Certification Report

HP Integrated Lights-Out 4 v2.11

Issued by:

Communications Security Establishment

Certification Body

Canadian Common Criteria Evaluation and Certification Scheme

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DISCLAIMER

The Information Technology (IT) product identified in this certification report, and its associated certificate, has been evaluated at an approved evaluation facility – established under the Canadian Common Criteria Evaluation and Certification Scheme (CCS) – using the *Common Methodology for Information Technology Security Evaluation, Version 3.1 Revision 4*, for conformance to the *Common Criteria for Information Technology Security Evaluation, Version 3.1 Revision 4*. 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 CCS, and the conclusions of the evaluation facility 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 the Communications Security Establishment, 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 Communications Security Establishment, or any other organization that recognizes or gives effect to this report, and its associated certificate, is either expressed or implied.

FOREWORD

The Canadian Common Criteria Evaluation and Certification Scheme (CCS) provides a third-party evaluation service for determining the trustworthiness of Information Technology (IT) security products. Evaluations are performed by a commercial Common Criteria Evaluation Facility (CCEF) under the oversight of the CCS Certification Body, which is managed by the Communications Security Establishment.

A CCEF is a commercial facility that has been approved by the CCS Certification Body to perform Common Criteria evaluations; a significant requirement for such approval is accreditation to the requirements of *ISO/IEC 17025:2005, the General Requirements for the Competence of Testing and Calibration Laboratories*. Accreditation is performed under the Program for the Accreditation of Laboratories - Canada (PALCAN), administered by the Standards Council of Canada.

The CCEF that carried out this evaluation is CGI IT Security Evaluation & Test Facility.

By awarding a Common Criteria certificate, the CCS 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, in order 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 CCEF.

This certification report is associated with the certificate of product evaluation dated 08 March 2016, and the security target identified in Section 4 of this report.

The certification report, certificate of product evaluation and security target are posted on the CCS Certified Products list (CPL) and the Common Criteria portal (the official website of the Common Criteria Project).

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Executive Summary

HP Integrated Lights-Out 4 v2.11, from Hewlett Packard Enterprise Development, L.P., is the Target of Evaluation. The results of this evaluation demonstrate that HP Integrated Lights-Out 4 v2.11 meets the requirements of Evaluation Assurance Level (EAL) 2 augmented for the evaluated security functionality.

HP Integrated Lights-Out 4 v2.11 is a hardware-firmware TOE used to simplify initial server setup, monitor server health, provide power and thermal optimization, and provide secure remote server administration. HP Integrated Lights-Out 4 v2.11 is integrated into the motherboard of HP ProLiant Gen8 or Gen9 DL, ML, SL, or XL servers.

CGI IT Security Evaluation & Test Facility is the CCEF that conducted the evaluation. This evaluation was completed on 08 March 2016 and was carried out in accordance with the rules of the Canadian Common Criteria Evaluation and Certification Scheme (CCS).

The scope of the evaluation is defined by the security target, which identifies assumptions made during the evaluation, the intended environment for HP Integrated Lights-Out 4 v2.11, 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.

Communications Security Establishment, as the CCS Certification Body, declares that the HP Integrated Lights-Out 4 v2.11 evaluation meets all the conditions of the *Arrangement on the Recognition of Common Criteria Certificates* and that the product will be listed on the CCS Certified Products list (CPL) and the Common Criteria portal (the official website of the Common Criteria Project).

