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5 **WBEM URI Mapping Specification**

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Foreword

57 The *WBEM URI Mapping Specification* (DSP0207) was prepared by the DMTF WBEM Modeling Working
58 Group.

59 DMTF is a not-for-profit association of industry members dedicated to promoting enterprise and systems
60 management and interoperability.

61 The Distributed Management Task Force, Inc. (DMTF), developer of CIM, is the industry organization
62 leading the development, adoption, and interoperability of management specifications and initiatives for
63 enterprise and Internet environments.

64 This specification was processed and approved by the DMTF. Approval of this specification does not
65 necessarily imply that all members voted for approval.

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67 The authors wish to acknowledge the following people.

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76

Introduction

77 This specification defines the WBEM Universal Resource Identifier (URI). The WBEM URI is used in
78 WBEM protocols to identify several kinds of CIM objects.

79 A URI (as defined by the IETF in [RFC 3986](#)) is a compact string representation for a resource available
80 via the Internet. This specification defines the subset of the URI syntax that is specific to WBEM.

81 The reader is expected to have a working knowledge of URI and WBEM.

82

83

WBEM URI Mapping Specification

84 1 Scope

85 This document defines the Universal Resource Identifier (URI) format for WBEM protocols. A WBEM URI
86 is a compact string of characters for identifying a CIM element. This document defines a mapping of CIM
87 naming, as defined in the CIM Infrastructure Specification ([DSP0004](#)), to the URI syntax, as defined in
88 [RFC 3986](#).

89 The URI Generic Syntax standard and the Universal Resource Locators standards by the IETF provide a
90 framework for identifying resources.

91 2 Normative References

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

95 2.1 Approved References

96 DMTF DSP0004, *Common Information Model (CIM) Specification 2.5*,
97 http://www.dmtf.org/standards/published_documents/DSP0004_2.5.pdf

98 DMTF DSP0200, *CIM Operations over HTTP 1.3*,
99 http://www.dmtf.org/standards/published_documents/DSP0200_1.3.pdf

100 IETF RFC 1034, *Domain Names — Concepts and Facilities*, November 1987,
101 <http://www.ietf.org/rfc/rfc1034.txt>

102 IETF RFC 1123, *Requirements for Internet Hosts — Applications and Support*, October 1989,
103 <http://www.ietf.org/rfc/rfc1123.txt>

104 IETF RFC 2373, *IP Version 6 Addressing Architecture*, July 1998,
105 <http://www.ietf.org/rfc/rfc2373.txt>

106 IETF RFC 2717, *Registration Procedures for URL Scheme Names*, November 1999,
107 <http://www.ietf.org/rfc/rfc2717.txt>

108 IETF RFC 2718, *Guidelines for new URL Schemes*, November 1999,
109 <http://www.ietf.org/rfc/rfc2718.txt>

110 IETF RFC 3986, *Uniform Resource Identifiers (URI): Generic Syntax*, January 2005,
111 <http://www.ietf.org/rfc/rfc3986.txt>

112 IETF RFC 5234, *Augmented BNF for Syntax Specifications: ABNF*, January 2008,
113 <http://www.ietf.org/rfc/rfc5234.txt>

114 2.2 Other References

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

117 **3 Terms and Definitions**

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

119 **3.1**

120 **can**

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

122 **3.2**

123 **cannot**

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

125 **3.3**

126 **conditional**

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

129 **3.4**

130 **mandatory**

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

133 **3.5**

134 **may**

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

136 **3.6**

137 **need not**

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

139 **3.7**

140 **optional**

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

142 **3.8**

143 **shall**

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

146 **3.9**

147 **shall not**

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

150 **3.10**

151 **should**

152 indicates that among several possibilities, one is recommended as particularly suitable, without
153 mentioning or excluding others, or that a certain course of action is preferred but not necessarily required

154 **3.11**

155 **should not**

156 indicates that a certain possibility or course of action is deprecated but not prohibited

157 4 Symbols and Abbreviated Terms

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

159 4.1

160 **ABNF**

161 Augmented Backus-Naur Form

162 4.2

163 **BNF**

164 Backus-Naur Form

165 4.3

166 **CIM**

167 Common Information Model

168 4.4

169 **URI**

170 Universal Resource Identifier

171 4.5

172 **WBEM**

173 Web-Based Enterprise Management

174 5 WBEM URI

175 5.1 General

176 This section specifies the WBEM URI.

177 The WBEM URI can be used to reference the following kinds of CIM objects:

- 178 • CIM namespaces
- 179 • CIM classes
- 180 • CIM instances
- 181 • CIM qualifier types

