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Foreword

78 The *DASH Implementation Requirements* (DSP0232) was prepared by the Desktop and Mobile Working
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Introduction

105 This specification describes the conformance requirements for implementing the Desktop and Mobile
106 Architecture for System Hardware (DASH) version 1.2.

107

DASH Implementation Requirements

108 1 Scope

109 This document describes the requirements for implementing the Desktop and Mobile Architecture for
110 System Hardware version 1.2. This document does not define the implementation requirements directly.
111 In clause 5, the mandatory profile specifications to be implemented are defined. In clause 6, the optional
112 and conditional profile specifications are defined. Clauses 7, 8, 9, and 10 define the protocol, security,
113 discovery, and management traffic requirements, respectively.

114 2 Normative references

115 The following referenced documents are indispensable for the application of this document. For dated
116 references, only the edition cited applies. For undated references, the latest edition of the referenced
117 document (including any amendments) applies.

118 2.1 Approved references

- 119 DMTF DSP0136, *Alert Standard Format Specification 2.0*,
120 <http://www.dmtf.org/standards/documents/ASF/DSP0136.pdf>
- 121 DMTF DSP0200, *CIM Operations over HTTP 1.3*,
122 http://www.dmtf.org/standards/published_documents/DSP0200_1.3.pdf
- 123 DMTF DSP0226, *Web Services for Management 1.0*,
124 http://www.dmtf.org/standards/published_documents/DSP0226_1.0.pdf
- 125 DMTF DSP0227, *WS-Management CIM Binding Specification 1.0*,
126 http://www.dmtf.org/standards/published_documents/DSP0227_1.0.pdf
- 127 DMTF DSP0230, *WS-CIM Mapping Specification 1.0*,
128 http://www.dmtf.org/standards/published_documents/DSP0230_1.0.pdf
- 129 DMTF DSP1009, *Sensors Profile 1.0*,
130 http://www.dmtf.org/standards/published_documents/DSP1009_1.0.pdf
- 131 DMTF DSP1009, *Sensors Profile, 1.1*,
132 http://www.dmtf.org/standards/published_documents/DSP1009_1.1.pdf
- 133 DMTF DSP1010, *Record Log Profile, 2.0*,
134 http://www.dmtf.org/standards/published_documents/DSP1010_2.0.pdf
- 135 DMTF DSP1011, *Physical Asset Profile 1.0*,
136 http://www.dmtf.org/standards/published_documents/DSP1011_1.0.pdf
- 137 DMTF DSP1012, *Boot Control Profile 1.0*,
138 http://www.dmtf.org/standards/published_documents/DSP1012_1.0.pdf
- 139 DMTF DSP1013, *Fan Profile 1.0*,
140 http://www.dmtf.org/standards/published_documents/DSP1013_1.0.pdf
- 141 DMTF DSP1014, *Ethernet Port Profile, 1.0*,
142 http://www.dmtf.org/standards/published_documents/DSP1014_1.0.pdf

