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Ethernet Port Profile

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Foreword

The *Ethernet Port Profile* (DSP1014) was prepared by the Server Management Working Group.

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

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 an Ethernet port and its associated configuration information. The target audience for this specification is implementers who are writing CIM-based providers or consumers of management interfaces that represent the component described in this document.

Ethernet Port Profile

1 Scope

The *Ethernet Port Profile* extends the management capability of referencing profiles by adding the capability to represent an Ethernet port, its associated controller, and Ethernet 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 DSP0200, *CIM Operations over HTTP 1.2.0*

DMTF DSP0004, *CIM Infrastructure Specification 2.3.0*

DMTF DSP1000, *Management Profile Specification Template*

DMTF DSP1001, *Management Profile Specification Usage Guide*

DMTF DSP1004, *Base Server Profile*

DMTF DSP1033, *Profile Registration Profile*

DMTF DSP1035, *Host LAN Network Port Profile*

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

Unified Modeling Language (UML) from the Open Management Group (OMG), http://www.uml.org/

3 Terms and Definitions

For the purposes of this document, the following terms and definitions 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 "Referenced 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 strictly 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

4 Symbols and Abbreviated Terms

The following symbols and abbreviations are used in this document.

4.1
CIM
Common Information Model

4.2
LAN
Local Area Network

5 Synopsis

Profile Name: Ethernet Port

Version: 1.0.0

Organization: DMTF

CIM Schema Version: 2.18.0

Central Class: CIM_EthernetPort

Scoping Class: CIM_ComputerSystem

Specializes: DMTF *Host LAN Network Port Profile, 1.0.0*

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

CIM_EthernetPort shall be the Central Class of this profile. The instance of CIM_EthernetPort shall be the Central Instance 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.

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

Table 1 – Referenced Profiles

Profile Name	Organization	Version	Description
Profile Registration	DMTF	1.0.0	Mandatory
Host LAN Network Port	DMTF	1.0.0	Specializes

6 Description

The *Ethernet Port Profile* specializes the DMTF *Host LAN Network Port Profile, 1.0.0*. The *Ethernet Port Profile* constrains the generalized model of a network port to usage for modeling an Ethernet port. This profile is limited to defining CIM elements and constraints beyond those defined in the specialized profile. To implement this profile, it is necessary to understand and implement the *Host LAN Network Port Profile*.

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

- a specification of the Ethernet port and related hardware
- network interfaces active over the network port

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

- modeling of the controller and its relationship with the Ethernet port

The following functionality is not covered in this profile:

- modeling of the networks in which the Ethernet interface participates

Figure 1 represents the class schema of the *Ethernet Port Profile*. The CIM_EthernetPort class is a subclass (specialization) of the CIM_NetworkPort class. It replaces the CIM_NetworkPort class as the subject for constraints defined in the *Host LAN Network Port Profile*. The CIM_EthernetPort class represents the Ethernet port. The CIM_LANEndpoint class represents an access point at the data-link layer, which in this case is identified by a MAC address to which the Ethernet port will respond on the network.

