

---

---

**Information technology — Dynamic  
adaptive streaming over HTTP (DASH) —**

**Part 2:**

**Conformance and reference software**

*Technologies de l'information — Diffusion en flux adaptatif dynamique  
sur HTTP (DASH) —*

*Partie 2: Conformité et logiciel de référence*



**COPYRIGHT PROTECTED DOCUMENT**

© ISO/IEC 2014

All rights reserved. Unless otherwise specified, 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  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

## Contents

Foreword.....	iv
Introduction .....	v
1 Scope .....	1
2 Normative references .....	1
3 Terms, definitions, symbols and abbreviated terms .....	1
3.1 Terms and definitions .....	1
3.2 Symbols and abbreviated terms .....	1
4 Media presentation conformance .....	1
4.1 Overview .....	1
4.2 Software Tools .....	2
5 MPD conformance .....	2
5.1 General.....	2
5.2 Static MPD conformance .....	3
6 Segment conformance .....	4
6.1 Overview .....	4
6.2 Representation conformance .....	4
6.2.1 ISO base media file format.....	4
6.2.2 MPEG-2 transport stream .....	7
6.3 Adaptation set conformance .....	11
6.3.1 ISO base media file format.....	11
6.3.2 MPEG-2 Transport Stream .....	12
6.4 Dynamic media presentation conformance .....	13
7 Profile specific conformance.....	13
7.1 ISO base media file format on demand profile .....	13
7.2 ISO base media file format live profile .....	14
7.3 ISO base media file format main profile .....	14
7.4 MPEG-2 transport stream simple profile.....	14
8 Conforming test vectors .....	15
Annex A (normative) MPD conformance checking .....	16
A.1 Introduction .....	16
A.2 Step 1: XLink Resolver .....	16
A.3 Step 2: XML Validator .....	17
A.4 Step 3: Schematron Validator.....	18
Annex B (normative) Test Vectors .....	51
Annex C (normative) DASH access engine reference software .....	53
C.1 Introduction .....	53
C.2 libdash overview .....	53
C.3 libdash-enabled example system (informative).....	53
C.4 libdash availability .....	54
Annex D (informative) Sample Software .....	55
D.1 Introduction .....	55
D.2 Sample Clients .....	55
D.3 Sample Segmenter .....	56
Annex E (informative) Dynamic Media Presentation Emulator.....	58
E.1 Introduction .....	58
E.2 Usage .....	58
E.3 Availability .....	58

## 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.

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

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

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.

ISO/IEC 23009-2 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 23009 consists of the following parts, under the general title *Information technology — Dynamic adaptive streaming over HTTP (DASH)*:

- *Part 1: Media presentation description and segment formats*
- *Part 2: Conformance and reference software*
- *Part 3: Implementation guidelines* [Technical Report]
- *Part 4: Segment encryption and authentication*

## Introduction

This part of ISO/IEC 23009 specifies the conformance and reference software. The conformance and reference software of ISO/IEC 23009 serves three main purposes:

- validation of the written specification of the several parts of ISO/IEC 23009;
- clarification of the written specification of the several parts of ISO/IEC 23009; and
- conformance testing for checking interoperability for the various applications against the reference software which aims to be compliant with ISO/IEC 23009.

[This is a preview - click here to buy the full publication](#)

# Information technology — Dynamic adaptive streaming over HTTP (DASH) —

## Part 2: Conformance and reference software

### 1 Scope

This part of ISO/IEC 23009 specifies the conformance and reference software implementing the normative clauses of all parts of ISO/IEC 23009. That is, test vectors comprising Media Presentation Descriptions, Segments, and combinations thereof that conform or do not conform to the normative clauses of the other parts of ISO/IEC 23009 and corresponding software modules.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) shall apply.

ISO/IEC 19757-3, *Information technology — Document Schema Definition Languages (DSDL) — Part 3: Rule-based validation — Schematron*

ISO/IEC 23009-1, *Information technology — Dynamic adaptive streaming over HTTP (DASH) — Part 1: Media presentation description and segment formats*

W3C XLINK, *XML Linking Language (XLink) Version 1.1*, W3C Recommendation 06, May 2010

W3C XML, *Extensible Markup Language (XML) 1.1 (Second Edition)*, W3C Recommendation 16, August 2006, edited in place 29 September 2006

W3C XML SCHEMA, *XML Schema Definition Language (XSD)*