143	DMTF DSP1015, <i>Power Supply Profile 1.0</i> ,
144	http://www.dmtf.org/standards/published_documents/DSP1015_1.0.pdf
145	DMTF DSP1015, <i>Power Supply Profile, 1.1</i> ,
146	http://www.dmtf.org/standards/published_documents/DSP1015_1.1.pdf
147	DMTF DSP1016, <i>Telnet Service Profile, 1.0</i> ,
148	http://www.dmtf.org/standards/published_documents/DSP1016_1.0.pdf
149	DMTF DSP1017, <i>SSH Service Profile, 1.0</i> ,
150	http://www.dmtf.org/standards/published_documents/DSP1017_1.0.pdf
151	DMTF DSP1018, <i>Service Processor Profile, 1.1</i> ,
152	http://www.dmtf.org/standards/published_documents/DSP1018_1.1.pdf
153	DMTF DSP1022, <i>CPU Profile 1.0</i> ,
154	http://www.dmtf.org/standards/published_documents/DSP1022_1.0.pdf
155	DMTF DSP1023, <i>Software Inventory Profile 1.0</i> ,
156	http://www.dmtf.org/standards/published_documents/DSP1023_1.0.pdf
157	DMTF DSP1024, <i>Text Console Redirection Profile 1.0</i> ,
158	http://www.dmtf.org/standards/published_documents/DSP1024_1.0.pdf
159	DMTF DSP1025, <i>Software Update Profile 1.0</i> ,
160	http://www.dmtf.org/standards/published_documents/DSP1025_1.0.pdf
161	DMTF DSP1026, <i>System Memory Profile 1.0</i> ,
162	http://www.dmtf.org/standards/published_documents/DSP1026_1.0.pdf
163	DMTF DSP1027, <i>Power State Management Profile 1.0</i> ,
164	http://www.dmtf.org/standards/published_documents/DSP1027_1.0.pdf
165	DMTF DSP1027, <i>Power State Management Profile 2.0</i> ,
166	http://www.dmtf.org/standards/published_documents/DSP1027_2.0.pdf
167	DMTF DSP1029, <i>OS Status Profile 1.0</i> ,
168	http://www.dmtf.org/standards/published_documents/DSP1029_1.0.pdf
169	DMTF DSP1029, <i>OS Status Profile, 1.1</i> ,
170	http://www.dmtf.org/standards/published_documents/DSP1029_1.1.pdf
171	DMTF DSP1030, <i>Battery Profile 1.0</i> ,
172	http://www.dmtf.org/standards/published_documents/DSP1030_1.0.pdf
173	DMTF DSP1033, <i>Profile Registration Profile 1.0</i> ,
174	http://www.dmtf.org/standards/published_documents/DSP1033_1.0.pdf
175	DMTF DSP1033, <i>Profile Registration Profile 1.1</i> ,
176	http://www.dmtf.org/standards/published_documents/DSP1033_1.1.pdf
177	DMTF DSP1034, <i>Simple Identity Management Profile 1.0</i> ,
178	http://www.dmtf.org/standards/published_documents/DSP1034_1.0.pdf
179	DMTF DSP1035, <i>Host LAN Network Port Profile 1.0</i> ,
180	http://www.dmtf.org/standards/published_documents/DSP1035_1.0.pdf
181	DMTF DSP1036, <i>IP Interface Profile 1.0</i> ,
182	http://www.dmtf.org/standards/published_documents/DSP1036_1.0.pdf
183	DMTF DSP1037, <i>DHCP Client Profile 1.0</i> ,
184	http://www.dmtf.org/standards/published_documents/DSP1037_1.0.pdf

- 185 DMTF DSP1038, *DNS Client Profile 1.0*,
186 http://www.dmtf.org/standards/published_documents/DSP1038_1.0.pdf
- 187 DMTF DSP1039, *Role Based Authorization Profile 1.0*,
188 http://www.dmtf.org/standards/published_documents/DSP1039_1.0.pdf
- 189 DMTF DSP1040, *Watchdog Profile, 1.0*,
190 http://www.dmtf.org/standards/published_documents/DSP1040_1.0.pdf
- 191 DMTF DSP1054, *Indications Profile 1.0*,
192 http://www.dmtf.org/standards/published_documents/DSP1054_1.0.pdf
- 193 DMTF DSP1058, *Base Desktop and Mobile Profile 1.0*,
194 http://www.dmtf.org/standards/published_documents/DSP1058_1.0.pdf
- 195 DMTF DSP1061, *BIOS Management Profile 1.0*,
196 http://www.dmtf.org/standards/published_documents/DSP1061_1.0.pdf
- 197 DMTF DSP1070, *Opaque Management Data Profile 1.0*,
198 http://www.dmtf.org/standards/published_documents/DSP1070_1.0.pdf
- 199 DMTF DSP1074, *Indicator LED Profile, 1.0*,
200 http://www.dmtf.org/standards/published_documents/DSP1074_1.0.pdf
- 201 DMTF DSP1075, *PCI Device Profile, 1.0*,
202 http://www.dmtf.org/standards/published_documents/DSP1075_1.0.pdf
- 203 DMTF DSP1076, *KVM Redirection 1.0*,
204 http://www.dmtf.org/standards/published_documents/DSP1076_1.0.pdf
- 205 DMTF DSP1077, *USB Redirection Profile 1.0*,
206 http://www.dmtf.org/standards/published_documents/DSP1077_1.0.pdf
- 207 DMTF DSP1086, *Media Redirection Profile 1.0*,
208 http://www.dmtf.org/standards/published_documents/DSP1086_1.0.pdf
- 209 DMTF DSP1108, *Physical Computer System View Profile, 1.0*,
210 http://www.dmtf.org/standards/published_documents/DSP1108_1.0.pdf
- 211 DMTF DSP1116, *IP Configuration Profile, 1.0*,
212 http://www.dmtf.org/standards/published_documents/DSP1116_1.0.pdf
- 213 DMTF DSP8007 *Platform Message Registry 1.0*,
214 http://schemas.dmtf.org/wbem/messageregistry/1/dsp8007_1.0.xml
- 215 DMTF DSP8030, *DASH Namespace Schema 1.0*, <http://schemas.dmtf.org/wbem/dash/1/dash.xsd>
- 216 IETF RFC 2246, T. Dierks et al., *The TLS Protocol Version 1.0*, <http://www.ietf.org/rfc/rfc2246.txt>
- 217 IETF RFC 4106, J. Viega and D. McGrew, *The Use of Galois/Counter Mode (GCM) in IPsec Encapsulating Security Payload (ESP)*, <http://www.rfc-editor.org/rfc/rfc4106.txt>
- 219 IETF RFC 4301, S. Kent, *Security Architecture for the Internet Protocol*,
220 <http://www.rfc-editor.org/rfc/rfc4301.txt>
- 221 IETF RFC 4303, S. Kent, *IP Encapsulating Security Payload*, <http://www.ietf.org/rfc/rfc4303.txt>
- 222 IETF RFC 4346, T. Dierks et al., *The TLS Protocol Version 1.1*, <http://www.ietf.org/rfc/rfc4346.txt>
- 223 IETF RFC 5246, T. Dierks et al., *The TLS Protocol Version 1.2*, <http://www.ietf.org/rfc/rfc5246.txt>

