PCI Device Profile

CONTENTS

Figures

Tables

PCI Device Profile

1   Scope

The DCIM PCI Device Profile describes the properties and interfaces for executing system management tasks related to the management of PCI devices within a system. The profile standardizes and aggregates the description for the PCI device properties into a PCI view representation as well as provides static methodology for the clients to query the PCI views without substantial traversal of the model.

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.

DMTF DSP1033, *Profile Registration Profile 1.0.0*

DMTF DSP0226, *Web Services for Management (WS-Management) Specification 1.1.0*

DMTF DSP0227, *WS-Management CIM Binding Specification 1.0.0*

Dell Lifecycle Controller Best Practices Guide 1.0,
http://en.community.dell.com/techcenter/extras/m/white_papers/20066173.aspx

Dell WSMAN Licenses and Privileges 1.0

Dell Tech Center MOF Library, http://www.delltechcenter.com/page/DCIM.Library.MOF

- DCIM_PCIDeviceView.mof
- DCIM_LCEnumeration.mof
- DCIM_LCRegisteredProfile.mof

3   Terms and Definitions

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

3.1
conditional
indicates requirements to be followed strictly in order to conform to the document when the specified conditions are met

3.2
mandatory
indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted

3.3
may

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

3.4
optional

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

3.5
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

3.6
shall

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

3.7
FQDD

Fully Qualified Device Descriptor is used to identify a particular component in a system.

3.8
Interop Namespace

Interop Namespace is where instrumentation instantiates classes to advertise its capabilities for client discovery.

3.9
Implementation Namespace

Implementation Namespace is where instrumentation instantiates classes relevant to executing core management tasks.

3.10
`ENUMERATE`

Refers to WS-MAN `ENUMERATE` operation as described in Section 8.2 of DSP0226_V1.1 and Section 9.1 of DSP0227_V1.0

3.11
`GET`

Refers to WS-MAN `GET` operation as defined in Section 7.3 of DSP00226_V1.1 and Section 7.1 of DSP0227_V1.0

4   Symbols and Abbreviated Terms

4.1
CIM

Common Information Model

4.2
iDRAC

Integrated Dell Remote Access Controller – management controller for blades and monolithic servers

4.3
CMC

Chassis Manager Controller – management controller for the modular chassis

4.4
WBEM

Web-Based Enterprise Management

5   Synopsis

Profile Name: PCI Device

Version: 1.0.0

Organization: Dell

CIM Schema Version: 2.26 Experimental

Dell Schema Version: 1.0.0

Interop Namespace: root/interop

Implementation Namespace: root/dcim

Central Class: DCIM_PCIDeviceView

Scoping Class: DCIM_ComputerSystem

The Dell PCI Device Profile is a component profile that contains the Dell specific implementation requirements for PCI Device view.

DCIM_PCIDeviceView shall be the Central Class.

Table 1 identifies profiles that are related to this profile.

Table 1 – Related Profiles

Profile Name	Organization	Version	Relationship
Profile Registration	DCIM	1.0	Reference

6 Description

The Dell PCI Device Profile describes platform's PCI devices. Each PCI device's information is represented by an instance of DCIM_PCIDeviceView class.

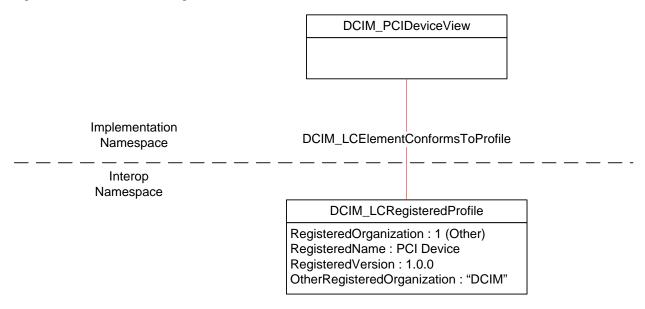Figure 1 details the class diagram of the Dell PCI Device Profile.