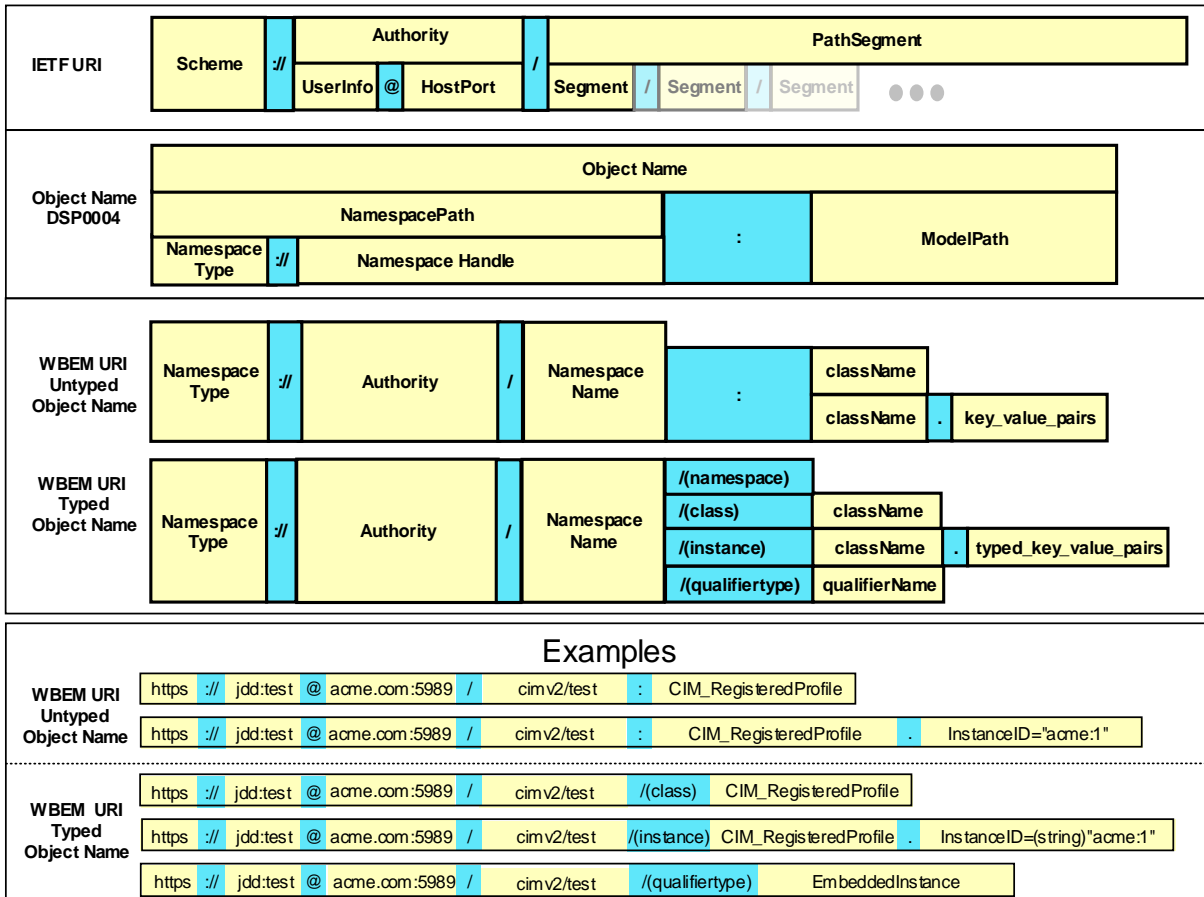
182 The following two formats of the WBEM URI are defined:

- 183 • Untyped WBEM URI is a format compatible with the CIM Object Name format defined by
184 [DSP0004](#).
- 185 • Typed WBEM URI is a format that includes the data type of the key properties, as well as the
186 kind of CIM object referenced.

187 The Untyped WBEM URI is included to support legacy use of the ObjectName syntax defined in the
188 DMTF [DSP0004](#). For some applications, the Untyped WBEM URI encoding lacks sufficient type
189 information to allow the URI to be processed unambiguously. For this reason, use of the Typed WBEM
190 URI is preferred over the Untyped WBEM URI.

191 The WBEM URI consists of the components defined in the following subclauses. Specifications that use
192 the WBEM URI shall define the components that are required in their usage of the WBEM URI. The
193 components should be referenced using the BNF production name defined in this document.

194 Figure 1 illustrates the Mapping of the CIM Object Name to the IETF URI.



195

196

Figure 1 – WBEM URI as a Mapping of CIM Object Name to IETF URI

197 **5.2 Namespace Type or Scheme**

198 The Namespace Type is defined as <scheme> in section 3.1 of [RFC 3986](#).

199 Each WBEM protocol specification shall define the namespace types it supports.

200 WBEM defined namespace types shall be in the form of <protocol>.wbem or <protocol>.wbems where
 201 protocol is the name of the WBEM protocol. The <protocol>.wbems shall be used for the secure version
 202 of the WBEM protocol. For example, for CIM-XML the protocol would be cimxml.wbem and
 203 cimxml.wbems, respectively. A WBEM protocol may also support additional namespace types. For
 204 example, the namespace types “http” and/or “https” would also be valid namespace types for the CIM-
 205 XML protocol.

