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Information technology — Security techniques — Telebiometric authentication framework using biometric hardware security module

Technologies de l'information — Techniques de sécurité — Infrastructure d'authentification télébiométrique utilisant un module de sécurité matériel biométrique

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This document was prepared by ISO/IEC JTC 1, *Information technology*, SC 27, *IT Security techniques*, in collaboration with ITU-T. The identical text is published as ITU-T X.1085 (10/2016).

INTERNATIONAL STANDARD ISO/IEC 17922
RECOMMENDATION ITU-T X.1085

Information technology – Security techniques – Telebiometric authentication framework using biometric hardware security module

Summary

Recommendation ITU-T X.1085 | ISO/IEC 17992 describes a telebiometric authentication scheme using biometric hardware security module (BHSM) for the telebiometric authentication of proving owner of ITU-T X.509 certificate registered individual at registration authority (RA). This Recommendation | International Standard provides the requirements for deploying the BHSM scheme to securely operate the telebiometric authentication under PKI environments. The scheme focuses on providing how to assure the telebiometric authentication with biometric techniques and hardware security module and it also suggests ASN.1 standard format for including the proposed scheme in ITU-T X.509 framework when telebiometric authentication and ITU-T X.509 certificate are combined to prove the owner of the certificate.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T X.1085	2016-10-14	17	11.1002/1000/13060

Keywords

Biometric hardware security module, BHSM, ITU-T X.509 certificate, ISO/IEC 24761, pseudonymous identifier, PSID, public key infrastructure, PKI, telebiometric authentication.

* To access the Recommendation, type the URL http://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID. For example, http://handle.itu.int/11.1002/1000/11830-en.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

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Introduction

This Recommendation | International Standard describes a telebiometric authentication scheme using a biometric hardware security module (BHSM) for the telebiometric authentication of the person who presents the BHSM as the owner of an ITU-T X.509 certificate embedded in the BHSM as registered with the certification authority (CA). This Recommendation | International Standard provides the requirements for deploying a BHSM scheme to provide secure telebiometric authentication within public key infrastructure (PKI) environments. The scheme provides assurance for telebiometric authentication using biometric recognition integrated into a hardware security module. It also provides ASN.1 definitions that allow the biometric authentication to be incorporated into an ITU-T X.509 framework to authenticate the user as the owner of the ITU-T X.509 certificate.

INTERNATIONAL STANDARD
ITU-T RECOMMENDATION

Information technology – Security techniques – Telebiometric authentication framework using biometric hardware security module

1 Scope

To prove ownership of an ITU-T X.509 certificate registered individually with the registration authority (RA), a biometric hardware security module has been considered to provide a high-level biometric authentication. This Recommendation | International Standard provides a framework for telebiometric authentication using BHSM.

Within the scope of this Recommendation | International Standard, the following issues are addressed:

- telebiometric authentication mechanisms using BHSM in telecommunication network environments; and
- abstract syntax notation one (ASN.1) format and protocols for implementing the mechanisms in the ITU-T X.509 framework.

The related standard environment is depicted in Figure 1. The main role of this Recommendation | International Standard is to harmonize with existing telebiometric authentication and public key infrastructure (PKI) standards and to establish a standard mechanism using BHSM to verify the ownership of the ITU-T X.509 certificate in the telebiometric environment.

NOTE – In this Recommendation | International Standard, ITU-T X.509 certificate means ITU-T X.509 public-key certificate.

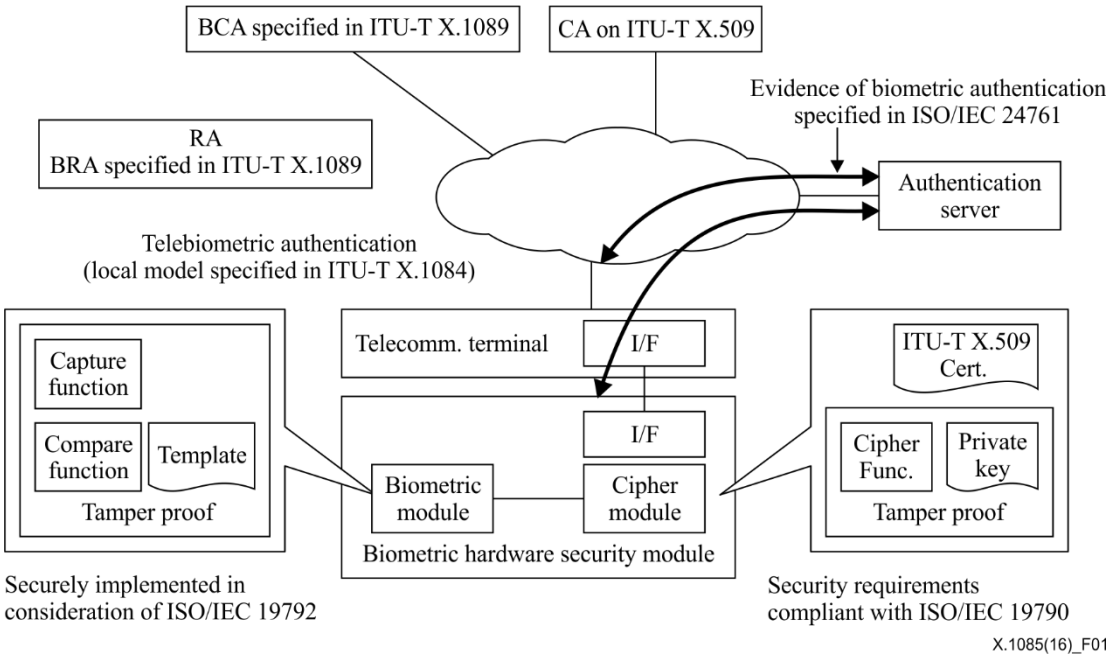

Figure 1 – Standard environment for BHSM

2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1 Identical Recommendations | International Standards

- Recommendation ITU-T X.509 (2016) | ISO/IEC 9594-8:2016, *Information technology – Open Systems Interconnection – The Directory: Public-key and attribute certificate frameworks*.

2.2 Paired Recommendations | International Standards equivalent in technical content

None.

2.3 Additional references

- ISO/IEC 24745:2011, *Information technology – Security techniques – Biometric information protection*.
- ISO/IEC 24761:2009, *Information technology – Security techniques – Authentication context for biometrics*.
- ISO/IEC 19790:2012, *Information technology – Security techniques – Security requirements for cryptographic modules*.
- ISO/IEC 19792:2009, *Information technology – Security techniques – Security evaluation of biometrics*.