

USB Device Profile

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Contents

| | | |
|--------|--------------------------------------|----|
| 1. | Scope | 6 |
| 2. | Normative References | 6 |
| 3. | Terms and Definitions | 6 |
| 3.1. | Conditional | 6 |
| 3.2. | Mandatory | 6 |
| 3.3. | May | 6 |
| 3.4. | Optional | 6 |
| 3.5. | Referencing profile | 6 |
| 3.6. | Shall | 7 |
| 3.7. | FQDD | 7 |
| 3.8. | Interop Namespace | 7 |
| 3.9. | Implementation Namespace | 7 |
| 3.10. | ENUMERATE | 7 |
| 3.11. | GET | 7 |
| 4. | Symbols and Abbreviated Terms | 7 |
| 4.1. | CIM | 7 |
| 4.2. | iDRAC | 7 |
| 4.3. | CMC | 7 |
| 4.4. | WBEM | 7 |
| 5. | Synopsis | 7 |
| 6. | Description | 8 |
| 7. | Implementation Description | 9 |
| 7.1. | USB Device View – DCIM_USBDeviceView | 10 |
| 7.1.1. | Resource URIs for WinRM® | 10 |
| 7.1.2. | Operations | 10 |
| 7.1.3. | Properties | 10 |
| 7.2. | USB Device Profile Registration | 11 |
| 7.2.1. | Resource URIs for WinRM® | 11 |
| 7.2.2. | Operations | 11 |
| 7.2.3. | Properties | 12 |
| 8. | Methods | 12 |
| 9. | Use Cases | 12 |
| 10. | CIM Elements | 12 |

| | |
|---------------------------------------|----|
| 11. Privilege and License Requirement | 13 |
| Change Log | 13 |

1. Scope

The DCIM USB Device Profile describes the properties and interfaces for executing system management tasks related to the management of USB devices within a system. The profile standardizes and aggregates the description for the USB device properties into a USBDevice view representation as well as provides static methodology for the clients to query the USB Device 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 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

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

DMTF DSP0227, WS-Management CIM Binding Specification 1.0.0

Dell Tech Center MOF Library

<http://www.delltechcenter.com/page/DCIM.Library.MOF>

- DCIM_USBDeviceView.mof
- DCIM_iDRACCardEnumeration.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: USB Device

Version: 4.0.0

Organization: Dell

CIM Schema Version: 2.41.0 Final

Dell Schema Version: 1.0.0

Interop Namespace: root/interop

Implementation Namespace: root/dcim

Central Class: DCIM_USBDeviceView

Scoping Class: DCIM_ComputerSystem

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

DCIM_USBDeviceView 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 USB Device Profile describes platform's USB Devices. Each USB Device's information is represented by an instance of DCIM_USBDeviceView class.

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

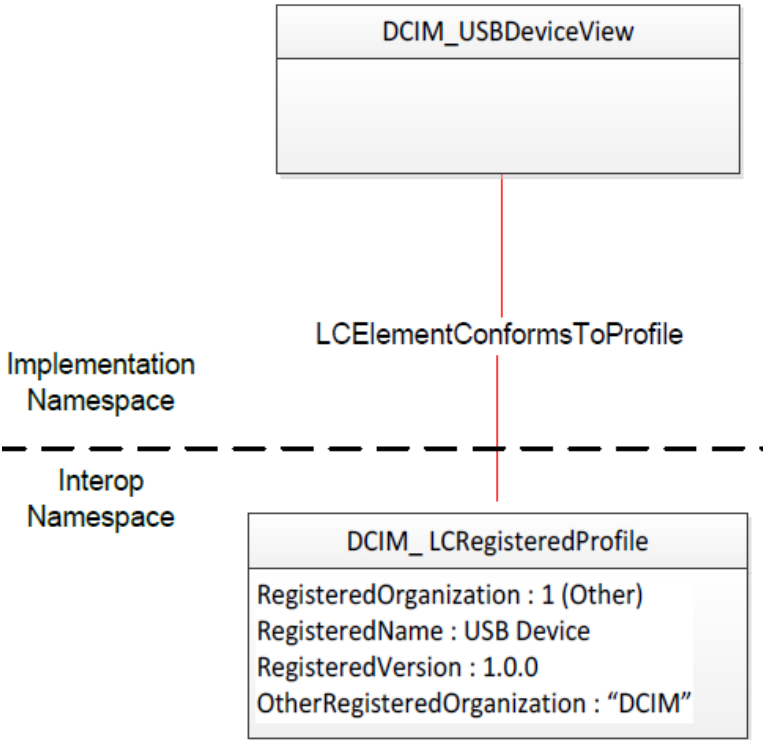


Figure 1. Class Diagram

Figure 2 details typical Dell USB Device Profile implementation for a platform containing USB Device. In order for client to discover the instrumentation's support of this profile, USB Device Profile is instantiated in the Interop Namespace. USB 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.

