Communications Security Establishment
Centre de la sécurité des télécommunications

CANADIAN CENTRE FOR CYBER SECURITY

COMMON CRITERIA CERTIFICATION REPORT

Ixia, A Keysight Business Vision Series Network Packet Broker v5.3.0

Ixia, A Keysight Business

22 July 2020

383-4-505

V1.0

Canada

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 evaluation facility established under the Canadian Centre for Cyber Security (CCCS). 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 CC Scheme, 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 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 Scheme 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 Certification Body, which is managed by the Canadian Centre for Cyber Security.

A CCEF 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, 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.

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

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EXECUTIVE SUMMARY

The Ixia, A Keysight Business Vision Series Network Packet Broker v5.3.0 (hereafter referred to as the Target of Evaluation, or TOE), from Ixia, A Keysight Business , 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 Table 1 for the evaluated security functionality.

Lightship Security is the CCEF that conducted the evaluation. This evaluation was completed on 22 July 2020 and was carried out in accordance with the rules of the Canadian Common Criteria Scheme.

The scope of the evaluation is defined by the Security Target, which identifies assumptions made during the evaluation, the intended environment for 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 CC Scheme and the Common Criteria portal (the official website of the International Common Criteria Project).

1 IDENTIFICATION OF TARGET OF EVALUATION

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

Table 1: TOE Identification

TOE Name and Version	Ixia, A Keysight Business Vision Series Network Packet Broker v5.3.0
Developer	Ixia, A Keysight Business

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;

collaborative Protection Profile for Network Devices, v2.1

1.2 TOE DESCRIPTION

The TOE is a network device which captures network traffic by tapping network links. Through non-production network links, traffic flows to the Network Packet Broker where duplicate data is removed and filtered. Performance and monitoring tools then receive the most appropriate data stream, tailored specifically for that tool.

1.3 TOE ARCHITECTURE

A diagram of the TOE architecture is as follows:

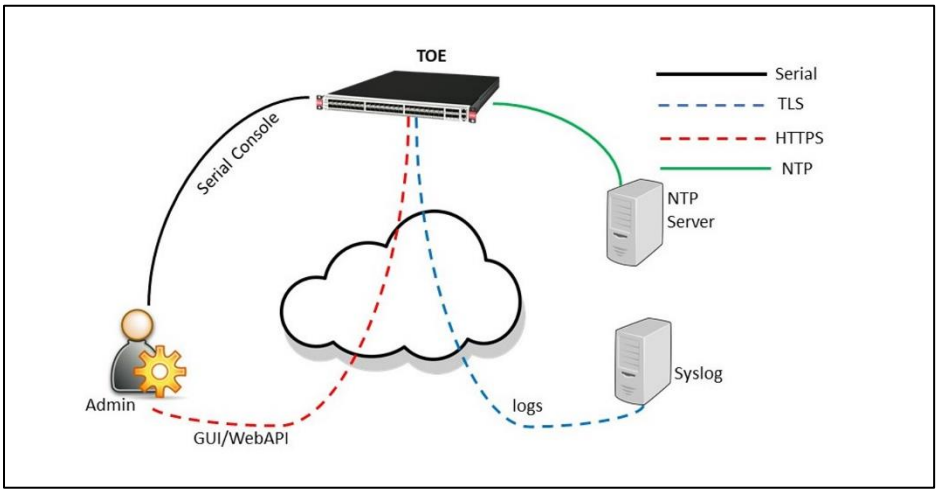


Figure 1: TOE Architecture

2 SECURITY POLICY

The TOE implements policies pertaining to the following security functional classes:

- Security Audit
- Cryptographic Support
- Identification and Authentication
- Security Management
- Protection of the TSF
- TOE Access
- 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 have been evaluated by the CAVP and are used by the TOE:

Table 2: Cryptographic Implementation(s)

Cryptographic Algorithm	Certificate Number
Ixia Cryptographic Module for Network Visibility	C1551
Ixia Cryptographic Module for OpenSSL	C1550
AES	5940
RSA	3118
ECDSA	1590
Component	2169
SHS	4693, 4692
HMAC	3915
KAS	210
DRBG	2493

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.