224 **2.2 Other references**

225 ISO/IEC Directives, Part 2, *Rules for the structure and drafting of International Standards*,
226 <http://isotc.iso.org/livelink/livelink.exe?func=ll&objId=4230456&objAction=browse&sort=subtype>

227 **3 Terms and definitions**

228 For the purposes of this document, the following terms and definitions apply.

229 3.1

230 **can**

231 used for statements of possibility and capability, whether material, physical, or causal

232 3.2

233 **cannot**

234 used for statements of possibility and capability, whether material, physical, or causal

235 3.3

236 **conditional**

237 indicates requirements to be followed strictly in order to conform to the document when the specified
238 conditions are met

239 3.4

240 **mandatory**

241 indicates requirements to be followed strictly in order to conform to the document and from which no
242 deviation is permitted

243 3.5

244 **may**

245 indicates a course of action permissible within the limits of the document

246 3.6

247 **need not**

248 indicates a course of action permissible within the limits of the document

249 3.7

250 **optional**

251 indicates a course of action permissible within the limits of the document

252 3.8

253 **shall**

254 indicates requirements to be followed strictly in order to conform to the document and from which no
255 deviation is permitted

256 3.9

257 **shall not**

258 indicates requirements to be followed in order to conform to the document and from which no deviation is
259 permitted

260 3.10
261 **should**
262 indicates that among several possibilities, one is recommended as particularly suitable, without
263 mentioning or excluding others, or that a certain course of action is preferred but not necessarily required

264 3.11
265 **should not**
266 indicates that a certain possibility or course of action is deprecated but not prohibited

267 **4 Symbols and abbreviated terms**

268 The following symbols and abbreviations are used in this document.

269 **4.1**

270 **ASF**

271 Alert Standard Format

272 **4.2**

273 **IANA**

274 Internet Assigned Numbers Authority

275 **4.3**

276 **IP**

277 Internet Protocol

278 **4.4**

279 **MAC**

280 Media Access Control

281 **4.5**

282 **MAP**

283 Management Access Point

284 **4.6**

285 **RMCP**

286 Remote Management and Control Protocol

287 **4.7**

288 **TCP**

289 Transmission Control Protocol

290 **4.8**

291 **TLS**

292 Transport Layer Security

293 **4.9**

294 **UDP**

295 User Datagram Protocol

296 **4.10**
 297 **URI**
 298 Uniform Resource Identifier

299 **4.11**
 300 **WS**
 301 Web Services

302 **5 Mandatory profiles and specifications**

303 The mandatory profiles and specifications shown in Table 1 shall be implemented in accordance with this
 304 specification.

305 **Table 1 – Mandatory profiles and specifications**

Name	Number	Version
<i>Base Desktop and Mobile Profile</i>	DSP1058	1.0
<i>Profile Registration Profile</i>	DSP1033	1.0
<i>Role Based Authorization Profile</i>	DSP1039	1.0
<i>Simple Identity Management Profile</i>	DSP1034	1.0
<i>WS-Management Specification</i>	DSP0226	1.0
<i>WS-Management CIM Binding Specification</i>	DSP0227	1.0
<i>WS-CIM Mapping Specification</i>	DSP0230	1.0

306 **6 Optional profiles**

307 The optional profiles shown in Table 2 may be implemented. When a profile in Table 2 is implemented,
 308 the requirements specified in this section shall be met. For an optional profile with multiple versions listed
 309 in the table below, one or more versions of the optional profile may be implemented. If implemented, the
 310 latest version of the listed optional profile should be implemented.

