

# Software Inventory Profile

Document Number:	DCIM1037
Document Type:	Specification
Document Status:	Final
Document Language:	E
Date:	2017-07-08
Version:	4.0.0

This profile is for informational purposes only and may contain typographical errors and technical inaccuracies. The content is provided as-is, without express or implied warranties of any kind. If there is no separate agreement between you and Dell with regard to feedback to Dell on this profile specification, you agree any feedback you provide to Dell regarding this profile specification will be owned and can be freely used by Dell.

Copyright © 2017 Dell Inc. or its subsidiaries. All rights reserved. Dell, EMC, and other trademarks are trademarks of Dell Inc. or its subsidiaries. Other trademarks may be trademarks of their respective owners.

# Contents

1.	Scope	5
2.	Normative References	5
3.	Terms and Definitions	5
3.1.	Conditional	5
3.2.	Mandatory	5
3.3.	May	5
3.4.	Optional	5
3.5.	Can	6
3.6.	Cannot	6
3.7.	Need not	6
3.8.	Referencing profile	6
3.9.	Shall	6
3.10.	Shall not	6
3.11.	Should	6
3.12.	Should not	6
3.13.	FQDD	6
3.14.	Interop Namespace root/interop	6
3.15.	ENUMERATE	6
3.16.	GET	6
4.	Symbols and Abbreviated Terms	7
4.1.	CIM	7
4.2.	iDRAC	7
5.	Synopsis	7
6.	Description	7
7.	Implementation Description	8
7.1.	DCIM_SoftwareIdentity	8
7.1.1.	Resource URIs for WinRM®	8
7.1.2.	Operations	8
7.1.3.	Class Properties	9
7.2.	Software Inventory Profile Registration – DCIM_LCRegistered Profile	10
7.2.1.	Resource URIs for WinRM®	10
7.2.2.	Operations	11
7.2.3.	Properties	11

8.	Methods	11
9.	Use Cases	12
10.	CIM Elements	12
11.	Privilege and License Requirement	12

# 1. Scope

The Dell Software Inventory Profile extends the management capabilities of referencing profiles by adding the capability to represent the software inventory of system. The profile represents:

- Installed firmware such as BIOS, embedded software, and hardware component firmware and their versions.
- Update images located on the Lifecycle Controller
- Ability to provide input values for Dell Software update profile to perform update or rollback operations.

# 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](http://en.community.dell.com/techcenter/extras/m/white_papers/20066173.aspx)
- Dell WSMAN Licenses and Privileges 1.0
- 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>
- Related Managed Object Format (MOF) files:
  - DCIM\_SoftwareIdentity.mof
  - DCIM\_LCElementConformsToProfile.mof
  - DCIM\_LCRegisteredProfile.mof

For more information, see Dell Tech Center MOF Library: <http://www.delltechcenter.com/page/DCIM.Library.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. Can

Used for statements of possibility and capability, whether material, physical, or causal.

### 3.6. Cannot

Used for statements of possibility and capability, whether material, physical, or causal.

### 3.7. Need not

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 “Related 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

### 3.13. FQDD

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

### 3.14. Interop Namespace root/interop

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

Implementation Namespace: root/dcim – Implementation Namespace is where instrumentation instantiates classes relevant to executing core management tasks.

