
**Information technology — Generic
coding of moving pictures and
associated audio information —**

**Part 11:
IPMP on MPEG-2 systems**

*Technologies de l'information — Codage générique des images
animées et du son associé —*

Partie 11: IPMP sur les systèmes MPEG-2

Contents

Page

Foreword.....	vi
1 Scope.....	1
2 Normative references	2
3 Terms and definitions.....	2
4 Compatibility with Conditional Access framework (Informative)	4
4.1 The existing MPEG-2 CA framework.....	4
4.2 Backward compatibility – the carriage of IPMP in the CA framework.....	4
4.3 Forward compatibility – the carriage of CA data within MPEG-2 IPMP.....	5
4.4 Co-existence of MPEG-2 IPMP and Conditional Access.....	5
5 Overview of MPEG-2 IPMP (Informative)	6
5.1 IPMP Architecture	6
5.1.1 IPMP tool acquisition and protection signaling.....	6
5.1.2 IPMP Information carriage in MPEG-2 Content.....	7
5.1.3 Messaging.....	7
5.1.4 Mutual Authentication	7
5.1.5 IPMP Tool connection and disconnection.....	8
5.1.6 Notification of IPMP Tool connection and disconnection	9
5.1.7 Common IPMP processing	9
5.1.8 IPMP tool to/from User interaction.....	9
6 Specifications (Normative).....	10
6.1 Overview	10
6.1.1 MPEG-2 IPMP architecture	10
6.1.2 Structure of IPMP protected MPEG-2 content	11
6.2 IPMP Control Information.....	11
6.2.1 IPMP Control Information in Transport Stream	11
6.2.2 IPMP Control Information in Program Stream	18
6.3 IPMP Protection Signalling	21
6.3.1 IPMP Protection Signalling in Transport Stream.....	21
6.3.2 IPMP Protection Signalling in Program Stream.....	22
6.3.3 IPMP Descriptor	22
6.4 IPMP Stream	24
6.4.1 IPMP Stream Specification.....	24
6.4.2 IPMP Stream Syntax	25
6.4.3 IPMP Stream Decoder Model	25
7 IPMP Data and Messages (Normative).....	27
7.1 IPMP_Data_BaseClass	27
7.1.1 Syntax.....	27
7.1.2 Semantics	27
7.1.3 Extension tags for the IPMP_Data_BaseClass message.....	28
7.2 Mutual Authentication	29
7.2.1 IPMP_InitAuthentication.....	29
7.2.2 IPMP_Mutual_Authentication	29
7.2.3 IPMP_TrustSecurityMetadata	34
7.2.4 DateClass	35
7.2.5 IPMP_SecureContainer.....	35
7.3 IPMP Tool connection and disconnection.....	36
7.3.1 IPMP_GetTools.....	36
7.3.2 IPMP_GetToolsResponse	36
7.3.3 IPMP Tool Parametric Capabilities Query	36

7.3.4	IPMP Tool Parametric Capabilities Query Response	37
7.3.5	IPMP_ConnectTool.....	37
7.3.6	IPMP_DisconnectTool.....	37
7.4	IPMP Tool notification.....	38
7.4.1	IPMP_AddToolNotificationListener	38
7.4.2	IPMP_RemoveToolNotificationListener	39
7.4.3	IPMP_NotifyToolEvent	39
7.5	IPMP Processing	40
7.5.1	IPMP_CanProcess	40
7.5.2	IPMP Opaque data	40
7.5.3	IPMP_KeyData	40
7.5.4	IPMP_RightsData.....	41
7.5.5	IPMP_SelectiveDecryptionInit.....	41
7.5.6	IPMP_AudioWatermarkingInit.....	41
7.5.7	IPMP_SendAudioWatermark.....	41
7.5.8	IPMP_VideoWatermarkingInit	41
7.5.9	IPMP_SendVideoWatermark	41
7.6	User Interaction Messages.....	41
7.6.1	IPMP_UserQuery	42
7.6.2	IPMP_UserQueryResponse	44
7.7	IPMP Information Delivery Functions.....	44
7.7.1	IPMP_ToolMessageBase	45
7.7.2	IPMP_MessageFromBitstream.....	45
7.7.3	IPMP_DescriptorFromBitstream	46
7.7.4	IPMP_MessageFromTool.....	46
Annex A	(normative) Tool/Content Transfer Messages among Distributed IPMP Devices	47
A.1	Introduction.....	47
A.2	Addressing of distributed devices	47
A.3	IPMP_DeviceMessageBase	47
A.3.1	Syntax.....	47
A.3.2	Semantics.....	47
A.4	Device to Device IPMP Message.....	48
A.4.1	IPMP_MessageFromDevice	48
A.5	Content Transfer Messages	48
A.5.1	IPMP_RequestContent.....	48
A.5.2	IPMP_ResponseToContentRequest	49
A.5.3	IPMP_ContentTransfer.....	49
A.6	Tool Transfer Messages	50
A.6.1	IPMP_RequestTool.....	50
A.6.2	IPMP_ResponseToToolRequest	50
A.7	Device ID messages.....	51
A.7.1	PMP_DeviceID_Notification Message	51
Annex B	(normative) Schema for Terminal Platform	52
Annex C	(normative) Selective Decryption Configuration Data	55
C.1	Introduction.....	55
C.2	IPMP_SelectiveDecryptionInit.....	55
C.2.1	Syntax.....	55
C.2.2	Semantics.....	56
C.3	An example of a selective decryption configuration data (Informative).....	58
Annex D	(normative) Audio Watermarking Configuration and Notification	61
D.1	Introduction.....	61
D.2	IPMP_AudioWatermarkingInit.....	61
D.2.1	Syntax.....	61
D.2.2	Semantics.....	62
D.3	IPMP_SendAudioWatermark	63
D.3.1	Syntax.....	63
D.3.2	Semantics.....	63

