EDSA-312

ISA Security Compliance Institute — Embedded Device Security Assurance –

Security development artifacts for embedded devices

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Revision history

version	date	changes
V1R3-03082010	2010.03.08	initial version published to http://www.ISASecure.org
1.4	2010.06.08	formatting changes
2.0	2015.04.22	document title and scope changed from SDSA requirements matrix to artifact assessment requirements (SDA-E), with pointer to SDLA-312 for matrix

Contents

FOREWORD

This is one of a series of documents that defines ISASecure® certification for embedded devices, which is developed and managed by the industry consortium ISA Security Compliance Institute (ISCI). This specification is one document in the series that specifies the technical requirements for ISASecure Embedded Device Security Assurance (EDSA) certification. The current list of documents related to ISASecure EDSA and other ISASecure certification programs can be found on the web site http://www.ISASecure.org.

1 Scope

In order for an embedded device to pass an ISASecure® EDSA (Embedded Device Security Assurance) certification as defined in [EDSA-100] per the technical pass criteria in [EDSA-300], it must pass several evaluation elements. One of these elements is a security development artifact assessment for the embedded device (SDA-E). The purpose of this document is to state the criterion for passing the SDA-E element of an EDSA certification evaluation.

In order to define the criteria for passing SDA-E, this brief document refers to the separate document [SDLA-312] that includes an enumeration of the detailed technical requirements for the SDA-E.

2 Normative references

[EDSA-100] *ISCI Embedded Device Security Assurance – ISASecure certification scheme*, as specified at http://www.ISASecure.org

[EDSA-300] *ISCI Embedded Device Security Assurance – ISASecure Certification Requirements,* as specified at http://www.ISASecure.org

[SDLA-100] *ISCI Security Development Lifecycle Assurance – ISASecure certification scheme*, as specified at http://www.ISASecure.org

[SDLA-312] *ISCI Security Development Lifecycle Assurance – Security development lifecycle assessment*, as specified at http://www.ISASecure.org

3 Definitions and abbreviations

3.1 Definitions

3.1.1
artifact
tangible output from the application of a specified method that provides evidence of its application

NOTE Examples of artifacts for secure development methods are a threat model document, a security requirements document, meeting minutes, internal test results.

3.1.2
certifier
chartered laboratory, which is an organization that is qualified to certify products or supplier development processes as ISASecure

NOTE This term is used when a simpler term that indicates the role of a “chartered laboratory” is clearer in a particular context.

3.1.3
embedded device
special purpose device running embedded software designed to directly monitor, control or actuate an industrial process

NOTE Attributes of an embedded device are: no rotating media, limited number of exposed services, programmed through an external interface, embedded OS or firmware equivalent, real-time scheduler, may have an attached control panel, may have a communications interface. Examples are: PLC, field sensor devices, SIS controller, DCS controller.

3.1.4
industrial automation and control system
collection of personnel, hardware and software that can affect or influence the safe, secure and reliable operation of an industrial process

3.1.5
security level
measure of confidence that the IACS is free from vulnerabilities and functions in the intended manner

NOTE Vulnerabilities can either be designed into the IACS, inserted at any time during its lifecycle or result from changing threats. Designed-in vulnerabilities may be discovered long after the initial deployment of the IACS, for example an encryption technique has been broken or an improper policy for account management such as not removing old user accounts. Inserted vulnerabilities may be the result of a patch or a change in policy that opens up a new vulnerability.

3.2 Abbreviations

The following abbreviations are used in this document

DCS	distributed control system
EDSA	embedded device security assurance
IACS	industrial automation and control system
ISA	International Society of Automation
ISCI	ISA Security Compliance Institute
PLC	programmable logic controller
SDA-E	security development artifacts for embedded devices
SDLA	security development lifecycle assurance
SDLPA	security development lifecycle process assessment
SIS	safety instrumented system
SSA	system security assurance

4 Background

General background on the ISASecure programs and the ISASecure EDSA certification program for embedded devices is provided in [EDSA-100]. This clause discusses the rationale and structure of these programs as it relates to SDA-E.

The evaluation of security development processes is a key characteristic of the ISASecure certification programs. This evaluation has two aspects. The first aspect is to determine whether a *supplier has defined and is maintaining* a documented development process. The second aspect is to determine whether the supplier is *following* the documented process.

In order to achieve a product certification under ISASecure EDSA for an embedded device, both aspects are required. First, a Security Development Lifecycle Process Assessment (SDLPA) is required to determine whether the supplier has defined and is maintaining a documented development process that meets ISASecure SDLA requirements. This assessment can be done separately as part of the evaluation toward an ISASecure SDLA certification of the supplier's development process. It may also be done as part of the ISASecure EDSA certification process itself.

Secondly, the ISASecure EDSA certifier will verify that the required artifacts that result from carrying out the documented development process exist for the specific embedded device product that has been presented as a candidate for certification. This aspect of an EDSA product evaluation is called Security Development Artifacts for embedded devices, or SDA-E. SDA-E is the topic of the present document.

The requirements for a secure development lifecycle process and the requirements on the artifacts that result from the implementation of that process are closely related. For this reason, the document [SDLA-312] covers both the requirements assessed for an SDLPA evaluation of a supplier's development lifecycle process, and the requirements assessed for the SDA-E element of an ISASecure EDSA certification evaluation of a supplier's embedded device product. Whereas an ISASecure SDLA certification requires examining process documentation and *representative samples* of artifacts for secure development methods that comprise that process, the SDA-E requirements call for artifacts resulting from these same methods, *for the specific embedded device* that is a candidate for ISASecure EDSA certification.

An embedded device is certified to a specific security level. This level will impact the SDA-E evaluation as described in the following section.

5 Criterion for passing SDA-E for EDSA certification

Requirement ISASecure_SDA-E.R1 – Criterion for passing SDA-E

An embedded device SHALL pass the security development artifacts evaluation (SDA-E) element of an evaluation for ISASecure EDSA certification if requirements in [SDLA-312] that meet the following selection criteria, pass verification:

- Requirement is in a row labeled "**Component**"
- Requirement is applicable to the security level to which the embedded device is to be certified, as seen in the column labeled **"ISASecure Level."**

Verification is performed per the column labeled "**Component or System Validation Activity**" in [SDLA-312].

NOTE For existing products which predate an organization's adoption of a well-defined secure development process, artifacts to satisfy SDA-E may be created during the organization's transition to that process.

BIBLIOGRAPHY

[1] ISA−62443−1−1, *Security for industrial automation and control systems: Part 1-1, Terminology, concepts and models*

NOTE It is the intent going forward to align ISASecure SDLA certification and SDA-E for ISASecure EDSA with the approved version of the following standard.

[2] ISA 62443-4-1 *Security for industrial automation and control systems – Product development requirements* (under development December 2014)