### 3.15. 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

### 3.16. 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

# 5. Synopsis

Profile Name: Software Inventory

Version: 4.0.0

Organization: DCIM

CIM Schema Version: 2.41 Final

Central Class: DCIM\_SoftwareIdentity

Scoping Class: DCIM\_ComputerSystem

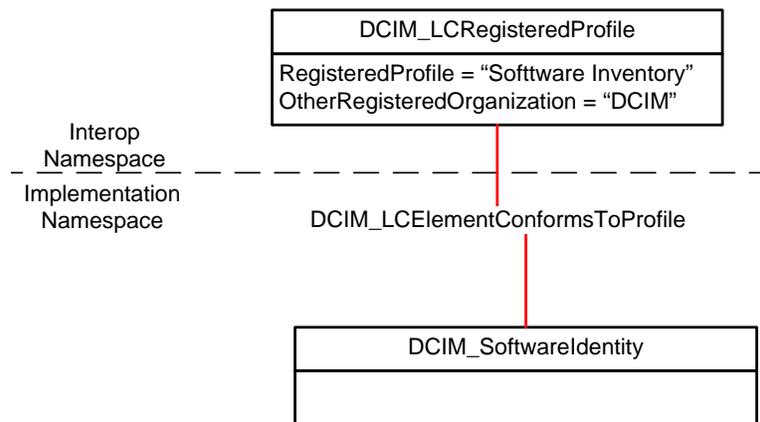
The Software Inventory Profile extends the management capability of the referencing profiles by adding the capability to represent the software inventory for remote enablement platform management activity, hereafter referred to as “inventory”. DCIM\_SoftwareIdentity shall be the Central Class. DCIM\_ComputerSystem shall be the Scoping 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 Software Inventory Profile describes the system firmware and driver inventory and resultant representations. Figure 1 represents the class schema for the Software Inventory Profile. The Software Inventory in a managed system is represented by the instance of DCIM\_SoftwareIdentity class. The Software Inventory profile information is represented with the instance of LC\_RegisteredProfile.



**Figure 1. Software Inventory: Class Diagram**

NOTE: Note that the SATA HDD firmware information will not be surfaced.

# 7. Implementation Description

This section describes the requirements and guidelines for implementing Software Inventory Profile.

**Table 2.** Class Requirements: Software Inventory Profile

Element Name	Requirement	Description
Classes		
DCIM_SoftwareIdentity	Mandatory	The class shall be implemented in the Implementation Namespace: root/dcim. See section 7.1
DCIM_LCElementConformsToProfile	Mandatory	The class shall be implemented in both the Interop Namespace: root/interop and Implementation Namespaces: root/dcim. See section 7.1 and 7.2
DCIM_LCRegisteredProfile	Mandatory	The class shall be implemented in the <i>Interop Namespace: root/interop</i> . See section 7.2
Indications		
None defined in this profile		

## 7.1. DCIM\_SoftwareIdentity

This section describes the implementation for the DCIM\_SoftwareIdentity class. This class shall be instantiated in the Implementation Namespace: root/dcim.

The class shall represent the platform software: firmware and drivers that are present on the platform or can be accessed from the iDRAC.

The DCIM\_LCElementConformsToProfile association’s ManagedElement property shall reference the DCIM\_SoftwareIdentity instance(s).

### 7.1.1. Resource URIs for WinRM®

The class Resource URI is:

“http://schemas.dell.com/wbem/wscim/1/cim-schema/2 / DCIM\_SoftwareIdentity?\_\_cimnamespace=root/dcim”

The key property is InstanceID.

The instance Resource URI for DCIM\_SoftwareIdentity instance is:

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

DCIM\_SoftwareIdentity?\_\_cimnamespace=root/dcim+InstanceID=<InstanceID>

where <InstanceID> is the InstanceID property value.

### 7.1.2. Operations

The following table details the implemented operations on DCIM\_SoftwareIdentity

**Table 3.** DCIM\_SoftwareIdentity - Operations

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

### 7.1.3. Class Properties

The following table lists the implemented properties for DCIM\_SoftwareIdentity instance in a system. The “Requirements” column shall denote whether the property is implemented (for requirement definitions, see section **Error! Reference source not found.**). The “Additional Requirements” column shall denote either possible values for the property, or requirements on the value formulation.

**Table 4.** DCIM\_SoftwareIdentity Properties

Property Name	Requirement	Type	Additional Requirement
InstanceID	Mandatory	String	The property value shall opaquely and uniquely identify an instance of this class within the scope of the instantiating Namespace.
FQDD	Mandatory	String	A string containing the Fully Qualified Device Description that is a user-friendly name for the object.
BuildNumber	Mandatory	Uint16	The property value shall represent the build number of the software.
Classifications	Mandatory	Uint16	The property shall be one of the following: <ul style="list-style-type: none"> <li>• 10 (Firmware)</li> <li>• 11 (BIOS)</li> </ul>
ComponentID	Optional	String	The property value shall be populated for a software for the non-PCI system components. The property value together with the ComponentType property value shall uniquely identify the non-PCI system component that the software is for.
ComponentType	Mandatory	String	The property shall have one of the following values: <ul style="list-style-type: none"> <li>• FRMW</li> <li>• BIOS</li> <li>• APAC</li> </ul>
ElementName	Mandatory	String	The property value shall represent the full descriptive name of the software.
IdentityInfoType	Mandatory	String	The property shall have one of the following values <ul style="list-style-type: none"> <li>• “OrgID:ComponentType:ComponentID” for non-PCI device software</li> <li>• “OrgID:ComponentType:DeviceID:SubDeviceID:VendorID:SubVendorID” for PCI device software.</li> </ul>
IdentityInfoValue	Mandatory	String	The property value shall represent an indexed array of fixed-form strings that provide the software descriptor in the form identified in the corresponding index of the IdentityInfoValue array.
InstallationDate	Mandatory	String	The property value shall represent the Installation Date in string format. NOTE: For CPLD firmware on modular servers, the property shall be always set to Jan 1, 2000 regardless of the true update date.
IsEntity	Mandatory	Boolean	The property shall have the value TRUE.
MajorVersion	Mandatory	Uint16	The property value shall represent the major number component of the software version.
MinorVersion	Mandatory	Uint16	The property value shall represent the minor number component of the software version.