Figure 1 – Class Diagram

Figure 2 details typical Dell PCI Device Profile implementation for a platform containing two PCI devices. In order for client to discover the instrumentation's support of this profile, PCI Device Profile is instantiated in the Interop Namespace. PCI Device Profile instance describes the information about the implemented profile: most importantly, the name and version of the profile and the organization name that produced the profile.

PCI1 and PCI2 are the PCI device views representing the two PCI devices in the Implementation Namespace. They are associated to the Interop namespace's PCIProfile instance.

system1 : DCIM_ComputerSystem
Name : srv:system

systemview1 : DCIM_SystemView
FQDD: System.Embedded.1

PCI1 : DCIM_PCIDeviceView
FQDD: PciDevices.Slot.1 BusNumber : 5 DeviceNumber : 1 VendorID : ABCD DeviceID : 2222 Manufacturer : XYZ Description : PCI-Express Wireless Card ...

PCI2 : DCIM_PCIDeviceView
FQDD: PciDevices.Slot.2 BusNumber : 4 DeviceNumber : 1 VendorID : 1028 DeviceID : 012c Manufacturer : Dell Description : Gigabit controller ...

ElementConformsToProfile

LCElementConformsToProfile

Implementation
Namespace

- -

Interop
Namespace

CSProfile : RegisteredProfile
RegisteredOrganization : 2 (DMTF) RegisteredName : Base Server RegisteredVersion : 1.0.0

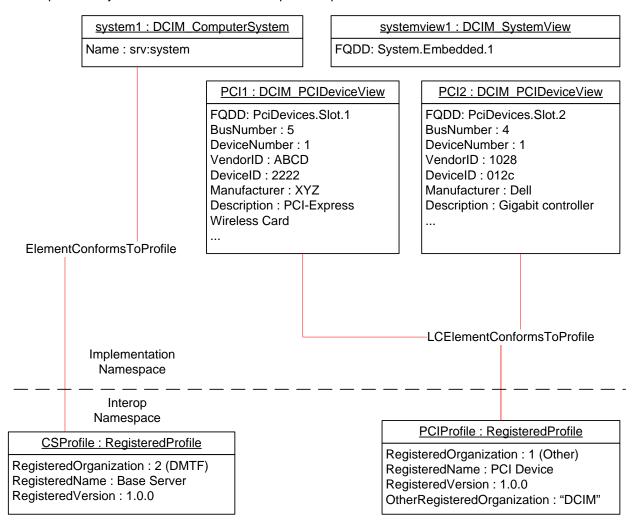| PCIProfile : RegisteredProfile |
| --- |
| RegisteredOrganization : 1 (Other)
RegisteredName : PCI Device
RegisteredVersion : 1.0.0
OtherRegisteredOrganization : "DCIM" |

Figure 2 – PCI Device Profile Implementation

7 Implementation Description

This section describes the requirements and guidelines for implementing Dell PCI Device Profile.

Table 2 – Class Requirements: PCI Device Profile

Element Name	Requirement	Description
Classes		
DCIM_PCIDeviceView	Mandatory	The class shall be implemented in the Implementation Namespace. See section 7.1.
DCIM_LCElementConformsToProfile	Mandatory	The class shall be implemented in the *Implementation Namespace*.
DCIM_LCElementConformsToProfile	Mandatory	The class shall be implemented in the *Interop Namespace*.
DCIM_LCRegisteredProfile	Mandatory	The class shall be implemented in the Interop Namespace. See section 7.2.
Indications		
None defined in this profile		

7.1 PCI Device View

This section describes the implementation for the DCIM_PCIDeviceView class.

This class shall be instantiated in the Implementation Namespace.

The DCIM_ElementConformsToProfile association(s) shall reference the DCIM_PCIDeviceView instance(s).

7.1.1 Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_PCIDeviceView?__cimnamespace=root/dcim"

The key property shall be the InstanceID.

