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Foreword

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

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Introduction

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

Wi-Fi Port Profile

1 Scope

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

2 Normative References

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

2.1 Approved References

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

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

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

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

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

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

2.2 Other References

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

3 Terms and Definitions

For the purposes of this document, the following terms and definitions apply. For the purposes of this document, the terms and definitions given in DSP1033 and DSP1001 also apply.

3.1
can
used for statements of possibility and capability, whether material, physical, or causal

3.2
cannot
used for statements of possibility and capability, whether material, physical, or causal

3.3
conditional
indicates requirements to be followed strictly in order to conform to the document when the specified conditions are met

3.4
mandatory
indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted

3.5
may
indicates a course of action permissible within the limits of the document

3.6
need not
indicates a course of action permissible within the limits of the document

3.7
optional
indicates a course of action permissible within the limits of the document

3.8
referencing profile
indicates a profile that owns the definition of this class and can include a reference to this profile in its "Related Profiles" table

3.9
shall
indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted

3.10
shall not
indicates requirements to be followed in order to conform to the document and from which no deviation is permitted

3.11
should
indicates that among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required

3.12
should not
indicates that a certain possibility or course of action is deprecated but not prohibited

3.13
station
a component that can connect into a wireless medium in a network

3.14
unspecified
indicates that this profile does not define any constraints for the referenced CIM element or operation

4 Symbols and Abbreviated Terms

The following symbols and abbreviations are used in this document.

4.1
BSS
Basic Service Set

4.2
CIM
Common Information Model

4.3
LAN
Local Area Network

4.4
PLCP
Physical Layer Convergence Protocol

4.5
PPDU
PLCP Protocol Data Unit

4.6
WEP
Wired Equivalent Privacy
a deprecated data confidentiality algorithm defined for IEEE 802.11 wireless networks

4.7
WPA
Wi-Fi Protected Access
an extensible security architecture defined to replace WEP for IEEE 802.11 wireless networks