311 **Table 2 – Optional profiles**

Name	Number	Version	Description
Battery Profile	DSP1030	1.0	
BIOS Management Profile	DSP1061	1.0	
Boot Control Profile	DSP1012	1.0	
CPU Profile	DSP1022	1.0	
DHCP Client Profile	DSP1037	1.0	
DNS Client Profile	DSP1038	1.0	
Ethernet Port Profile	DSP1014	1.0	
Fan Profile	DSP1013	1.0	
Host LAN Network Port Profile	DSP1035	1.0	
Indications Profile	DSP1054	1.0	An instance of one of the concrete subclasses of CIM_Indication shall be the payload of a WS-Eventing message. The contents for AlertIndication should be drawn from <i>Platform Message Registry</i> (DSP8007). It is recommended that any vendor-specific messages are formulated with a published message registry with the owning entity other than the DMTF. Vendor-specific messages should be defined in a vendor-specific message registry that is conformant with the DMTF Message Registry Schema, as defined in DSP4006 .
Indicator LED Profile	DSP1074	1.0	
IP Interface Profile	DSP1036	1.0	
IP Configuration Profile	DSP1116	1.0	
KVM Redirection Profile	DSP1076	1.0	
Media Redirection Profile	DSP1086	1.0	
Opaque Management Data Profile	DSP1070	1.0	
OS Status Profile	DSP1029	1.0	
OS Status Profile	DSP1029	1.1	
PCI Device Profile	DSP1075	1.0	
Physical Asset Profile	DSP1011	1.0	
Physical Computer System View Profile	DSP1108	1.0	
Power State Management Profile	DSP1027	1.0	
Power State Management Profile	DSP1027	2.0	
Power Supply Profile	DSP1015	1.0	
Power Supply Profile	DSP1015	1.1	
Profile Registration Profile	DSP1033	1.1	

Name	Number	Version	Description
Record Log Profile	DSP1010	2.0	
Sensors Profile	DSP1009	1.0	
Sensors Profile	DSP1009	1.1	
Service Processor Profile	DSP1018	1.1	
Software Inventory Profile	DSP1023	1.0	
Software Update Profile	DSP1025	1.0	
SSH Service Profile	DSP1017	1.0	
System Memory Profile	DSP1026	1.0	
Telnet Service Profile	DSP1016	1.0	
Text Console Redirection Profile	DSP1024	1.0	
USB Redirection Profile	DSP1077	1.0	
Watchdog Profile	DSP1040	1.0	

312 7 Protocol implementation requirements

313 A DASH-compliant implementation shall use a CIM-based data model for representing managed
 314 resources and services. This section describes the Management Protocol and Transport Protocol
 315 requirements for a DASH implementation.

316 7.1 Management protocol

317 It is mandatory for DASH implementations to use the protocol defined in *Web Services for Management*
 318 *Specification* ([DSP0226](#)) as the management protocol for supporting operations. The implementation of
 319 the Web Services Management protocol shall expose CIM schema.

320 7.1.1 XML namespaces

321 The following URI identifies an XML namespace that contains DASH-specific XML definitions

322 (1) <http://schemas.dmtf.org/wbem/dash/1/dash.xsd>

323 7.1.2 WS-Transfer

324 It is mandatory for DASH implementations to support WS-Transfer as described in clause 7 of [DSP0226](#).
 325 Table 3 defines support for WS-Transfer operations and their respective DASH requirements.

326 **Table 3 – WS-Transfer operations**

Operation	Requirement	Notes
Get	Mandatory	This operation retrieves resource representations.
Put	Conditional	This operation updates resources. If an implemented profile requires ModifyInstance support, the Put operation shall be supported to fulfill that requirement.
Create	Conditional	This operation creates resource instances. If an implemented profile requires CreateInstance support, the Create operation shall be supported.
Delete	Conditional	This operation deletes resources. If an implemented profile requires DeleteInstance support, the Delete operation shall be supported.

327 **7.1.3 WS-Enumeration**

328 It is mandatory for DASH implementations to support WS-Enumeration as described in clause 8 of
 329 [DSP0226](#). Table 4 defines support for WS-Enumeration operations and their respective DASH
 330 requirements.

