary

The TOE Boundary includes all the CyberArk developed parts of PSM, CPM, PVWA, and the Version Check tool.



The TOE is a software-only TOE and is comprised of the PSM, CPM, and PVWA software. The TOE Boundary includes all the CyberArk developed parts of the PSM, CPM, and PVWA products. This TOE was evaluated as a single component consisting of multiple processes. It is *not* a distributed TOE. It is also not multiple products packaged together for evaluation structuring, where each product independently meets all SFRs. The three main PAS components and the Version Check tool, combined, meet the SFRs. SFRs were assessed against all components implementing the functionality, or subject to the threats, addressed by the indicated SFR.

Components and Applications Required in the TOE Operational Environment

The TOE operates with the following components in its operational environment:

For the evaluated configuration, the following TOE software must be installed on the Windows machine in the environment:

- CyberArk PSM v10.04.100.25
- CyberArk CPM v10.04.10.7
- CyberArk PVWA v10.04.10.4

Logical Scope and Boundary

The logical scope of the TOE comprises the following security functions:

Cryptographic Support — The TOE uses CAVP-validated cryptographic algorithm provided by its OpenSSL FIPS Object Module v2.0.14 with CyberArk libraries. The libraries are used to support the establishment of trusted channels and paths to protect

data in transit. In the evaluated configuration, the TOE's cryptographic libraries are used by the TLS client connection to the EPV server from PSM, CPM, and PVWA.

User Data Protection — The TOE stores sensitive information in the form of encrypted passwords in non-volatile memory. The TOE will limit its access to only network connectivity when accessing the platform's hardware resources. The network connection is used for communications between the TOE to the EPV server, the TOE to the target devices, and the user/administrator to the TOE.

Identification and Authentication — To validate the EPV server's certificate during the TLS handshake, the TOE implements functionality to validate X.509 certificates. The TOE uses a CRL to check certificate revocation status and will not establish a connection to the EPV server when the CRL is unavailable. The same functionality is used by CPM when it connects to the EPV server to manage passwords.

Security Management — The TOE is configured with default file permissions already in place and does not provide default credentials for authentication. The TOE relies on PVWA for storing and setting configuration options for PSM and CPM. Administrators can manage various parts of the TOE's functionality using the PVWA interfaces.

Privacy — The TOE does not store or transmit any Personally Identifiable Information (PII).

Protection of the TSF —The TOE protects against exploitation by implementing address space layout randomization (ASLR) and not allocating memory with both writing and execution. The TOE is also compatible with a hardened Windows environment and is compiled with stack-based buffer overflow protection. It also stores user-modifiable files to directories that do not contain executable files.

The TOE uses standard platform APIs and includes only the third-party libraries it needs to perform its functionality.

The version of each TOE component can be checked using the platform's Programs and Features manager. PVWA also provides its version information in its help section. Checking for updates to the TOE is reliant on the platform's functionally. Any update downloaded for the TOE must be installed using the platform's package manager. The installation package for each TOE component is digitally signed using a public key from CyberArk that is used to verify the integrity of the TOE's files.

Trusted Path/Channel — The TOE relies on the IIS service in the OE to provide a trusted path for communications to the TOE using TLS. The TOE also relies on the RDP Client in the OE to provide a trusted channel for communications from the TOE to a remote target using TLS. The TOE provides its own trusted channel between each TOE component to the EPV server over TLS.

6. DOCUMENTATION

The TOE includes the Security Target and the following guidance documents:

- CyberArk Software Ltd. Privileged Access Security – Windows Components Including Privileged Session Manager (PSM) v10.4, Central Policy Manager (CPM) v10.4, and Password Vault Web Access (PVWA) v10.4 Security Target Version 0.15, September 27, 2019
- CyberArk: Privileged Access Security Installation Guide; Version 10.4; PASIN-10-4-0-1
- CyberArk: Privileged Access Security System Requirements; Version 10.4; PASSR-10-4-0-1
- CyberArk; Privileged Access Security End-user Guide; Version 10.4; PASEUG-10-4-0-1
- CyberArk; Privileged Access Security Reference Guide; Version 10.4; PASRG-10-4-0-1
- CyberArk; Privileged Access Security Implementation Guide; Version 10.4; PASIMPG-10-4-0-1
- CyberArk.; Privileged Access Security – Windows Components; Guidance Documentation Supplement; Document Version: 0.8

All documentation delivered with the product is relevant to and within the scope of the TOE.

7. IT PRODUCT TESTING

This section describes the testing efforts of the evaluation team.

Evaluation team independent testing

The evaluation team conducted independent testing at the CyberArk facilities in Petach-Tikva, Israel. The evaluation team configured the TOE according to vendor installation instructions and the evaluated configuration as identified in the Security Target.

The evaluation team confirmed the technical accuracy of the setup and installation guide during installation of the TOE. The evaluation team confirmed that the TOE version delivered for testing was identical to the version identified in the ST.

The evaluation team used the Protection Profile test procedures as a basis for creating each of the Independent tests as required by the Assurance Activities.

Each Assurance Activity was tested as required by the conformant Protection Profile and the evaluation team verified that each test passed.

