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117

Foreword

118 The *Wi-Fi Port Profile* (DSP1088) was prepared by the Desktop and Mobile Working Group (DMWG) and
119 the Physical Platform Profiles Working Group (PPP WG) of the DMTF.

120 DMTF is a not-for-profit association of industry members dedicated to promoting enterprise and systems
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133

Introduction

134 The information in this specification should be sufficient for a provider or consumer of this data to identify
135 unambiguously the classes, properties, methods, and values that shall be instantiated and manipulated to
136 represent and manage a Wi-Fi port and its associated configuration information. The target audience for
137 this specification includes implementers who are writing CIM-based providers or consumers of
138 management interfaces that represent the component described in this document.

139

Wi-Fi Port Profile

140 1 Scope

141 The *Wi-Fi Port Profile* extends the management capability of referencing profiles by adding the capability
142 to represent a Wi-Fi port, its associated controller, and Wi-Fi interfaces. Associations with the port's
143 physical aspects and profile-implementation version information are modeled in this profile.

144 2 Normative References

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

148 2.1 Approved References

149 DMTF DSP0004, *CIM Infrastructure Specification 2.5*,
150 http://www.dmtf.org/standards/published_documents/DSP0004_2.5.pdf

151 DMTF DSP0200, *CIM Operations over HTTP 1.2*,
152 http://www.dmtf.org/standards/published_documents/DSP0200_1.2.pdf

153 DMTF DSP1001, *Management Profile Specification Usage Guide 1.0*,
154 http://www.dmtf.org/standards/published_documents/DSP1001_1.0.pdf

155 DMTF DSP1033, *Profile Registration Profile 1.0*,
156 http://www.dmtf.org/standards/published_documents/DSP1033_1.0.pdf

157 DMTF DSP1035, *Host LAN Network Port Profile 1.0*,
158 http://www.dmtf.org/standards/published_documents/DSP1035_1.0.pdf

159 DMTF DSP1058, *Base Desktop and Mobile Profile 1.0*,
160 http://www.dmtf.org/standards/published_documents/DSP1058_1.0.pdf

161 2.2 Other References

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

164 3 Terms and Definitions

165 For the purposes of this document, the following terms and definitions apply. For the purposes of this
166 document, the terms and definitions given in [DSP1033](#) and [DSP1001](#) also apply.

167 3.1

168 **can**

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

170 3.2

171 **cannot**

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

- 173 **3.3**
174 **conditional**
175 indicates requirements to be followed strictly in order to conform to the document when the specified
176 conditions are met
- 177 **3.4**
178 **mandatory**
179 indicates requirements to be followed strictly in order to conform to the document and from which no
180 deviation is permitted
- 181 **3.5**
182 **may**
183 indicates a course of action permissible within the limits of the document
- 184 **3.6**
185 **need not**
186 indicates a course of action permissible within the limits of the document
- 187 **3.7**
188 **optional**
189 indicates a course of action permissible within the limits of the document
- 190 **3.8**
191 **referencing profile**
192 indicates a profile that owns the definition of this class and can include a reference to this profile in its
193 "Related Profiles" table
- 194 **3.9**
195 **shall**
196 indicates requirements to be followed strictly in order to conform to the document and from which no
197 deviation is permitted
- 198 **3.10**
199 **shall not**
200 indicates requirements to be followed in order to conform to the document and from which no deviation is
201 permitted
- 202 **3.11**
203 **should**
204 indicates that among several possibilities, one is recommended as particularly suitable, without
205 mentioning or excluding others, or that a certain course of action is preferred but not necessarily required
- 206 **3.12**
207 **should not**
208 indicates that a certain possibility or course of action is deprecated but not prohibited
- 209 **3.13**
210 **station**
211 a component that can connect into a wireless medium in a network
- 212 **3.14**
213 **unspecified**
214 indicates that this profile does not define any constraints for the referenced CIM element or operation

215 4 Symbols and Abbreviated Terms

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

217 4.1

218 **BSS**

219 Basic Service Set

220 4.2

221 **CIM**

222 Common Information Model

223 4.3

224 **LAN**

225 Local Area Network

226 4.4

227 **PLCP**

228 Physical Layer Convergence Protocol

229 4.5

230 **PPDU**

231 PLCP Protocol Data Unit

232 4.6

233 **WEP**

234 Wired Equivalent Privacy

235 a deprecated data confidentiality algorithm defined for IEEE 802.11 wireless networks

236 4.7

237 **WPA**

238 Wi-Fi Protected Access

239 an extensible security architecture defined to replace WEP for IEEE 802.11 wireless networks

240 5 Synopsis

241 **Profile Name:** Wi-Fi Port

242 **Version:** 1.0.0

243 **Organization:** DMTF

244 **CIM Schema Version:** 2.21

245 **Central Class:** CIM_WiFiPort

246 **Scoping Class:** CIM_ComputerSystem

247 The *Wi-Fi Port Profile* extends the management capability of referencing profiles by adding the capability
248 to represent a Wi-Fi interface in a managed system.

249 CIM_WiFiPort shall be the Central Class of this profile. The instance(s) of CIM_WiFiPort shall be the
250 Central Instance(s) of this profile. CIM_ComputerSystem shall be the Scoping Class of this profile. The
251 instance of CIM_ComputerSystem with which the Central Instance is associated through an instance of
252 CIM_SystemDevice shall be the Scoping Instance of this profile.

253 Table 1 identifies profiles on which this profile has a dependency.

254 **Table 1 – Referenced Profiles**

Profile Name	Organization	Version	Description
Profile Registration	DMTF	1.0	Mandatory
Host LAN Network Port	DMTF	1.0	Specializes

255 6 Description

256 The *Wi-Fi Port Profile* specializes the DMTF [Host LAN Network Port Profile](#) 1.0. The *Wi-Fi Port Profile*
 257 constrains the generalized model of a network port to usage for modeling a Wi-Fi port. This profile is
 258 limited to defining CIM elements and constraints beyond those defined in the [Host LAN Network Port](#)
 259 [Profile](#). To implement this profile, it is necessary to understand and implement the [Host LAN Network Port](#)
 260 [Profile](#).

261 The following functionality is mandatory within the scope of this profile:

- 262 • a specification of the Wi-Fi port and related hardware
- 263 • network interfaces active over the network port

264 The following functionality is optional within the scope of this profile:

- 265 • modeling of the controller and its relationship with the Wi-Fi port

266 The following functionality is not covered in this profile:

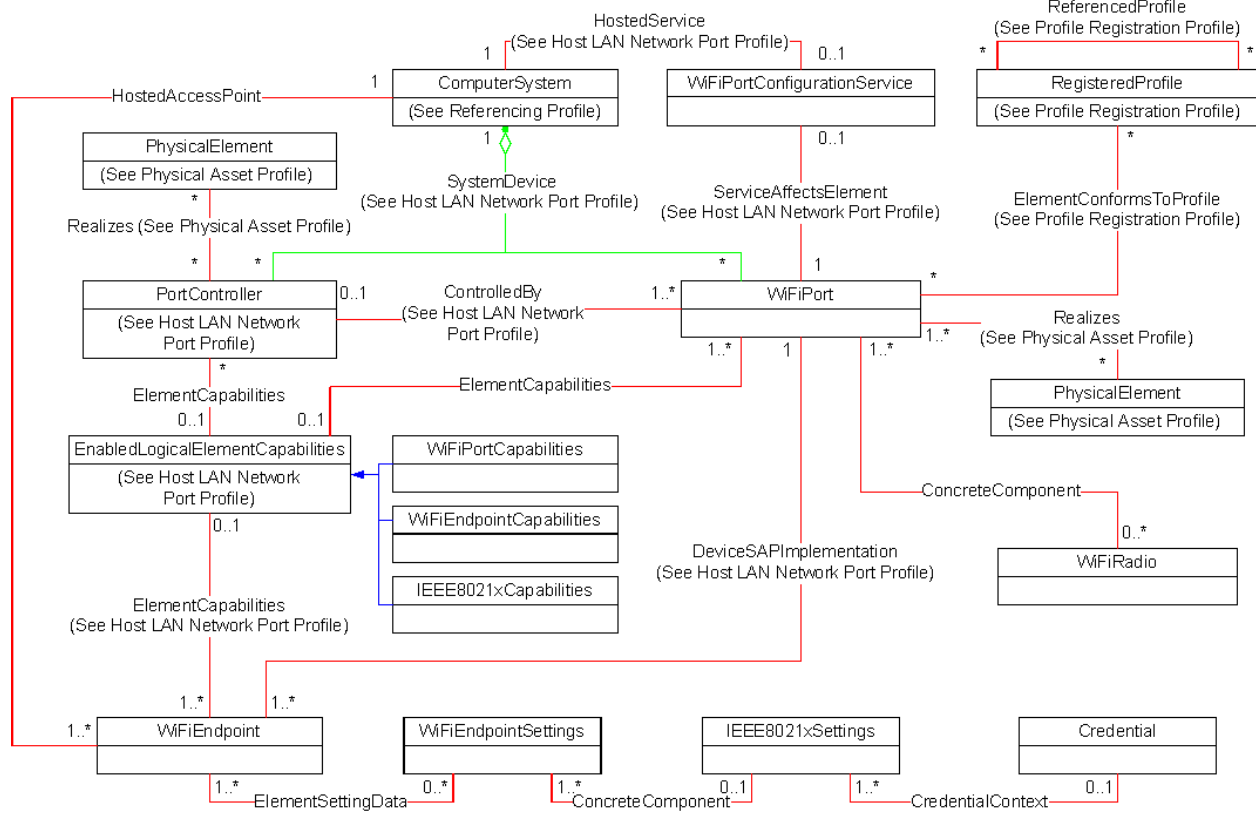
- 267 • modeling of the networks in which the Wi-Fi interface participates

268 Figure 1 represents the class schema for the *Wi-Fi Port Profile*. For simplicity, the prefix CIM_ has been
 269 removed from the names of the classes. The CIM_WiFiPort class is a subclass (specialization) of the
 270 CIM_NetworkPort class. It replaces the CIM_NetworkPort class as the subject for constraints defined in
 271 the [Host LAN Network Port Profile](#). The CIM_WiFiPort class represents the Wi-Fi port. The
 272 CIM_WiFiEndpoint class represents an access point at the data-link layer, which in this case is identified
 273 by a MAC address to which the Wi-Fi port will respond on the network.

