Dell™ Software Inventory Profile

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Foreword

The Dell Software Inventory Profile (DCIM 1037) was prepared by Dell Product Group Engineering. This Common Information Model (CIM) profile integrates into other CIM profiles published by Dell and the DMTF.

Introduction

The information in this specification and referenced specifications should be sufficient for a provider or consumer of this data to identify unambiguously the classes, properties, and values that shall be instantiated and manipulated to represent and software inventory of a computer system that are modeled using the DMTF CIM core and extended model definitions.

The target audience for this specification is implementers who are writing CIM-based providers, or consumers of management interfaces that represent the component and capabilities described in this document.

Dell 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. This profile is intended to align with the DMTF Software inventory profile. The inventory features are:

- Represent installed firmware of BIOS, embedded software and hardware component firmware.
- Represent update images located on the Lifecycle Controller that are locally available to be installed
- Ability to provide input values for Dell Software update profile to perform update or rollback operations.
- Ability to classify firmware and BIOS versions in system.

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.

2.1 Approved References

DMTF DSP1033, *Profile Registration Profile 1.0.0*

DMTF DSP0200, *CIM Operations over HTTP 1.2.0*

DMTF DSP0004, *CIM Infrastructure Specification 2.3.0*

DMTF DSP1000, *Management Profile Specification Template*

DMTF DSP1001, *Management Profile Specification Usage Guide*

2.2 Other References

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

3 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

can
used for statements of possibility and capability, whether material, physical, or causal

cannot
used for statements of possibility and capability, whether material, physical, or causal

conditional
indicates requirements to be followed strictly in order to conform to the document when the specified conditions are met

mandatory
indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted

may
indicates a course of action permissible within the limits of the document

need not
indicates a course of action permissible within the limits of the document

optional
indicates a course of action permissible within the limits of the document

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

shall
indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted

shall not
indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted

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

should not
indicates that a certain possibility or course of action is deprecated but not prohibited

4   Symbols and Abbreviated Terms

CIM
Common Information Model

5   Synopsis

Profile Name: Software Inventory

Version: 1.0.0

Organization: DCIM

CIM Schema Version: 2.19.1

Central Class: DCIM_SoftwareIdentity

Scoping Class: CIM_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. CIM_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 Profile	DMTF	1.0.0	Mandatory

6   Description

The Dell Software Inventory Profile describes the system firmware 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.
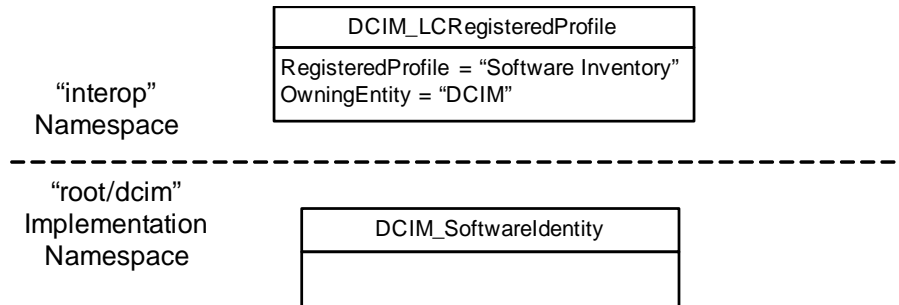

Figure 1 Software Inventory: Class Diagram

7   Implementation Requirements

Requirements and guidelines for propagating and formulating certain properties of the classes are discussed in this section. Properties are listed in section 10.

7.1   DCIM_SoftwareIdentity

The service shall instantiate one instance of DCIM_SoftwareIdentity for each firmware and embedded software component that is to appear in the system software inventory. The instances are instantiated in the "root/dcim" implementation namespace.

7.2   DCI_LCRegisteredProfile

One instance of DCIM_LCRegisteredProfile shall be instantiated in the interop namespace.

8   Methods

This section details the requirements for supporting intrinsic operations and extrinsic methods for the CIM elements defined by this profile.

8.1   Intrinsic Operations

The following table lists the intrinsic CIM operations that are supported for the DCIM_SoftwareIdentity instances.

