

ISO/IEC 23009-1:2012-04 (E)

Information technology - Dynamic adaptive streaming over HTTP (DASH) - Part 1: Media presentation description and segment formats

| Contents | | Page |
|--------------------|--|-------------|
| Foreword | | v |
| Introduction | | vi |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms, definitions, symbols and abbreviated terms | 2 |
| 3.1 | Terms and definitions | 2 |
| 3.2 | Symbols and abbreviated terms | 5 |
| 3.3 | Conventions | 6 |
| 4 | Introduction | 6 |
| 4.1 | System description | 6 |
| 4.2 | DASH client model | 7 |
| 4.3 | DASH data model overview | 8 |
| 4.4 | Protocols | 11 |
| 4.5 | Media Stream and Representation properties | 11 |
| 4.6 | Brands | 13 |
| 4.7 | Schemes | 13 |
| 5 | Media Presentation | 14 |
| 5.1 | General | 14 |
| 5.2 | Media Presentation Description | 14 |
| 5.3 | Hierarchical data model | 16 |
| 5.4 | Media Presentation Description updates | 54 |
| 5.5 | MPD assembly | 55 |
| 5.6 | Base URL Processing | 57 |
| 5.7 | Program information | 58 |
| 5.8 | Descriptors | 59 |
| 5.9 | DASH metrics descriptor | 65 |
| 6 | Segment formats | 67 |
| 6.1 | Introduction | 67 |
| 6.2 | Segment types | 67 |
| 6.3 | Segment formats for ISO base media file format | 69 |
| 6.4 | Segment formats for MPEG-2 transport streams | 72 |
| 7 | Combined semantics of MPD and Segment formats | 78 |
| 7.1 | Introduction | 78 |
| 7.2 | General | 79 |
| 7.3 | Media Presentation based on the ISO base media file format | 80 |
| 7.4 | Media Presentation based on MPEG-2 TS | 82 |
| 8 | Profiles | 84 |
| 8.1 | Definition | 84 |
| 8.2 | Full profile | 85 |
| 8.3 | ISO Base media file format On Demand profile | 85 |
| 8.4 | ISO Base media file format live profile | 87 |
| 8.5 | ISO Base media file format main profile | 88 |

| | | |
|---|--|-----|
| 8.6 | MPEG-2 TS main profile | 89 |
| 8.7 | MPEG-2 TS simple profile | 90 |
| Annex A (informative) Example DASH client behaviour | | 92 |
| A.1 | Introduction | 92 |
| A.2 | Overview | 92 |
| A.3 | Segment list generation | 93 |
| A.4 | Seeking | 96 |
| A.5 | Support for trick modes | 97 |
| A.6 | Switching Representations | 97 |
| A.7 | Reaction to error codes | 98 |
| A.8 | Encoder clock drift control | 98 |
| Annex B (normative) MPD schema | | 99 |
| Annex C (normative) MIME type registration for MPD | | 105 |
| C.1 | Introduction | 105 |
| C.2 | MIME type and subtype | 105 |
| C.3 | Parameters | 106 |
| Annex D (normative) DASH Metrics | | 107 |
| D.1 | Introduction | 107 |
| D.2 | DASH-Metrics client reference model | 107 |
| D.3 | Definition of observation points | 107 |
| D.4 | Semantics of the DASH metrics | 108 |
| Annex E (normative) Byte range requests with regular HTTP GET methods | | 114 |
| E.1 | Background | 114 |
| E.2 | Construction rule | 114 |
| E.3 | Examples | 115 |
| Annex F (informative) Guidelines for extending DASH with other delivery formats | | 116 |
| F.1 | Adding delivery formats to DASH | 116 |
| F.2 | Media Presentation authoring rules | 116 |
| Annex G (informative) MPD Examples and MPD Usage | | 117 |
| G.1 | Example MPD for ISO Base media file format On Demand profile | 117 |
| G.2 | Example for ISO Base media file format Live profile | 118 |
| G.3 | Example for MPEG-2 TS Live profile | 119 |
| G.4 | Example for multiple stereo views | 120 |
| G.5 | Example for SVC alternative streams | 121 |
| G.6 | Example for trick play support | 122 |
| G.7 | Example for content protected by multiple schemes | 123 |
| G.8 | Example for usage of Role descriptor | 124 |
| Bibliography | | 126 |