



Communications  
Security Establishment

Centre de la sécurité  
des télécommunications

# CANADIAN CENTRE FOR **CYBER SECURITY**

## COMMON CRITERIA CERTIFICATION REPORT

Oracle Linux 9.3

14 February 2025

653-EWA

v1.0

# FOREWORD

This certification report is an UNCLASSIFIED publication, issued under the authority of the Chief, Communications Security Establishment (CSE).

The Information Technology (IT) product identified in this certification report, and its associated certificate, has been evaluated at an approved testing laboratory established under the Canadian Centre for Cyber Security (a branch of CSE). This certification report, and its associated certificate, applies only to the identified version and release of the product in its evaluated configuration. The evaluation has been conducted in accordance with the provisions of the Canadian Common Criteria Program, and the conclusions of the testing laboratory in the evaluation report are consistent with the evidence adduced.

This report, and its associated certificate, are not an endorsement of the IT product by Canadian Centre for Cyber Security, or any other organization that recognizes or gives effect to this report, and its associated certificate, and no warranty for the IT product by the Canadian Centre for Cyber Security, or any other organization that recognizes or gives effect to this report, and its associated certificate, is either expressed or implied.

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## OVERVIEW

The Canadian Common Criteria Program provides a third-party evaluation service for determining the trustworthiness of Information Technology (IT) security products. Evaluations are performed by a commercial Common Criteria Testing Laboratory (CCTL) under the oversight of the Certification Body, which is managed by the Canadian Centre for Cyber Security.

A CCTL is a commercial facility that has been approved by the Certification Body to perform Common Criteria evaluations; a significant requirement for such approval is accreditation to the requirements of ISO/IEC 17025, the General Requirements for the Competence of Testing and Calibration Laboratories.

By awarding a Common Criteria certificate, the Certification Body asserts that the product complies with the security requirements specified in the associated security target. A security target is a requirements specification document that defines the scope of the evaluation activities. The consumer of certified IT products should review the security target, in addition to this certification report, to gain an understanding of any assumptions made during the evaluation, the IT product's intended environment, the evaluated security functionality, and the testing and analysis conducted by the CCTL.

The certification report, certificate of product evaluation and security target are posted to the Common Criteria portal (the official website of the International Common Criteria Program).



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## EXECUTIVE SUMMARY

**Oracle Linux 9.3** (hereafter referred to as the Target of Evaluation, or TOE), from **Oracle Corporation**, was the subject of this Common Criteria evaluation. A description of the TOE can be found in Section 1.2. The results of this evaluation demonstrate that the TOE meets the requirements of the conformance claim listed in Section 1.1 for the evaluated security functionality.

**EWA-Canada** is the CCTL that conducted the evaluation. This evaluation was completed on **14 February 2025** and was carried out in accordance with the rules of the Canadian Common Criteria Program.

The scope of the evaluation is defined by the Security Target, which identifies assumptions made during the evaluation, the intended environment for the TOE, and the security functional/assurance requirements. Consumers are advised to verify that their operating environment is consistent with that specified in the security target, and to give due consideration to the comments, observations, and recommendations in this Certification Report.

The Canadian Centre for Cyber Security, as the Certification Body, declares that this evaluation meets all the conditions of the Arrangement on the Recognition of Common Criteria Certificates and that the product is listed on the Certified Products list (CPL) for the Canadian Common Criteria Program and the Common Criteria portal (the official website of the International Common Criteria Program).

# 1 IDENTIFICATION OF TARGET OF EVALUATION

The Target of Evaluation (TOE) is identified as follows:

**Table 1: TOE Identification**

<b>TOE Name and Version</b>	Oracle Linux 9.3
<b>Developer</b>	Oracle Corporation

## 1.1 COMMON CRITERIA CONFORMANCE

The evaluation was conducted using the Common Methodology for Information Technology Security Evaluation, Version 3.1 Revision 5, for conformance to the Common Criteria for Information Technology Security Evaluation, Version 3.1 Revision 5.

The TOE claims the following conformance:

**Protection Profile for General Purpose Operating Systems, Version 4.3**

**Functional Package for Transport Layer Security (TLS), version 1.1**

**Functional Package for Secure Shell (SSH), Version 1.0**

## 1.2 TOE DESCRIPTION

The TOE is a Linux-based operating system which supports secure remote login and other secure network services over an untrusted network using Secure Shell (SSH). It is a general purpose, multi-user, multi-tasking Linux based operating system.

