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Information security — Non-repudiation —

Part 1: General

Sécurité de l'information — Non-répudiation —

Partie 1: Généralités

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see http://patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 Joint Technical Committee ISO/IEC JTC 1 *Information technology*, Subcommittee SC 27, *Information security, cybersecurity and privacy protection*.

This fourth edition cancels and replaces the third edition (ISO/IEC 13888-1:2009), which has been technically revised.

The main changes compared to the previous edition are as follows:

— Clause 3 has been updated;

— terminology issues have been fixed; and

— a new requirement has been introduced when using hash functions.

A list of all parts in the ISO/IEC 13888 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 goal of a non-repudiation service is to generate, collect, maintain, make available and verify evidence concerning a claimed event or action in order to resolve disputes about the occurrence or non-occurrence of the event or action. This document defines a model for non-repudiation mechanisms providing evidence based on cryptographic check values generated using symmetric or asymmetric cryptographic techniques.

Non-repudiation services establish evidence. Evidence establishes accountability regarding a particular event or action. The entity responsible for the action, or associated with the event, with regard to which evidence is generated, is known as the evidence subject.

Non-repudiation mechanisms provide protocols for the exchange of non-repudiation tokens specific to each non-repudiation service. Non-repudiation tokens consist of secure envelopes and/or digital signatures and, optionally, additional data:

— secure envelopes are generated by an evidence generating authority using symmetric cryptographic techniques;

— digital signatures are generated by an evidence generator or an evidence generating authority using asymmetric techniques.

Non-repudiation tokens can be stored as non-repudiation information that can be used subsequently by disputing parties or by an adjudicator to arbitrate in disputes.

Depending on the non-repudiation policy in effect for a specific application, and the legal environment within which the application operates, additional information can be required to complete the non-repudiation information, for example:

— evidence including a trusted time-stamp provided by a time-stamping authority;

— evidence provided by a notary which provides assurance about data created or the action or event performed by one or more entities.

Non-repudiation can only be provided within the context of a clearly defined security policy for a particular application and its legal environment. Non-repudiation policies are described in ISO/IEC 10181-4.

Specific non-repudiation mechanisms generic to the various non-repudiation services are first described and then applied to a selection of specific non-repudiation services such as:

— non-repudiation of origin;

— non-repudiation of delivery;

— non-repudiation of submission;

— non-repudiation of transport.

Additional non-repudiation services mentioned in this document are:

— non-repudiation of creation;

— non-repudiation of receipt;

— non-repudiation of knowledge;

— non-repudiation of sending.

Information security — Non-repudiation —

Part 1: General

1 Scope

This document serves as a general model for subsequent parts specifying non-repudiation mechanisms using cryptographic techniques.

The ISO/IEC 13888 series provides non-repudiation mechanisms for the following phases of non-repudiation:

— evidence generation;

— evidence transfer, storage and retrieval; and

— evidence verification.

Dispute arbitration is outside the scope of the ISO/IEC 13888 series.

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/IEC 18014 (all parts), *Information technology — Security techniques — Time-stamping services*

3 Terms and definitions

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

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

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

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

3.1
adjudicator
entity which arbitrates disputes between parties

3.2
certificate
entity's data rendered unforgeable with the private or *secret key* (3.48) of a *certification authority* (3.3)

Note 1 to entry: Unforgeable means impossible to copy or imitate unlawfully.