274 CIM_WiFiEndpoint includes properties that describe the encryption method and related parameters that
 275 are currently in effect between the endpoint and the network with which it is associated.

276 CIM_WiFiEndpointSettings includes properties that describe the encryption method and related
 277 parameters required by the network identified by the CIM_WiFiEndpointSettings.SSID property.

278 CIM_WiFiEndpointCapabilities includes properties that describe the encryption capabilities of a
 279 CIM_WiFiEndpoint instance associated by CIM_ElementCapabilities.



280

281

Figure 1 – Wi-Fi Port Profile: Profile Class Diagram

282 7 Implementation Requirements

283 This clause details the requirements related to the arrangement of instances and properties for
 284 implementations of this profile in addition to those placed on the implementation by the [Host LAN Network](#)
 285 [Port Profile](#).

286 7.1 Representing Wi-Fi Ports

287 Each Wi-Fi port device shall be represented by an instance of CIM_WiFiPort. Zero or more instance of
 288 CIM_WiFiPort shall be implemented.

289 7.1.1 CIM_WiFiPort.Speed

290 If the Speed property is supported, it shall contain the data rate (in bits per second) at which the most
 291 recent PPDU was received. This value is encoded in the first 4 bits of the PLCP header in each PLCP
 292 frame.

293 7.1.2 CIM_WiFiPort.MaxSpeed

294 The MaxSpeed shall contain the maximum bandwidth (in bits per second) relative to the current operating
 295 mode specified in PortType. For example, shall contain the value 11,000,000 if PortType contains 71
 296 (802.11b).

297 **7.1.3 CIM_WiFiPort.PermanentAddress**

298 When the permanent address is known, the PermanentAddress property shall be formatted as 12
299 contiguous hex digits (pattern "[0123456789ABCDEFabcdef]{12}\$"). When the permanent address is not
300 known, the PermanentAddress property shall be formatted as a zero-length string (pattern ".{0}").

301 **7.1.4 CIM_WiFiPortCapabilities**

302 The [Host LAN Network Port Profile](#) specifies the conditions under which an instance of
303 CIM_EnabledLogicalElementCapabilities shall be associated through CIM_ElementCapabilities to an
304 instance of CIM_NetworkPort. If the creation class of the CIM_NetworkPort instance under these
305 conditions is CIM_WiFiPort, then the creation class of the CIM_EnabledLogicalElementCapabilities
306 instance shall be CIM_WiFiPortCapabilities.

307 **7.2 Port Configuration**

308 An implementation may support CIM_WiFiNetworkDetectionSettings, which provides properties for
309 configuring general Wi-Fi network detection behavior for one or more Wi-Fi Ports. The properties are
310 described in this clause, and the methods are described in clause 8.

311 **7.2.1 CIM_WiFiNetworkDetectionSettings.TargetNetworkCategories**

312 An implementation that supports CIM_WiFiNetworkDetectionSettings may support the
313 TargetNetworkCategories property.

314 If an implementation supports TargetNetworkCategories, it shall also support PreferredNetworks and
315 KnownNetworks.

316 TargetNetworkCategories indicates whether a CIM_WiFiPort instance associated to the
317 CIM_WiFiNetworkDetectionSettings instance through an instance of CIM_ElementSettingData will only
318 connect to networks listed in the CIM_WiFiNetworkDetectionSettings.PreferredNetworks property or to
319 any network that satisfies the other property values in the CIM_WiFiNetworkDetectionSettings instance.

320 An implementation may support modification of TargetNetworkCategories. If an implementation supports
321 modification of the value of TargetNetworkCategories, it shall do so through the ModifyInstance method.

322 **7.2.2 CIM_WiFiNetworkDetectionSettings.PreferredNetworks**

323 An implementation that supports CIM_WiFiNetworkDetectionSettings may support the PreferredNetworks
324 property.

325 If an implementation supports PreferredNetworks, it shall also support TargetNetworkCategories and
326 KnownNetworks, and the SSIDs in PreferredNetworks shall always be a subset of those in
327 KnownNetworks.

328 If an implementation supports PreferredNetworks, it shall support modification of the value of
329 PreferredNetworks through the ModifyInstance method.

330 PreferredNetworks lists the SSIDs of the networks to which a CIM_WiFiPort instance associated to the
331 CIM_WiFiNetworkDetectionSettings instance through an instance of CIM_ElementSettingData will
332 connect if TargetNetworkCategories contains 3 (Preferred).

333 **7.2.3 CIM_WiFiNetworkDetectionSettings.KnownNetworks**

334 An implementation that supports CIM_WiFiNetworkDetectionSettings may support the KnownNetworks
335 property.

336 If an implementation supports KnownNetworks, it shall also support PreferredNetworks and
337 TargetNetworkCategories.

338 An implementation shall not support modification of KnownNetworks.

339 The KnownNetworks property lists the SSIDs of the networks known to the CIM_WiFiPort, whether
340 preferred or not.

341 **7.2.4 CIM_WiFiNetworkDetectionSettings.MinimumSignalStrength**

342 An implementation that supports CIM_WiFiNetworkDetectionSettings may support the
343 MinimumSignalStrength property.

344 If an implementation supports MinimumSignalStrength, it may support modification of the value of
345 MinimumSignalStrength through the ModifyInstance method.

346 MinimumSignalStrength specifies a signal threshold. If the port detects a signal from a wireless network
347 that it would otherwise connect to, but the signal strength is less than MinimumSignalStrength, the port
348 shall not connect to the network.

349 **7.2.5 CIM_WiFiNetworkDetectionSettings.AvailablePortTypes**

350 An implementation that supports CIM_WiFiNetworkDetectionSettings may support the PortTypes
351 property.

352 If an implementation supports PortTypes, it may support modification of the value of PortTypes through
353 the ModifyInstance method.

354 PortTypes lists the types of Wi-Fi networks to which the port is allowed to connect.

355 A value shall only appear in the AvailablePortTypes property of a CIM_WiFiNetworkDetectionSettings
356 instance if it appears in the SupportedPortTypes property in the CIM_WiFiPortCapabilities instance that is
357 associated through CIM_ElementCapabilities to a CIM_WiFiPort instance that is associated through
358 CIM_ElementSettingData to the CIM_WiFiNetworkDetectionSettings instance.

359 **7.3 Representing Wi-Fi Communication Endpoints**

360 Each Wi-Fi communication endpoint shall be represented by an instance of CIM_WiFiEndpoint.

361 **7.3.1 CIM_WiFiEndpoint.ProtocolIFType**

362 The ProtocolIFType property of each CIM_WiFiEndpoint shall contain the value 71 (IEEE 802.11).

363 **7.3.2 CIM_WiFiEndpoint.LANID**

364 The LANID property may be supported. When supported, the LANID property shall contain the Service
365 Set Identifier (SSID) of the wireless LAN with which the WiFiEndpoint is associated.

366 **7.3.3 CIM_WiFiEndpoint.AccessPointAddress**

367 The AccessPointAddress property may be supported. When supported, the AccessPointAddress property
368 shall contain the MAC address of the access point with which the WiFiEndpoint is associated.

369 **7.3.4 CIM_WiFiEndpoint.BSSType**

370 The BSSType property may be supported. When supported, the BSSType property shall contain the
371 Basic Service Set type of the wireless LAN with which the WiFiEndpoint is associated.

372 **7.3.5 CIM_WiFiEndpoint.Associated**

373 The Associated property may be supported. When supported, the Associated property shall contain
374 TRUE if and only if the CIM_WiFiEndpoint is currently associated to a Wi-Fi access point (for an
375 Infrastructure BSS) or station (for an Independent BSS).

376 **7.3.6 Endpoint Configuration**

377 An implementation may support manual and/or autonomous configuration of Wi-Fi communication
378 endpoints. Configuration data that are applied to a CIM_WiFiEndpoint in order for it to connect to a given
379 Wi-Fi network shall be represented by CIM_WiFiEndpointSettings and CIM_IEEE8021xSettings. These
380 settings may be applied manually through CIM intrinsic operations, or autonomously, based on a variety
381 of factors, including the signal strength of nearby access points and the relative priority configured for
382 each CIM_WiFiEndpointSettings instance. The requirements in this section apply to implementations that
383 support manual and/or autonomous configuration of CIM_WiFiEndpoints. Additional requirements for
384 implementations that support configuration of CIM_WiFiEndpoints are specified in 7.6.1.2 and 7.6.2.2.

385 **7.3.6.1 CIM_WiFiEndpointSettings.Priority**

386 The Priority property may be supported. When supported, the Priority property shall contain a non-
387 negative integer value that represents the relative priority of the CIM_WiFiEndpointSettings. Lower
388 numbers shall represent higher priority, and each CIM_WiFiEndpointSettings instance shall contain a
389 unique Priority value.

390 **7.3.6.2 CIM_WiFiEndpointSettings.SSID**

391 The SSID property shall be supported and shall contain the Service Set Identifier (SSID) of the network
392 that corresponds to the WiFiEndpointSettings instance.

393 **7.3.6.3 CIM_WiFiEndpointSettings.BSSType**

394 The BSSType property shall be supported and shall contain the Basic Service Set (BSS) Type of the
395 network that corresponds to the WiFiEndpointSettings instance.