### 1.3 TOE ARCHITECTURE

A diagram of the TOE architecture is as follows:

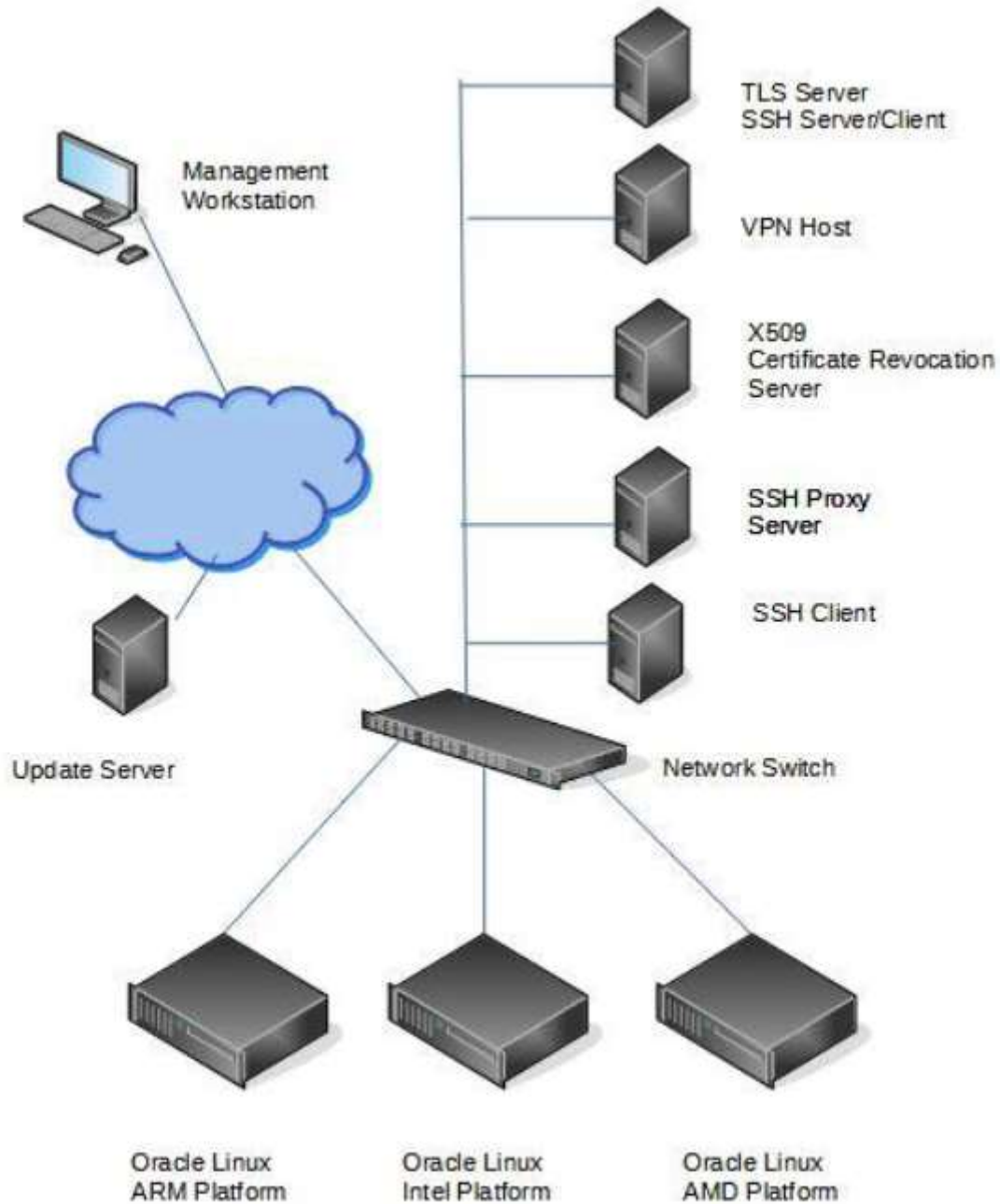


Figure 1: TOE Architecture



## 2 SECURITY POLICY

The TOE implements and enforces policies pertaining to the following security functionality:

- Audit Data Generation
- Cryptographic Support
- User Data Protection
- Identification and Authentication
- Security Management
- Protection of the TSF
- Trusted Path/Channels

Complete details of the security functional requirements (SFRs) can be found in the Security Target (ST) referenced in section 8.2.

