International Standard

ISO 13491-1

Financial services — Secure cryptographic devices (retail) —

Part 1: Concepts and requirements

Services financiers — Dispositifs cryptographiques de sécurité (services aux particuliers) —

Partie 1: Concepts et exigences

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 268, *Financial services*, Subcommittee SC 2, *Financial Services, security*.

This fourth edition cancels and replaces the third edition (ISO 13491-1:2016), which has been technically revised.

The main changes are as follows:

— revision for classes of secure cryptographic devices (SCDs);

— updated life cycle guidance.

A list of all parts in the ISO 13491 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The ISO 13491 series describes both the physical and logical characteristics and the management of the secure cryptographic devices (SCDs) used to protect messages, cryptographic keys and other sensitive data used in a retail financial services environment.

This document contains the security requirements for SCDs. ISO 13491-2 is a tool for measuring compliance against these requirements. It provides a checklist of:

— characteristics that a device has to possess;

— how devices have to be managed;

— characteristics of the operational environments.

The security of retail electronic payment systems is largely dependent upon the security of these cryptographic devices. This security is based upon the premise that computer files can be accessed and manipulated, communications lines can be tapped and authorized data or control inputs into system equipment can be replaced with unauthorized inputs. When personal identification numbers (PINs), message authentication codes (MACs), cryptographic keys and other sensitive data are processed, there is a risk of tampering or other compromise to disclose or modify such data. The risk of financial loss is reduced through the appropriate use of cryptographic devices that have proper characteristics and are properly managed.

Appropriate device characteristics are necessary to ensure that the device has the proper operational capabilities and provides adequate protection for the data it contains. Appropriate device management is necessary to ensure that the device is legitimate, that it has not been modified in an unauthorized manner (e.g. by bugging) and that any sensitive data placed within the device (e.g. cryptographic keys) has not been subject to disclosure or change.

Absolute security is not achievable in practical terms. Cryptographic security depends upon each life cycle phase of the SCD and the complementary combination of appropriate management procedures and secure cryptographic characteristics. These management procedures implement preventive measures to reduce the opportunities for breaches of SCD security. The aim is for a high probability of detection of any unauthorized access to sensitive or confidential data in cases where device characteristics fail to prevent or detect the security compromise.

Financial services — Secure cryptographic devices (retail) —

Part 1: Concepts and requirements

1 Scope

This document specifies the security characteristics for secure cryptographic devices (SCDs) based on the cryptographic processes defined in the ISO 9564 series, ISO 16609 and ISO 11568.

This document states the security characteristics concerning both the operational characteristics of SCDs and the management of such devices throughout all stages of their life cycle.

This document does not address issues arising from the denial of service of an SCD.

This document does not address software services that use multi-party computation (MPC) to achieve some security objectives and, relying on these, offer cryptographic services.

NOTE These are sometimes called “soft” or software hardware security modules (HSMs) in common language, which is misleading and does not correspond to the definition of HSM in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11568, *Financial services — Key management (retail)*

ISO 13491-2:2023, *Financial services — Secure cryptographic devices (retail) — Part 2: Security compliance checklists for devices used in financial transactions*

ISO/IEC 18031, *Information technology — Security techniques — Random bit generation*

NIST SP 800-90A, *Recommendation for Random Number Generation Using Deterministic Random Bit Generators*

NIST SP 800-90B, *Recommendation for the Entropy Sources Used for Random Bit Generation*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
audit
evaluates compliance with an evaluation on behalf of an evaluation agency