396 **7.3.6.4 CIM_ElementSettingData**

397 Each instance of CIM_WiFiEndpointSettings shall be associated through CIM_ElementSettingData to one
398 or more instances of CIM_WiFiEndpoint.

399 **7.4 Representing Detected Networks**

400 An implementation may optionally represent the Wi-Fi networks each Wi-Fi endpoint has detected but to
401 which it is not connected.

402 If an implementation represents the networks Wi-Fi networks each Wi-Fi endpoint has detected but to
403 which it is not connected, it shall represent each such network using an instance of
404 CIM_WiFiEndpointSettings that is associated through CIM_ElementSettingData to the CIM_WiFiEndpoint
405 and that conforms to the constraints specified in the subclauses below.

406 **7.4.1 CIM_WiFiEndpointSettings.ChangeableType**

407 The ChangeableType property shall contain the value 3 (Not Changeable – Transient).

408 **7.4.2 CIM_WiFiEndpointSettings.Priority**

409 The Priority property shall be null.

410 7.4.3 Keys

411 The Keys property shall be null.

412 7.4.4 KeyIndex

413 The KeyIndex property shall be null.

414 7.4.5 PSKValue

415 The PSKValue property shall be null.

416 7.4.6 PSKPassPhrase

417 The PSKPassPhrase property shall be null.

418 7.5 Representing Wi-Fi Radios

419 If an implementation supports representation of Wi-Fi transmitters, receivers, and transceivers, it shall do
420 so using the class CIM_WiFiRadio. This clause and its subclauses specify the requirements that shall be
421 met if CIM_WiFiRadio is supported.

422 7.5.1 Relationship between Wi-Fi Radios and Wi-Fi Ports

423 Each instance of CIM_WiFiRadio shall be associated to one or more instances of CIM_WiFiPort through
424 CIM_ConcreteComponent. Each instance of CIM_WiFiPort shall be associated with one or more
425 instances of CIM_WiFiRadio through CIM_ConcreteComponent.

426 7.5.2 CIM_WiFiRadio.SignalStrength

427 The SignalStrength property may be supported. If supported, the SignalStrength property shall contain
428 the strength of the signal received by the WiFiEndpoint to/from the access point or station with which it is
429 associated, in terms of decibels.

430 7.5.3 CIM_WiFiRadio.Channel

431 The Channel property may be supported. If supported, the Channel property shall contain the channel
432 number currently in use by the WiFiEndpoint to communicate with the station with which it is associated.

433 7.5.4 Wi-Fi Radio State Management Is Supported

434 When management of the state of a Wi-Fi Radio is supported, exactly one instance of
435 CIM_EnabledLogicalElementCapabilities shall be associated with the CIM_WiFiRadio instance through
436 an instance of CIM_ElementCapabilities.

437 Support for managing the state of the Wi-Fi Radio is optional behavior. This section describes the CIM
438 elements and behaviors that shall be implemented when this behavior is supported.

439 **Conditional Determination:** A client can determine whether state management is supported as follows:

- 440 1) Find the CIM_EnabledLogicalElementCapabilities instance that is associated with the
441 CIM_WiFiRadio instance.
- 442 2) Query the value of the RequestedStatesSupported property. If at least one value is specified,
443 state management is supported.

444 7.5.4.1 CIM_EnabledLogicalElementCapabilities

445 When state management is supported, exactly one instance of CIM_EnabledLogicalElementCapabilities
446 shall be associated with the CIM_WiFiRadio instance through an instance of the
447 CIM_ElementCapabilities association.

448 7.5.4.1.1 CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported

449 The RequestedStatesSupported property may contain one or more of the following values: 2 (Enabled), 3
450 (Disabled), or 11 (Reset).

451 7.5.4.2 CIM_WiFiRadio.RequestedState

452 When the CIM_WiFiRadio.RequestStateChange() method is successfully invoked, the value of the
453 RequestedState property shall be the value of the RequestedState parameter. If the method is not
454 successfully invoked, the value of the RequestedState property is indeterminate.

455 The CIM_WiFiRadio.RequestedState property shall have one of the values specified in the
456 CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported property or 5 (No Change).

457 7.5.4.3 CIM_WiFiRadio.EnabledState

458 When the RequestedState parameter has a value of 2 (Enabled) or 3 (Disabled) and the
459 CIM_WiFiRadio.RequestStateChange() method completes successfully, the value of the EnabledState
460 property shall equal the value of the CIM_WiFiRadio.RequestedState property.

461 If the method does not complete successfully, the value of the EnabledState property is indeterminate.

462 The EnabledState property shall have the value 2 (Enabled) or 3 (Disabled).

463 7.5.5 Wi-Fi Radio State Management Is Not Supported

464 This section describes the CIM elements and behaviors that shall be implemented when management of
465 the Wi-Fi Radio state is not supported.

466 7.5.5.1 CIM_EnabledLogicalElementCapabilities

467 When state management is not supported, exactly one instance of
468 CIM_EnabledLogicalElementCapabilities may be associated with the CIM_WiFiRadio instance through an
469 instance of the CIM_ElementCapabilities association.

470 7.5.5.1.1 CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported

471 The CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported property shall not contain any
472 values.

473 7.5.5.2 CIM_WiFiRadio.RequestedState

474 The RequestedState property shall have the value 12 (Not Applicable).

475 7.5.5.3 CIM_WiFiRadio.EnabledState

476 The EnabledState property shall have one of the following values: 2 (Enabled), 3 (Disabled), 5 (Not
477 Applicable).

478 **7.5.6 Modifying ElementName Is Supported**

479 The CIM_WiFiRadio.ElementName property may support being modified by the ModifyInstance
480 operation. See 8.5.1.1. This behavior is conditional. This section describes the CIM elements and
481 behavior requirements when an implementation supports client modification of the
482 CIM_WiFiRadio.ElementName property.

483 **Client Determination:** A client can determine whether it can modify the ElementName as follows:

- 484 1) Find the CIM_EnabledLogicalElementCapabilities instance that is associated with the
485 CIM_WiFiRadio instance.
- 486 2) Query the value of the ElementNameEditSupported property of the instance. If the value is
487 TRUE, the client can modify the CIM_WiFiRadio.ElementName property.

488 **7.5.6.1 CIM_EnabledLogicalElementCapabilities**

489 An instance of CIM_EnabledLogicalElementCapabilities shall be associated with the CIM_WiFiRadio
490 instance through an instance of CIM_ElementCapabilities.

491 **7.5.6.1.1 CIM_EnabledLogicalElementCapabilities.ElementNameEditSupported**

492 This property shall have a value of TRUE when the implementation supports client modification of the
493 CIM_WiFiRadio.ElementName property.

494 **7.5.6.1.2 CIM_EnabledLogicalElement.MaxElementNameLen**

495 The MaxElementNameLen property shall be implemented.

496 **7.5.7 Modifying ElementName Is Not Supported**

497 This section describes the CIM elements and behaviors that shall be implemented when the
498 CIM_WiFiRadio.ElementName does not support being modified by the ModifyInstance operation.

499 **7.5.7.1 CIM_EnabledLogicalElementCapabilities**

500 An instance of CIM_EnabledLogicalElementCapabilities may be associated with the CIM_WiFiRadio
501 instance through an instance of CIM_ElementCapabilities.

502 **7.5.7.1.1 CIM_EnabledLogicalElementCapabilities.ElementNameEditSupported**

503 This property shall have a value of FALSE when the implementation does not support client modification
504 of the CIM_WiFiRadio.ElementName property.

505 **7.5.7.1.2 CIM_EnabledLogicalElement.MaxElementNameLen**

506 The MaxElementNameLen property may be implemented. The MaxElementNameLen property is
507 irrelevant in this context.

508 **7.6 Security**

509 This clause specifies the implementation requirements for profile elements related to IEEE 802.11
510 security, which provides encryption and authentication.

511 **7.6.1 Encryption**

512 This clause specifies the implementation requirements for profile elements related to IEEE 802.11
513 encryption.

514 **7.6.1.1 Describing Current Encryption**

515 An implementation may support description of the encryption method and related parameters that are
516 currently in effect between an instance of CIM_WiFiEndpoint and the network with which it is associated.
517 If an implementation supports describing current encryption, it shall support the requirements in this
518 clause.

519 **7.6.1.1.1 CIM_WiFiEndpoint.EncryptionMethod**

520 CIM_WiFiEndpoint.EncryptionMethod shall describe the IEEE 802.11 encryption method currently in
521 effect between the CIM_WiFiEndpoint and the network with which it is associated.

522 **7.6.1.1.2 CIM_WiFiEndpoint.OtherEncryptionMethod**

523 CIM_WiFiEndpoint.OtherEncryptionMethod shall be non-null if and only if CIM_WiFiEndpoint.Encryption-
524 Method contains 1 ("Other").

525 **7.6.1.2 Endpoint Encryption Configuration**

526 As specified in 7.1.4, an implementation may support configuration of a CIM_WiFiEndpoint to enable it to
527 join one of multiple networks with different policies. If an implementation supports endpoint configuration,
528 it shall support the requirements in this clause.

529 **7.6.1.2.1 CIM_WiFiEndpointSettings.EncryptionMethod**

530 CIM_WiFiEndpointSettings.EncryptionMethod shall specify the encryption method required to join the
531 network specified by CIM_WiFiEndpointSettings.SSID.

532 **7.6.1.2.2 CIM_WiFiEndpointSettings.OtherEncryptionMethod**

533 CIM_WiFiEndpointSettings.OtherEncryptionMethod shall be non-null if and only if CIM_WiFiEndpointSet-
534 tings.EncryptionMethod contains 1 ("Other").