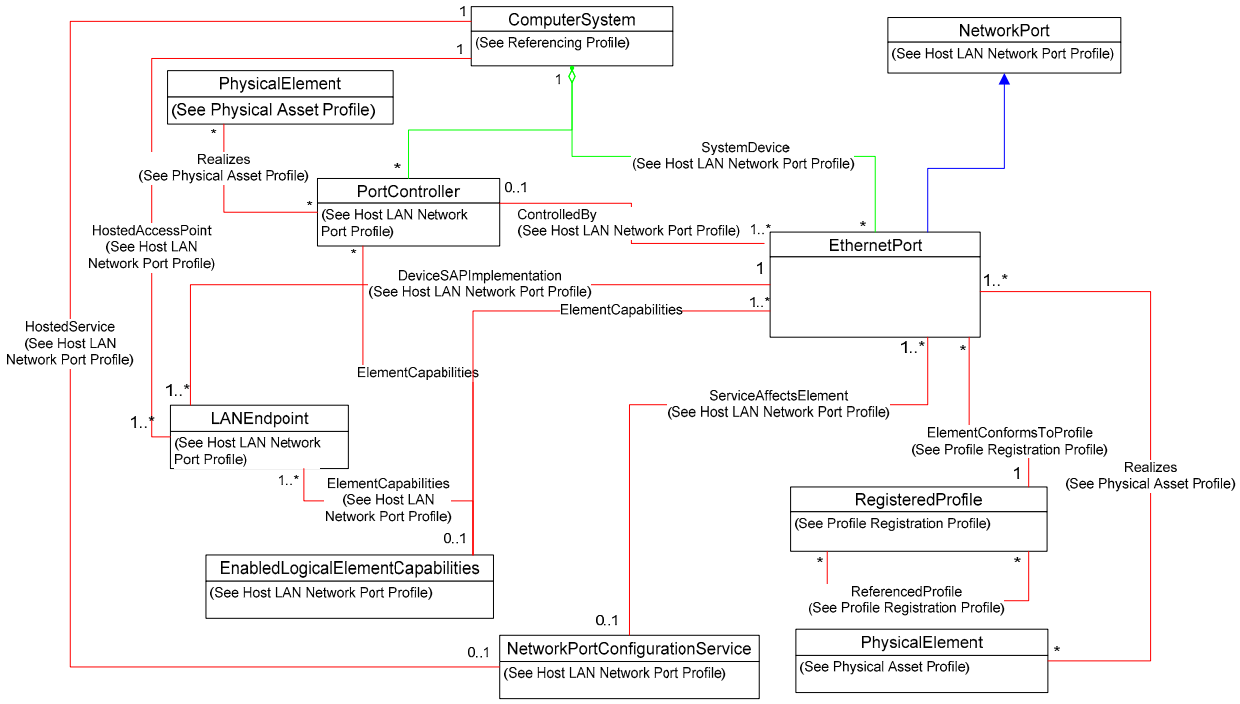

Figure 1 – Ethernet Port Profile: Class Diagram

7 Implementation Requirements

This section details the requirements related to the arrangement of instances and properties of instances for implementations of this profile.

7.1 CIM_EthernetPort.PermanentAddress

When the permanent address is known, the PermanentAddress property shall be formatted as 12 contiguous case insensitive 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}).

8 Methods

This profile does not define any extrinsic methods beyond those defined in the *Host LAN Network Port Profile*.

8.1 CIM_EthernetPort

All operations are supported as for CIM_NetworkPort in the *Host LAN Network Port Profile, 1.0.0*.

9 Use Cases

This section contains object diagrams and use cases for the *Ethernet 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 *Ethernet Port Profile* with which an instance of CIM_EthernetPort 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 Server Profile*, version 1.0. The other instance identifies the *Ethernet Port Profile*, version 1.0.

The CIM_EthernetPort instance is scoped to an instance of CIM_ComputerSystem. This instance of CIM_ComputerSystem is conformant with the DMTF *Base Server 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_EthernetPort. The CIM_ReferencedProfile relationship between *BaseSystem* and *net* places the CIM_EthernetPort instance within the scope of *net.* Thus, the CIM_EthernetPort instance is conformant with the *Ethernet Port Profile* version 1.0.

