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11. Privilege and License Requirement
1. Scope
The DCIM Memory Profile describes the properties and interfaces for executing system management tasks related to the management of memories (DIMMs) within a system. The profile standardizes and aggregates the description for the memory properties into a memory view representation as well as provides static methodology for the clients to query the memory 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
  o DCIM_MemoryView.mof
  o DCIM_LCEnumeration.mof
  o 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: Memory Version: 4.0.0
Organization: Dell
CIM Schema Version: 2.41 Final
Dell Schema Version: 1.0.0
Interop Namespace: root/interop Implementation Namespace: root/dcim Central Class: DCIM_MemoryView Scoping Class: DCIM_ComputerSystem
The Dell Memory Profile is a component profile that contains the Dell specific implementation requirements for memory view.
DCIM_MemoryView shall be the Central Class.
Table 1 identifies profiles that are related to this profile.
### Table 1. Related Profiles

<table>
<thead>
<tr>
<th>Profile Name</th>
<th>Organization</th>
<th>Version</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile Registration</td>
<td>DCIM</td>
<td>1.0</td>
<td>Reference</td>
</tr>
</tbody>
</table>

## 6. Description

The Dell Memory Profile describes platform’s physical memory. Each DIMM’s information is represented by an instance of DCIM_MemoryView class.

Figure 1 details the class diagram of the Dell Memory Profile.

![Class Diagram](image)

**Figure 1. Class Diagram**

Figure 2 details typical Dell Memory Profile implementation for a platform containing two DIMMs. In order for client to discover the instrumentation’s support of this profile, MemoryProfile is instantiated in the Interop Namespace. MemoryProfile 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.

Memory1 and memory2 are the memory views representing the two memories in the Implementation Namespace. They are associated to the Interop namespace’s MemoryProfile instance.
7. Implementation Description

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

Table 2. Class Requirements: Memory Profile

<table>
<thead>
<tr>
<th>Element Name</th>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCIM_MemoryView</td>
<td>Mandatory</td>
<td>The class shall be implemented in the Implementation Namespace. See section 7.1.</td>
</tr>
<tr>
<td>DCIM_LCEElementConformsToProfile</td>
<td>Mandatory</td>
<td>The class shall be implemented in the Implementation Namespace.</td>
</tr>
<tr>
<td>DCIM_LCEElementConformsToProfile</td>
<td>Mandatory</td>
<td>The class shall be implemented in the Interop Namespace.</td>
</tr>
<tr>
<td>DCIM_LCRegisteredProfile</td>
<td>Mandatory</td>
<td>The class shall be implemented in the Interop Namespace.</td>
</tr>
</tbody>
</table>

Indications

None defined in this profile
### 7.1. Memory View

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

The DCIM_LCEElementConformsToProfile association(s) shall reference the DCIM_MemoryView 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_MemoryView ? cimnamespace=root/dcim"

The key property shall be the InstanceID.


#### 7.1.2. Operations

The following table details the implemented operations on DCIM_MemoryView.

<table>
<thead>
<tr>
<th>Operation Name</th>
<th>Requirements</th>
<th>Required Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get</td>
<td>Mandatory</td>
<td>Instance URI</td>
</tr>
<tr>
<td>Enumerate</td>
<td>Mandatory</td>
<td>Class URI</td>
</tr>
</tbody>
</table>