535 **7.6.1.2.3 CIM_WiFiEndpointSettings.Keys**

536 If CIM_WiFiEndpointSettings.EncryptionMethod contains 2 ("WEP"), CIM_WiFiEndpointSettings.Keys
537 shall not be null and shall contain one to four WEP encryption keys. However, to maintain the secrecy of
538 the actual keys, the value of the CIM_WiFiEndpointSettings.Keys property shall be an empty array when
539 it is retrieved from the service.

540 If CIM_WiFiEndpointSettings.EncryptionMethod does not contain 2 ("WEP"),
541 CIM_WiFiEndpointSettings.Keys shall be null.

542 **7.6.1.2.4 CIM_WiFiEndpointSettings.KeyIndex**

543 If CIM_WiFiEndpointSettings.EncryptionMethod contains 2 ("WEP"), CIM_WiFiEndpointSettings.KeyIndex
544 shall not be null and shall contain the zero-relative index of the active key in
545 CIM_WiFiEndpointSettings.Keys (the key that shall be used when the associated CIM_WiFiEndpoint
546 connects to the network identified by CIM_WiFiEndpointSettings.SSID). However, to maintain the secrecy
547 of the actual keys and which one is active, the value of the CIM_WiFiEndpointSettings.KeyIndex property
548 shall be null when it is retrieved from the service.

549 If CIM_WiFiEndpointSettings.EncryptionMethod does not contain 2 ("WEP"), CIM_WiFiEndpoint-
550 Settings.KeyIndex shall be null.

551 **7.6.1.2.5 CIM_WiFiEndpointCapabilities.SupportedEncryptionMethods**

552 CIM_WiFiEndpointCapabilities.SupportedEncryptionMethods shall contain one or more IEEE 802.11
553 encryption methods supported by the implementation. SupportedEncryptionMethods may contain 1

554 (Other) to represent an operational mode not explicitly included in the definition of
555 SupportedEncryptionMethods.

556 **7.6.1.2.6 CIM_WiFiEndpointCapabilities.OtherSupportedEncryptionMethods**

557 CIM_WiFiEndpointCapabilities.OtherSupportedEncryptionMethods shall contain one or more strings if
558 and only if CIM_WiFiEndpointCapabilities.SupportedEncryptionMethods contains 1 (Other).

559 CIM_WiFiEndpointCapabilities.OtherSupportedEncryptionMethods shall be NULL if and only if
560 CIM_WiFiEndpointCapabilities.SupportedEncryptionMethods does not contain 1 (Other).

561 **7.6.2 Authentication**

562 This clause specifies the implementation requirements for profile elements related to IEEE 802.11
563 authentication.

564 **7.6.2.1 Describing Current Authentication**

565 An implementation may support description of the authentication method and related parameters that are
566 currently in effect between an instance of CIM_WiFiEndpoint and the network with which it is associated.
567 If an implementation supports describing current authentication, it shall support the requirements in this
568 clause.

569 **7.6.2.1.1 CIM_WiFiEndpoint.AuthenticationMethod**

570 CIM_WiFiEndpoint.AuthenticationMethod shall describe the IEEE 802.11 authentication method used to
571 mutually authenticate the CIM_WiFiEndpoint and the network with which it is currently associated.

572 **7.6.2.1.2 CIM_WiFiEndpoint.OtherAuthenticationMethod**

573 CIM_WiFiEndpoint.OtherAuthenticationMethod shall be non-null if and only if CIM_WiFiEndpoint.Authent-
574 icationMethod contains 1 ("Other").

575 **7.6.2.1.3 CIM_WiFiEndpoint.IEEE8021xAuthenticationProtocol**

576 CIM_WiFiEndpoint.IEEE8021xAuthenticationProtocol shall be non-null if and only if CIM_WiFiEnd-
577 point.AuthenticationMethod contains 5 (WPA IEEE 802.1x), 7 (WPA2 IEEE 802.1x), or 8 (CCKM IEEE
578 802.1x).

579 **7.6.2.2 Endpoint Authentication Configuration**

580 As specified in 7.1.4, an implementation may support configuration of a CIM_WiFiEndpoint to enable it to
581 join one of multiple networks with different policies. If an implementation supports endpoint configuration,
582 it shall support the requirements in this clause.

583 **7.6.2.2.1 CIM_WiFiEndpointSettings.AuthenticationMethod**

584 CIM_WiFiEndpointSettings.AuthenticationMethod shall specify the authentication method required to join
585 the network specified by CIM_WiFiEndpointSettings.SSID.

586 **7.6.2.2.2 CIM_WiFiEndpointSettings.OtherAuthenticationMethod**

587 CIM_WiFiEndpointSettings.OtherAuthenticationMethod shall be non-null if and only if
588 CIM_WiFiEndpointSettings.AuthenticationMethod contains 1 ("Other").

589 7.6.2.2.3 CIM_WiFiEndpointSettings.PSKValue and CIM_WiFiEndpointSettings.PSKPassPhrase

590 If CIM_WiFiEndpointSettings.AuthenticationMethod contains 4 ("WPA PSK") or 6 ("WPA2 PSK"), then
591 exactly one of CIM_WiFiEndpointSettings.PSKValue and CIM_WiFiEndpointSettings.PSKPassPhrase
592 shall not be null.

593 If CIM_WiFiEndpointSettings.AuthenticationMethod contains 4 ("WPA PSK") or 6 ("WPA2 PSK") and
594 CIM_WiFiEndpointSettings.PSKValue is not null, then CIM_WiFiEndpointSettings.PSKValue shall contain
595 a 64-byte pre-shared key.

596 If CIM_WiFiEndpointSettings.AuthenticationMethod contains 4 ("WPA PSK") or 6 ("WPA2 PSK") and
597 CIM_WiFiEndpointSettings.PSKPhrase is not null, then CIM_WiFiEndpointSettings.PSKPhrase shall
598 contain a string of 8 to 63 characters that shall be used by the implementation to generate a pre-shared
599 key.

600 If CIM_WiFiEndpointSettings.AuthenticationMethod contains neither 4 ("WPA PSK") nor 6 ("WPA2 PSK"),
601 then CIM_WiFiEndpointSettings.PSKValue and CIM_WiFiEndpointSettings.PSKPassPhrase shall both
602 be null.

603 7.6.2.2.4 CIM_WiFiEndpointCapabilities.SupportedAuthenticationMethods

604 CIM_WiFiEndpointCapabilities.SupportedAuthenticationMethods shall contain one or more IEEE 802.11
605 authentication methods supported by the implementation. SupportedAuthenticationMethods may contain
606 1 (Other) to represent an operational mode not explicitly included in the definition of
607 SupportedAuthenticationMethods.

608 7.6.2.2.5 CIM_WiFiEndpointCapabilities.OtherSupportedAuthenticationMethods

609 CIM_WiFiEndpointCapabilities.OtherSupportedAuthenticationMethods shall contain one or more strings if
610 and only if CIM_WiFiEndpointCapabilities.SupportedAuthenticationMethods contains 1 (Other).

611 CIM_WiFiEndpointCapabilities.OtherSupportedAuthenticationMethods shall be NULL if and only if
612 CIM_WiFiEndpointCapabilities.SupportedAuthenticationMethods does not contain 1 (Other).

613 7.6.2.3 CIM_IEEE8021xSettings

614 An instance of CIM_IEEE8021xSettings shall be associated with the instance of CIM_WiFiEndpointSet-
615 tings by an instance of CIM_ConcreteComponent if and only if CIM_WiFiEndpointSettings.Authentication-
616 Method contains 5 ("WPA IEEE 802.1x") or 7 ("WPA2 IEEE 802.1x").

617 7.6.2.3.1 CIM_IEEE8021xSettings.AuthenticationProtocol

618 CIM_IEEE8021xSettings.AuthenticationProtocol shall contain the Extensible Authentication Protocol
619 (EAP) type used by the network.

620 7.6.2.3.2 CIM_IEEE8021xSettings.RoamingIdentity

621 If CIM_IEEE8021xSettings.AuthenticationProtocol contains 1 ("EAP-TTLS/MSCHAPv2"), 2
622 ("PEAPv0/EAP-MSCHAPv2"), 3 ("PEAPv1/EAP-GTC"), 7 ("EAP-PSK"), 8 ("EAM-SIM"), or 9 ("EAP-AKA"),
623 CIM_IEEE8021xSettings.RoamingIdentity shall either be null or shall contain an identity for quick
624 reauthentication when roaming.

625 7.6.2.3.3 CIM_IEEE8021xSettings.ServerCertificateName

626 CIM_IEEE8021xSettings.ServerCertificateName shall either be null or shall contain the subject name to
627 be compared with the subject name in the certificate presented by the IEEE 802.1x authentication server.
628 If CIM_IEEE8021xSettings.ServerCertificateName is not null, then CIM_IEEE8021xSettings.ServerCertif-
629 icateNameComparison shall not be null.

630 7.6.2.3.4 CIM_IEEE8021xSettings.ServerCertificateNameComparison

631 CIM_IEEE8021xSettings.ServerCertificateNameComparison shall not be null if and only if CIM_IEEE-
632 8021xSettings.ServerCertificateName is not null.

633 If CIM_IEEE8021xSettings.ServerCertificateNameComparison contains 2 (“FullName”), the CIM_WiFi-
634 Endpoint shall accept the IEEE 802.1x authentication server certificate only if CIM_IEEE8021xSet-
635 tings.ServerCertificateName and the subject name in the certificate match exactly.

636 If CIM_IEEE8021xSettings.ServerCertificateNameComparison contains 3 (“DomainSuffix”), the
637 CIM_WiFiEndpoint shall accept the IEEE 802.1x authentication server certificate only if CIM_IEEE8021x-
638 Settings.ServerCertificateName matches the domain suffix (the portion after the first label and “.”) in the
639 subject name in the certificate.