The instance Resource URI for DCIM_PCIDeviceView instance shall be:
"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_PCIDeviceView?__cimnamespace=root/dcim+InstanceID=<FQDD>"

7.1.2 Operations

The following table details the implemented operations on DCIM_PCIDeviceView.

Table 3 – DCIM_PCIDeviceView - Operations

Operation Name	Requirements	Required Input
Get	Mandatory	Instance URI
Enumerate	Mandatory	Class URI

7.1.3 Properties

The following table details the implemented properties for DCIM_PCIDeviceView instance representing a PCI in a system. The "Requirements" column shall denote the implementation requirement for the corresponding property. If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirement", or shall be implemented according to the requirements in the corresponding column "Additional Requirement".

Table 4 – DCIM_PCIDeviceView - Properties

Property Name	Requirements	Type	Requirement and description
InstanceID	Mandatory	string	The property value shall be the FQDD property value.
FQDD	Mandatory	string	A string containing the Fully Qualified Device Description, a user-friendly name for the object.
BusNumber	Mandatory	uint32	The bus number where the PCI device resides.
DeviceNumber	Mandatory	uint32	The device number assigned to the PCI device for this bus.
FunctionNumber	Mandatory	uint32	The function number for the PCI device.
PCIVendorID	Mandatory	string	The property contains a value assigned by the PCI SIG used to identify the manufacturer of the device.
PCISubVendorID	Mandatory	string	Subsystem vendor ID.
PCIDeviceID	Mandatory	string	The property contains a value assigned by the device manufacturer used to identify the type of device.
PCISubDeviceID	Mandatory	string	The property contains a value assigned by the vendor manufacturer used to identify the type of device.
Manufacturer	Mandatory	String	A string containing the Manufacturer name. The name of the organization responsible for producing the PCI Device.
Description	Optional	string	Gives the description of the PCI Device
DataBusWidth	Mandatory	string	Data bus width of the PCI: "0001" - "Other", "0002" - "Unknown", "0003" - "8 bit", "0004" - "16 bit", "0005" - "32 bit", "0006" - "64 bit", "0007" - "128 bit", "0008" - "1x or x1", "0009" - "2x or x2", "000A" - "4x or x4", "000B" - "8x or x8", "000C" - "12x or x12", "000D" - "16x or x16", "000E" - "32x or x32"
SlotLength	Mandatory	string	Slot length of the PCI: "0001" - "Other", "0002" - "Unknown", "0003" - "Short Length", "0004" - "Long Length"
SlotType	Mandatory	string	PCI slot type:

Property Name	Requirements	Type	Requirement and description
			"0001" - "Other", "0002" - "Unknown", "0003" - "ISA", "0004" - "MCA", "0005" - "EISA", "0006" - "PCI", "0007" - "PC Card (PCMCIA)", "0008" - "VL-VESA", "0009" - "Proprietary", "000A" - "Processor Card Slot", "000B" - "Proprietary Memory Card Slot", "000C" - "I/O Riser Card Slot", "000D" - "NuBus", "000E" - "PCI - 66MHz Capable", "000F" - "AGP", "0010" - "AGP 2X", "0011" - "AGP 4X", "0012" - "PCI-X", "0013" - "AGP 8X", "00A0" - "PC-98/C20", "00A1" - "PC-98/C24", "00A2" - "PC-98/E", "00A3" - "PC-98/Local Bus", "00A4" - "PC-98/Card", "00A5" - "PCI Express (see below)", "00A6" - "PCI Express x1", "00A7" - "PCI Express x2", "00A8" - "PCI Express x4", "00A9" - "PCI Express x8", "00AA" - "PCI Express x16", "00AB" - "PCI Express Gen 2 (see below)", "00AC" - "PCI Express Gen 2 x1", "00AD" - "PCI Express Gen 2 x2", "00AE" - "PCI Express Gen 2 x4", "00AF" - "PCI Express Gen 2 x8", "00B0" - "PCI Express Gen 2 x16" "00B1" - "PCI Express Gen 3", "00B2" - "PCI Express Gen 3 x1", "00B3" - "PCI Express Gen 3 x2", "00B4" - "PCI Express Gen 3 x4", "00B5" - "PCI Express Gen 3 x8", "00B6" - "PCI Express Gen 3 x16",
LastSystemInventoryTime	Mandatory	string	This property provides the last time \"System \"Inventory Collection On Reboot(CSIOR)\" was performed. The value is represented as yyyymmddHHMMSS.
LastUpdateTime	Mandatory	string	This property provides the last time the data was updated. The value is represented as yyyymmddHHMMSS