5 Synopsis

Profile Name: Wi-Fi Port

Version: 1.0.0

Organization: DMTF

CIM Schema Version: 2.21

Central Class: CIM_WiFiPort

Scoping Class: CIM_ComputerSystem

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

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

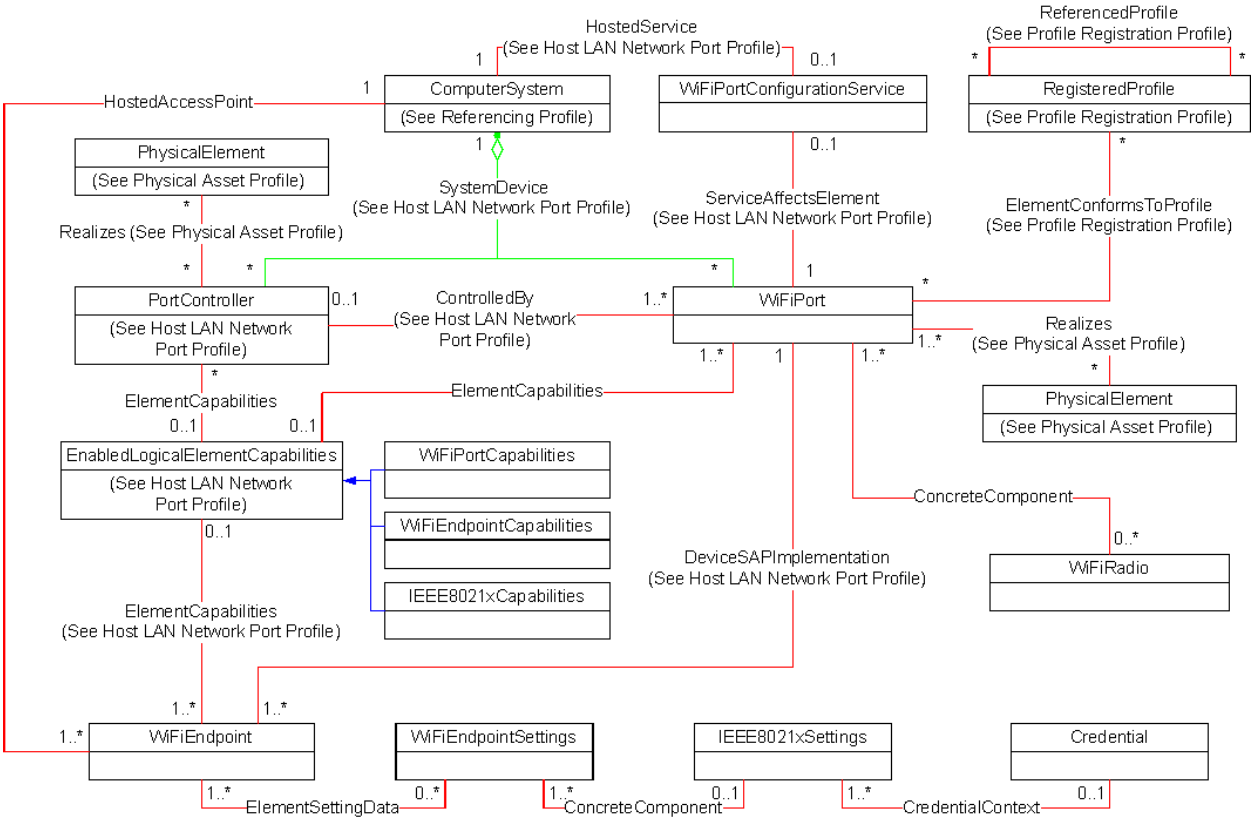

Figure 1 – Wi-Fi Port Profile: Profile Class Diagram

7 Implementation Requirements

This clause details the requirements related to the arrangement of instances and properties for implementations of this profile in addition to those placed on the implementation by the *Host LAN Network Port Profile*.

7.1 Representing Wi-Fi Ports

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

7.1.1 CIM_WiFiPort.Speed

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

7.1.2 CIM_WiFiPort.MaxSpeed

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

7.1.3 CIM_WiFiPort.PermanentAddress

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

7.1.4 CIM_WiFiPortCapabilities

The *Host LAN Network Port Profile* specifies the conditions under which an instance of CIM_EnabledLogicalElementCapabilities shall be associated through CIM_ElementCapabilities to an instance of CIM_NetworkPort. If the creation class of the CIM_NetworkPort instance under these conditions is CIM_WiFiPort, then the creation class of the CIM_EnabledLogicalElementCapabilities instance shall be CIM_WiFiPortCapabilities.

7.2 Port Configuration

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

7.2.1 CIM_WiFiNetworkDetectionSettings.TargetNetworkCategories

An implementation that supports CIM_WiFiNetworkDetectionSettings may support the TargetNetworkCategories property.

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

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

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

7.2.2 CIM_WiFiNetworkDetectionSettings.PreferredNetworks

An implementation that supports CIM_WiFiNetworkDetectionSettings may support the PreferredNetworks property.

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

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

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

7.2.3 CIM_WiFiNetworkDetectionSettings.KnownNetworks

An implementation that supports CIM_WiFiNetworkDetectionSettings may support the KnownNetworks property.

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

An implementation shall not support modification of KnownNetworks.

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

7.2.4 CIM_WiFiNetworkDetectionSettings.MinimumSignalStrength

An implementation that supports CIM_WiFiNetworkDetectionSettings may support the MinimumSignalStrength property.

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

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

7.2.5 CIM_WiFiNetworkDetectionSettings.AvailablePortTypes

An implementation that supports CIM_WiFiNetworkDetectionSettings may support the PortTypes property.

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

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

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

7.3 Representing Wi-Fi Communication Endpoints

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

7.3.1 CIM_WiFiEndpoint.ProtocolIFType

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

7.3.2 CIM_WiFiEndpoint.LANID

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

7.3.3 CIM_WiFiEndpoint.AccessPointAddress

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

7.3.4 CIM_WiFiEndpoint.BSSType

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

7.3.5 CIM_WiFiEndpoint.Associated

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

7.3.6 Endpoint Configuration

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

7.3.6.1 CIM_WiFiEndpointSettings.Priority

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

7.3.6.2 CIM_WiFiEndpointSettings.SSID

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

7.3.6.3 CIM_WiFiEndpointSettings.BSSType

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

7.3.6.4 CIM_ElementSettingData

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

7.4 Representing Detected Networks

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

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

7.4.1 CIM_WiFiEndpointSettings.ChangeableType

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

7.4.2 CIM_WiFiEndpointSettings.Priority

The Priority property shall be null.