### 2.1 CRYPTOGRAPHIC FUNCTIONALITY

The following cryptographic implementations are used by the TOE and have been evaluated by the CAVP:

**Table 2: Cryptographic Implementation**

Cryptographic Implementation	Certificate Number
Oracle Linux 9 OpenSSL FIPS Provider	A6141

## 3 ASSUMPTIONS AND CLARIFICATION OF SCOPE

Consumers of the TOE should consider assumptions about usage and environmental settings as requirements for the product's installation and its operating environment. This will ensure the proper and secure operation of the TOE.

### 3.1 USAGE AND ENVIRONMENTAL ASSUMPTIONS

The following assumptions are made regarding the use and deployment of the TOE:

- The OS relies upon a trustworthy computing platform for its execution. This underlying platform is out of scope of this PP.
- The user of the OS is not willfully negligent or hostile, and uses the software in compliance with the applied enterprise security policy. At the same time, malicious software could act as the user, so requirements which confine malicious subjects are still in scope.
- The administrator of the OS is not careless, willfully negligent or hostile, and administers the OS within compliance of the applied enterprise security policy.

### 3.2 CLARIFICATION OF SCOPE

The following interfaces are not included as part of the evaluated configuration and are disabled:

- GUI
- LSM Support
- GSS-API Security Mechanisms

## 4 EVALUATED CONFIGURATION

The evaluated configuration for the TOE comprises:

TOE Software/Firmware	Oracle Linux 9.3 with the following package updates:	
	<ul style="list-style-type: none"> <li>● c-ares.x86_64 1.19.1-2.el9_4</li> <li>● curl.x86_64 7.76.1-29.el9_4.1</li> <li>● expat.x86_64 2.5.0-2.el9_4.1</li> <li>● file.x86_64 5.39-16.el9</li> <li>● glibc.x86_64 2.34-100.0.1.el9_4.3</li> <li>● glib2.x86_64 2.68.4-14.el9_4.1</li> <li>● gnutls.x86_64 3.8.3-4.el9_4</li> <li>● grub2-common.noarch 1:2.06-82.0.1.el9_4</li> <li>● iwl100-firmware.noarch 999:39.31.5.1-999.34.el9 *</li> <li>● iwl1000-firmware.noarch 999:39.31.5.1-999.34.el9 *</li> <li>● iwl105-firmware.noarch 999:18.168.6.1-999.34.el9 *</li> <li>● iwl2000-firmware.noarch 999:18.168.6.1-999.34.el9 *</li> <li>● iwl2030-firmware.noarch 999:18.168.6.1-999.34.el9 *</li> <li>● iwl3160-firmware.noarch 999:25.30.13.0-999.34.el9 *</li> <li>● iwl5000-firmware.noarch 999:8.83.5.1_1-999.34.el9 *</li> <li>● iwl5150-firmware.noarch 999:8.24.2.2-999.34.el9 *</li> <li>● iwl6000g2a-firmware.noarch 999:18.168.6.1-999.34.el9 *</li> <li>● iwl6050-firmware.noarch 999:41.28.5.1-999.34.el9 *</li> </ul>	<ul style="list-style-type: none"> <li>● iwl7260-firmware.noarch 999:25.30.13.0-999.34.el9 *</li> <li>● iwllax2xx-firmware.noarch 999:20240715-999.34.el9 *</li> <li>● kernel-uek.x86_64 5.15.0-300.163.18.el9uek</li> <li>● kernel.x86_64 5.14.0-427.37.1.el9_4</li> <li>● kernel-tools.x86_64 5.14.0-427.37.1.el9_4</li> <li>● kernel-tools-libs.x86_64 5.14.0-427.37.1.el9_4</li> <li>● krb5-libs.x86_64 1.21.1-2.0.1.el9_4</li> <li>● less.x86_64 590-4.el9_4</li> <li>● libnghttp2.x86_64 1.43.0-5.el9_4.3</li> <li>● libndp.x86_64 1.8-6.el9_4</li> <li>● libssh.x86_64 0.10.4-13.el9</li> <li>● libxml2.x86_64 2.9.13-6.el9_4</li> <li>● linux-firmware.noarch 999:20240715-999.34.git4c8fb21e.el9</li> <li>● linux-firmware-core.noarch 999:20240715-999.34.git4c8fb21e.el9</li> <li>● pam.x86_64 1.5.1-19.0.2.el9</li> <li>● python3.x86_64 3.9.18-3.el9_4.5</li> <li>● python3-cryptography.x86_64 36.0.1-4.0.1.el9</li> <li>● python3-setuptools-wheel.noarch 53.0.0-12.el9_4.1</li> <li>● rpm.x86_64 4.16.1.3-29.el9</li> </ul>