331 **Table 4 – WS-Enumeration operations**

Operation	Requirement	Messages
Enumerate	Mandatory	This operation is used to initiate an enumeration and receive an enumeration context.
Pull	Mandatory	This operation is used to pull a sequence of elements of a resource.
Renew	Optional	See Rule R8.1-4 in DSP0226 . Implementation of this operation is not recommended.
GetStatus	Optional	See Rule R8.1-4 in DSP0226 . Implementation of this operation is not recommended.
Release	Mandatory	This operation is used to release an enumeration context.
EnumerationEnd	Optional	See Rule R8.1-4 in DSP0226 . Implementation of this operation is not recommended.

332 It is recommended that the wsman:OptimizeEnumeration option be implemented as a child element of the
 333 wsen:Enumerate element. Refer to clause 8.2.3 of [DSP0226](#) for details. The service shall accept the
 334 element, but it does not have to honor it as described in Rule R8.2.3-1 of [DSP0226](#).

335 **7.1.3.1 WS-Enumeration filter dialects**

336 It is optional for DASH implementations to support Selector Filter Dialect for filtered enumeration and
 337 subscription as described in Annex E of [DSP0226](#). This recommendation does not contravene Rule
 338 R8.2.1-5 of [DSP0226](#).

339 It is optional for DASH implementations to support *Association Queries* with the dialect filter URI as
 340 specified in [DSP0227](#).

341 It is optional for DASH implementations to support the CQL filter dialect for enumeration as described in
 342 clause 7.1 of [DSP0227](#). This clause does not contravene Rule R8.2.1-5 of [DSP0226](#).

343 **7.1.4 WS-Eventing**

344 Support for WS-Eventing is conditional.

345 A service advertising conformance to the *Indications Profile* shall support WS-Eventing as described in
 346 clause 10 of [DSP0226](#) and is further constrained by the definition described in this section 7.1.4. Table 5
 347 defines support for WS-Eventing operations and their respective DASH requirements.

348 **Table 5 – WS-Eventing operations**

Operation	Requirement	Notes
Subscribe	Mandatory	
Renew	Mandatory	
Unsubscribe	Mandatory	
SubscriptionEnd	Optional	
GetStatus	Optional	See Rule R10.3-1 in DSP0226 . Implementation of this operation is not recommended.

349 **7.1.4.1 WS-Eventing messaging security**

350 For WS-Eventing the messaging security defined in Table 6 should be followed.

351 **Table 6 – WS-Eventing Message security recommendations**

Plane	WS-Eventing Message	Recommended Security Class	Security Principal Requiring Authentication
Control	wse:Subscribe	Class B as defined in section 8.1, because it can carry sensitive information	Subscriber
	wse:Renew	Class B, because it can carry sensitive information	Subscriber
	wse:SubscriptionEnd	Class B, because it can carry sensitive information	Subscriber
	wse:Unsubscribe	Class B, because it can carry sensitive information	Subscriber
Delivery	wse:Delivery (Push)	Class A or B as defined in section 8.1 (B for sensitive information or for more compute-intensive information)	MAP, but not necessarily with its own credentials
	wse:Delivery (PushWithAck)	Class A or B (B for sensitive information)	MAP, but not necessarily with its own credentials
	wse:Delivery (Batched)	Class A or B (B for sensitive information)	MAP, but not necessarily with its own credentials
	wsen:Pull (Pull delivery)	Class A or B (B for sensitive information)	Subscriber

352 7.1.4.2 WS-Eventing delivery mode

353 DASH implementations shall support WS-Eventing Push Mode as described in clause 10.2.9.2 of
354 [DSP0226](#). DASH implementations should support WS-Eventing PushWithAck Mode as described in
355 clause 10.2.9.3 of [DSP0226](#).

356 7.1.4.3 Subscription related property definition guidance

357 The PersistenceType property in a CIM_ListenerDestination instance created internally in response to
358 wse:Subscribe should be set to 3 (Transient).

359 The value for the FailureTriggerTimeInterval property on the CIM_IndicationSubscription or
360 CIM_FilterCollectionSubscription instance created internally in response to wse:Subscribe should be to
361 30 seconds.

362 7.2 Transport protocol

363 DASH implementations shall use HTTP 1.1 as the SOAP transport for [DSP0226](#). For detailed information
364 about the transport protocol required by DASH, refer to section 5.2 of the *Systems Management*
365 *Architecture for Mobile and Desktop Hardware White Paper* ([DSP2014](#)).