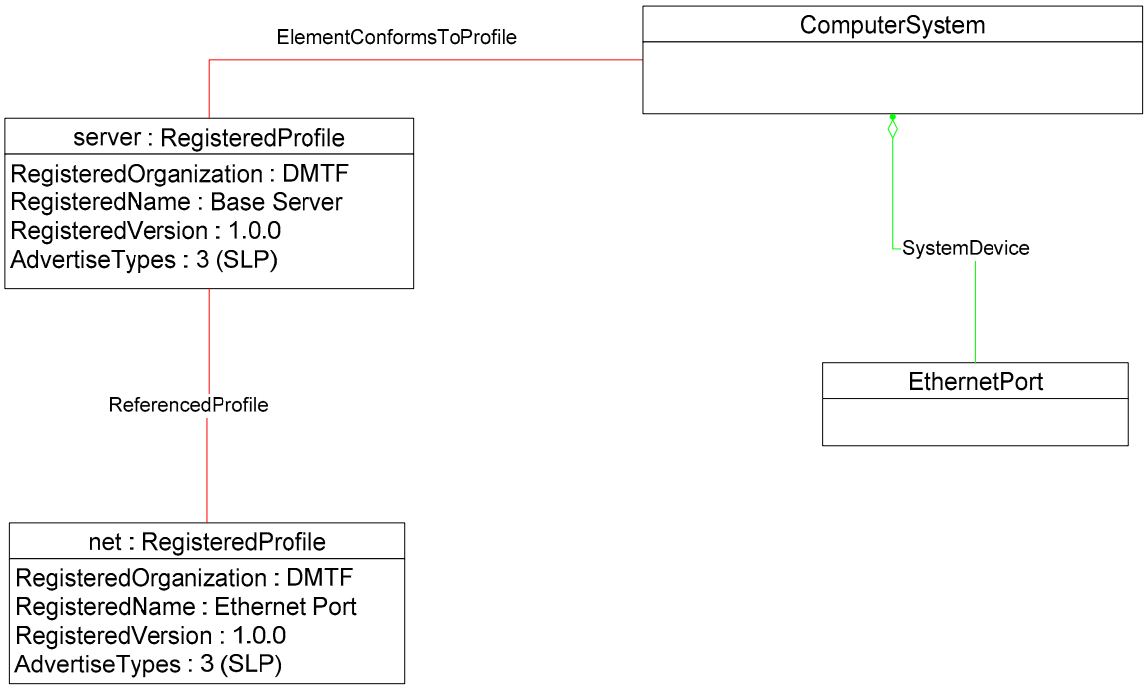

Figure 2 – Registered Profile

Figure 3 is a simple object diagram for a single Ethernet port that provides a single Ethernet interface. The Ethernet port is represented by an instance of CIM_EthernetPort. The Ethernet interface is represented by an instance of CIM_LANEndpoint.

