

Memory Profile

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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
- 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_MemoryView.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: 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

Profile Name	Organization	Version	Relationship
Profile Registration	DCIM	1.0	Reference

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.

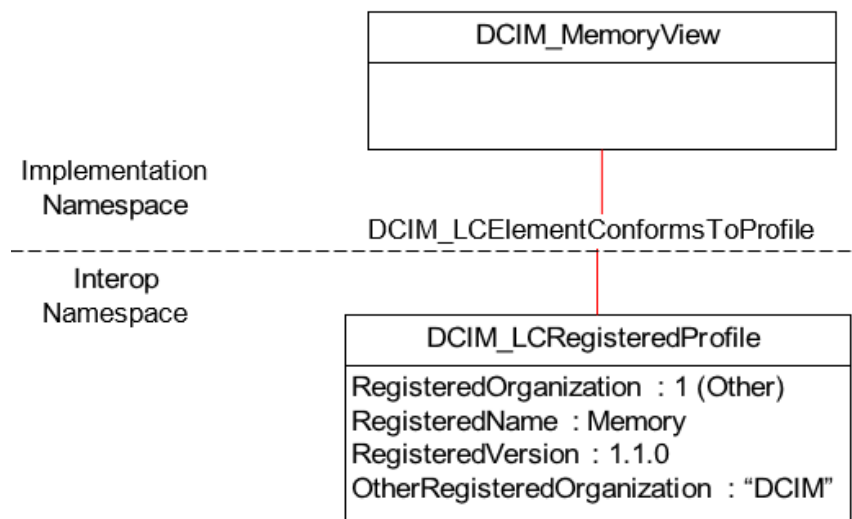


Figure 1. Class Diagram

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.

