IEC 62351-11

Edition 1.0 2016-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Power systems management and associated information exchange – Data and communications security – Part 11: Security for XML documents

Gestion des systèmes de puissance et échanges d'informations associés – Sécurité des communications et des données – Partie 11: Sécurité des documents XML

IEC 62351-11:2016-09(en-fr)

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POWER SYSTEMS MANAGEMENT AND ASSOCIATED INFORMATION EXCHANGE – DATA AND COMMUNICATIONS SECURITY –

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FOREWORD

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International Standard IEC 62351-11 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

The text of this standard is based on the following documents:

FDIS	Report on voting
57/1753/FDIS	57/1774/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 62351 series, published under the general title *Power systems management and associated information exchange – Data and communications security,* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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POWER SYSTEMS MANAGEMENT AND ASSOCIATED INFORMATION EXCHANGE – DATA AND COMMUNICATIONS SECURITY –

Part 11: Security for XML documents

1 Scope

This part of IEC 62351 specifies schema, procedures, and algorithms for securing XML documents that are used within the scope of the IEC as well as documents in other domains (e.g. IEEE, proprietary, etc.). This part is intended to be referenced by standards if secure exchanges are required, unless there is an agreement between parties in order to use other recognized secure exchange mechanisms.

This part of IEC 62351 utilizes well-known W3C standards for XML document security and provides profiling of these standards and additional extensions. The IEC 62351-11 extensions provide the capability to provide:

- Header: the header contains information relevant to the creation of the secured document such as the Date and Time when IEC 62351-11 was created.
- A choice of encapsulating the original XML document in an encrypted (Encrypted) or non-encrypted (nonEncrypted) format. If encryption is chosen, there is a mechanism provided to express the information required to actually perform encryption in an interoperable manner (EncryptionInfo).
- AccessControl: a mechanism to express access control information regarding information contained in the original XML document.
- Body: is used to contain the original XML document that is being encapsulated.
- Signature: a signature that can be used for the purposes of authentication and tamper detection.

The general structure is shown in Figure 1.

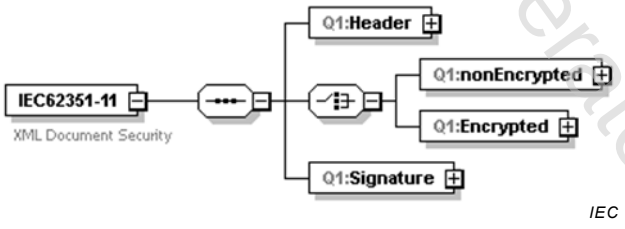

Figure 1 – Overview of IEC 62351-11 structure

For the measures described in this document to take effect, they must be accepted and referenced by the specifications themselves. This document is written to enable that process.

The subsequent audience for this part of IEC 62351 is intended to be the developers of products that implement these specifications.

Portions of this part of IEC 62351 may also be of use to managers and executives in order to understand the purpose and requirements of the work.

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.

IEC TS 62351-2, *Power systems management and associated information exchange – Data and communications security – Part 2: Glossary of terms*

IEC TS 62351-8, *Power systems management and associated information exchange – Data and communications security – Part 8: Role-based access control*

IEC TS 62351-9, *Power systems management and associated information exchange – Data and communications security – Part 9: Cyber security key management for power system equipment*

Recommended Canonical XML1.0 with comments, W3C,
http://www.w3.org/TR/2001/REC-xml-c14n-20010315#WithComments

Required Canonical XML 1.0, Omits comments, W3C,
http://www.w3.org/TR/2001/REC-xml-c14n-20010315

RFC 6931, *Additional XML Security Uniform Resource Identifiers (URIs)*

XML Encryption Syntax and Processing Version 1.1 April 11, 2013,
http://www.w3.org/TR/xmlenc-core1/

XML Signature Syntax and Processing W3C Recommendation 10 June 2008,
http://www.w3.org/TR/2008/REC-xmldsig-core-20080610/

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC TS 62351-2 and the following apply.

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
nonce
random or pseudo-random value used within an authentication system

[SOURCE: IEEE Std 1455-1999, IEEE Standard for Message Sets for Vehicle/Roadside Communications]

3.2
IANA
Internet Assigned Numbers Authority

Note 1 to entry: IANA is responsible for the global coordination of the DNS Root, IP addressing, and other Internet protocol resources.

[SOURCE: http://www.iana.org]