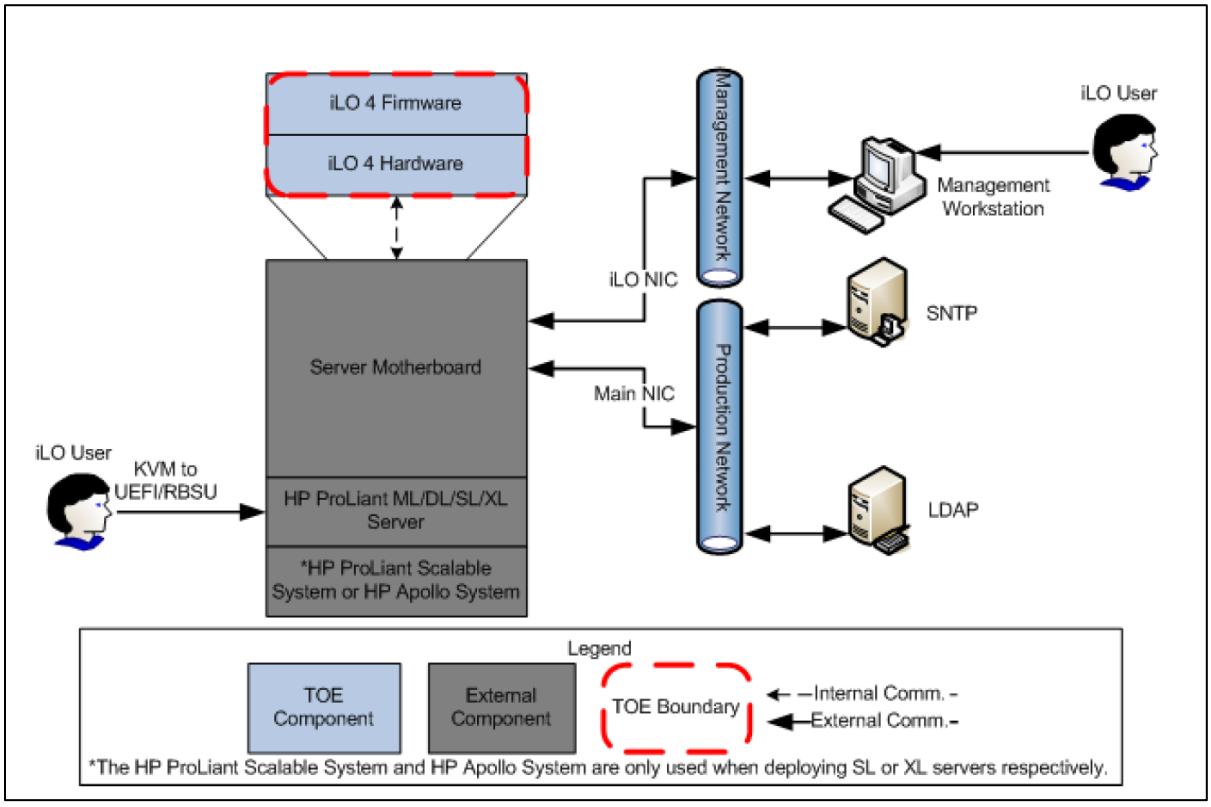
1 Identification of Target of Evaluation

The Target of Evaluation (TOE) for this EAL 2+ evaluation is HP Integrated Lights-Out 4 v2.11, from Hewlett Packard Enterprise Development, L.P..

2 TOE Description

HP Integrated Lights-Out 4 v2.11 is a hardware-firmware TOE used to simplify initial server setup, monitor server health, provide power and thermal optimization, and provide secure remote server administration. HP Integrated Lights-Out 4 v2.11 is integrated into the motherboard of HP ProLiant Gen8 or Gen9 DL, ML, SL, or XL servers.

A diagram of the HP Integrated Lights-Out 4 v2.11 architecture is as follows:



3 Security Policy

HP Integrated Lights-Out 4 v2.11 implements a role-based access control policy to control administrative access to the system. In addition, HP Integrated Lights-Out 4 v2.11 implements policies pertaining to the following security functional classes:

- Security Audit
- Cryptographic Support
- User Data Protection

- Identification and Authentication
- Security Management
- Protection of the TOE Security Functionality
- TOE Access
- Trusted Path/Channel

The following cryptographic module was evaluated to the FIPS 140-2 standard:

Cryptographic Module	**Certificate**
iLO Cryptographic Module	2574

4 Security Target

The ST associated with this Certification Report is identified below:

Hewlett Packard Enterprise Development LP Integrated Lights-Out 4 v2.11 Security Target, Version 2.2, March 8, 2016.

5 Common Criteria Conformance

The evaluation was conducted using the Common Methodology for Information Technology Security Evaluation, Version 3.1 Revision 4, for conformance to the Common Criteria for Information Technology Security Evaluation, Version 3.1 Revision 4.

HP Integrated Lights-Out 4 v2.11 is:

a. EAL 2 augmented, containing all security assurance requirements listed, as well as the following:
    - ALC_FLR.2 – Flaw Reporting Procedures
b. Common Criteria Part 2 conformant; with security functional requirements based only upon functional components in Part 2;
c. Common Criteria Part 3 conformant, with security assurance requirements based only upon assurance components in Part 3.

6 Assumptions and Clarification of Scope

Consumers of HP Integrated Lights-Out 4 v2.11 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.

