
**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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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.

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**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.

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

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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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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**.

**INTERNATIONAL STANDARD
ITU-T RECOMMENDATION****Information technology – JPEG 2000 image coding system: Secure JPEG 2000****1 Scope**

This Recommendation | International Standard specifies the framework, concepts, and methodology for securing JPEG 2000 codestreams. The scope of this Recommendation | International Standard is to define:

- 1) a normative codestream syntax containing information for interpreting secure image data;
- 2) informative examples of JPSEC tools in typical use cases;
- 3) informative guidelines on how to implement security services and related metadata.

The scope of this Recommendation | International Standard is not to describe specific secure imaging applications or to limit secure imaging to specific techniques, but to create a framework that enables future extensions as secure imaging techniques evolve.

2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. At the time of publication, the editions indicated in dated references 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.

- Recommendation ITU-T T.800 | ISO/IEC 15444-1, *Information technology – JPEG 2000 image coding system: Core coding system*.
- Recommendation ITU-T T.801 | ISO/IEC 15444-2, *Information technology – JPEG 2000 image coding system: Extensions*.
- Recommendation ITU-T T.808 | ISO/IEC 15444-9, *Information technology – JPEG 2000 image coding system: Interactivity tools, APIs and protocols*.
- Recommendation ITU-T T.814 | ISO/IEC 15444-15, *Information technology – JPEG 2000 image coding system: High-Throughput JPEG 2000*.
- Recommendation ITU-T X.509 | ISO/IEC 9594-8, *Information technology – Open Systems Interconnection – The Directory: Public-key and attribute certificate frameworks*.
- ISO/IEC 14496-12, *Information technology – Coding of audio-visual objects – Part 12: ISO base media file format*.