Software Inventory Profile

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Software Inventory Profile

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
- 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:
    - o DCIM_SoftwareIdentity.mof
    - o DCIM_LCElementConformsToProfile.mof
    - o 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.

3.15

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

3.16

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

3.17

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: 1.1.0

Organization: DCIM

CIM Schema Version: 2.26 Experimental

Central Class: DCIM_SoftwareIdentity

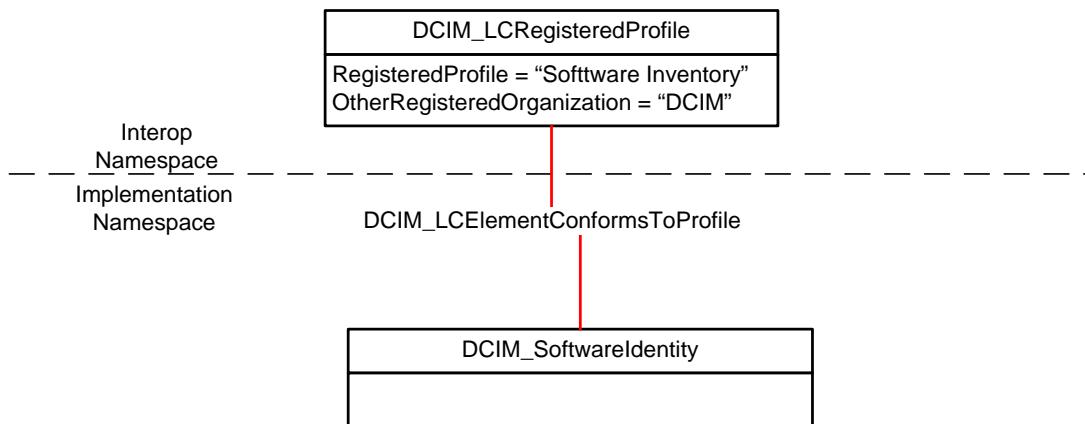**Scoping Class:** DCIM_ComputerSystem

181 The Software Inventory Profile extends the management capability of the referencing profiles by adding
182 the capability to represent the software inventory for remote enablement platform management activity,
183 hereafter referred to as "inventory". DCIM_SoftwareIdentity shall be the Central Class.
184 DCIM_ComputerSystem shall be the Scoping Class. Table 1 identifies profiles that are related to this
185 profile.

186 **Table 1 – Related Profiles**

Profile Name	Organization	Version	Relationship
Profile Registration	DCIM	1.0	Reference

187 6   Description

188 The Dell Software Inventory Profile describes the system firmware and driver inventory and resultant
189 representations. Figure 1 represents the class schema for the Software Inventory Profile. The Software
190 Inventory in a managed system is represented by the instance of DCIM_SoftwareIdentity class. The
191 Software Inventory profile information is represented with the instance of LC_RegisteredProfile.

192

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

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

195

196 7 Implementation Description

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

198 **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 Namspace: root/interop* and *Implementation Namespaces: root/dcim.* See section 7.1 and 7.2
DCIM_LCRegisteredProfile	Mandatory	The class shall be implemented in the *Interop Namspace: root/interop.* See section 7.2
Indications		
None defined in this profile		

199

200 7.1 DCIM_SoftwareIdentity

201 This section describes the implementation for the DCIM_SoftwareIdentity class. This class shall be
202 instantiated in the Implementation Namespace: root/dcim.

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

205 The DCIM_LCElementConformsToProfile association's ManagedElement property shall reference the
206 DCIM_SoftwareIdentity instance(s).

207 7.1.1 Resource URIs for WinRM®

208 The class Resource URI is:

209 *"http://schemas.dell.com/wbem/wscim/1/cim-schema/2 /*
210 *DCIM_SoftwareIdentity?__cimnamespace=root/dcim"*

211 The key property is InstanceID.

212 The instance Resource URI for DCIM_SoftwareIdentity instance is:

213 *http://schemas.dell.com/wbem/wscim/1/cim-schema/2/*
214 *DCIM_SoftwareIdentity?__cimnamespace=root/dcim+InstanceID=<InstanceID>*

215 *where <InstanceID> is the InstanceID property value.*

216 7.1.2 Operations

217 The following table details the implemented operations on DCIM_SoftwareIdentity

218 **Table 3 – DCIM_SoftwareIdentity - Operations**

Operation Name	Requirements	Required Input

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

219

7.1.3 Class Properties

220

221 The following table lists the implemented properties for DCIM_SoftwareIdentity instance in a system. The
222 "Requirements" column shall denote whether the property is implemented (for requirement definitions,
223 see section 3). The "Additional Requirements" column shall denote either possible values for the property,
224 or requirements on the value formulation.

225   **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: • 10 (Firmware) • 11(BIOS)
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: • FRMW • BIOS • APAC
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 • "OrgID:ComponentType:ComponentID" for non-PCI device software • "OrgID:ComponentType:DeviceID:SubDeviceID:VendorID:SubVendorID" for PCI device software.
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

Property Name	Requirement	Type	Additional Requirement
			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.
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: • Installed • Available
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.

226

227 7.2 Software Inventory Profile Registration – DCIM_LCRegistered Profile

228 This section describes the implementation for the DCIM_LCRegisteredProfile class.

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

230 The DCIM_LCElementConformsToProfile association(s)' ConformantStandard property shall reference
231 the DCIM_LCRegisteredProfile instance.

7.2.1 Resource URIs for WinRM®

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

235 The key property shall be the InstanceID property.

236 The instance Resource URI shall be: "http://schemas.dell.com/wbem/wscim/1/cim-
237 schema/2/DCIM_LCRegisteredProfile?__cimnamespace=root/interop+InstanceID=DCIM:SoftwareInventory:
238 1.0.0"

7.2.2 Operations

240 The following table details the implemented operations on DCIM_LCRegisteredProfile.

241 **Table 5 – DCIM_LCRegisteredProfile - Operations**

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

242

7.2.3 Properties

244 The following table lists the implemented properties for DCIM_LCRegisteredProfile instance representing
245 Software Inventory Profile implementation. The "Requirements" column shall denote whether the property
246 is implemented (for requirement definitions, see section 3). The "Additional Requirements" column shall
247 denote either possible values for the property, or requirements on the value formulation.

248 **Table 6 – Class: DCIM_LCRegisteredProfile**

Properties	Requirement	Type	Additional Requirements
InstanceID	Mandatory	string	This property shall have a value of "DCIM:SoftwareInventory:1.0.0"
RegisteredName	Mandatory	string	This property shall have a value "Software Inventory".
RegisteredVersion	Mandatory	string	This property shall have a value "1.1.0".
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 Namspace "]
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.

Properties	Requirement	Type	Additional Requirements
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

250   No extrinsic methods are currently defined.

9 Use Cases

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

10 CIM Elements

254   No further requirements are defined.

11 Privilege and License Requirement

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

259   **Table 7 – Privilege and License Requirements**

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

260