366 8 Security implementation requirements

367 This section describes transport requirements, roles and authorization, user account management, and
368 authentication.

369 8.1 Transport requirements

370 DASH defines two security classes for HTTP 1.1 transport:

371 1) **Class A:** The security class A requires HTTP digest authentication for the user authentication.
372 For this class, no encryption capabilities are required beyond the encryption of the password
373 during the digest authentication exchange. If class A is implemented, MD5 digest algorithm shall
374 be supported.

- 375 • **String = "HTTP_DIGEST"**

- 376 – URI = <http://schemas.dmtf.org/wbem/wsman/1/wsman/secprofile/http/digest>

377 2) **Class B:** This class defines three security profiles that are based on either TLS or IPsec with
378 specifically selected modes and cryptographic algorithms. For class B compliance, the support
379 for at least one of the following security profiles is mandatory:

- 380 • **String = "HTTP_TLS_1"**

- 381 – URI = <http://schemas.dmtf.org/wbem/wsman/1/wsman/secprofile/https/digest>

- 382 • **String = "HTTP_TLS_2"**

- 383 – URI = <http://schemas.dmtf.org/wbem/wsman/1/wsman/secprofile/https/basic>

- 384 • **String = "HTTP_IPSEC"**

- 385 – URI = <http://schemas.dmtf.org/wbem/wsman/1/wsman/secprofile/http/digest/ipsec>

386 A DASH implementation shall support at least one of the preceding security classes. It is recommended
387 that a DASH implementation be Class B compliant for privacy/confidentiality and additional security.

388 Refer to 7.1.4.1 for WS-Eventing security requirements.

389 8.1.1 Cryptographic algorithms and cipher suites

390 Table 7 lists the required cryptographic algorithms or cipher suites for the security profiles mentioned in
391 this section.

392 **Table 7 – Required cryptographic algorithms or cipher suites**

Security Profile	Required Algorithm(s) or Cipher suite	Notes
"HTTP_DIGEST"	MD5	
"HTTP_TLS_1"	TLS_RSA_WITH_AES_128_CBC_SHA (for TLS) and MD5 (for HTTP digest)	TLS version 1.0 or later Refer to RFC 2246, RFC 4346, RFC 5246 and RFC 3268. It is recommended that the latest 1.x version of TLS is implemented.
"HTTP_TLS_2"	TLS_RSA_WITH_AES_128_CBC_SHA	TLS version 1.0 or later Refer to RFC 2246, RFC 4346, RFC 5246 and RFC 3268. It is recommended that the latest 1.x version of TLS is implemented.
"HTTP_IPSEC"	For IPsec: AES-GCM (key size: 128 bits, ICV or Digest len: 16 B) or AES-CBC (Key size: 128 bits) with HMAC-SHA1-96 and For HTTP digest: MD5	Refer to RFC 4301 , 4303 , and 4106

393 8.2 Roles and authorization

394 Table 8 outlines the Operational Roles supported by DASH implementations and the respective DASH
395 requirements.

396 **Table 8 – Operational roles supported by DASH**

Operational Role	Requirement	Notes
Read-only User	Optional	For detailed description of these roles see DSP2014 .
Operator	Optional	
Administrator	Mandatory	

397 A DASH-compliant service shall support the administrator role. An implementation may support the
398 operator and/or read-only user roles. All roles shall be modeled using [DSP1039](#), *Role Based*
399 *Authorization Profile, 1.0*.

400 8.3 User account management

401 The authentication and authorization mechanisms defined are tied with user account management. DASH
402 implementations shall support a role-based authorization model.

403 Each user shall have the ability to modify its own account credentials, depending on the user's privileges.
404 An account in the administrator role shall be able to perform account management for all users. Table 9
405 outlines the operations supported for user account management and the respective DASH requirements.

406

Table 9 – User account operations

Operation	Requirement	Notes
Create an account	Optional	Recommended for the administrator role
Delete an account	Optional	Recommended for the administrator role
Enable an account	Optional	
Disable an account	Optional	
Modify the privileges of an account	Optional	
Modify the password of an account	Mandatory	Required for the administrator account.
Change the role of an account	Optional	
Create a group of accounts	Optional	
Delete a group of accounts	Optional	
Add an account to a group	Optional	
Remove an account from a group	Optional	
Change the role of a group	Optional	
Modify the privileges of a group	Optional	
Change the associations of roles and accounts	Optional	Recommended for the administrator role

407 The modifications of privileges include the changing of bindings between accounts or groups and roles.
 408 All operations defined in Table 9 shall be performed using operations as defined in DMTF [DSP1039](#), *Role*
 409 *Based Authorization Profile, 1.0* and DMTF [DSP1034](#), *Simple Identity Management Profile, 1.0*.