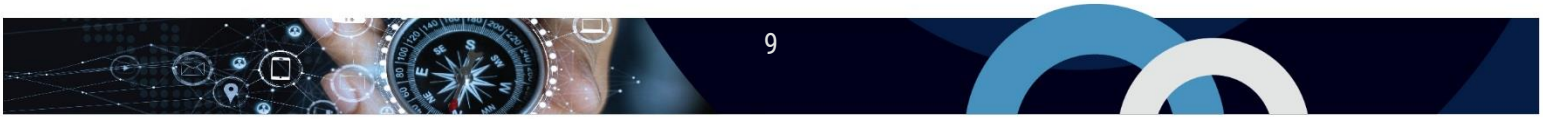
3.1 USAGE AND ENVIRONMENTAL ASSUMPTIONS

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

- The device is assumed to be physically protected in its operational environment and not subject to physical attacks that compromise the security and/or interfere with the device's physical interconnections and correct operation. This protection is assumed to be sufficient to protect the device and the data it contains.
- The device is assumed to provide networking and filtering functionality as its core function and not provide functionality/services that could be deemed as general-purpose computing. For example, the device should not provide computing platform for general purpose applications (unrelated to networking functionality).
- A standard/generic network device does not provide any assurance regarding the protection of traffic that traverses it. The intent is for the network device to protect data that originates on or is destined to the device itself, to include administrative data and audit data. Traffic that is traversing the network device, destined for another network entity, is not covered by the Protection Profile.
- The Security Administrator(s) for the network device are assumed to be trusted and to act in the best interest of security for the organization. This includes being appropriately trained, following policy, and adhering to guidance documentation. Administrators are trusted to ensure passwords/credentials have sufficient strength and entropy and to lack malicious intent when administering the device. The network device is not expected to be capable of defending against a malicious Administrator that actively works to bypass or compromise the security of the device.
- For TOEs supporting X.509v3 certificate-based authentication, the Security Administrator(s) are expected to fully validate (e.g. offline verification) any CA certificate (root CA certificate or intermediate CA certificate) loaded into the TOE's trust store (aka 'root store', ' trusted CA Key Store', or similar) as a trust anchor prior to use (e.g. offline verification).
- The network device firmware and software is assumed to be updated by an administrator on a regular basis in response to the release of product updates due to known vulnerabilities.
- The administrator's credentials (private key) used to access the device are protected by the platform on which they reside.
- It is assumed that the administrator will ensure that there is no unauthorized access possible for sensitive residual information (e.g. cryptographic keys, keying material, PINs, passwords etc.) on networking equipment when the equipment is discarded or removed from its operational environment.

3.2 CLARIFICATION OF SCOPE

The TOE incorporates CAVP-validated cryptography and was not subjected to CMVP (FIPS-140) validation. Only the functionality claimed in the Network Device Collaborative Protection Profile was tested.



4 EVALUATED CONFIGURATION

The evaluated configuration for the TOE comprises the Vision Series Network Packet Broker v5.3.0.22 software running on the following appliances:

- Vision ONE
- Vision 7300/7303
- Vision E40
- Vision E100
- Vision E10S
- Vision X
- TradeVision

The evaluated configuration requires a syslog and NTP server present in the operational environment.