Vulnerability analysis

The evaluation team performed a vulnerability analysis of the TOE evidence and a search of publicly available information to identify potential vulnerabilities in the TOE. Based on the results of this effort, there were no identifiable vulnerabilities found at the time of certification. The vulnerability assessment was completed in September 2019.

8. RESULTS OF THE EVALUATION

The evaluation was carried out in accordance with the Common Criteria Evaluation and Validation Scheme (CCEVS) processes and procedures. The TOE was evaluated against the criteria contained in the Common Criteria for Information Technology Security Evaluation, Version 3.1R4. The evaluation methodology used by the evaluation team to conduct the evaluation is the Common Methodology for Information Technology Security Evaluation, Version 3.1R4.

DXC has determined that the product meets the security criteria in the Security Target, which specifies conformance to the Protection Profile for Application Software v1.2; April 22, 2016. A team of Validators, on behalf of the CCEVS Validation Body, monitored the evaluation. The evaluation effort was finished on September 27, 2019.

9. VALIDATOR COMMENTS

As stated earlier in this report, the product is the CyberArk PAS Solution, which enables organizations to secure, provision, control, and monitor all activities associated with the privileged identities used in enterprise systems. PAS contains multiple applications that work together to provide privileged access security. However, the components of the PAS Solution were not evaluated as a distributed TOE but as standalone TOEs that work together. There are separate security targets, detailed test reports, assurance activity reports, and secure configure guidance supplement. This validation report covers the evaluation of the Windows components Privileged Session Manager (PSM) v10.4, Central Policy Manager (CPM) v10.4, and Password Vault Web Access (PVWA).

The reader should review the Guidance Documentation Supplements and the associated guidance documents identified in section 6 carefully to ensure secure configuration of the product.

All other items and scope issues have been sufficiently addressed elsewhere in the document

10. ANNEXES

None

11. SECURITY TARGET

CyberArk Software Ltd. Privileged Access Security – Windows Components including Privileged Session Manager (PSM) v10.4, Central Policy Manager (CPM) v10.4, and Password Vault Web Access (PVWA) v10.4 Security Target, version 0.15, September 27, 2019

12. GLOSSARY

- **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.
- **Evaluation:** The assessment of an IT product against the Common Criteria using the Common Criteria Evaluation Methodology to determine whether or not the claims made are justified; or the assessment of a protection profile against the Common Criteria using the Common Evaluation Methodology to determine if the Profile is complete, consistent, technically sound and hence suitable for use as a statement of requirements for one or more TOEs that may be evaluated.
- **Evaluation Evidence:** Any tangible resource (information) required from the sponsor or developer by the evaluator to perform one or more evaluation activities.
- **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.
- **Threat:** Means through which the ability or intent of a threat agent to adversely affect the primary functionality of the TOE, facility that contains the TOE, or malicious operation directed towards the TOE. A potential violation of security.
- **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.
- **Vulnerabilities:** A vulnerability is a hardware, firmware, or software flaw that leaves an Automated Information System (AIS) open for potential exploitation. A weakness in automated system security procedures, administrative controls, physical layout, internal controls, and so forth, which could be exploited by a threat to gain unauthorized access to information or disrupt critical processing.

13. BIBLIOGRAPHY

1. Common Criteria for Information Technology Security Evaluation, Part 1: Introduction and General Model, CCMB-2012-09-001, Version 3.1 Revision 4, September 2012.
2. Common Criteria for Information Technology Security Evaluation, Part 2: Security Functional Components, CCMB-2012-09-002, Version 3.1 Revision 4, September 2012.
3. Common Criteria for Information Technology Security Evaluation, Part 3: Security Assurance Components, CCMB-2012-09-003, Version 3.1 Revision 4, September 2012.
4. Common Methodology for Information Technology Security Evaluation, Evaluation Methodology, CCMB-2012-09-004, Version 3.1, Revision 4, September 2012
5. Protection Profile for Application Software v1.2; April 22, 2016
6. CyberArk Software Ltd. Privileged Access Security – Windows Components including Privileged Session Manager (PSM) v10.4, Central Policy Manager (CPM) v10.4, and Password Vault Web Access (PVWA) v10.4 Security Target, version 0.15 September 27, 2019
7. Assurance Activity Report for CyberArk Privileged Access Security – Windows Components including PSM v10.04, CPM v10.04, and PVWA v10.04 , v0.3 September 2019
8. CyberArk Privileged Access Security – Windows Components including PSM v10.04, CPM v10.04, and PVWA v10.04 Evaluation Technical Report, v0.5 September 27, 2019
9. PAS-Windows Components PSM V10.4, CPM V10.4, PVWA V10.4, Detailed Test Report (DTR) Document Version 0.4 September 27, 2019
10. CyberArk: Privileged Access Security Installation Guide; Version 10.4; PASIN-10-4-0-1
11. CyberArk: Privileged Access Security System Requirements; Version 10.4; PASSR-10-4-0-1
12. CyberArk; Privileged Access Security End-user Guide; Version 10.4; PASEUG-10-4-0-1
13. CyberArk; Privileged Access Security Reference Guide; Version 10.4; PASRG-10-4-0-1
14. CyberArk Software Ltd.; Privileged Access Security – Windows Components; Guidance Documentation Supplement; Document Version: 0.7