6.1 Secure Usage Assumptions

The following Secure Usage Assumption is listed in the ST:

- There are one or more competent individuals assigned to manage the TOE, its operating environment, and the security of the information it contains. The individuals are non-hostile, appropriately trained, and follow all guidance.

6.2 Environmental Assumptions

The following Environmental Assumptions are listed in the ST:

- The TOE is located within a controlled access facility.
- The TOE will be protected from unauthorized modification.

7 Evaluated Configuration

The evaluated configuration for HP Integrated Lights-Out 4 v2.11 comprises the following components:

Component	Requirements
HP iLO 4 Firmware	Version 2.11
HP iLO 4 Hardware	At least one of the following ASICs: • GLP-3 (Model number 531510-003) • GLP-4 (Model number 531510-004) • Sabine (Model number 610107-002)
HP iLO 4 License	HP iLO 4 Advanced License

The HP iLO 4 hardware is contained within the host server and cannot be chosen independently. At least one of the following hosts is required:

- HP ProLiant Gen8 DL Rack Server (can contain a GLP-3 or Sabine ASIC)
- HP ProLiant Gen9 DL Rack Server (contains a GLP-4 ASIC)
- HP ProLiant Gen8 ML Tower Server (contains a Sabine ASIC)
- HP ProLiant Gen9 ML Tower Server (contains a GLP-4 ASIC)
- HP ProLiant Gen8 SL Scalable Server (contains a Sabine ASIC)
- HP ProLiant Gen8 XL Scalable Server (contains a Sabine ASIC)
- HP ProLiant Gen9 XL Scalable Server (contains a GLP-4 ASIC)

The publication entitled Hewlett-Packard Enterprise Development, L.P. Integrated Lights-Out 4 v2.11 Guidance Documentation Supplement, version 1.5, March 8, 2016 describes the procedures necessary to install and operate HP Integrated Lights-Out 4 v2.11 in its evaluated configuration.

8 Documentation

The Hewlett Packard Enterprise Development, L.P. documents provided to the consumer are as follows:

a. HP iLO 4 Scripting and Command Line Guide; HP Part Number 684919-009, March 2015, Edition 1,

b. HP iLO 4 User Guide; HP Part Number 684918-009, March 2015, Edition 1,

c. HP iLO 4 Release Notes 2.10, HP Part Number 684917-403, March 2015, Edition 1,

d. HP iLO Federation User Guide, HP Part Number 767159-003, March 2015, Edition 1,

e. HP Integrated Light-Out (iLO) Quick Specs (Overview), HP Part Number DA-14276, Published, March 2015, Edition 12,

f. HP ProLiant Gen8 Troubleshooting Guide Volume II: Error Messages, HP Part Number, 658801-003, November 2013, Edition 3,

g. HP ProLiant Gen9 Troubleshooting Guide Volume II: Error Messages, HP Part Number 795673-001, September 2014, Edition 1,

h. Managing HP Servers Using the HP RESTful API for iLO, HP Part Number 795538-002, March 2015, Edition 1, and

i. Hewlett-Packard Enterprise Development LP Integrated Lights-Out 4 v2.11 Guidance Documentation Supplement, version 1.5, March 8, 2016.

9 Evaluation Analysis Activities

The evaluation analysis activities involved a structured evaluation of HP Integrated Lights-Out 4 v2.11, including the following areas:

Development: The evaluators analyzed the HP Integrated Lights-Out 4 v2.11 functional specification and design documentation; they determined that the design completely and accurately describes the TOE security functionality (TSF) interfaces, the TSF subsystems and how the TSF implements the security functional requirements (SFRs). The evaluators analyzed the HP Integrated Lights-Out 4 v2.11 security architectural description and determined that the initialization process is secure, that the security functions are protected against tamper and bypass, and that security domains are maintained. The evaluators also independently verified that the correspondence mappings between the design documents are correct.

Guidance Documents: The evaluators examined the HP Integrated Lights-Out 4 v2.11 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.

Life-cycle support: An analysis of the HP Integrated Lights-Out 4 v2.11 configuration management system and associated documentation was performed. The evaluators found that the HP Integrated Lights-Out 4 v2.11 configuration items were clearly marked.

The evaluators examined the delivery documentation and determined that it described all of the procedures required to maintain the integrity of HP Integrated Lights-Out 4 v2.11 during distribution to the consumer.