	<ul style="list-style-type: none"> <li>• linux-firmware-whence.noarch 999:20240715-999.34.git4c8fb21e.el9</li> <li>• microcode_ctl.noarch 4:20231114-0.1.el9 *</li> <li>• openssh.x86_64 8.7p1-38.0.2.el9_4.4</li> <li>• openssl.x86_64 1:3.0.7-28.0.1.el9_4</li> <li>• openssl-fips-provider.x86_64 3.0.7-2.0.1.el9</li> </ul>	<ul style="list-style-type: none"> <li>• sssd-common.x86_64 2.9.4-6.0.1.el9_4.1</li> <li>• squashfs-tools.x86_64 4.4-10.git1.el9</li> <li>• sqlite-libs.x86_64 3.34.1-7.el9_3</li> <li>• sudo.x86_64 1.9.5p2-10.el9_3</li> <li>• systemd.x86_64 252-32.0.2.el9_4.7</li> </ul>
<b>TOE Hardware</b>	<ul style="list-style-type: none"> <li>• Oracle Linux 9.3 on KVM (Oracle Linux 8) on AMD EPYC 7J13 (UEK and RHCK Kernel)</li> <li>• Oracle Linux 9.3 on KVM (Oracle Linux 8) on Intel Icelake Xeon Platinum 8358 (UEK and RHCK Kernel)</li> <li>• Oracle Linux 9.3 on KVM (Oracle Linux 8) on Ampere Altra Q80-30 (UEK Kernel) <ul style="list-style-type: none"> <li>○ Packages marked with * are not applicable to the ARM platform</li> </ul> </li> </ul>	
<b>Environmental Support</b>	<ul style="list-style-type: none"> <li>• Update server</li> <li>• Certificate revocation Server</li> </ul>	

## 4.1 DOCUMENTATION

The following documents are provided to the consumer to assist in the configuration and installation of the TOE:

- a) Oracle Linux 9.3 Common Criteria Guidance Document, 2025-02-14, v1.4
- b) Oracle Linux 9 Installing Oracle Linux, F51031-13, October 2024
- c) Oracle Linux 9 Enhancing System Security, F84093-03, August 2024
- d) Oracle Linux 9 Connecting to Remote Systems with OpenSSH, F22963-13, April 2024
- e) Oracle Linux 9 Setting Up System Users and Authentication, F56873-06, January 2024

## 5 EVALUATION ANALYSIS ACTIVITIES

The evaluation analysis activities involved a structured evaluation of the TOE. Documentation and process dealing with Development, Guidance Documents, and Life-Cycle Support were evaluated.

### 5.1 DEVELOPMENT

The evaluators analyzed the documentation provided by the vendor; they determined that the design completely and accurately describes the TOE security functionality (TSF) interfaces and how the TSF implements the security functional requirements. The evaluators determined that the initialization process is secure, that the security functions are protected against tamper and bypass, and that security domains are maintained.

### 5.2 GUIDANCE DOCUMENTS

The evaluators examined the TOE preparative user guidance and operational user guidance and determined that it sufficiently and unambiguously describes how to securely transform the TOE into its evaluated configuration and how to use and administer the product. The evaluators examined and tested the preparative and operational guidance and determined that they are complete and sufficiently detailed to result in a secure configuration.

Section 4.1 provides details on the guidance documents.

### 5.3 LIFE-CYCLE SUPPORT

An analysis of the TOE configuration management system and associated documentation was performed. The evaluators found that the TOE configuration items were clearly marked.

The evaluators examined the delivery documentation and determined that it described all the procedures required to maintain the integrity of the TOE during distribution to the consumer.

## 6 TESTING ACTIVITIES

Testing consists of the following three steps: assessing developer tests, performing independent tests, and performing a vulnerability analysis.