Operation	Requirement	Description
Enumerate Instances	Mandatory	Enumerate the instances of DCIM_ SoftwareIdentity
Get Instance	Mandatory	For getting the properties of a single instance of DCIM_SoftwareIdentity

Table 2 – CIM Operations: Software Inventory Profile

9   Use Cases

This section contains object diagrams and use cases for the Software Inventory Profile

9.1 Instance Diagram
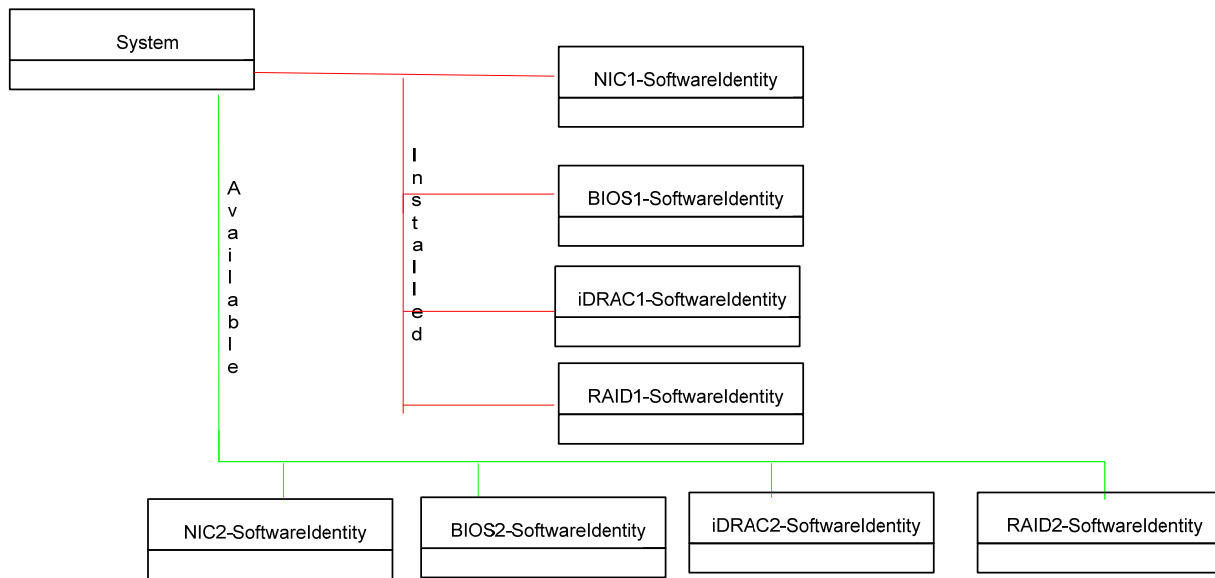
Figure 2 Software Inventory: Instance Diagram

9.2 Use Case 1 – Discover the Software Inventory Profile

1. Enumerate (namespace='root/interop', classname="CIM_RegisteredProfile")
2. Filter the returned enumeration using a property filter (RegisteredName="Software Inventory")
3. Result shall contain one instance of CIM_RegisteredProfile containing property version="1.0.0"

9.3 Use Case 2 – Collect Installed BIOS Firmware Inventory

1. Enumerate (namespace='root/dcim', classname=DCIM_SoftwareIdentity)
2. Pick the Software Identity instance with ElementName="BIOS" and Status="Installed"

9.4 Use Case 3 – Collect Available iDRAC6 Firmware Inventory

1. Enumerate (namespace='root/dcim', classname=DCIM_SoftwareIdentity)
2. Pick the Software Identity instance with ElementName="iDrac6" and Status="Available".

10 CIM Elements

The following table shows the instances of CIM Elements for this profile. Instances of the CIM Elements shall be implemented as described in the table. Section 7 "Implementation Requirements" may impose additional requirements on these elements.

Table 18 – CIM Elements: Software Inventory Profile

Element Name	Requirement	Description
Classes		
DCIM_SoftwareIdentity	Mandatory	See subclause 10.1
DCIM_LCRegisteredProfile	Mandatory	See subclause 10.2
Indications		
None defined in this profile		

10.1   DCIM_SoftwareIdentity

This class represents individual BIOS, component firmware, and embedded software images. The images are either installed in the device or location required for use or are available in the Lifecycle Controller for installation.