7.2 PCI Device Profile Profile Registration

This section describes the implementation for the DCIM_LCRegisteredProfile class.

This class shall be instantiated in the Interop Namespace.

The DCIM_LCElementConformsToProfile association(s) shall reference the DCIM_LCRegisteredProfile instance.

7.2.1 Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_RegisteredProfile?__cimnamespace=root/interop"

The key property shall be the InstanceID property.

The instance Resource URI shall be: "http://schemas.dell.com/wbem/wscim/1/cim-schema/2//DCIM_LCRegisteredProfile?__cimnamespace=root/interop+InstanceID= DCIM:PCIDevice:1.0.0"

7.2.2 Operations

The following table details the implemented operations on DCIM_LCRegisteredProfile.

Table 5 – DCIM_LCRegisteredProfile - Operations

Operation Name	Requirements	Required Input
Get	Mandatory	Instance URI
Enumerate	Mandatory	Class URI

7.2.3 Properties

The following table details the implemented properties for DCIM_LCRegisteredProfile instance representing PCI Device Profile implementation. The "Requirements" column shall denote the implementation requirement for the corresponding property. If the column "Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

Table 6 – DCIM_LCRegisteredProfile

Property Name	Requirement	Type	Additional Requirements
InstanceID	Mandatory	String	DCIM:PCIDevice:1.0.0
RegisteredName	Mandatory	String	This property shall have a value of "PCI Device".
RegisteredVersion	Mandatory	String	This property shall have a value of "1.0.0".
RegisteredOrganization	Mandatory	Uint16	This property shall have a value of 1 (Other).
OtherRegisteredOrganization	Mandatory	String	The property value shall match "DCIM".
AdvertisedTypes[]	Mandatory	Uint16	This property array shall contain [1(Other), 1 (Other)].
AdvertiseTypeDescriptions[]	Mandatory	String	This property array shall contain ["WS-Identify", "Interop Namespace"].
ProfileRequireLicense[]	Mandatory	String	This property array shall describe the required licenses for this profile. If no license is required for the profile, the property shall have value NULL.
ProfileRequireLicenseStatus[]	Mandatory	String	This property array shall contain the status for the corresponding license in the same element index of the ProfileRequireLicense array property. Each array element shall contain: • "LICENSED"

| | | | • "NOT_LICENSED" |
| | | | If no license is required for the profile, the property shall have value NULL. |

8 Methods

This section details the requirements for supporting extrinsic methods for the CIM elements defined by this profile.

No additional details specified.

9 Use Cases

See *Lifecycle Controller (LC) Integration Best Practices Guide*.

10 CIM Elements

No additional details specified.

11 Privilege and License Requirement

The following table describes the privilege and license requirements for the listed operations . For the detailed explanation of the privileges and licenses, refer to the Dell WSMAN Licenses and Privileges specification.

Table 7 – Privilege and License Requirements

Class and Method	Operation	User Privilege Required	License Required
DCIM_PCIDeviceView	ENUMERATE, GET	Login	LM_REMOTE_ASSET_INVENTORY
DCIM_LCRegisteredProfile	ENUMERATE, GET	Login	None.
DCIM_LCElementConformsToProfile	ENUMERATE, GET	Login	None.