640 7.6.2.3.5 CIM_IEEE8021xSettings.Username

641 If CIM_IEEE8021xSettings.AuthenticationProtocol contains 0 (“EAP-TLS”), 1 (“EAP-TTLS/MSCHAPv2”),
642 2 (“PEAPv0/EAP-MSCHAPv2”), 3 (“PEAPv1/EAP-GTC”), 4 (“EAP-FAST/MSCHAPv2”), 5 (“EAP-
643 FAST/GTC”), 6 (“EAP-MD5”), 8 (“EAP-SIM”), or 9 (“EAP-AKA”), CIM_IEEE8021xSettings.Username shall
644 contain a permanent username.

645 7.6.2.3.6 CIM_IEEE8021xSettings.Password

646 If CIM_IEEE8021xSettings.AuthenticationProtocol contains 1 (“EAP-TTLS/MSCHAPv2”), 2
647 (“PEAPv0/EAP-MSCHAPv2”), 3 (“PEAPv1/EAP-GTC”), 4 (“EAP-FAST/MSCHAPv2”), 5 (“EAP-
648 FAST/GTC”), or 6 (“EAP-MD5”), CIM_IEEE8021xSettings.Password shall contain a user password
649 associated with CIM_IEEE8021xSettings.Username. When an operation returns the Password property
650 to a client, it shall be returned as an array of zero length.

651 7.6.2.3.7 CIM_IEEE8021xSettings.Domain

652 An implementation may support a domain name that qualifies the user name in CIM_IEEE8021xSet-
653 tings.Username. CIM_IEEE8021xSettings.Domain shall be used for such a domain name. CIM_IEEE-
654 8021xSettings.Domain shall be used for this purpose only if CIM_IEEE8021xSettings.Username is not
655 null and not empty.

656 7.6.2.3.8 CIM_IEEE8021xSettings.ProtectedAccessCredential

657 CIM_IEEE8021xSettings.ProtectedAccessCredential shall contain a protected access credential if and
658 only if CIM_IEEE8021xSettings.AuthenticationProtocol contains 4 (“EAP-FAST/MSCHAPv2”) or 5 (“EAP-
659 FAST/GTC”).

660 7.6.2.3.9 CIM_IEEE8021xSettings.PACPassword

661 An implementation may support an optional password to extract the protected access credential from the
662 protected access credential data. When an operation returns the PACPassword property to a client, it
663 shall be returned as an array of zero length.

664 7.6.2.3.10 CIM_IEEE8021xSettings.PSK

665 CIM_IEEE8021xSettings.PSK shall be non-null if and only if
666 CIM_IEEE8021xSettings.AuthenticationProtocol contains 7 (EAP-PSK), 8 (EAP-SIM), or 9 (EAP-AKA).

667 7.6.2.3.11 CIM_IEEE8021xCapabilities.SupportedAuthenticationProtocols

668 CIM_IEEE8021xCapabilities.SupportedAuthenticationProtocols shall contain one or more IEEE 802.1x
669 Extensible Authentication Protocol (EAP) types supported by the implementation.

670 7.6.2.3.12 CIM_IEEE8021xCapabilities.RoamingSupported

671 CIM_IEEE8021xCapabilities.RoamingSupported shall contain true if and only if the CIM_WiFiEndpoint
672 associated with the CIM_IEEE8021xCapabilities instance through CIM_ElementCapabilities supports fast
673 re-authentication for roaming.

674 7.7 Frequency Band and Data Rate

675 This clause describes the requirements for reporting the frequency band and data rate of a
676 CIM_WiFiPort.

677 7.7.1 CIM_WiFiPortCapabilities.SupportedPortTypes

678 CIM_WiFiPortCapabilities.SupportedPortTypes shall contain one or more IEEE 802.11 operational
679 modes: 70 (802.11a), 71 (802.11b), 72 (802.11g), and 72 (802.11n). Each operational mode describes a
680 combination of frequency band and data rate. SupportedPortTypes may contain 1 (Other) to represent an
681 operational mode not explicitly included in the definition of SupportedPortTypes.

682 7.7.2 CIM_WiFiPortCapabilities.OtherSupportedPortTypes

683 CIM_WiFiPortCapabilities.OtherSupportedPortTypes shall contain one or more strings if and only if
684 CIM_WiFiPortCapabilities.SupportedPortTypes contains 1 (Other).

685 CIM_WiFiPortCapabilities.OtherSupportedPortTypes shall be NULL if and only if
686 CIM_WiFiPortCapabilities.SupportedPortTypes does not contain 1 (Other).

687 8 Methods

688 This clause details the requirements — over and above those defined in the [Host LAN Network Port Profile](#)
689 — for supporting intrinsic operations and extrinsic methods for the CIM elements defined by this
690 profile.

691 8.1 CIM_WiFiPortConfigurationService.AddWiFiSettings()

692 The AddWiFiSettings() method is used to create a group of settings that enable a CIM_WiFiEndpoint to
693 join a particular wireless LAN. This method shall be supported when the
694 CIM_WiFiPortConfigurationService is instrumented. When this method is invoked, the implementation
695 shall attempt to create the new instances provided in the parameters.

696 The return code values and parameters for the AddWiFiSettings() method are specified in Table 2 and
697 Table 3, respectively.

698 No standard messages are defined.

699 **Table 2 – CIM_WiFiPortConfigurationService.AddWiFiSettings(): Return Code Values**

Value	Description
0	Request was successfully executed.
2	Error occurred

700

Table 3 – CIM_WiFiPortConfigurationService.AddWiFiSettings(): Method Parameters

Qualifiers	Name	Type	Description/Values
IN, Required	WiFiEndpoint	CIM_WiFiEndpoint REF	The endpoint with which to associate the new settings
IN, Required, EmbeddedInstance	WiFiEndpointSettingsInput	string	A string-encoded embedded instance of CIM_WiFiEndpointSettings
IN, EmbeddedInstance	IEEE8021xSettingsInput	string	A string-encoded embedded instance of CIM_IEEE8021xSettings
IN	ClientCredential	CIM_Credential REF	A client credential (for example, an X.509 certificate) for the IEEE 802.1x settings
IN	CACredential	CIM_Credential REF	A trusted root credential used by the local machine to authenticate the leaf certificate provided by the authentication server during IEEE 802.1x protocol exchange
OUT	WiFiEndpointSettings	CIM_WiFiEndpointSettings REF	A reference to a new CIM_WiFiEndpointSettings instance that shall be created by the method using the property values in WiFiEndpointSettingsInput
OUT	IEEE8021xSettings	CIM_IEEE8021xSettings REF	A reference to a new CIM_IEEE8021xSettings instance that shall be created by the method using the property values in IEEE8021xSettingsInput, if and only if the IEEE8021xSettingsInput parameter is not NULL

701 **8.2 CIM_WiFiPortConfigurationService.UpdateWiFiSettings()**

702 The UpdateWiFiSettings() method is used to update a group of settings that enable a CIM_WiFiEndpoint
 703 to join a particular wireless LAN. This method shall be supported when the
 704 CIM_WiFiPortConfigurationService is instrumented. When this method is invoked, the implementation
 705 shall attempt to update the instances referenced in the parameters.

706 The return code values and parameters for the UpdateWiFiSettings() method are specified in Table 2
 707 and Table 3, respectively.

708 No standard messages are defined.

709 **Table 4 – CIM_WiFiPortConfigurationService.UpdateWiFiSettings(): Return Code Values**

Value	Description
0	Request was successfully executed.
2	Error occurred

710

Table 5 – CIM_WiFiPortConfigurationService.UpdateWiFiSettings(): Method Parameters

Qualifiers	Name	Type	Description/Values
IN, OUT, Required	WiFiEndpointSettings	CIM_WiFiEndpointSettings REF	The CIM server shall update the CIM_WiFiEndpointSettings instance referenced by this parameter using the property values in the WiFiEndpointSettingsInput parameter.
IN, EmbeddedInstance	WiFiEndpointSettingsInput	string	If not NULL, this parameter shall provide the new property values for the CIM_WiFiEndpointSettings instance referenced by the WiFiEndpointSettings parameter.
IN, EmbeddedInstance	IEEE8021xSettingsInput	string	If not NULL, this parameter shall provide the new property values for the CIM_IEEE8021xSettings instance referenced by the CIM_IEEE8021xSettingsInput parameter.
IN	ClientCredential	CIM_Credential REF	If the local machine is associated to the network described by the WiFiEndpointSettings parameter, it shall present the credential referenced by this parameter to an IEEE 802.1x authentication server during IEEE 802.1x protocol exchanges.
IN	CACredential	CIM_Credential REF	If the local machine is associated to the network described by the WiFiEndpointSettings parameter, it shall use the credential referenced by this parameter to authenticate the leaf credential provided by an IEEE 802.1x authentication server during IEEE 802.1x protocol exchanges.
IN, OUT	IEEE8021xSettings	CIM_IEEE8021xSettings REF	If this parameter is not NULL, the CIM server shall update the CIM_IEEE8021xSettings instance it references using the values in the IEEE8021xSettingsInput parameter.

711 8.3 Profile Conventions for Operations

712 All intrinsic operation requirements specified in the [Host LAN Network Port Profile](#) shall be supported. For
 713 classes specified in this profile, the default list of operations specified in the [Host LAN Network Port](#)
 714 [Profile](#) shall be supported unless otherwise specified in the following clauses.

715 **8.4 CIM_WiFiPort**

716 All operations are supported as for CIM_NetworkPort in the [Host LAN Network Port Profile](#).

717 **8.5 CIM_WiFiRadio**

718 Table 6 lists implementation requirements for operations. If implemented, these operations shall be
 719 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 6, all operations in
 720 the default list referenced in 8.3 shall be implemented as defined in [DSP0200](#).

721 NOTE: Related profiles may define additional requirements on operations for the profile class.

722 **Table 6 – Operations: CIM_WiFiRadio**

Operation	Requirement	Messages
ModifyInstance	Optional	None

723 **8.5.1 CIM_WiFiRadio — ModifyInstance Operation**

724 This section details the specific requirements for the ModifyInstance operation that is applied to an
 725 instance of CIM_WiFiRadio.