#### 7.1.3. Properties

The following table details the implemented properties for DCIM_MemoryView instance representing a memory 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>
<thead>
<tr>
<th>Property Name</th>
<th>Requirements</th>
<th>Type</th>
<th>Requirement and description</th>
</tr>
</thead>
<tbody>
<tr>
<td>InstanceID</td>
<td>Mandatory</td>
<td>string</td>
<td>The property value shall be the FQDD property value.</td>
</tr>
<tr>
<td>FQDD</td>
<td>Mandatory</td>
<td>string</td>
<td>The property shall represent, a string containing the Fully Qualified Device Description, a user-friendly name for the object.</td>
</tr>
<tr>
<td>MemoryType</td>
<td>Mandatory</td>
<td>uint16</td>
<td>The property shall represent the type of the physical memory.</td>
</tr>
<tr>
<td>Speed</td>
<td>Mandatory</td>
<td>uint32</td>
<td>The property value shall be in MHz and shall represent the maximum operating speed of the physical memory.</td>
</tr>
<tr>
<td>CurrentOperatingSpeed</td>
<td>Mandatory</td>
<td>uint32</td>
<td>The property value shall be in MHz and shall represent the current operating speed of the physical memory.</td>
</tr>
<tr>
<td>Size</td>
<td>Mandatory</td>
<td>uint32</td>
<td>The property value shall be in MB and shall represent the total size of the physical memory in MegaBytes.</td>
</tr>
<tr>
<td>BankLabel</td>
<td>Mandatory</td>
<td>string</td>
<td>The property shall represent a string identifying the physically labeled bank where the memory is located.</td>
</tr>
<tr>
<td>Property Name</td>
<td>Requirements</td>
<td>Type</td>
<td>Requirement and description</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------</td>
<td>---------</td>
<td>----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Mandatory</td>
<td>string</td>
<td>The property shall represent the name of the organization responsible for producing the memory.</td>
</tr>
<tr>
<td>SerialNumber</td>
<td>Mandatory</td>
<td>string</td>
<td>The property shall represent a manufacturer-allocated number used to identify the physical memory.</td>
</tr>
<tr>
<td>PartNumber</td>
<td>Mandatory</td>
<td>string</td>
<td>The property shall represent the part number assigned by the organization that is responsible for producing or manufacturing the physical memory.</td>
</tr>
<tr>
<td>Model</td>
<td>Mandatory</td>
<td>string</td>
<td>The property shall represent the model of the memory.</td>
</tr>
<tr>
<td>ManufactureDate</td>
<td>Mandatory</td>
<td>string</td>
<td>The property shall represent manufacture date of the product.</td>
</tr>
<tr>
<td>Rank</td>
<td>Mandatory</td>
<td>uint8</td>
<td>The property shall represent the number of ranks for the memory.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 1 – Single Rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 2 – Double Rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 4 – Quad Rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 8 – Octal Rank</td>
</tr>
<tr>
<td>PrimaryStatus</td>
<td>Mandatory</td>
<td>uint32</td>
<td>The property shall represent a high level status value, intended to align with Red-Yellow-Green type representation of status for the physical memory,</td>
</tr>
<tr>
<td>LastSystemInventoryTime</td>
<td>Mandatory</td>
<td>string</td>
<td>The property shall represent the last time &quot;System Inventory Collection On Reboot(CSIR)&quot; was performed. The value is represented as yyyymmdHHMMSS.</td>
</tr>
<tr>
<td>LastUpdateTime</td>
<td>Mandatory</td>
<td>string</td>
<td>The property shall represent the last time the data was updated. The value is represented as yyyymmdHHMMSS.</td>
</tr>
</tbody>
</table>

### 7.2. Memory Profile 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:Memory:1.0.0"

#### 7.2.2. Operations

The following table details the implemented operations on DCIM_LCRegisteredProfile.

**Table 5. DCIM_LCRegisteredProfile - Operations**

<table>
<thead>
<tr>
<th>Operation Name</th>
<th>Requirements</th>
<th>Required Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get</td>
<td>Mandatory</td>
<td>Instance URI</td>
</tr>
<tr>
<td>Enumerate</td>
<td>Mandatory</td>
<td>Class URI</td>
</tr>
</tbody>
</table>
7.2.3. Properties

The following table details the implemented properties for DCIM_LCRegisteredProfile instance representing Memory 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>
<thead>
<tr>
<th>Property Name</th>
<th>Requirement</th>
<th>Type</th>
<th>Additional Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>InstanceID</td>
<td>Mandatory</td>
<td>String</td>
<td>DCIM:Memory:4.0.0</td>
</tr>
<tr>
<td>RegisteredName</td>
<td>Mandatory</td>
<td>String</td>
<td>This property shall have a value of &quot;Memory&quot;.</td>
</tr>
<tr>
<td>RegisteredVersion</td>
<td>Mandatory</td>
<td>String</td>
<td>This property shall have a value of &quot;4.0.0&quot;.</td>
</tr>
<tr>
<td>RegisteredOrganization</td>
<td>Mandatory</td>
<td>Uint16</td>
<td>This property shall have a value of 1 (Other).</td>
</tr>
<tr>
<td>OtherRegisteredOrganization</td>
<td>Mandatory</td>
<td>String</td>
<td>The property value shall match &quot;DCIM&quot;.</td>
</tr>
<tr>
<td>AdvertisedTypes[]</td>
<td>Mandatory</td>
<td>Uint16</td>
<td>This property array shall contain [1(Other), 1 (Other)].</td>
</tr>
<tr>
<td>AdvertiseTypeDescriptions[]</td>
<td>Mandatory</td>
<td>String</td>
<td>This property array shall contain [&quot;WS- Identify&quot;, &quot;Interop Namespace&quot;].</td>
</tr>
<tr>
<td>ProfileRequireLicense[]</td>
<td>Mandatory</td>
<td>String</td>
<td>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.</td>
</tr>
<tr>
<td>ProfileRequireLicenseStatus[]</td>
<td>Mandatory</td>
<td>String</td>
<td>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: • &quot;LICENSED&quot; • &quot;NOT_LICENSED&quot; If no license is required for the profile, the property shall have value NULL.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Class and Method</th>
<th>Operation</th>
<th>User Privilege Required</th>
<th>License Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCIM_MemoryView</td>
<td>ENUMERATE, GET</td>
<td>Login</td>
<td>LM_REMOTE_ASSET_INVENTORY</td>
</tr>
<tr>
<td>DCIM_LCRegisteredProfile</td>
<td>ENUMERATE, GET</td>
<td>Login</td>
<td>None.</td>
</tr>
<tr>
<td>DCIM_LCElementConformsToProfile</td>
<td>ENUMERATE, GET</td>
<td>Login</td>
<td>None.</td>
</tr>
</tbody>
</table>