The evaluators reviewed the flaw remediation procedures used by developer for the HP Integrated Lights-Out 4 v2.11. During a site visit, the evaluators also examined the evidence generated by adherence to the procedures. The evaluators concluded that the procedures are adequate to track and correct security flaws, and distribute the flaw information and corrections to consumers of the product.

All these evaluation activities resulted in **PASS** verdicts.

10 ITS Product Testing

Testing consists of the following three steps: assessing developer tests, performing independent functional tests, and performing penetration tests.

10.1 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 ETR[1].

The evaluators analyzed the developer's test coverage analysis and found it to be complete and accurate. The correspondence between the tests identified in the developer's test documentation and the functional specification was complete.

10.2 Independent Functional Testing

During this evaluation, the evaluator developed independent functional 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. Resulting from this test coverage approach is the following list of test goals:

a. Repeat of Developer's Tests: The objective of this test goal is to repeat a subset of the developer's tests;

b. iLO Lightweight Directory Access Protocol (LDAP) Authentication and Authorization: The objective of this test goal is to verify that LDAP authentication and authorization is enforced on the TOE;

c. Unified Extensible Firmware Interface (UEFI) and ROM-Based Setup Utility (RBSU) Access: The objective of this test goal is to verify that authentication is required to access the UEFI and RBSU interfaces;

d. Command Line Interface (CLI) Authentication Delay: The objective of this test goal is to confirm that the TOE will enforce a login delay between failed CLI login attempts;

e. User Authorization: The objective of this test goal is to verify that degraded user's privileges are enforced correctly for a logged in user; and

f. Takeover .NET IRC session: The objective of this test goal is to take over an existing .NET IRC session and ensure that privileges are not escalated.

10.3 Independent Penetration Testing

Subsequent to the independent review of public domain vulnerability databases and all evaluation deliverables, limited independent evaluator penetration testing was conducted. The penetration tests focused on:

[1] The ETR is a CCS document that contains information proprietary to the developer and/or the evaluator, and is not releasable for public review.

a. Use of automated vulnerability scanning tools to discover potential network, platform and application layer vulnerabilities such as Heartbleed, Shellshock, POODLE, GHOST, and FREAK; and

b. iLO Federation Using Secure Communication: The objective of this test goal is to attempt a man in the middle attack between distributed TOEs.

The independent penetration testing did not uncover any exploitable vulnerabilities in the intended operating environment.

10.4 Conduct of Testing

HP Integrated Lights-Out 4 v2.11 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.

10.5 Testing Results

The developer's tests and the independent functional tests yielded the expected results, providing assurance that HP Integrated Lights-Out 4 v2.11 behaves as specified in its ST and functional specification.

11 Results of the Evaluation

This evaluation has provided the basis for a EAL 2+ level of assurance. The overall verdict for the evaluation is **PASS**. These results are supported by evidence in the ETR.

12 Acronyms, Abbreviations and Initializations

Acronym/Abbreviation/ Initialization	Description
CCEF	Common Criteria Evaluation Facility
CCS	Canadian Common Criteria Evaluation and Certification Scheme
CLI	Command Line Interface
CPL	Certified Products list
CM	Configuration Management
LDAP	Lightweight Directory Access Protocol
EAL	Evaluation Assurance Level
ETR	Evaluation Technical Report
IT	Information Technology
ITSET	Information Technology Security Evaluation and Testing
PALCAN	Program for the Accreditation of Laboratories - Canada
RBSU	ROM-Based Setup Utility
SFR	Security Functional Requirement
ST	Security Target
TOE	Target of Evaluation
TSF	TOE Security Function
UEFI	Unified Extensible Firmware Interface

13 References

This section lists all documentation used as source material for this report:

a. CCS Publication #4, Technical Oversight, Version 1.8, October 2010.

b. Common Criteria for Information Technology Security Evaluation, Version 3.1 Revision 4, September 2012.

c. Common Methodology for Information Technology Security Evaluation, CEM, Version 3.1 Revision 4, September 2012.

d. Hewlett Packard Enterprise Development LP Integrated Lights-Out 4 v2.11 Security Target, Version 2.2, March 8, 2016.

e. Hewlett-Packard Development Company, L.P. HP Integrated Lights-Out 4 v2.11 on the GLP-3, GLP-4, and Sabine ASIC with an Advanced License Common Criteria EAL 2+ Evaluation Technical Report, Version 0.4, March 8, 2016.