7.4.3 Keys

The Keys property shall be null.

7.4.4 KeyIndex

The KeyIndex property shall be null.

7.4.5 PSKValue

The PSKValue property shall be null.

7.4.6 PSKPassPhrase

The PSKPassPhrase property shall be null.

7.5 Representing Wi-Fi Radios

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

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

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

7.5.2 CIM_WiFiRadio.SignalStrength

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

7.5.3 CIM_WiFiRadio.Channel

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

7.5.4 Wi-Fi Radio State Management Is Supported

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

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

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

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

7.5.4.1 CIM_EnabledLogicalElementCapabilities

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

7.5.4.1.1 CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported

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

7.5.4.2 CIM_WiFiRadio.RequestedState

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

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

7.5.4.3 CIM_WiFiRadio.EnabledState

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

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

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

7.5.5 Wi-Fi Radio State Management Is Not Supported

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

7.5.5.1 CIM_EnabledLogicalElementCapabilities

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

7.5.5.1.1 CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported

The CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported property shall not contain any values.

7.5.5.2 CIM_WiFiRadio.RequestedState

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

7.5.5.3 CIM_WiFiRadio.EnabledState

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

7.5.6 Modifying ElementName Is Supported

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

Client Determination: A client can determine whether is can modify the ElementName as follows:

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

7.5.6.1 CIM_EnabledLogicalElementCapabilities

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

7.5.6.1.1 CIM_EnabledLogicalElementCapabilities.ElementNameEditSupported

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

7.5.6.1.2 CIM_EnabledLogicalElement.MaxElementNameLen

The MaxElementNameLen property shall be implemented.

7.5.7 Modifying ElementName Is Not Supported

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

7.5.7.1 CIM_EnabledLogicalElementCapabilities

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

7.5.7.1.1 CIM_EnabledLogicalElementCapabilities.ElementNameEditSupported

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

7.5.7.1.2 CIM_EnabledLogicalElement.MaxElementNameLen

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

7.6 Security

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

7.6.1 Encryption

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

7.6.1.1 Describing Current Encryption

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

7.6.1.1.1 CIM_WiFiEndpoint.EncryptionMethod

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

7.6.1.1.2 CIM_WiFiEndpoint.OtherEncryptionMethod

CIM_WiFiEndpoint.OtherEncryptionMethod shall be non-null if and only if CIM_WiFiEndpoint.EncryptionMethod contains 1 (“Other”).

7.6.1.2 Endpoint Encryption Configuration

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

7.6.1.2.1 CIM_WiFiEndpointSettings.EncryptionMethod

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

7.6.1.2.2 CIM_WiFiEndpointSettings.OtherEncryptionMethod

CIM_WiFiEndpointSettings.OtherEncryptionMethod shall be non-null if and only if CIM_WiFiEndpointSettings.EncryptionMethod contains 1 (“Other”).

7.6.1.2.3 CIM_WiFiEndpointSettings.Keys

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

If CIM_WiFiEndpointSettings.EncryptionMethod does not contain 2 (“WEP”), CIM_WiFiEndpointSettings.Keys shall be null.

7.6.1.2.4 CIM_WiFiEndpointSettings.KeyIndex

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

If CIM_WiFiEndpointSettings.EncryptionMethod does not contain 2 (“WEP”), CIM_WiFiEndpointSettings.KeyIndex shall be null.