410 **8.4 Authentication mechanisms**

411 DASH implementations shall support User-Level authentication. DASH implementations may support two-
 412 level (Machine-Level and User-Level) authentication.

413 Table 10 outlines requirements for the three types of authentication mechanisms supported by DASH 1.0
 414 implementations.

415 **Table 10 – Authentication mechanisms**

Authentication Mechanisms	Requirement
Machine-Level	Optional
User-Level	Mandatory
Third-Party	Optional

416 **9 Discovery requirements**

417 Multiple discovery stages are required to accumulate the necessary information from the managed
 418 system. This section defines the implementation requirements of the stages involved in discovering
 419 managed systems and their management capabilities.

420 9.1 Network endpoint discovery stage

421 Section 8.2 of the *Systems Management Architecture for Mobile and Desktop Hardware White Paper*
 422 ([DSP2014](#)) describes endpoint discovery methods. A DASH 1.1 compliant implementation need not
 423 support any of the described methods.

424 9.2 Management access point discovery stage

425 A DASH-compliant MAP should support the following phase process for MAP discovery:

- 426 • **Phase 1:** RMCP Presence Ping/Pong.

427 A DASH-compliant MAP shall support the following phase process for MAP discovery:

- 428 • **Phase 2:** WS-Management Identify method.

429 9.2.1 RMCP Presence Ping/Pong

430 Presence Ping is an RMCP command that is defined in the *Alert Standard Format Specification*,
 431 ([DSP0136](#)). The command involves a request-response message exchange initiated by a management
 432 client (Ping) and completed by a management service (Pong).

433 The format of the RMCP Presence Pong (40h) data section shall conform to section 3.2.4.3 of [DSP0136](#)
 434 with the following definition:

435 *Supported Interactions* field (Data Byte 10 of Presence Pong), bit 5 set to 1b if DASH is supported

436 A DASH-compliant MAP should support this command on the ASF-RMCP well-known UDP port (623)
 437 and/or well-known UDP port (664).

438 9.2.2 WS-Management Identify method

439 Refer to clause 11 of [DSP0226](#) for a definition of the Identify method. A DASH-compliant management
 440 service shall support the Identify method on each TCP port on which WS-Management service is
 441 supported.

442 In addition to the child element defined in [DSP0226](#), the following extension elements are defined by
 443 DASH as children of the *IdentifyResponse* element:

```

444 <s:Body>
445   <wsmid:IdentifyResponse>
446     <wsmid:ProtocolVersion> xs:anyURI </wsmid:ProtocolVersion>
447     <wsmid:ProductVendor> xs:string </wsmid:ProductVendor>
448     <wsmid:ProductVersion> xs:string </wsmid:ProductVersion>
449     <dash:DASHVersion> xs:string </dash:DASHVersion>
450     <wsmid:SecurityProfiles>
451       <wsmid:SecurityProfileName> xs:string or URI </wsmid:SecurityProfileName> +
452     </wsmid:SecurityProfiles>
453   </wsmid:IdentifyResponse>
454 </s:Body>

```

455 Table 11 defines the *IdentifyResponse* payload requirements for DASH 1.1.

456

Table 11 – WS-Management IdentifyResponse payload elements

Element	Requirement	Notes
wsmid:IdentifyResponse	Mandatory	The body of the response
wsmid:IdentifyResponse/wsmid:ProtocolVersion	Mandatory	URI identifying DSP0226 1.0 http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd
wsmid:IdentifyResponse/wsmid:ProductVendor	Optional	
wsmid:IdentifyResponse/wsmid:ProductVersion	Optional	
wsmid:IdentifyResponse/dash:DASHVersion	Mandatory	Identifies the version of the <i>DASH Implementation Requirements</i> specification that is supported, which shall be in the form “M.N.U”, where M represents major version, N represents minor version, and U represents update version of the specification. For this specification, the value shall be set to “1.1.0”.
wsmid:IdentifyResponse/wsmid:SecurityProfiles/ wsmid:SecurityProfileName	Mandatory	URI identifying the security profile supported Class A: “HTTP_DIGEST”: http://schemas.dmtf.org/wbem/wsman/1/wsman/secprofile/http/digest Class B: “HTTP_TLS_1”: http://schemas.dmtf.org/wbem/wsman/1/wsman/secprofile/https/digest “HTTP_TLS_2”: http://schemas.dmtf.org/wbem/wsman/1/wsman/secprofile/https/basic “HTTP_IPSEC”: http://schemas.dmtf.org/wbem/wsman/1/wsman/secprofile/http/digest