206 **5.3 Authority**

207 Refer to section 3.2 of [RFC 3986](#) for the definition of the authority.

208 **5.4 Namespace Name**

209 The <namespace> may contain the “/” character but shall not begin or end with a “/”.

210 5.5 Model Path Encoding

211 Two model path encodings are defined in this specification:

- 212 • untyped_modelpath
- 213 • typed_modelpath

214 If the reference is to a CIM Namespace, the model path encoding shall not be present.

215 If the reference is to a CIM Class, the model path encoding shall only include the className.

216 If the reference is to an instance, the model path encoding shall include both the className and a
217 key_value_pair or a typed_key_value_pair for all key properties of the instance.

218 If the reference is to a Qualifier Type, the model path shall only include the qualifierName.

219 Examples of Untyped Key value pairs:

- 220 • stringProperty = "This is a string value with a double quote \" included in the string."
- 221 • char16Property='a'
- 222 • char16Property='\x32'
- 223 • booleanProperty=TRUE
- 224 • integerProperty=1000
- 225 • integerProperty=100101B
- 226 • datetimeProperty="19980525133015.000000-300"
- 227 • datetimeProperty="00000001132312.000000:000"
- 228 • CIM_IndicationSubscription.Filter="CIM_IndicationFilter.SystemCreationClassName=\"CIM_Co
229 mputerSystem\",SystemName=\"server001.acme.com\",CreationClassName=\"CIM_IndicationH
230 andlerCIMXML\",Name=\"Filter01\",Handler="CIM_IndicationHandlerCIMXML.SystemCreation
231 ClassName=\"CIM_ComputerSystem\",SystemName=\"server001.acme.com\",CreationClassNa
232 me=\"CIM_IndicationHandlerCIMXML\",Name="Handler01"
- 233 • ACME_DoubleQuoteExample.Antecedent="ACME_AntecedentClass.Name =\"Before double
234 quote \"\" after double quote\",ACME_DependentClass.Name=\"Before backslash \"\" after
235 backslash\""

236 Examples of Typed Key value pairs:

- 237 • stringProperty = (string)"This is a string value with a double quote \" included in the string."
- 238 • char16Property=(char16)'a'
- 239 • char16Property=(char16)\x32'
- 240 • booleanProperty=(boolean)TRUE
- 241 • integerProperty=(sint32)1000
- 242 • integerProperty=(uint32)100101B
- 243 • integerProperty=(sint64)-12310
- 244 • datetimeProperty=(datetime)"19980525133015.000000-300"
- 245 • datetimeProperty=(datetime)"00000001132312.000000:000"

- 246 • CIM_IndicationSubscription.Filter=(reference)"CIM_IndicationFilter.SystemCreationClassName
247 =(string)"CIM_ComputerSystem",SystemName=(string)"server001.acme.com",CreationClass
248 Name=(string)"CIM_IndicationHandlerCIMXML",Name=(string)"Filter01",Handler=(reference
249)"CIM_IndicationHandlerCIMXML.SystemCreationClassName=(string)"CIM_ComputerSystem"
250 ,SystemName=(string)"server001.acme.com",CreationClassName=(string)"CIM_IndicationHa
251 ndlerCIMXML",Name=(string)"Handler01"
- 252 • ACME_DoubleQuoteExample.Antecedent=(reference)"ACME_AntecedentClass.Name
253 =(string)"Before double quote \" after double
254 quote\"",ACME_DependentClass.Name=(string)"Before backslash \\ after backslash\""

255 5.6 Collected BNF for WBEM URI

256 The DMTF WBEM URI BNF is a conformant subset of the BNF defined in [RFC 3986](#). To minimize the
257 impact of future changes, implementations should be designed to reject, as invalid or unsupported,
258 WBEM URIs that do not conform to an approved version of the DMTF WBEM URI BNF.

