

Australian Standard™

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

Part 11: IPMP on MPEG-2 systems



**STANDARDS
AUSTRALIA**

This Australian Standard was prepared by Committee IT-029, Coded Representation of Picture, Audio and Multimedia/Hypermedia Information. It was approved on behalf of the Council of Standards Australia on 27 October 2004. This Standard was published on 3 December 2004.

The following are represented on Committee IT-029:

Australian Broadcasting Authority
Australian Broadcasting Corporation
Australian Consumer Association
Australian Subscription Television
CSIRO Information and Communication Technology Centre
DSTC
Department of Defence (Australia)
Free TV Australia
Special Broadcasting Service
The University of New South Wales
University of Sydney
University of Wollongong
Victoria University of Technology

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Web Shop at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Global Standard*, has a full listing of revisions and amendments published each month.

Australian Standards™ and other products and services developed by Standards Australia are published and distributed under contract by SAI Global, which operates the Standards Web Shop.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to the Chief Executive, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001.

Australian Standard™

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

Part 11: IPMP on MPEG-2 systems

First published as AS ISO/IEC 13818.11-2004.

COPYRIGHT

© Standards Australia International

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia International Ltd GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 6396 0

PREFACE

This Standard was prepared by the Standards Australia Committee IT-029, Coded Representation of Picture, Audio and Multimedia/Hypermedia Information.

This Standard is identical with, and has been reproduced from, ISO/IEC 13818-11:2004, *Information technology—Generic coding of moving pictures and associated audio information—Part 11: IPMP on MPEG-2 systems*.

The objective of this Standard is to provide users of MPEG-2 systems with the IPMP (Intellectual Property Management and Protection) guidelines, including the syntax and semantics for IPMP control, signalling and data extension.

This Standard is Part 11 of AS 13818, *Information technology—Generic coding of moving pictures and associated audio information*, which is published in parts as follows:

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

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 (this Standard)

The terms ‘normative’ and ‘informative’ are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

As this Standard is reproduced from an international standard, the following applies:

- (a) Its number appears on the cover and title page while the international standard number appears only on the cover.
- (b) In the source text ‘this International Standard’ should read ‘this Australian Standard’.
- (c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard</i>		<i>Australian Standard/New Zealand Standard</i>	
ISO/IEC		AS/NZS	
13818	Information technology—Generic coding of moving pictures and associated audio information	13818	Information technology—Generic coding of moving pictures and associated audio information
13818-1	Part 1: Systems	13818.1	Part 1: Systems
14496	Information technology—Coding of audio-visual objects	14496	Information technology—Coding of audio-visual objects
14496-1	Part 1: Systems	14496.1	Part 1: Systems

Only referenced documents that have been adopted as Australian or Australian/New Zealand Standards have been listed.

CONTENTS

Page

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 message.....	51
A.7.1	IPMP_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 on a 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

Currently in preview, click buy full version

AUSTRALIAN STANDARD

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.