457 **9.2.3 wsmid:Identify security implementation requirements**

458 Implementations may support wsmid:Identify without authentication as described in Rule R11.4 of
459 [DSP0226](#).

460 If an implementation supports wsmid:Identify without authentication, it should support it through a URL
461 that contains the suffix “/wsman-anon/identify.”

462 **9.3 Enumeration of management capabilities stage**

463 The DMTF *Profile Registration Profile* ([DSP1033](#)) specifies methods for enumerating the management
464 capabilities of a CIM-based management access point in a scalable manner. Scalability here refers to the
465 fact that each registered profile concisely describes support for a set of related management capabilities
466 that is independent of the number of CIM instances supported by the management access point.

467 9.4 RegisteredSpecification instance

468 The DASH implementation should support an instance of CIM_RegisteredSpecification to indicate
469 support for this version of the specification.

470 Table 12 identifies the element requirements for CIM_RegisteredSpecification.

471 **Table 12 – CIM_RegisteredSpecification element requirements**

Element	Requirement	Description
Properties		
InstanceID	Mandatory	Key, see schema definition.
SpecificationType	Mandatory	This property shall have a value of 3 ("Initiative Wrapper").
RegisteredOrganization	Mandatory	This property shall have a value of 2 (DMTF).
RegisteredName	Mandatory	This property shall have a value of "DASH".
RegisteredVersion	Mandatory	This property shall have a value of "1.2.2".
AdvertiseTypes	Mandatory	Required, see Schema definition.
AdvertiseTypeDescriptions	Mandatory	See Schema definition.
Operations		
GetInstance	Mandatory	
EnumerateInstances	Mandatory	
EnumerateInstanceNames	Mandatory	

472 The instance of CIM_RegisteredSpecification shall be exposed in the interop namespace. The instance to
473 CIM_RegisteredSpecification shall be associated with at least one instance of CIM_RegisteredProfile of
474 one of the mandatory profiles defined in this specification using an instance of
475 CIM_ReferencedSpecification. The Antecedent property of the instance of CIM_ReferencedSpecification
476 shall reference the instance of the CIM_RegisteredProfile. The Dependent property of the instance of
477 CIM_ReferencedSpecification shall reference the instance CIM_RegisteredSpecification.

478 10 In-Band and Out-of-Band traffic requirements

479 A DASH compliant service shall support, at minimum, a shared IPv4 and MAC address as defined below:

- 480 • A physical system's out-of-band Management Access Point and the In-Band host shall share
481 the MAC address and IPv4 address of the network interface. Manageability traffic shall be
482 routed to the MAP through the well-known system ports defined by IANA. Implementations may
483 support the use and configuration of other ports.

484 Developers may use any port necessary during product development. Implementations shall support the
485 IANA-defined system ports for product deployment.

- 486 • Sideband: TCP ports for WS-Management Service
 - 487 – OOB-WS-HTTP
 - 488 – TCP 623
 - 489 – OOB-WS-HTTPS
 - 490 – TCP 664 (If class B is implemented)
- 491 • In-band: TCP ports for WS-Management Service may be supported on the following transport
492 ports and shall be transport specific:
 - 493 – HTTP

494 – HTTPS (If class B is implemented)

495 NOTE: In-band and out-of-band MAPs shall listen on different ports.

496
497
498

ANNEX A (informative) Change log

Version	Date	Description
1.0.0	2009-05-19	
1.1.0	2009-06-22	DMTF Standard Release
1.2.0	2014-10-19	DMTF Standard Release
1.2.1	2015-05-21	Resolves Mantis #2253.
1.2.2	2022-01-01	Reference to added Profile Registration Profile 1.1

499

Bibliography

500

501 DMTF DSP2014, *Systems Management Architecture for Mobile and Desktop Hardware White Paper*
502 1.1.0, http://www.dmtf.org/standards/published_documents/DSP2014_1.1.0.pdf
503 (Informative text in this document details Protocol, Security, and Discovery.)

504 DMTF DSP4006, Standard Registry Development and Publication Process 1.1,
505 http://www.dmtf.org/standards/published_documents/DSP4006_1.1.0.pdf

506