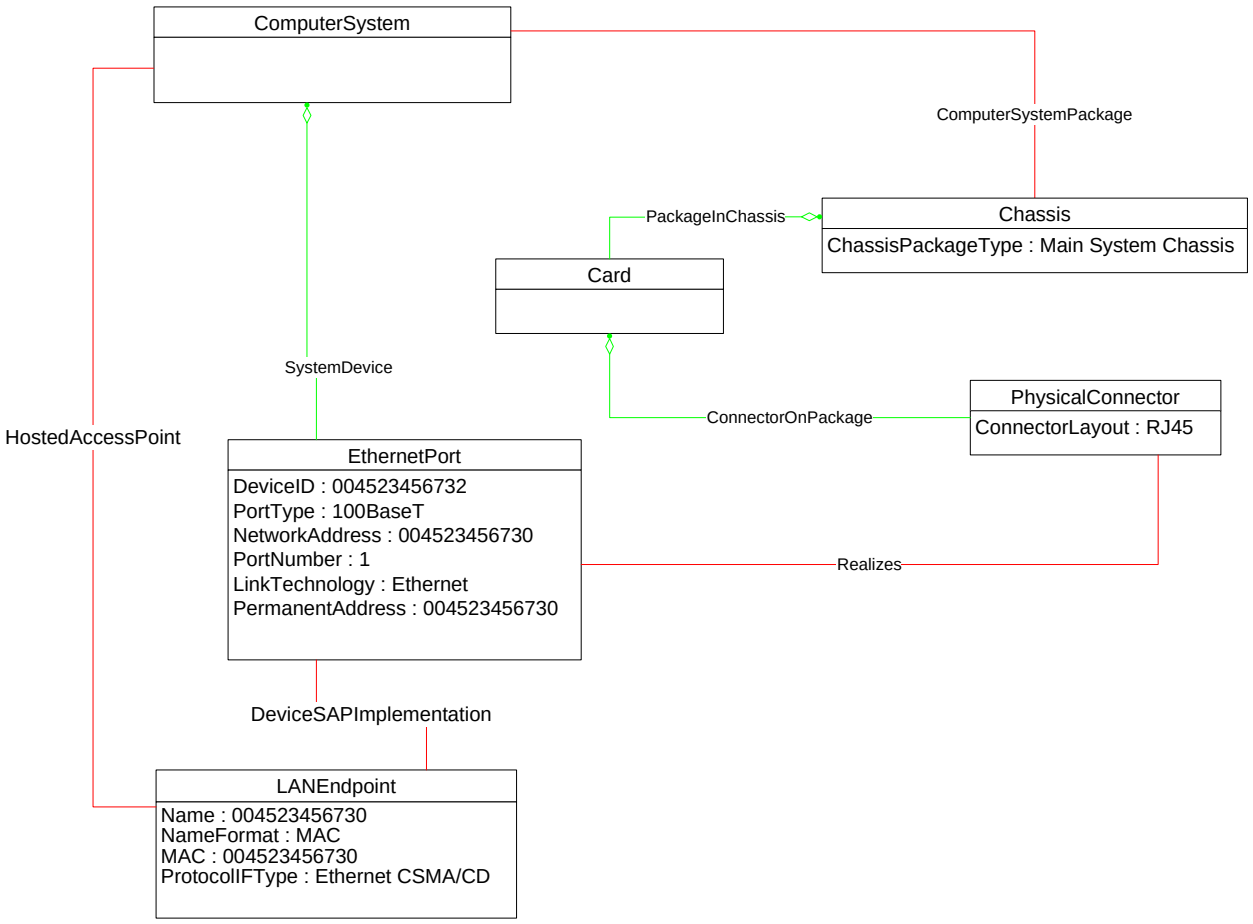

Figure 3 – Single Interface

9.2 Query MAC Address for an Interface

A client can determine the MAC addresses in use for an Ethernet port as follows:

1) Find all instances of CIM_LANEndpoint that are associated with the CIM_EthernetPort through an instance of CIM_DeviceSAPImplementation.

2) Query the MACAddress property of each instance of CIM_LANEndpoint.

9.3 Determine Physical Connector for an Ethernet Address

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

1) Find the instance of CIM_EthernetPort that is associated with the CIM_LANEndpoint instance through an instance of CIM_DeviceSAPImplementation.

2) Find the instance of CIM_PhysicalConnector that is associated with the CIM_EthernetPort instance through an instance of CIM_Realizes.

10 CIM Elements

Table 2 shows the instances of CIM Elements for this profile. Instances of the CIM Elements shall be implemented as described in Table 2. Section 7 may impose additional requirements on these elements.

Table 2 – CIM Elements: Ethernet Port Profile

Element Name	Requirement	Notes
Classes		
CIM_EthernetPort	Mandatory	See section 10.1.
CIM_PortController	Optional	See section 10.2.
CIM_RegisteredProfile	Mandatory	See section 10.3.
Indications		
None defined in this profile		

10.1 CIM_EthernetPort

CIM_EthernetPort represents the hardware and device aspects of an Ethernet interface. The constraints defined in Table 3 are in addition to those placed on the base CIM_NetworkPort class in the base *Host LAN Network Port Profile*.

Table 3 – Class: CIM_EthernetPort

Properties	Requirement	Notes
PortType	Mandatory	None
NetworkAddresses	Mandatory	Shall be formatted as 12 unseparated case-insensitive hex digits (pattern "^[0123456789ABCDEFabcdef]{12}$")
Capabilities	Mandatory	None
EnabledCapabilities	Mandatory	None
LinkTechnology	Mandatory	Match 2 ("Ethernet")
PermanentAddress	Mandatory	See section 7.1.

10.2 CIM_PortController

CIM_PortController represents a network controller. All properties listed below override the requirements of the *Host LAN Network Port Profile*.

Table 4 – Class: CIM_PortController

Properties	Requirement	Notes
ControllerType	Mandatory	Matches 2 (Ethernet)

10.3 CIM_RegisteredProfile

CIM_RegisteredProfile identifies the *Ethernet 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 5, the behavior of the CIM_RegisteredProfile instance is defined by the *Profile Registration Profile*.

Table 5 – Class: CIM_RegisteredProfile

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

NOTE: Previous versions of this document included the suffix 'Profile' for the RegisteredName value. If implementations querying for the RegisteredName value find the suffix 'Profile', they should ignore the suffix, with any surrounding white spaces, before any comparison is done with the value as specified in this document.

ANNEX A
(informative)

Change Log

Version	Date	Description
1.0.0b	04/10/2006	Company Review edit
1.0.0	10/08/2008	Final Standard

ANNEX B
(informative)

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