726 **8.5.1.1 CIM_WiFiRadio.ElementName**

727 When an instance of CIM_EnabledLogicalElementCapabilities is associated with the CIM_WiFiRadio
 728 instance and the CIM_EnabledLogicalElementCapabilities.ElementNameEditSupported property has a
 729 value of TRUE, the implementation shall allow the ModifyInstance operation to change the value of the
 730 ElementName property of the CIM_WiFiRadio instance. The ModifyInstance operation shall enforce the
 731 length restriction specified in the MaxElementNameLen property of the
 732 CIM_EnabledLogicalElementCapabilities instance.

733 When an instance of CIM_EnabledLogicalElementCapabilities is not associated with the CIM_WiFiRadio
 734 instance, or the ElementNameEditSupported property of the CIM_EnabledLogicalElementCapabilities
 735 instance has a value of FALSE, the implementation shall not allow the ModifyInstance operation to
 736 change the value of the ElementName property of the CIM_WiFiRadio instance.

737 **8.6 CIM_WiFiEndpoint**

738 All operations are supported as for CIM_LANEndpoint in the [Host LAN Network Port Profile](#).

739 **8.7 CIM_WiFiEndpointSettings**

740 Table 7 lists implementation requirements for operations. If implemented, these operations shall be
 741 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 7, all operations in
 742 the default list referenced in 8.3 shall be implemented as defined in [DSP0200](#).

743 NOTE: Related profiles may define additional requirements on operations for the profile class.

744 **Table 7 – Operations: CIM_WiFiEndpointSettings**

Operation	Requirement	Messages
ModifyInstance	Optional	None
DeleteInstance	Optional	None

745 8.8 CIM_IEEE8021xSettings

746 Table 8 lists implementation requirements for operations. If implemented, these operations shall be
 747 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 8, all operations in
 748 the default list referenced in 8.3 shall be implemented as defined in [DSP0200](#).

749 NOTE: Related profiles may define additional requirements on operations for the profile class.

750 **Table 8 – Operations: CIM_IEEE8021xSettings**

Operation	Requirement	Messages
ModifyInstance	Optional	None

751 8.9 CIM_WiFiPortCapabilities

752 All default operations are supported as described by [DSP0200](#).

753 NOTE: Related profiles may define additional requirements on operations for the profile class.

754 8.10 CIM_WiFiEndpointCapabilities

755 All default operations are supported as described by [DSP0200](#).

756 NOTE: Related profiles may define additional requirements on operations for the profile class.

757 8.11 CIM_IEEE8021xCapabilities

758 All default operations are supported as described by [DSP0200](#).

759 NOTE: Related profiles may define additional requirements on operations for the profile class.

760 8.12 CIM_WiFiPortConfigurationService

761 All operations are supported as for CIM_NetworkPortConfigurationService in the [Host LAN Network Port Profile](#).

763 8.13 CIM_ConcreteComponent (CIM_WiFiRadio)

764 Table 9 lists implementation requirements for operations. If implemented, these operations shall be
 765 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 9, all operations in
 766 the default list referenced in 8.3 shall be implemented as defined in [DSP0200](#).

767 NOTE: Related profiles may define additional requirements on operations for the profile class.

768 **Table 9 – Operations: CIM_ConcreteComponent (CIM_WiFiRadio)**

Operation	Requirement	Messages
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

769 **8.14 CIM_ConcreteComponent (CIM_IEEE8021xSettings)**

770 Table 10 lists implementation requirements for operations. If implemented, these operations shall be
 771 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 10, all operations
 772 in the default list referenced in 8.3 shall be implemented as defined in [DSP0200](#).

773 NOTE: Related profiles may define additional requirements on operations for the profile class.

774 **Table 10 – Operations: CIM_ConcreteComponent (CIM_IEEE8021xSettings)**

Operation	Requirement	Messages
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

775 **8.15 CIM_ElementSettingData**

776 Table 11 lists implementation requirements for operations. If implemented, these operations shall be
 777 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 11, all operations
 778 in the default list referenced in 8.3 shall be implemented as defined in [DSP0200](#).

779 NOTE: Related profiles may define additional requirements on operations for the profile class.

780 **Table 11 – Operations: CIM_ElementSettingData**

Operation	Requirement	Messages
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

781 **8.16 CIM_CredentialContext**

782 Table 12 lists implementation requirements for operations. If implemented, these operations shall be
 783 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 12, all operations
 784 in the default list referenced in 8.3 shall be implemented as defined in [DSP0200](#).

785 NOTE: Related profiles may define additional requirements on operations for the profile class.

786 **Table 12 – Operations: CIM_CredentialContext**

Operation	Requirement	Messages
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

787 **8.17 CIM_WiFiNetworkDetectionSettings**

788 Table 13 lists implementation requirements for operations. If implemented, these operations shall be
 789 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 13, all operations
 790 in the default list referenced in 8.3 shall be implemented as defined in [DSP0200](#).

791 NOTE: Related profiles may define additional requirements on operations for the profile class.

792 **Table 13 – Operations: CIM_WiFiNetworkDetectionSettings**

Operation	Requirement	Messages
ModifyInstance	Optional	None

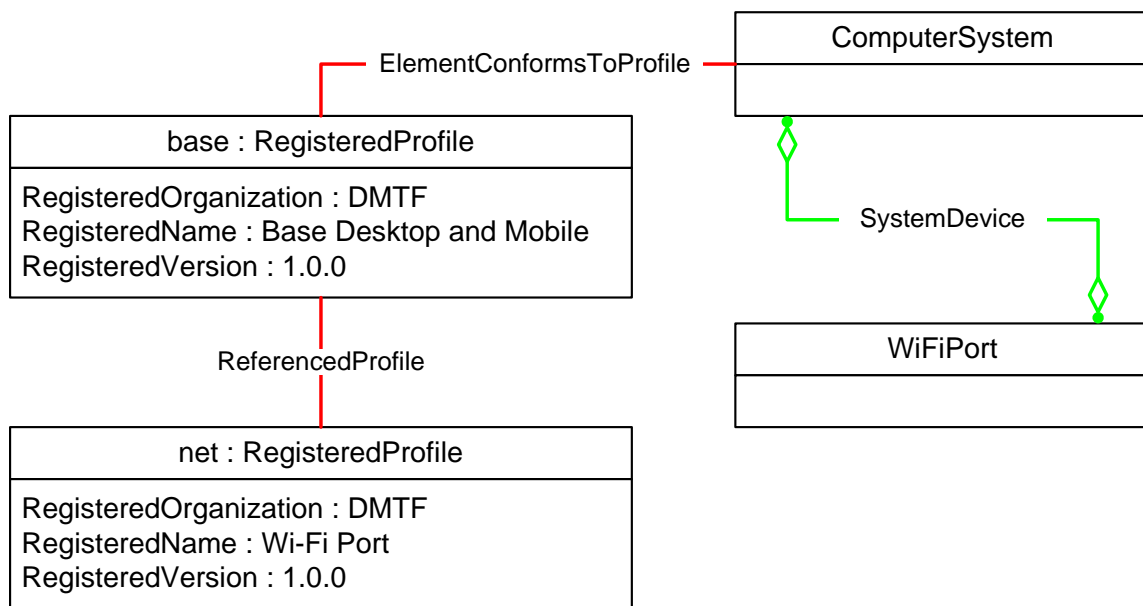
793 **9 Use Cases**

794 This clause contains object diagrams and use cases for the *Wi-Fi Port Profile*.

795 **9.1 Object Diagrams**

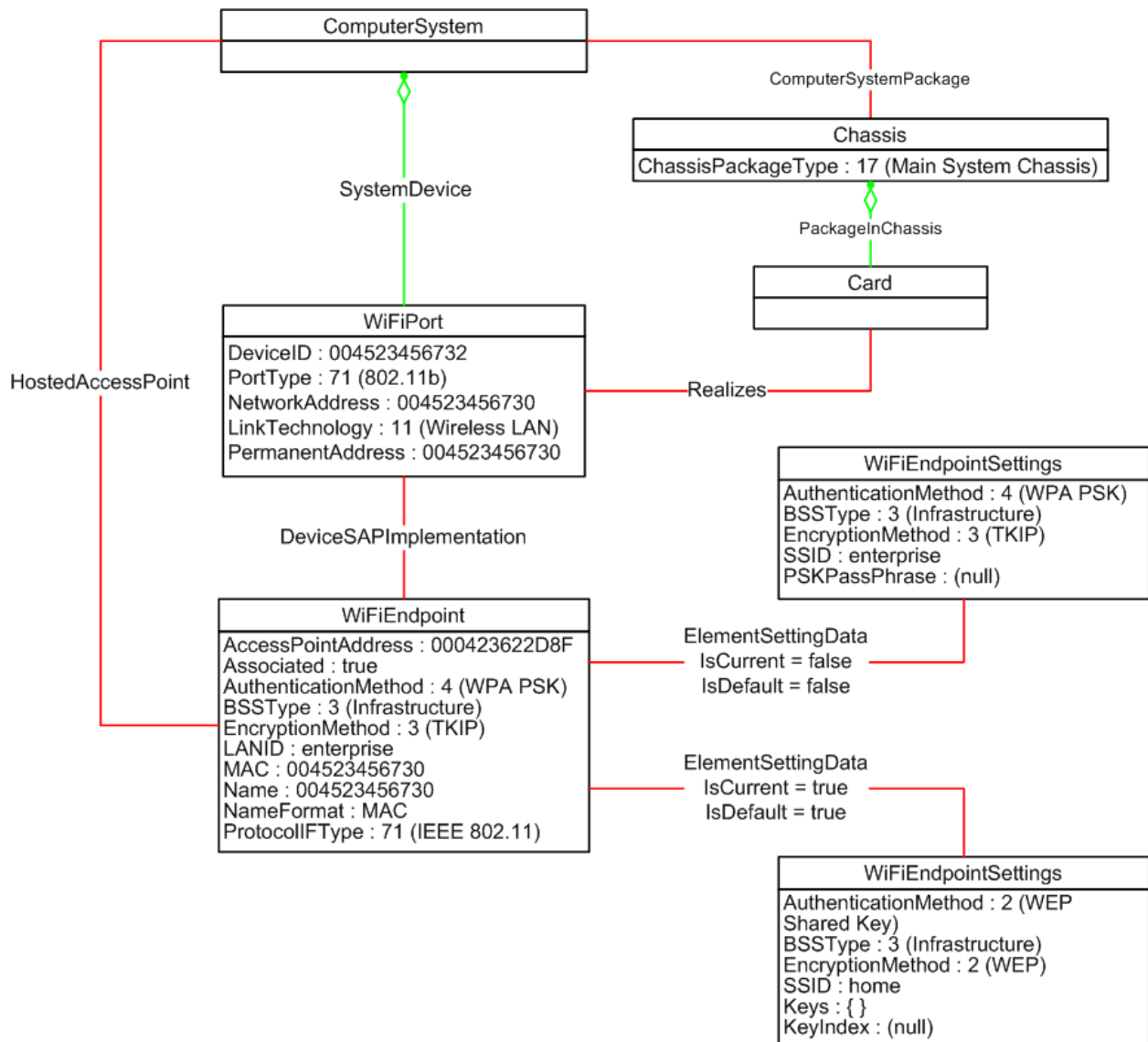
796 The object diagram in Figure 2 shows how instances of CIM_RegisteredProfile are used to identify the
 797 version of the *Wi-Fi Port Profile* with which an instance of CIM_WiFiPort and its associated instances are
 798 conformant. An instance of CIM_RegisteredProfile exists for each profile that is instrumented in the
 799 system. One instance of CIM_RegisteredProfile identifies the DMTF [Base Desktop and Mobile Profile](#),
 800 version 1.0. The other instance identifies the *Wi-Fi Port Profile*, version 1.0.