### 6.1 ASSESSMENT OF DEVELOPER TESTS

The evaluators verified that the developer has met their testing responsibilities by examining their test evidence, and reviewing their test results, as documented in the Evaluation Test Report (ETR). The correspondence between the tests identified in the developer's test documentation and the functional specification was complete.

### 6.2 CONDUCT OF TESTING

The TOE was subjected to a comprehensive suite of formally documented, independent functional and penetration tests. The detailed testing activities, including configurations, procedures, test cases, expected results and observed results are documented in a separate Test Results document.

### 6.3 INDEPENDENT TESTING

During this evaluation, the evaluator developed independent functional & penetration tests by examining design and guidance documentation.

All testing was planned and documented to a sufficient level of detail to allow repeatability of the testing procedures and results. The following testing activities were performed:

- a. PP Assurance Activities: The evaluator performed the assurance activities listed in the claimed PP
- b. Cryptographic Implementation Verification: The evaluator verified that the claimed cryptographic implementation was present in the TOE.

#### 6.3.1 INDEPENDENT TESTING RESULTS

The developer's tests and the independent tests yielded the expected results, providing assurance that the TOE behaves as specified in its ST and functional specification.

## 6.4 VULNERABILITY ANALYSIS

The vulnerability analysis focused on 4 flaw hypotheses.

- Public Vulnerability based (Type 1)
- Evaluation team generated (Type 3)
- Technical community sources (Type 2)
- Tool Generated (Type 4)

The evaluators conducted an independent review of all evaluation evidence, public domain vulnerability databases and technical community sources (Type 1 & 2). Additionally, the evaluators used automated vulnerability scanning tools to discover potential network, platform, and application layer vulnerabilities (Type 4). Based upon this review, the evaluators formulated flaw hypotheses (Type 3), which they used in their vulnerability analysis.

Type 1 & 2 searches were conducted on **17 October 2024** and included the following search terms:

Oracle Linux 9.3	OpenSSL 3.0.7	OpenSSH 8
kernel-UEK		

Vulnerability searches were conducted using the following sources:

National Vulnerability Database <a href="https://nvd.nist.gov/vuln/search">https://nvd.nist.gov/vuln/search</a>	Oracle Linux Security Errata <a href="https://linux.oracle.com/security/">https://linux.oracle.com/security/</a>
CISA Known Exploited Vulnerabilities Catalog <a href="https://www.cisa.gov/known-exploited-vulnerabilities-catalog">https://www.cisa.gov/known-exploited-vulnerabilities-catalog</a>	

### 6.4.1 VULNERABILITY ANALYSIS RESULTS

The vulnerability analysis did not uncover any security relevant residual exploitable vulnerabilities in the intended operating environment.

## 7 RESULTS OF THE EVALUATION

The Information Technology (IT) product identified in this certification report, and its associated certificate, has been evaluated at an approved testing laboratory established under the Canadian Centre for Cyber Security. This certification report, and its associated certificate, apply only to the specific version and release of the product in its evaluated configuration.

This evaluation has provided the basis for the conformance claim documented in Section 1.1. The overall verdict for this evaluation is **PASS**. These results are supported by evidence in the ETR.

### 7.1 RECOMMENDATIONS/COMMENTS

It is recommended that all guidance outlined in Section 4.1 be followed to configure the TOE in the evaluated configuration.



## 8 SUPPORTING CONTENT

### 8.1 LIST OF ABBREVIATIONS

Term	Definition
CAVP	Cryptographic Algorithm Validation Program
CCTL	Common Criteria Testing Laboratory
CMVP	Cryptographic Module Validation Program
CSE	Communications Security Establishment
EAL	Evaluation Assurance Level
ETR	Evaluation Technical Report
GUI	Graphical User Interface
IT	Information Technology
KVM	Kernal Based Virtual Machine
LSM	Linux Security Module
PP	Protection Profile
SFR	Security Functional Requirement
ST	Security Target
TOE	Target of Evaluation
TSF	TOE Security Function

### 8.2 REFERENCES

Reference
Common Criteria for Information Technology Security Evaluation, Version 3.1 Revision 5, April 2017.
Common Methodology for Information Technology Security Evaluation, CEM, Version 3.1 Revision 5, April 2017.
Evaluation Technical Report Oracle Linux 9.3, 2025-02-14, v0.8
Security Target Oracle Linux 9.3, 2025-02-14, v1.5
Assurance Activity Report Oracle Linux 9.3, 2025-02-14, v0.8