4.1 DOCUMENTATION

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

a) Ixia, A Keysight Business Vision Series Network Packet Broker v5.3.0 Common Criteria Guide, v1.0
b) Ixia Vision X User Guide v5.3.0, 913-2547-01 Rev B
c) Ixia Vision X Installation Guide v5.2.0, 913-2542-01 Rev A
d) Ixia Vision X Quick Start Guide v5.3.0, 913-2499-01 Rev-C
e) Ixia Vision 7300/7303 User Guide v5.3.0, 913-2548-01 Rev B
f) Ixia Vision 7300/7303 Installation Guide v5.0.2, 913-2530-01 Rev B
g) Ixia Vision 7300/7303 Startup Guide v5.0.0, 913-2413-01 Rev A
h) Ixia Vision ONE Installation Guide v5.0.0, 913-2419-01 Rev B
i) Ixia Vision ONE User Guide v5.3.0, 913-2549-01 Rev B
j) Ixia Vision ONE Startup Guide v5.0.0, 913-2416-01 Rev B
k) Ixia Vision Edge 40/100 Installation Guide v5.0.1, 913-2450-01 Rev A
l) Ixia Vision Edge 40/100 User Guide v5.3.0, 913-2550-01 Rev B
m) Ixia Vision E40 E100 Startup Guide, v5.0.0, 913-2415-01 Rev A
n) Ixia Vision Edge E10S User Guide v5.3.0, 913-2552-01 Rev B
o) Ixia Vision Edge 10S Installation Guide v5.2.0, 913-2529-01 Rev A
p) Ixia TradeVision Installation Guide v5.0.0, 913-2421-01 Rev A
q) Ixia TradeVision User Guide v5.3.0, 913-2565-01 Rev B
r) Ixia TradeVision Quick Start Guide v5.3.0, 913-2563-01 Rev A

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 functional tests, and performing penetration tests.

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 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. The following testing activities were performed:

a. PP Assurance Activities: The evaluator performed the assurance activities listed in the claimed PP; and
b. Cryptographic Implementation Verification: The evaluators verified that the cryptographic implementation claimed is present and used by the TOE.

6.3.1 FUNCTIONAL TEST RESULTS

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

6.4 INDEPENDENT PENETRATION TESTING

The penetration testing effort focused on 4 flaw hypotheses;

- Public vulnerability based (Type 1)
- Technical community sources (Type 2)
- Evaluation team generated (Type 3)
- 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 penetration testing effort.

6.4.1 PENETRATION TEST RESULTS

Type 1 and 2 searches were conducted on May 19, 2020 and included the following search terms:

- Ixia Network Packet Brokers
- Vision ONE, Vision 7300/7303, Vision E40, Vision E100, Vision E10S, Vision X, TradeVision
- Restlet-Framework/Apache-RESTv5.7.3
- Openssl 1.0.2o
- BouncyCastle 1.0.1

Vulnerability searches were conducted using the following sources:

- https://about.keysight.com/en/quality/security/advisory.shtml and https://support.ixiacom.com/support-services/security-advisories
- NIST National Vulnerabilities Database https://web.nvd.nist.gov/view/vuln/search
- NIST National Vulnerabilities Database (can be used to access CVE and US-CERT databases identified below): https://web.nvd.nist.gov/view/vuln/search
    - Common Vulnerabilities and Exposures: http://cve.mitre.org/cve/ https://www.cvedetails.com/vulnerability-search.php
    - US-CERT: http://www.kb.cert.org/vuls/html/search
- Exploit / Vulnerability Search Engine: www.exploitsearch.net
- SecurITeam Exploit Search: www.securiteam.com
- Tenable Network Security http://nessus.org/plugins/index.php?view=search
- Tipping Point Zero Day Initiative http://www.zerodayinitiative.com/advisories
- Offensive Security Exploit Database: https://www.exploit-db.com/
- Rapid7 Vulnerability Database: https://www.rapid7.com/db/vulnerabilities

- OpenSSL Vulnerbilities: https://www.openssl.org/news/vulnerabilities.html
- Google

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

7 RESULTS OF THE EVALUATION

This evaluation has provided the basis for the conformance claim documented in Table 1. The overall verdict for this evaluation is **PASS**. These results are supported by evidence in the ETR.

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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
CCEF	Common Criteria Evaluation Facility
CM	Configuration Management
CMVP	Cryptographic Module Validation Program
CSE	Communications Security Establishment
CCCS	Canadian Centre for Cyber Security
EAL	Evaluation Assurance Level
ETR	Evaluation Technical Report
GC	Government of Canada
IT	Information Technology
ITS	Information Technology Security
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.
Ixia, A Keysight Business Vision Series Network Packet Broker v5.3.0 Security Target, v1.4, July 20, 2020.
Ixia, A Keysight Business Vision Series Network Packet Broker v5.3.0 Evaluation Technical Report, v0.8, July 22, 2020
Ixia, A Keysight Business Vision Series Network Packet Broker v5.3.0 Assurance Activity Report, v0.9, July 22, 2020.