801 The CIM_WiFiPort instance is scoped to an instance of CIM_ComputerSystem. This instance of
 802 CIM_ComputerSystem is conformant with the DMTF [Base Desktop and Mobile Profile](#) version 1.0 as
 803 indicated by the CIM_ElementConformsToProfile association to the CIM_RegisteredProfile instance. The
 804 Scoping Instance in Figure 2 is the CIM_ComputerSystem instance. The Central Instance is the
 805 CIM_WiFiPort. The CIM_ReferencedProfile relationship between *base* and *net* places the CIM_WiFiPort
 806 instance within the scope of *net*. Thus, the CIM_WiFiPort instance is conformant with the *Wi-Fi Port*
 807 *Profile* version 1.0.



808 **Figure 2 – Registered Profile**

810 Figure 3 is a simple object diagram for a single Wi-Fi port that provides a single Wi-Fi interface. The Wi-Fi
 811 port is represented by an instance of CIM_WiFiPort. The Wi-Fi interface is represented by an instance of
 812 CIM_WiFiEndpoint.



813

814

Figure 3 – Single Interface

815 **9.2 Query MAC Address for an Interface**

816 A client can determine the MAC addresses in use for a Wi-Fi port as follows:

- 817 1) Find all instances of CIM_WiFiEndpoint that are associated with the CIM_WiFiPort through an
- 818 instance of CIM_DeviceSAPImplementation.
- 819 2) Query the MACAddress property of each instance of CIM_WiFiEndpoint.

820 **9.3 Determine Radio for an MAC Address**

821 One or more MAC addresses may be associated with a given physical Wi-Fi interface. It is useful for a
 822 client to be able to determine which CIM_WiFiRadio is associated with a given Wi-Fi address.

- 823 1) Find the instance of CIM_WiFiPort that is associated with the CIM_WiFiEndpoint instance
 824 through an instance of CIM_DeviceSAPImplementation.
- 825 2) Find the zero or more instances of CIM_WiFiRadio that are associated with the CIM_WiFiPort
 826 instance through CIM_ConcreteComponent.

827 **10 CIM Elements**

828 Table 14 shows the instances of CIM Elements for this profile. Instances of the CIM Elements shall be
 829 implemented as described in Table 14. Clauses 7 (“Implementation”) and 8 (“Methods”) may impose
 830 additional requirements on these elements.

831 **Table 14 – CIM Elements: Wi-Fi Port Profile**

Element Name	Requirement	Description
Classes		
CIM_WiFiPort	Mandatory	See 10.1.
CIM_RegisteredProfile	Mandatory	See 10.2.
CIM_WiFiRadio	Optional	See 10.3.
CIM_WiFiEndpoint	Optional	See 10.4.
CIM_WiFiEndpointSettings	Optional	See 10.5.
CIM_IEEE8021xSettings	Optional	See 10.6.
CIM_WiFiPortCapabilities	Optional	See 10.7.
CIM_EnabledLogicalElementCapabilities	Optional	See 10.8.
CIM_WiFiEndpointCapabilities	Optional	See 10.9.
CIM_IEEE8021xCapabilities	Optional	See 10.10.
CIM_WiFiPortConfigurationService	Optional	See 10.11.
CIM_ConcreteComponent (CIM_WiFiRadio)	Optional	See 7.5.1 and 10.12.
CIM_ConcreteComponent (CIM_IEEE8021xSettings)	Optional	See 7.6.1.2.3 and 10.13.
CIM_ElementSettingData	Optional	See 7.3.6.4 and 10.14.
CIM_CredentialContext	Optional	See 10.15.
CIM_WiFiNetworkDetectionSettings	Optional	See 10.16.
Indications		
None defined in this profile		

832 **10.1 CIM_WiFiPort**

833 CIM_WiFiPort represents the hardware and device aspects of a Wi-Fi interface. The constraints defined
 834 in Table 15 are in addition to those placed on the base CIM_NetworkPort class in the base [Host LAN](#)
 835 [Network Port Profile](#).

836 **Table 15 – Class: CIM_WiFiPort**

Elements	Requirement	Notes
Speed	Optional	See 7.1.1.
MaxSpeed	Optional	See 7.1.2.
PortType	Mandatory	None
PermanentAddress	Mandatory	See 7.1.3.
NetworkAddresses	Optional	Shall be formatted as 12 unseparated hex digits (pattern "[0123456789ABCDEFabcdef]{12}\$")
LinkTechnology	Mandatory	Matches 11 ("Wireless LAN")

837 **10.2 CIM_RegisteredProfile**

838 CIM_RegisteredProfile identifies the *Wi-Fi Port Profile* in order for a client to determine whether an
 839 instance of CIM_LogicalModule is conformant with this profile. The CIM_RegisteredProfile class is
 840 defined by the [Profile Registration Profile](#). With the exception of the mandatory values specified for the
 841 properties in Table 16, the behavior of the CIM_RegisteredProfile instance is defined by the [Profile](#)
 842 [Registration Profile](#).

843 **Table 16 – Class: CIM_RegisteredProfile**

Properties	Requirement	Notes
RegisteredName	Mandatory	This property shall have a value of "Wi-Fi Port".
RegisteredVersion	Mandatory	This property shall have a value of "1.0.0".
RegisteredOrganization	Mandatory	This property shall have a value of 2 (DMTF).

844 **10.3 CIM_WiFiRadio**

845 CIM_WiFiRadio represents radio transmitter, receiver, or transceiver hardware associated with a Wi-Fi
 846 port. Table 17 contains the requirements for elements of CIM_WiFiRadio.

847 **Table 17 – Class: CIM_WiFiRadio**

Properties	Requirement	Notes
SignalStrength	Optional	See 7.5.2.
SignalNoise	Optional	None
Channel	Optional	See 7.5.3.
Frequency	Optional	None
SystemCreationClassName	Mandatory	None
SystemName	Mandatory	None
CreationClassName	Mandatory	None
DeviceID	Mandatory	None
EnabledState	Mandatory	See 7.5.4.3 and 7.5.5.3.
RequestedState	Mandatory	See 7.5.4.2 and 7.5.5.2.
ElementName	Mandatory	See 7.5.6 and 7.5.7.

848 **10.4 CIM_WiFiEndpoint**

849 CIM_WiFiEndpoint represents a MAC address to which the network port will respond on the LAN. The
 850 constraints defined in Table 18 are in addition to those placed on the base CIM_LANEndpoint class in the
 851 base [Host LAN Network Port Profile](#).

852 **Table 18 – Class: CIM_WiFiEndpoint**

Properties	Requirement	Notes
LANID	Optional	See 7.3.2.
ProtocolIFTType	Mandatory	Matches 71 (IEEE 802.11)
EncryptionMethod	Optional	See 7.6.1.1.1.
OtherEncryptionMethod	Optional	See 7.6.1.1.2.
AuthenticationMethod	Optional	See 7.6.2.1.1.
OtherAuthenticationMethod	Optional	See 7.6.2.1.2.
IEEE8021xAuthenticationProtocol	Optional	See 7.6.2.1.3.
AccessPointAddress	Optional	See 7.3.3.
BSSType	Optional	See 7.3.4.
Associated	Optional	See 7.3.5.

853 **10.5 CIM_WiFiEndpointSettings**

854 CIM_WiFiEndpointSettings contains configuration data that can be applied to an instance of
 855 CIM_WiFiEndpoint to enable it to connect to a particular Wi-Fi network. Table 19 contains the
 856 requirements for elements of CIM_WiFiEndpointSettings.