7.6.1.2.5 CIM_WiFiEndpointCapabilities.SupportedEncryptionMethods

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

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

7.6.1.2.6 CIM_WiFiEndpointCapabilities.OtherSupportedEncryptionMethods

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

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

7.6.2 Authentication

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

7.6.2.1 Describing Current Authentication

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

7.6.2.1.1 CIM_WiFiEndpoint.AuthenticationMethod

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

7.6.2.1.2 CIM_WiFiEndpoint.OtherAuthenticationMethod

CIM_WiFiEndpoint.OtherAuthenticationMethod shall be non-null if and only if CIM_WiFiEndpoint.AuthenticationMethod contains 1 (“Other”).

7.6.2.1.3 CIM_WiFiEndpoint.IEEE8021xAuthenticationProtocol

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

7.6.2.2 Endpoint Authentication Configuration

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

7.6.2.2.1 CIM_WiFiEndpointSettings.AuthenticationMethod

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

7.6.2.2.2 CIM_WiFiEndpointSettings.OtherAuthenticationMethod

CIM_WiFiEndpoint.OtherAuthenticationMethod shall be non-null if and only if CIM_WiFiEndpoint.AuthenticationMethod contains 1 (“Other”).

7.6.2.2.3 CIM_WiFiEndpointSettings.PSKValue and CIM_WiFiEndpointSettings.PSKPassPhrase

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

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

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

If CIM_WiFiEndpointSettings.AuthenticationMethod contains neither 4 (“WPA PSK”) nor 6 (“WPA2 PSK”), then CIM_WiFiEndpointSettings.PSKValue and CIM_WiFiEndpointSettings.PSKPassPhrase shall both be null.

7.6.2.2.4 CIM_WiFiEndpointCapabilities.SupportedAuthenticationMethods

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

7.6.2.2.5 CIM_WiFiEndpointCapabilities.OtherSupportedAuthenticationMethods

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

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

7.6.2.3 CIM_IEEE8021xSettings

An instance of CIM_IEEE8021xSettings shall be associated with the instance of CIM_WiFiEndpointSettings by an instance of CIM_ConcreteComponent if and only if CIM_WiFiEndpointSettings.AuthenticationMethod contains 5 ("WPA IEEE 802.1x") or 7 (“WPA2 IEEE 802.1x”).

7.6.2.3.1 CIM_IEEE8021xSettings.AuthenticationProtocol

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

7.6.2.3.2 CIM_IEEE8021xSettings.RoamingIdentity

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

7.6.2.3.3 CIM_IEEE8021xSettings.ServerCertificateName

CIM_IEEE8021xSettings.ServerCertificateName shall either be null or shall contain the subject name to be compared with the subject name in the certificate presented by the IEEE 802.1x authentication server. If CIM_IEEE8021xSettings.ServerCertificateName is not null, then CIM_IEEE8021xSettings.ServerCertificateNameComparison shall not be null.

7.6.2.3.4 CIM_IEEE8021xSettings.ServerCertificateNameComparison

CIM_IEEE8021xSettings.ServerCertificateNameComparision shall not be null if and only if CIM_IEEE-8021xSettings.ServerCertificateName is not null.

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

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

7.6.2.3.5 CIM_IEEE8021xSettings.Username

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

7.6.2.3.6 CIM_IEEE8021xSettings.Password

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

7.6.2.3.7 CIM_IEEE8021xSettings.Domain

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

7.6.2.3.8 CIM_IEEE8021xSettings.ProtectedAccessCredential

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

7.6.2.3.9 CIM_IEEE8021xSettings.PACPassword

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

7.6.2.3.10 CIM_IEEE8021xSettings.PSK

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

7.6.2.3.11 CIM_IEEE8021xCapabilities.SupportedAuthenticationProtocols

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

7.6.2.3.12 CIM_IEEE8021xCapabilities.RoamingSupported

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

7.7 Frequency Band and Data Rate

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

7.7.1 CIM_WiFiPortCapabilities.SupportedPortTypes

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

7.7.2 CIM_WiFiPortCapabilities.OtherSupportedPortTypes

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

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

8 Methods

This clause details the requirements — over and above those defined in the *Host LAN Network Port Profile* — for supporting intrinsic operations and extrinsic methods for the CIM elements defined by this profile.