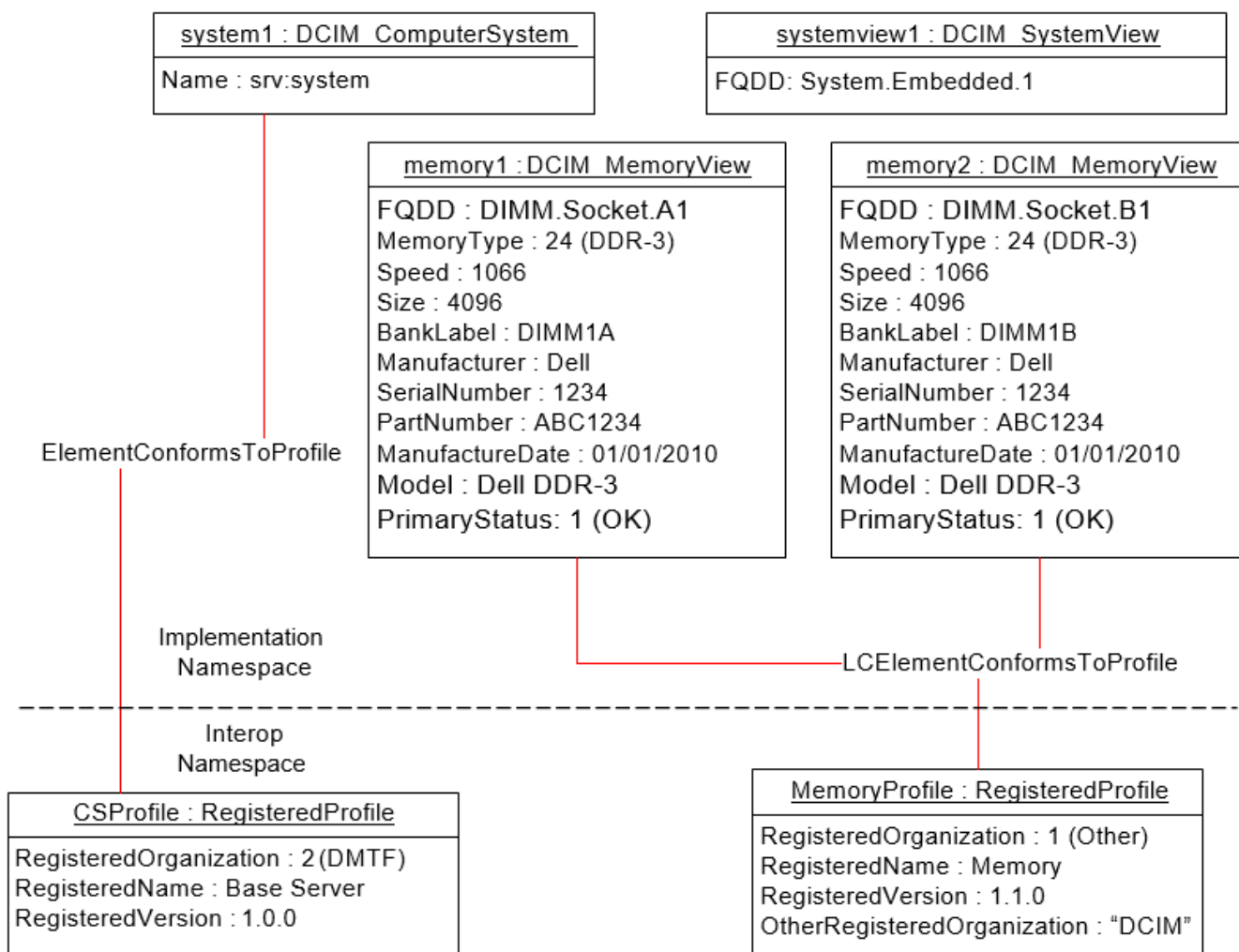


Figure 2. Memory Profile Implementation

7. Implementation Description

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

Table 2. Class Requirements: Memory Profile

Element Name	Requirement	Description
Classes		
DCIM_MemoryView	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. Memory View

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

The DCIM_LCElementConformsToProfile 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.

The instance Resource URI for DCIM_MemoryView instance shall be:

“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MemoryView?

? cimnamespace=root/dcim+InstanceID=<FQDD>”

7.1.2. Operations

The following table details the implemented operations on DCIM_MemoryView.

Table 3. DCIM_MemoryView - 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_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 4. DCIM_MemoryView - 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.
MemoryType	Mandatory	uint16	The property shall represent the type of the physical memory.
Speed	Mandatory	uint32	The property value shall be in MHz and shall represent the maximum operating speed of the physical memory.
CurrentOperatingSpeed	Mandatory	uint32	The property value shall be in MHz and shall represent the current operating speed of the physical memory.
Size	Mandatory	uint32	The property value shall be in MB and shall represent the total size of the physical memory in MegaBytes.
BankLabel	Mandatory	string	The property shall represent a string identifying the physically labeled bank where the memory is located.

Property Name	Requirements	Type	Requirement and description
Manufacturer	Mandatory	string	The property shall represent the name of the organization responsible for producing the memory.
SerialNumber	Mandatory	string	The property shall represent a manufacturer-allocated number used to identify the physical memory.
PartNumber	Mandatory	string	The property shall represent the part number assigned by the organization that is responsible for producing or manufacturing the physical memory.
Model	Mandatory	string	The property shall represent the model of the memory.
ManufactureDate	Mandatory	string	The property shall represent manufacture date of the product.
Rank	Mandatory	uint8	The property shall represent the number of ranks for the memory. <ul style="list-style-type: none"> • 1 – Single Rank • 2 – Double Rank • 4 – Quad Rank • 8 – Octal Rank
PrimaryStatus	Mandatory	uint32	The property shall represent a high level status value, intended to align with Red-Yellow-Green type representation of status for the physical memory,
LastSystemInventoryTime	Mandatory	string	The property shall represent the last time "\"System Inventory Collection On Reboot(CSIOR)\" was performed. The value is represented as yyyyymmddHHMMSS.
LastUpdateTime	Mandatory	string	The property shall represent the last time the data was updated. The value is represented as yyyyymmddHHMMSS

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

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 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 6. DCIM_LCRegisteredProfile

Property Name	Requirement	String	Additional Requirements
InstanceID	Mandatory	String	DCIM:Memory:4.0.0
RegisteredName	Mandatory	String	This property shall have a value of "Memory".
RegisteredVersion	Mandatory	String	This property shall have a value of "4.0.0".
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

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_MemoryView	ENUMERATE, GET	Login	LM_REMOTE_ASSET_INVENTORY
DCIM_LCRegisteredProfile	ENUMERATE, GET	Login	None.
DCIM_LCElementConformsToProfile	ENUMERATE, GET	Login	None.