857 **Table 19 – Class: CIM_WiFiEndpointSettings**

Properties	Requirement	Notes
Priority	Optional	See 7.3.6.1.
SSID	Mandatory	See 7.3.6.2.
BSSType	Mandatory	See 7.3.6.3.
EncryptionMethod	Mandatory	See 7.6.1.2.1.
OtherEncryptionMethod	Optional	See 7.6.1.2.2.
AuthenticationMethod	Mandatory	See 7.6.2.2.1.
OtherAuthenticationMethod	Optional	See 7.6.2.2.2.
Keys	Conditional	See 7.6.1.2.3.
KeyIndex	Conditional	See 7.6.1.2.4.
PSKValue	Conditional	See 7.6.2.2.3.
PSKPassPhrase	Conditional	See 7.6.2.2.3.
InstanceID	Mandatory	None
ElementName	Mandatory	(pattern ".**")

858 **10.6 CIM_IEEE8021xSettings**

859 CIM_IEEE8021xSettings contains IEEE 802.1x Port-Based Network Access Control configuration data
 860 that can be applied to an ISO OSI layer 2 protocol endpoint. In the context of IEEE 802.11 networks, it
 861 augments CIM_WiFiEndpointSettings for networks that use IEEE 802.1x to authenticate
 862 CIM_WiFiEndpoints. Table 20 contains the requirements for elements of CIM_IEEE8021xSettings.

863 **Table 20 – Class: CIM_IEEE8021xSettings**

Properties	Requirement	Notes
AuthenticationProtocol	Mandatory	See 7.6.2.3.1.
RoamingIdentity	Optional	See 7.6.2.3.2.
ServerCertificateName	Conditional	See 7.6.2.3.3.
ServerCertificateNameComparison	Conditional	See 7.6.2.3.4.
Username	Conditional	See 7.6.2.3.5.
Password	Conditional	See 7.6.2.3.6.
Domain	Conditional	See 7.6.2.3.7.
ProtectedAccessCredential	Conditional	See 7.6.2.3.8.
PACPassword	Conditional	See 7.6.2.3.9.
PSK	Conditional	See 7.6.2.3.10.
InstanceID	Mandatory	None
ElementName	Mandatory	(pattern ".**")

864 **10.7 CIM_WiFiPortCapabilities**

865 CIM_WiFiPortCapabilities is a specialization of CIM_NetworkPortCapabilities that describes the
 866 capabilities of a CIM_WiFiPort. Table 21 specifies the required properties in addition to those required for
 867 CIM_EnabledLogicalElementCapabilities (a superclass of CIM_WiFiPortCapabilities) in the [Host LAN](#)
 868 [Network Port Profile](#).

869 **Table 21 – Class: CIM_WiFiPortCapabilities**

Properties	Requirement	Notes
SupportedPortTypes	Mandatory	See 7.7.1.
OtherSupportedPortTypes	Optional	See 7.7.2.

870 **10.8 CIM_EnabledLogicalElementCapabilities — WiFiRadio**

871 CIM_EnabledLogicalElementCapabilities describes the capabilities of a CIM_WiFiRadio. Table 22
 872 contains the requirements for elements of CIM_EnabledLogicalElementCapabilities.

873 **Table 22 – Class: CIM_EnabledLogicalElementCapabilities — WiFiRadio**

Properties	Requirement	Notes
RequestedStatesSupported	Mandatory	See 7.5.4.1.1 and 7.5.5.1.1.
ElementNameEditSupported	Mandatory	See 7.5.6.1.1 and 7.5.7.1.1.
MaxElementNameLen	Conditional	See 7.5.6.1.2 and 7.5.7.1.2.
InstanceID	Mandatory	None

874 **10.9 CIM_WiFiEndpointCapabilities**

875 CIM_WiFiEndpointCapabilities describes the capabilities of a CIM_WiFiEndpoint. Table 23 specifies the
 876 required properties in addition to those required for CIM_EnabledLogicalElementCapabilities (a
 877 superclass of CIM_WiFiEndpointCapabilities) in the [Host LAN Network Port Profile](#).

878 **Table 23 – Class: CIM_WiFiEndpointCapabilities**

Properties	Requirement	Notes
SupportedEncryptionMethods	Mandatory	See 7.6.1.2.5.
OtherSupportedEncryptionMethods	Optional	See 7.6.1.2.6.
SupportedAuthenticationMethods	Mandatory	See 7.6.2.2.4.
OtherSupportedAuthenticationMethods	Optional	See 7.6.2.2.5.

879 **10.10 CIM_IEEE8021xCapabilities**

880 CIM_IEEE8021xCapabilities describes the IEEE 802.1x Port-Based Network Access Control capabilities
 881 of an ISO OSI layer 2 protocol endpoint (for example, a CIM_WiFiEndpoint). Table 24 contains the
 882 requirements for elements of CIM_IEEE8021xCapabilities.

883 **Table 24 – Class: CIM_IEEE8021xCapabilities**

Properties	Requirement	Notes
SupportedAuthenticationProtocols	Mandatory	See 7.6.2.3.11.
RoamingSupported	Mandatory	See 7.6.2.3.12.
InstanceID	Mandatory	None
ElementName	Mandatory	None

884 **10.11 CIM_WiFiPortConfigurationService**

885 CIM_WiFiPortConfigurationService provides Wi-Fi port configuration methods and properties. Table 25
 886 contains the requirements for elements of CIM_WiFiPortConfigurationService.

887 **Table 25 – Class: CIM_WiFiPortConfigurationService**

Properties	Requirement	Notes
AddWiFiSettings()	Optional	See 8.1.
UpdateWiFiSettings()	Optional	See 8.2.

888 **10.12 CIM_ConcreteComponent (CIM_WiFiRadio)**

889 Each CIM_WiFiRadio instance shall be associated to the CIM_WiFiPort instance that contains it through
 890 an instance of CIM_ConcreteComponent. Table 26 contains the requirements for elements of
 891 CIM_ConcreteComponent.

892 **Table 26 – Class: CIM_ConcreteComponent (CIM_WiFiRadio)**

Properties	Requirement	Notes
GroupComponent	Mandatory	Key. This shall be a reference to a Central Instance. Cardinality 1..*
PartComponent	Mandatory	Key. This shall be a reference to a CIM_WiFiRadio instance. Cardinality 0..*

893 10.13 CIM_ConcreteComponent (CIM_IEEE8021xSettings)

894 Each CIM_IEEE8021xSettings instance shall be associated to the CIM_WiFiEndpointSettings instance
 895 that contains it through an instance of CIM_ConcreteComponent. Table 27 contains the requirements for
 896 elements of CIM_ConcreteComponent.

897 **Table 27 – Class: CIM_ConcreteComponent (CIM_IEEE8021xSettings)**

Properties	Requirement	Notes
GroupComponent	Mandatory	Key. This shall be a reference to a CIM_WiFiEndpointSettings instance. Cardinality 1..*
PartComponent	Mandatory	Key. This shall be a reference to a CIM_IEEE8021xSettings instance. Cardinality 0..1

898 10.14 CIM_ElementSettingData

899 Each instance of CIM_WiFiEndpointSettings shall be associated to one or more CIM_WiFiEndpoints
 900 through an instance of CIM_ElementSettingData. Table 28 contains the requirements for elements of
 901 CIM_ElementSettingData.

902 **Table 28 – Class: CIM_ElementSettingData**

Properties	Requirement	Notes
ManagedElement	Mandatory	Key. This shall be a reference to a CIM_WiFiEndpoint instance. Cardinality 1..*
SettingData	Mandatory	Key. This shall be a reference to a CIM_WiFiEndpointSettings instance. Cardinality 1..*
IsDefault	Mandatory	Matches 1 (Is Default) or 2 (Is Not Default)
IsCurrent	Mandatory	Matches 1 (Is Current) or 2 (Is Not Current)

903 10.15 CIM_CredentialContext

904 Each credential used for IEEE 802.1x Port-Based Network Access Control shall be represented by a
 905 subclass of CIM_Credential and shall be associated to one or more CIM_IEEE8021xSettings instances
 906 through an instance of CIM_CredentialContext. Table 29 contains the requirements for elements of
 907 CIM_CredentialContext.

908 **Table 29 – Class: CIM_CredentialContext**

Properties	Requirement	Notes
ElementInContext	Mandatory	Key. This shall be a reference to a CIM_Credential subclass instance. Cardinality 1..*
ElementProvidingContext	Mandatory	Key. This shall be a reference to a CIM_IEEE8021xSettings subclass instance. Cardinality 0..1

909 **10.16 CIM_WiFiNetworkDetectionSettings**

910 CIM_WiFiNetworkDetectionSettings provides properties for configuring general Wi-Fi network detection
 911 behavior for one or more Wi-Fi Ports. Table 30 contains the requirements for elements of
 912 CIM_WiFiNetworkDetectionSettings.

913 **Table 30 – Class: CIM_WiFiNetworkDetectionSettings**

Properties	Requirement	Notes
TargetNetworkCategories	Optional	See 7.2.1.
PreferredNetworks	Optional	See 7.2.2.
KnownNetworks	Optional	See 7.2.3.
MinimumSignalStrength	Optional	See 7.2.4.
PortTypes	Optional	See 7.2.5.

914 **10.17 CIM_ElementSettingData**

915 Each instance of CIM_WiFiEndpointSettings shall be associated to one or more CIM_WiFiEndpoints
 916 through an instance of CIM_ElementSettingData. Table 31 contains the requirements for elements of
 917 CIM_ElementSettingData.

918 **Table 31 – Class: CIM_ElementSettingData**

Properties	Requirement	Notes
ManagedElement	Mandatory	Key. This shall be a reference to a CIM_WiFiPort instance. Cardinality 1..*
SettingData	Mandatory	Key. This shall be a reference to a 10.16 CIM_WiFiNetworkDetectionSettings instance. Cardinality 0..1

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ANNEX A
(informative)
Change Log

Version	Date	Description
1.0.0	2009-06-22	DMTF Standard Release

923