Table 3 – Class: DCIM_SoftwareIdentity

Properties	Requirement	Description
InstanceID	Mandatory	**DCIM:<STATUS>:<DEVICETYPE>** **: ComponentID:Version** STATUS: INSTALLED or AVAILABLE. DEVICETYPE : PCI or NONPCI devices.
ComponentType	Mandatory	Firmware or BIOS
ComponentID	Mandatory	Related PCI component firmware Dell Update Package ComponentID
ElementName	Mandatory	Device Name (for example, iDRAC6 or BIOS)
VersionString	Mandatory	Firmware version as a string.
MajorVersion	Mandatory	Component major version value; value obtained from version string.
MinorVersion	Mandatory	Component minor version value; value obtained from version string.
BuildNumber	Mandatory	Firmware BuildNumber; value obtained from version string.
Revision Number	Mandatory	Firmware revision number; value obtained from version string.
Revision String	Mandatory	Firmware revision string value; value obtained from version string. Some storage controller cards have the revision value in string format.
ImpactsTPMmeasurements	Mandatory	TRUE or FALSE
DeviceID	Mandatory	Related PCI component DeviceID value
SubDeviceID	Mandatory	Related PCI component SubDeviceID value

VendorID	Mandatory	Related PCI component VendorID value
SubVendorID	Mandatory	Related PCI component SubVendorID value
Status	Mandatory	Status value **Installed** for installed components and **Available** for available components.
InstallationDate	Mandatory	Firmware installation date in UTC format.
IdentityInfoType	Mandatory	CIM_SoftwareFamily.
IdentityInfoType	Mandatory	DCIM:Firmware.ComponentID(PCI devices) DCIM: Firmware.DeviceID: SubDeviceID: VendorID: SubVendorID (NONPCI- devices).
Classifications	Mandatory	Value 10 for Firmware & 11 for BIOS.

10.2   DCIM_LCRegisteredProfile

This class is used to advertise the implementation of the Dell Software Inventory Profile.

Table 4 – Class: DCIM_LCRegisteredProfile

Properties	Requirement	Description
RegisteredName	Mandatory	This property shall have a value of "Software Inventory".
RegisteredVersion	Mandatory	This property shall have a value of "1.0.0"".
RegisteredOrganization	Mandatory	This property shall have a value of 1 (Other).
OtherRegisteredOrganization	Mandatory	This property shall match "DCIM"

ANNEX A
(informative)

Dell Extension MOF

```
// ===================================================================
// DCIM Software Inventory classes and methods
// ===================================================================
  // ===================================================================
// DCIM_SoftwareIdentity
// ===================================================================
   [ Provider("cmpi:dcimsoftinv") ,Version ( "1.0.0" ),Description (
      "DCIM_SoftwareIdentity is a Dell extension profile of "
      "CIM_SoftwareIdentity Class.Properties InstanceID,VersionString "
      ",Majorversion,MinorVersion,Revisionnumber,BuildNumber are "
      "utilized from Parent Class CIM_SoftwareIdentity. "
      "InstanceID formatted as 'DCIM:<STATUS>:<COMPIID>:<VERSIONSTRING>'. "
      "<Status> Value depends on Installed firmware or Available "
      "firmware in component.<COMPID> value depends on PCI or NON PCI "
      "device ComponentID.<VERSIONSTRING> value depends on version of "
        "firmware.")]
   class DCIM_SoftwareIdentity : CIM_SoftwareIdentity{
       [Description (
         "This property represents the installed date of the firmware "
         "in  UTC datetime format.")]
         string InstallationDate;
       [Description (
         "This property represents the Revision Number of firmware "
         "in string format.")]
         string RevisionString;
       [Description (
         "This property represents the ComponentID of NONPCI "
          "firmware in string format.")]
         string ComponentID;
       [Description (
         "This property represents the  VendorID Of PCI firmware "
         "in string format.")]
         string VendorID;
       [Description (
         "This property represents the SubVendorID Of PCI firmware "
         "in string format." )]
         string SubVendorID;
       [Description (
         "This property represents the Device ID Of PCI firmware "
         "in string format.")]
        string DeviceID;
       [Description (
         "This property represents the SubDevice ID Of PCI firmware "
         "in string format.")]
        string SubDeviceID;
       [Description (
         "This property represents the ComponentType of firmware"
         "in string format.")]
        string ComponentType;
       [Description (
```

```
          "This property represents the Status of firmware "
          "in string format.If the status Value is AVAILABLE "
          "then firmware is available locally in persistent storage.  "
          "If the status value is INSTALLED then firmware is currently "
          "installed in component.")]
       string Status;
    [Description (
     "Boolean Variable  that represents the impactsTPMmeasurements "
      "in string Boolean format.")]
      Boolean impactsTPMmeasurements = FALSE;
};
```