259 This BNF conforms to ABNF as specified by [RFC 5234](#).

260 The defining specification shall define the allowable character encodings (for example, UTF-8 or UCS-2)
261 for a WBEM URI.

```

262 WBEM-URI           = WBEM-URI-TypedPath /
263                     WBEM-URI-UntypedPath
264
265 WBEM-URI-TypedPath = WBEM-URI-TypedNamespacePath /
266                     WBEM-URI-TypedClassPath /
267                     WBEM-URI-TypedInstancePath /
268                     WBEM-URI-TypedQualifierTypePath
269
270 WBEM-URI-UntypedPath = WBEM-URI-UntypedNamespacePath /
271                       WBEM-URI-UntypedClassPath /
272                       WBEM-URI-UntypedInstancePath
273
274 // Note: The production rules for className and qualifierName are
275 // defined in Appendix A (MOF Syntax Grammar Description) of DMTF
276 // DSP0004, CIM Infrastructure Specification.
277
278 WBEM-URI-TypedNamespacePath = namespacePath "/"(namespace) "
279 WBEM-URI-TypedClassPath     = namespacePath "/"(class) " className
280 WBEM-URI-TypedInstancePath  = namespacePath "/"(instance) "
281                             className "." typed_key_value_pairs
282 WBEM-URI-TypedQualifierTypePath = namespacePath "/"(qualifiertype) "
283                             qualifierName
284
285 WBEM-URI-UntypedNamespacePath = namespacePath
286 WBEM-URI-UntypedClassPath     = namespacePath ":" className
287 WBEM-URI-UntypedInstancePath  = namespacePath ":"
288                             className "." key_value_pairs
289
290 namespacePath = [namespaceType ":" ] namespaceHandle
291 namespaceType = ("http" ["s"]) / ("cimxml.wbem" ["s"])

```

```

292
293 // Note: The production rules for authority are defined in IETF
294 // RFC 3986 (Uniform Resource Identifiers (URI): Generic Syntax).
295 namespaceHandle      = [ "/" authority ] "/" [ namespaceName ]
296
297 // Note: IDENTIFIER is an identifier for CIM naming as defined in Appendix F
298 // (Unicode Usage) of DMTF DSP0004, CIM Infrastructure Specification.
299 namespaceName        = IDENTIFIER * ( "/" IDENTIFIER )
300
301 // Note: The production rules for stringValue, charValue, booleanValue,
302 // integerValue, and realValue are defined in Appendix A (MOF Syntax
303 // Grammar Description) of DMTF DSP0004, CIM Infrastructure Specification.
304 // The production datetimeValue is a datetime value as defined in
305 // Section 2.2.1 (Datetime Type) of DMTF DSP0004, CIM Infrastructure
306 // Specification.
307
308 // Untyped key value pairs
309 key_value_pairs      = key_value_pair * ( "," key_value_pair )
310 key_value_pair       = key_name "=" key_value
311 key_value            = stringValue / charValue / booleanValue /
312                       integerValue / realValue /
313                       "\"" datetimeValue "\"" /
314                       "\"" referenceValue "\""
315
316 // Typed key value pairs
317 typed_key_value_pairs = typed_key_value_pair * ( "," typed_key_value_pair )
318 typed_key_value_pair  = key_name "=" typed_key_value
319 typed_key_value       = typed_string_value / typed_char_value /
320                       typed_integer_value / typed_boolean_value /
321                       typed_datetime_value / typed_real_value /
322                       typed_reference_value
323 typed_string_value    = "(string)" stringValue
324 typed_char_value      = "(char16)" charValue
325 typed_boolean_value   = "(boolean)" booleanValue
326 typed_integer_value   = "(uint8)" / "(sint8)" / "(uint16)" / "(sint16)" /
327                       "(uint32)" / "(sint32)" / "(uint64)" /
328                       "(sint64)" integerValue
329 typed_real_value      = "(real32)" / "(real64)" realValue
330 typed_datetime_value  = "(datetime)" "\"" datetimeValue "\""
331
332 // Note: A typed-reference-value shall consist of a reference-type designation,
333 // followed by a referenceValue enclosed in double quotes ("). A
334 // referenceValue shall be constructed by recursively following these rules to
335 // construct a reference to either a CIM Class or CIM Instance. Any double
336 // quote character or backslash character that appears in the referenceValue
337 // shall be escaped using a preceding backslash (\\) character.
338 typed_reference_value = "(reference)" "\"" referenceValue "\""

```

339 **5.7 WBEM URI Examples**

340 **5.7.1 Untyped Model Path**

341 //www.acme.com/root/cimv2

342 //www.acme.com/root/cimv2:CIM_RegisteredProfile

343 https://jdd:test@acme.com:5959/cimv2:CIM_RegisteredProfile

344 https://jdd:test@acme.com:5959/cimv2:CIM_RegisteredProfile.InstanceID="acme:1"

345 **5.7.2 Typed Model Path**

346 //www.acme.com/root/cimv2/(namespace)

347 https://jdd:test@acme.com:5959/cimv2/(class)CIM_RegisteredProfile

348 https://jdd:test@acme.com:5959/cimv2/(instance)CIM_RegisteredProfile.InstanceID=(string)"acme:1"

349 https://jdd:test@acme.com:5959/cimv2/(qualifierType)Abstract

350

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ANNEX A (informative)

Change Log

Version	Date	Description
1.0.0	2009-07-29	
1.0.1	2013-10-23	DMTF Standard Release

356