Property Name	Requirement	Type	Additional Requirement
RevisionNumber	Mandatory	Uint16	The property value shall represent the revision number component of the software version.
RevisionString	Mandatory	String	The property value shall represent the Revision Number in string format
Status	Mandatory	String	The property shall be one of the following values: <ul style="list-style-type: none"> <li>• Installed</li> <li>• Available</li> </ul>
VersionString	Mandatory	String	The property value shall represent the complete software version.
impactsTPMmeasurements	Mandatory	Boolean	The property value shall represent whether the software impacts the Trusted Platform Module (TPM measurement). The property shall denote whether the software update impacts the TPM measurement and causes a lock-up if not performed with the TPM's knowledge.
VendorID	Optional	String	The property shall be populated for the PCI Device software. The property shall represent the VendorID from the PCI device.
SubVendorID	Optional	String	The property shall be populated for the PCI Device software. The property shall represent the SubVendorID from the PCI device.
DeviceID	Optional	String	The property shall be populated for the PCI Device software. The property shall represent the DeviceID from the PCI device.
SubDeviceID	Optional	String	The property shall be populated for the PCI Device software. The property shall represent the SubDeviceID from the PCI device.
Updateable	Mandatory	Boolean	The property shall represent whether the software can be updated through a WS-Management interface.

## 7.2. Software Inventory Profile Registration – DCIM\_LCRegistered Profile

This section describes the implementation for the DCIM\_LCRegisteredProfile class.

This class shall be instantiated in the Interop Namespace: root/interop.

The DCIM\_LCElementConformsToProfile association(s)' ConformantStandard property 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:SoftwareInventory: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 lists the implemented properties for DCIM\_LCRegisteredProfile instance representing Software Inventory Profile implementation. The “Requirements” column shall denote whether the property is implemented (for requirement definitions, see section **Error! Reference source not found.**). The “Additional Requirements” column shall denote either possible values for the property, or requirements on the value formulation.

**Table 6.** Class: DCIM\_LCRegisteredProfile

Properties	Requirement	Type	Additional Requirements
InstanceID	Mandatory	string	This property shall have a value of “DCIM:SoftwareInventory:4.0.0”
RegisteredName	Mandatory	string	This property shall have a value “Software Inventory”.
RegisteredVersion	Mandatory	string	This property shall have a value “4.0.0” .
RegisteredOrganization	Mandatory	uint16	This property shall have a value 1 (Other).
OtherRegisteredOrganization	Mandatory	string	This property shall match “DCIM”
AdvertiseTypes[]	Mandatory	uint16	This property array shall have values: [1(Other), 1(Other)]
AdvertiseTypeDescriptions[]	Mandatory	string	This property array shall have values [“WS-Identify” and “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"> <li>• “LICENSED”</li> <li>• “NOT_LICENSED”</li> </ul> If no license is required for the profile, the property shall have value NULL.

## 8. Methods

No extrinsic methods are currently defined.

## 9. Use Cases

See Lifecycle Controller (LC) Integration Best Practices Guide.

## 10. CIM Elements

No further requirements are defined.

## 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

<b>Class and Method</b>	<b>Operation</b>	<b>User Privilege Required</b>	<b>License Required</b>
DCIM_SoftwareIdentity	ENUMERATE, GET	Login	None.
DCIM_LCRegisteredProfile	ENUMERATE, GET	Login	None.
DCIM_LCElementConformsToProfile	ENUMERATE, GET	Login	None.