8.1 CIM_WiFiPortConfigurationService.AddWiFiSettings( )

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

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

No standard messages are defined.

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.

8.4 CIM_WiFiPort

All operations are supported as for CIM_NetworkPort in the *Host LAN Network Port Profile*.

8.5 CIM_WiFiRadio

Table 6 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 6, all operations in the default list referenced in 8.3 shall be implemented as defined in DSP0200.

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

Table 6 – Operations: CIM_WiFiRadio

Operation	Requirement	Messages
ModifyInstance	Optional	None

8.5.1 CIM_WiFiRadio — ModifyInstance Operation

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

8.5.1.1 CIM_WiFiRadio.ElementName

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

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

8.6 CIM_WiFiEndpoint

All operations are supported as for CIM_LANEndpoint in the *Host LAN Network Port Profile*.

8.7 CIM_WiFiEndpointSettings

Table 7 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 7, all operations in the default list referenced in 8.3 shall be implemented as defined in DSP0200.

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

Table 7 – Operations: CIM_WiFiEndpointSettings

Operation	Requirement	Messages
ModifyInstance	Optional	None
DeleteInstance	Optional	None

8.8 CIM_IEEE8021xSettings

Table 8 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 8, all operations in the default list referenced in 8.3 shall be implemented as defined in DSP0200.

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

Table 8 – Operations: CIM_IEEE8021xSettings

Operation	Requirement	Messages
ModifyInstance	Optional	None

8.9 CIM_WiFiPortCapabilities

All default operations are supported as described by DSP0200.

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

8.10 CIM_WiFiEndpointCapabilities

All default operations are supported as described by DSP0200.

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

8.11 CIM_IEEE8021xCapabilities

All default operations are supported as described by DSP0200.

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

8.12 CIM_WiFiPortConfigurationService

All operations are supported as for CIM_NetworkPortConfigurationService in the *Host LAN Network Port Profile*.

8.13 CIM_ConcreteComponent (CIM_WiFiRadio)

Table 9 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 9, all operations in the default list referenced in 8.3 shall be implemented as defined in DSP0200.

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

Table 9 – Operations: CIM_ConcreteComponent (CIM_WiFiRadio)

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

8.14 CIM_ConcreteComponent (CIM_IEEE8021xSettings)

Table 10 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 10, all operations in the default list referenced in 8.3 shall be implemented as defined in DSP0200.

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

Table 10 – Operations: CIM_ConcreteComponent (CIM_IEEE8021xSettings)

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

8.15 CIM_ElementSettingData

Table 11 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 11, all operations in the default list referenced in 8.3 shall be implemented as defined in DSP0200.

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

Table 11 – Operations: CIM_ElementSettingData

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

8.16 CIM_CredentialContext

Table 12 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 12, all operations in the default list referenced in 8.3 shall be implemented as defined in DSP0200.

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

Table 12 – Operations: CIM_CredentialContext

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

8.17 CIM_WiFiNetworkDetectionSettings

Table 13 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 13, all operations in the default list referenced in 8.3 shall be implemented as defined in DSP0200.