USB Device1 is the USB Device view representing the USB device in the Implementation Namespace. They are associated to the Interop namespace's USB Device Profile instance.

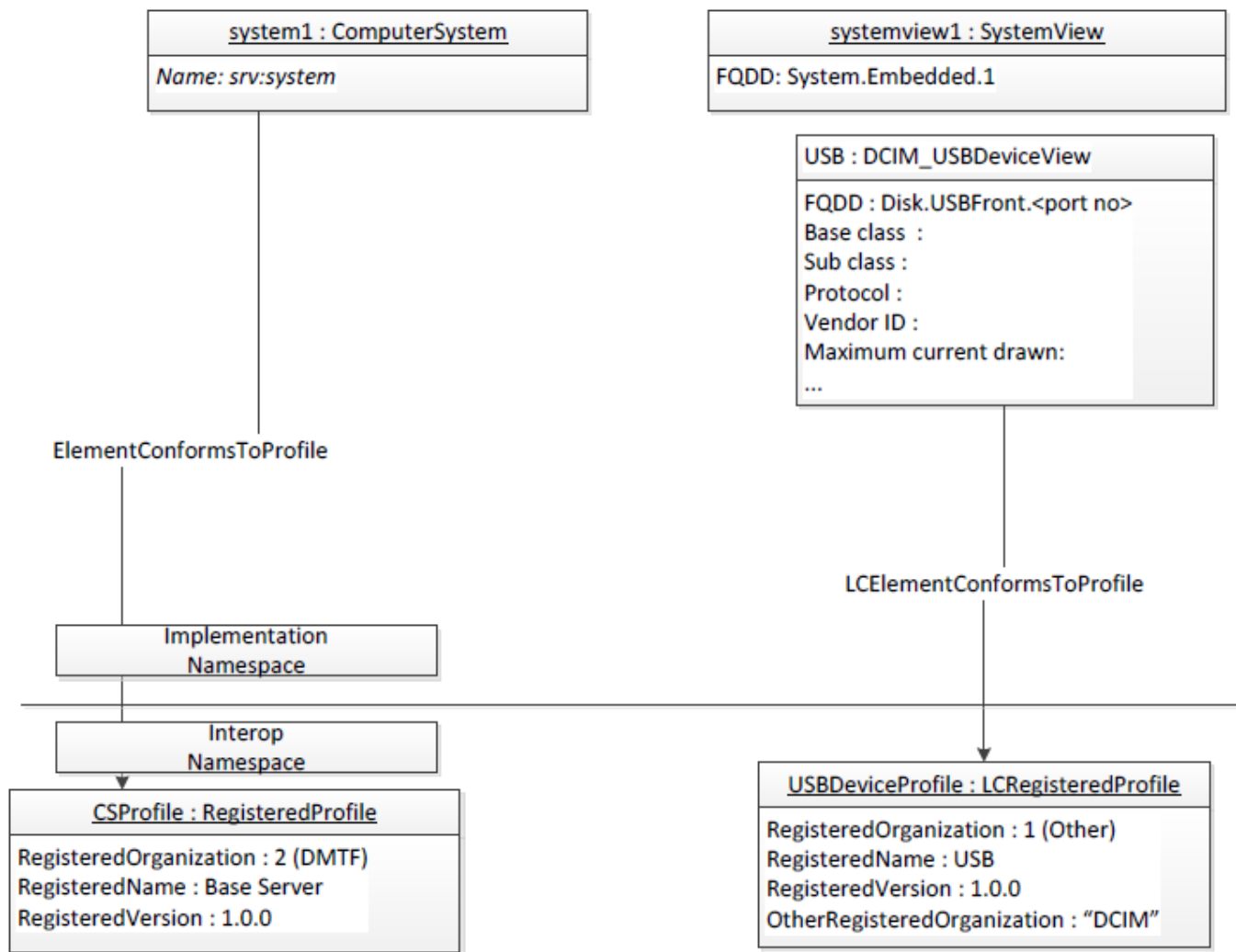


Figure 2. USB Device Profile Implementation

7. Implementation Description

This section describes the requirements and guidelines for implementing Dell USBDeviceProfile.

