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Information technology — JPEG 2000 image coding system —

Part 8: Secure JPEG 2000

Technologies de l'information — Système de codage d'images JPEG 2000 —

Partie 8: JPEG 2000 sécurisé

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Foreword

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This document was prepared by ITU-T (as ITU-T Rec T.807) and drafted in accordance with its editorial rules, in collaboration with Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This second edition cancels and replaces the first edition (ISO/IEC 15444-8:2007), which has been technically revised. It also incorporates the Amendment ISO/IEC 15444-8:2007/Amd 1:2008.

A list of all parts in the ISO/IEC 15444 series can be found on the ISO and IEC websites.

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 and www.iec.ch/national-committees.

INTERNATIONAL STANDARD ISO/IEC 15444-8
RECOMMENDATION ITU-T T.807

Information technology – JPEG 2000 image coding system: Secure JPEG 2000

Summary

Rec. ITU-T T.807 | ISO/IEC 15444-8 provides a syntax that allows security services to be applied to JPEG 2000 coded image data. Security services include confidentiality, integrity verification, source authentication, conditional access, secure scalable streaming and secure transcoding. The syntax allows these security services to be applied to coded and uncoded image data in part or in its entirety. This maintains the inherent features of JPEG 2000 such as scalability and access to various spatial areas, resolution levels, colour components, and quality layers, while providing security services on these elements.

This second edition:

1) consolidates all solved/outstanding amendments and corrigenda published since the first edition;
2) removes the clause on Registration Authority (first edition's clause 7);
3) removes the annex of patent statements (first edition's Annex D).

This Recommendation | International Standard was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*, in collaboration with ITU-T SG16. The identical text is published in ISO/IEC as ISO/IEC 15444-8.

History

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Keywords

Image security, jpsec, JPEG 2000, security, still image.

* 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

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

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.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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Introduction

In the "Digital Age", the Internet provides many new opportunities for right-holders regarding the electronic distribution of their work (books, videos, music, images, etc.).

At the same time, new information technology radically simplifies the access of content for the user. This goes hand in hand with the all-pervasive problem of pirated digital copies – with the same quality as the originals – and "file-sharing" in peer-to-peer networks, which gives rise to continued complaints about great losses by the content industry.

World Intellectual Property Organization (WIPO) and its Member countries (170) have an important role to play in assuring that copyright, and the cultural and intellectual expression it fosters, remains well protected in the 21st century. The new Digital economy and the creative people in every country of the world depend on it. Also in December 1996, WIPO Copyright Treaty (WCT) has been promulgated with two important articles (11 and 12) about technological measures and obligations concerning Right Management Information:

Article 11
Obligations concerning
Technological Measures

Contracting Parties shall provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with the exercise of their rights under this Treaty or the Berne Convention and that restrict acts, in respect of their works, which are not authorized by the authors concerned or permitted by law.

Article 12
Obligations concerning Rights
Management Information

(1) Contracting Parties shall provide adequate and effective legal remedies against any person knowingly performing any of the following acts knowing, or with respect to civil remedies having reasonable grounds to know, that it will induce, enable, facilitate or conceal an infringement of any right covered by this Treaty or the Berne Convention:

(i) to remove or alter any electronic rights management information without authority;

(ii) to distribute, import for distribution, broadcast or communicate to the public, without authority, works or copies of works knowing that electronic rights management information has been removed or altered without authority.

(2) As used in this Article, "rights management information" means information which identifies the work, the author of the work, the owner of any right in the work, or information about the terms and conditions of use of the work, and any numbers or codes that represent such information, when any of these items of information is attached to a copy of a work or appears in connection with the communication of a work to the public.

This treaty provides a solid foundation to protect Intellectual Property. As of 2004, about 50 countries ratified this important treaty. Therefore, it is expected that tools and protective methods that are recommended in JPEG 2000 needs ensure the security of transaction, protection of content (IPR), and protection of technologies.

Security issues, such as authentication, data integrity, protection of copyright and Intellectual Property, privacy, conditional access, confidentiality, transaction tracing, to mention a few, are among important features in many imaging applications targeted by JPEG 2000.

The technological means of protecting digital content are described and can be achieved in many ways such as digital watermarking, digital signature, encryption, metadata, authentication, and integrity checking.

This Recommendation | International Standard intends to provide tools and solutions in terms of specifications that allow applications to generate, consume, and exchange Secure JPEG 2000 codestreams. This is referred to as **JPSEC**.