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

Table 13 – Operations: CIM_WiFiNetworkDetectionSettings

Operation	Requirement	Messages
ModifyInstance	Optional	None

9 Use Cases

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

9.1 Object Diagrams

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

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

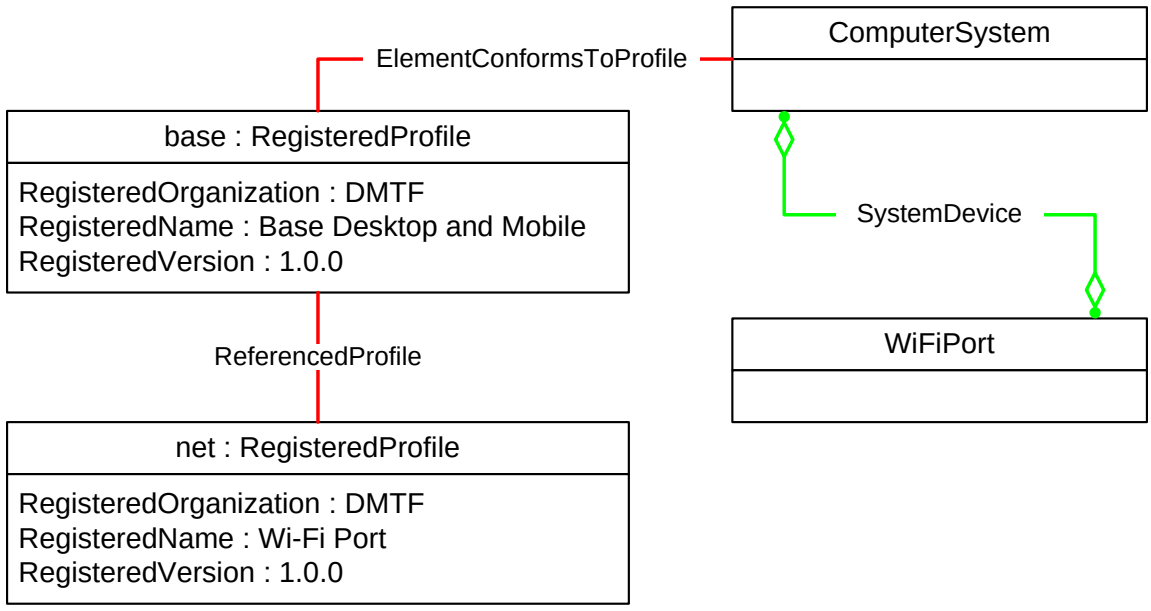

Figure 2 – Registered Profile

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

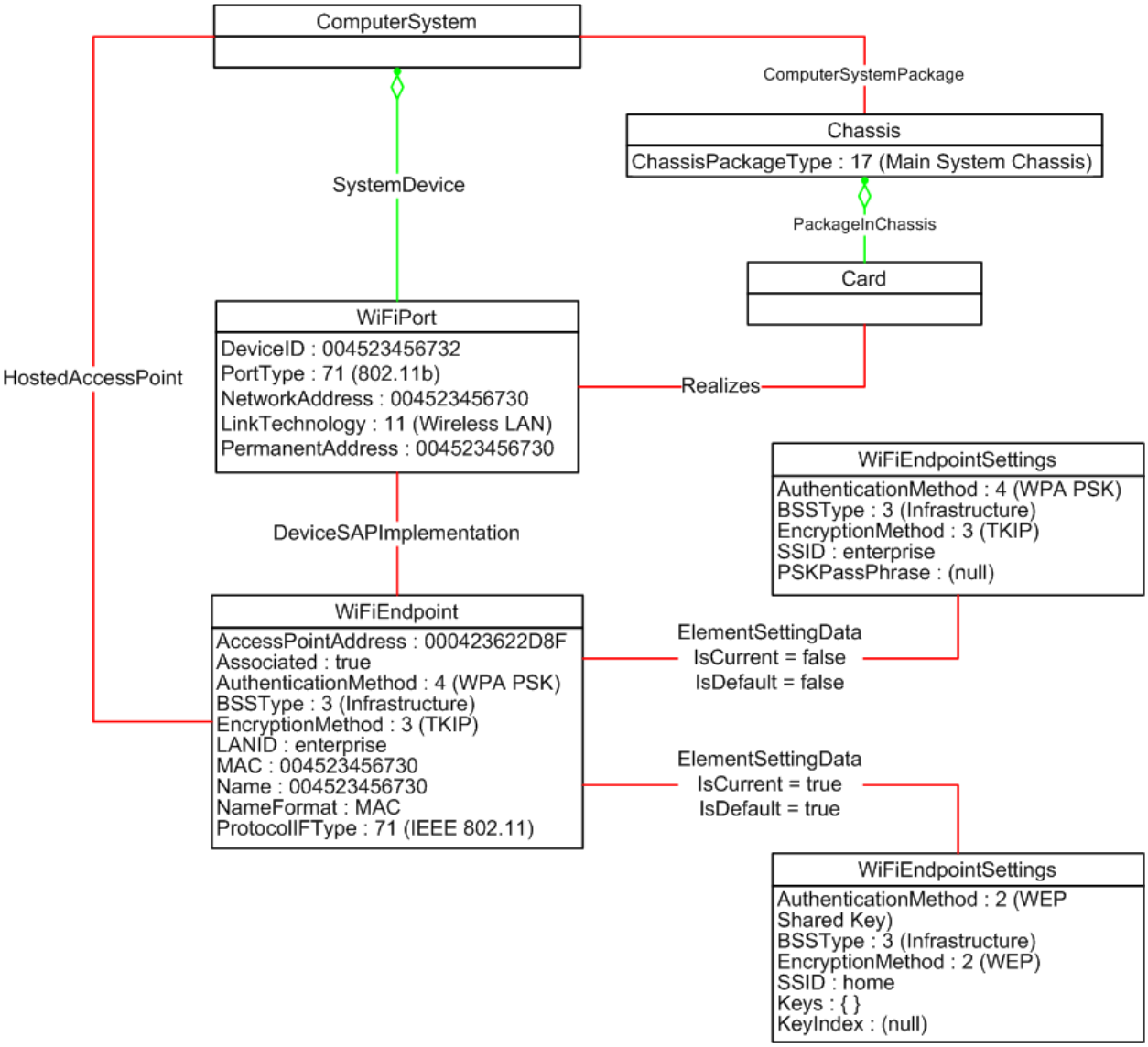

Figure 3 – Single Interface

9.2 Query MAC Address for an Interface

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

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

9.3 Determine Radio for an MAC Address

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

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

10 CIM Elements

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

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		

10.1 CIM_WiFiPort

CIM_WiFiPort represents the hardware and device aspects of a Wi-Fi interface. The constraints defined in Table 15 are in addition to those placed on the base CIM_NetworkPort class in the base *Host LAN Network Port Profile*.

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")

10.2 CIM_RegisteredProfile

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

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).

10.3 CIM_WiFiRadio

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

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.

10.4 CIM_WiFiEndpoint

CIM_WiFiEndpoint represents a MAC address to which the network port will respond on the LAN. The constraints defined in Table 18 are in addition to those placed on the base CIM_LANEndpoint class in the base *Host LAN Network Port Profile*.

Table 18 – Class: CIM_WiFiEndpoint

Properties	Requirement	Notes
LANID	Optional	See 7.3.2.
ProtocolIFType	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.

10.5 CIM_WiFiEndpointSettings

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

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 ".*")

10.6 CIM_IEEE8021xSettings

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

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 ".*")

