
Information technology — Multimedia application format (MPEG-A) —

Part 19: Common media application format (CMAF) for segmented media

AMENDMENT 1: SHVC media profile and additional audio media profiles

*Technologies de l'information — Format pour application multimédia
(MPEG-A) —*

*Partie 19: Format CMAF (Common Media Application Format) pour
médias segmentés*

*AMENDEMENT 1: Profil média SHVC et profils médias audio
supplémentaires*



Reference number
ISO/IEC 23000-19:2018/Amd.1:2018(E)

Documents
Document Sharing Hub
© ISO/IEC 2018



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2018

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

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

A list of all parts in the ISO/IEC 23000 series can be found on the ISO website.

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.

Information technology — Multimedia application format (MPEG-A) —

Part 19: Common media application format (CMAF) for segmented media

AMENDMENT 1: SHVC media profile and additional audio media profiles

Clause 2

Add the following normative references:

ISO/IEC 23008-3:—¹⁾, *Information technology — High efficiency coding and media delivery in heterogeneous environments — Part 3: 3D audio*

ISO/IEC 23091-3, *Information technology — Coding-independent code points — Part 3: Audio*

ISO/IEC 23003-4:2015, *MPEG audio technologies — Part 4: Dynamic range control*

Clause 3

Add the following terms and definitions to subclause 3.2:

3.2.10

audio programme

complete collection of all audio programme components and, if present, a set of accompanying presets

3.2.11

audio programme component

smallest addressable unit of an audio programme

Clause 5

Add the following new paragraphs at the end of Clause 5:

Annex H specifies the CMAF media profile for scalable HEVC (SHVC).

Annex I specifies the CMAF media profile for multichannel AAC.

Annex J specifies the CMAF media profile for MPEG-H audio.

1) Under preparation. Stage at the time of publication: ISO/FDIS 23008-3:2018.

Subclause 9.1

Before the last paragraph in subclause 9.1, add a new paragraph:

An additional CMAF media profile for scalable HEVC (SHVC) is defined in Annex H.

Subclause 10.1

Replace the first sentence with:

This clause specifies CMAF audio tracks derived from the CMAF track format, with additional constraints specific to CMAF audio tracks and audio CMAF media profiles.

Additional CMAF media profiles are defined in

- Annex I for multichannel AAC, and
- Annex J for MPEG-H 3D audio.

Annex G

Following Annex G, add new Annexes H, I and J:

Annex H (normative)

Scalable HEVC media profile and track format

H.1 Dependent CMAF tracks

Dependent CMAF tracks can only be processed with the availability of one or more CMAF tracks. Specifically, CMAF fragments of dependent CMAF track can only be decoded and/or rendered if the corresponding CMAF fragment of all of the CMAF tracks it depends on are available. CMAF tracks that are not dependent CMAF tracks are regular CMAF tracks.

In a hypothetical CMAF receiver, the corresponding CMAF fragments of CMAF tracks depended on, are expected to be available prior to the CMAF fragments of the dependent CMAF track.

A manifest offering CMAF presentations with dependent CMAF tracks is expected to provide signalling of dependent and required CMAF tracks.

H.2 Scalable HEVC CMAF tracks

Scalable HEVC CMAF tracks shall conform to Clauses 7, 8, 9, and 12, and shall additionally conform to the constraints specified in this Annex.

Each scalable HEVC CMAF track that does not contain VCL NAL units with `nuh_layer_id` and `TemporalID` both equal to 0 is a dependent CMAF track and the constraints specified for dependent CMAF tracks in Clause H.1 shall apply. It is expected that the manifest provides signalling to express the dependency of a dependent CMAF track on another CMAF track, for example, using the `@dependencyID` in a DASH MPD.

H.3 CMAF switching set constraints for scalable HEVC CMAF tracks and media profiles

H.3.1 General

Subclause 9.2.3 applies, and additionally the following constraints apply:

- Each CMAF track with sample entry 'hev1' shall conform to the HEVC media profile and track format as specified in Annex B.
- Each CMAF track containing a scalable HEVC bitstream or part thereof shall contain exactly one ISO BMFF track.
- When multiple CMAF tracks are present for carrying a scalable HEVC bitstream, the corresponding ISO BMFF tracks shall use distinct track IDs.
- CMAF switching sets containing a media profile listed in Clause H.6 with sample entry 'hev2' and 'lhe1' shall conform to single initialization CMAF switching set constraints.

Each coded video sequence in a scalable HEVC bitstream shall contain the necessary sequence parameter set and picture parameter set NAL units to signal decoding parameters changes allowed between CMAF tracks in the same switching set.