Table 2. Class Requirements: USB Device Profile

| Element Name | Requirement | Description |
|---------------------------------|-------------|---|
| Classes | | |
| DCIM_USBDeviceView | 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 Error! Reference source not found.. |
| Indications | | |

| Element Name | Requirement | Description |
|------------------------------|-------------|-------------|
| None defined in this profile | | |

7.1. USB Device View – DCIM_USBDeviceView

This section describes the implementation for the DCIM_USBDeviceView class. This class shall be instantiated in the Implementation Namespace.

The DCIM_LCElementConformsToProfile association(s) shall reference the DCIM_USBDeviceView 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_USBDeviceView?__cimnamespace=root/dcim”

The key property shall be the InstanceID.

The instance Resource URI for DCIM_USBDeviceView instance shall be:

“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_USBDeviceView?__cimnamespace=root/dcim+InstanceID=<FQDD>”

7.1.2. Operations

The following table details the implemented operations on DCIM_USBDeviceView.

Table 3. DCIM_USBDeviceView - 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_USBDeviceView instance representing a processor 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_USBDeviceView - Properties

| Property Name | Requirements | Type | Requirement and description |
|-------------------|--------------|--------|--|
| InstanceID | Mandatory | String | The property value shall be the FQDD property value. |
| FQDD | Mandatory | String | The property shall represent, a string containing the Fully Qualified Device Description, a user-friendly name for the object. |
| DeviceDescription | Mandatory | String | The property shall represent, a string containing the friendly Fully Qualified Device Description, a user-friendly name for the object. |
| Base class | Mandatory | String | Base Class is used in this description to identify. The first byte of the Class Code triple (It is assigned by assigned by usb.org). Note: Display in hex format & as a user-readable string. |
| Sub class | Mandatory | String | Sub Class is used in this description to identify. The second byte of the Class Code triple (It is assigned by assigned by usb.org). |
| Protocol | Mandatory | String | Protocol is used in this description to identify. The third byte of the Class Code triple (It is assigned by assigned by usb.org). |

| Property Name | Requirements | Type | Requirement and description |
|-----------------------|--------------|---------|---|
| Manufacturer | Mandatory | String | The property shall represent the name of the organization responsible for producing the USB device. |
| SerialNumber | Mandatory | String | The property shall represent a manufacturer-allocated number used to identify the physical element. |
| VendorID | Mandatory | String | The property shall represent the part number of the USB device. |
| ProductID | | | Used identify the type of the product, assigned by manufacturer. |
| ProductName | Mandatory | String | The property shall represent the product name of the USB device. |
| USBVersion | Mandatory | String | The property shall represent the highest USB specification supported by a device. If a device supports two versions, only the highest version is reported. Often, USB devices encode this value as a binary coded decimal with a format of 0xAABC, where AA is the major version number, B is the minor version number and C is the sub minor version number |
| DeviceVersion | Mandatory | String | A string containing the version of the device, assigned by manufacturer. |
| Maximum current drawn | Mandatory | Integer | A USB device can have more than one configuration with each configuration having a different power requirement. This property reports the maximum current drawn by a USB device across all available configurations. |

7.2. USB Device Profile Registration

This section describes the implementation for the DCIM_LCRegisteredProfile class. This class shall be instantiated in the Interop Namespace.

The DCIM_ElementConformsToProfile 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:USBDevice: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 USB 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 | String | Additional Requirements |
|-------------------------------|-------------|--------|---|
| InstanceID | Mandatory | String | DCIM:USBDevice:1.0.0 |
| RegisteredName | Mandatory | String | This property shall have a value of "USBDevice". |
| 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: <ul style="list-style-type: none">• "LICENSED"• "NOT_LICENSED" If no license is required for the profile, the property shall have value NULL. |

8. Methods

No methods are defined for this profile and class.

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_USBDeviceView | ENUMERATE, GET | Login | None |
| DCIM_LCRegisteredProfile | ENUMERATE, GET | Login | None. |
| DCIM_LCElementConformsToProfile | ENUMERATE, GET | Login | None. |

Change Log

| Version | Date | Description |
|---------|-------------|---|
| 4.0.0 | 20-Jun-2017 | LicenseStartDate property of DCIM_License is now Optional. LicenseAttributes has a new ValueMap, 4 – “Valid Subcomponent” (14G specific License) |