10.7 CIM_WiFiPortCapabilities

CIM_WiFiPortCapabilities is a specialization of CIM_NetworkPortCapabilities that describes the capabilities of a CIM_WiFiPort. Table 21 specifies the required properties in addition to those required for CIM_EnabledLogicalElementCapabilities (a superclass of CIM_WiFiPortCapabilities) in the *Host LAN Network Port Profile*.

Table 21 – Class: CIM_WiFiPortCapabilities

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

10.8 CIM_EnabledLogicalElementCapabilities — WiFiRadio

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

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

10.9 CIM_WiFiEndpointCapabilities

CIM_WiFiEndpointCapabilities describes the capabilities of a CIM_WiFiEndpoint. Table 23 specifies the required properties in addition to those required for CIM_EnabledLogicalElementCapabilities (a superclass of CIM_WiFiEndpointCapabilities) in the *Host LAN Network Port Profile*.

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.

10.10 CIM_IEEE8021xCapabilities

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

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

10.11 CIM_WiFiPortConfigurationService

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

Table 25 – Class: CIM_WiFiPortConfigurationService

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

10.12 CIM_ConcreteComponent (CIM_WiFiRadio)

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

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..*

10.13 CIM_ConcreteComponent (CIM_IEEE8021xSettings)

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

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

10.14 CIM_ElementSettingData

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

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)

10.15 CIM_CredentialContext

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

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

10.16 CIM_WiFiNetworkDetectionSettings

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

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.

10.17 CIM_ElementSettingData

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

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

ANNEX A
(informative)

Change Log

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