Annex E (normative) Video Watermarking Configuration and Notification Data	64
E.1 Introduction	64
E.2 IPMP_VideoWatermarkingInit	64
E.2.1 Syntax	64
E.2.2 Syntax	65
E.3 IPMP_SendVideoWatermark	65
E.3.1 Syntax	65
E.3.2 Semantics	66
Annex F (informative) An example of a simple use case of MPEG-2 IPMP	67
F.1 Content authoring	67
F.2 MPEG-2 IPMP Terminal behaviour	67
Annex G (normative) List of Registration Authorities	70
G.1 Registered Data	70
G.2 Procedure for the request of Registered Data	70
G.3 Responsibilities of the Registration Authority	70
G.4 Contact information for the Registration Authority	71
G.5 Responsibilities of Parties Requesting Registered Data	71
G.6 Appeal Procedure for Denied Applications	71
G.7 Registration Application Form	72
G.7.1 Contact Information of organization requesting a RID	72
G.7.2 Request for specific registered data	72
G.7.3 Short description of the Registered Data that is in use and date system was implemented	72
G.7.4 Statement of an intention to apply the assigned Registered Data	72
G.7.5 Date of intended implementation of the Registered Data	73
G.7.6 Authorized representative	73
G.7.7 For official use of the Registration Authority	73
Annex H (informative) Patent statements	74

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

ISO/IEC 13818-11 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

ISO/IEC 13818 consists of the following parts, under the general title *Information technology — Generic coding of moving pictures and associated audio information*:

- *Part 1: Systems*
- *Part 2: Video*
- *Part 3: Audio*
- *Part 4: Conformance testing*
- *Part 5: Software simulation*
- *Part 6: Extensions for DSM-CC*
- *Part 7: Advanced Audio Coding (AAC)*
- *Part 9: Extension for real time interface for systems decoders*
- *Part 10: Conformance extensions for Digital Storage Media Command and Control (DSM-CC)*
- *Part 11: IPMP on MPEG-2 systems*

Information technology — Generic coding of moving pictures and associated audio information —

Part 11: IPMP on MPEG-2 systems

1 Scope

This International Standard specifies IPMP (Intellectual Property Management and Protection) on the MPEG-2 system, including:

- a) syntax and semantics for IPMP control information which includes tool list, tool container and rights container;
- b) syntax and semantics for IPMP descriptors, which facilitates IPMP protection signalling;
- c) syntax and semantics of IPMP data extending from the common base class IPMP_Data_BaseClass to support the following functionalities:
 - mutual authentication for IPMP tool to IPMP tool as well as IPMP tool to terminal communication,
 - the requesting by IPMP tools of the connection/disconnection to requested IPMP tools,
 - the notification to IPMP tools of the connection/disconnection of IPMP tools,
 - common IPMP processing,
 - IPMP tool to/from user interaction;
- d) syntax and semantics for IPMP information carriage to and from IPMP tools;
- e) syntax and semantics for the request and transfer of content and IPMP tools between terminals;
- f) XML syntax and semantics for the description of the environment in which the MPEG-2 Terminal/application is operating;
- g) a list of registration authorities required for the support of the specifications found herein.

This document is organized as follows.

Clause 1 provides an introduction to the document. Clause 4 explains the compatibility between the Conditional Access framework and MPEG-2 IPMP framework. Clause 5 provides an overview of the process supported by the IPMP framework, and identifies different normative elements in this process. Clause 6 provides specifications for components identified in Clause 5. Clause 7 provides specifications for the messaging architecture and all supported messages.

2 Normative references

The following referenced documents are indispensable for the application 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 10646-1:2000, *Information technology — Universal Multiple-Octet Coded Character Set (UCS) — Part 1: Architecture and Basic Multilingual Plane*

ISO/IEC 13818-1, *Information technology — Generic coding of moving pictures and associated audio information: Systems*

ISO/IEC 14496-1:2001, *Information technology — Coding of audio-visual objects — Part 1: Systems*

ISO/IEC 14496-13¹⁾, *Information technology — Coding of audio-visual objects — Part 13: Intellectual Property Management and Protection (IPMP) extensions*

XML Schema Part 0: Primer, Part 1: Structures, and Part 2: Datatypes, W3C Recommendation, 2 May 2001, available at <<http://www.w3.org/TR/2001/REC-xmlschema-0-20010502>>, <<http://www.w3.org/TR/2001/REC-xmlschema-1-20010502>>, and <<http://www.w3.org/TR/2001/REC-xmlschema-2-20010502>>, respectively

1) To be published.