1 # Software Update

2 # Profile

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23 **Document Number: DCIM 1038**
24 **Document Type: Specification**
Document Status: Final
25 **Document Language: E**
26 **Date: 2012-03-08**

27 **Version:** 1.0.0

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CONTENTS

Figures

Tables

Software Update Profile

1 Scope

The Software Update Profile extends the management capabilities of referencing profiles by adding the capability to update platform firmware or software.

2 Normative References

Refer to the following documents for more information.

NOTE: For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applie

- 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
- Dell Tech Center MOF Library:

  http://www.delltechcenter.com/page/DCIM.Library.MOF

- Related Managed Object Format (MOF) files:
  - o DCIM_SoftwareInstallationService.mof
  - o DCIM_LCElementConformsToProfile.mof
  - o DCIM_LCRegisteredProfile.mof

3 Terms and Definitions

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

3.1
can - Used for statements of possibility and capability, whether material, physical, or causal.

3.2
cannot - Used for statements of possibility and capability, whether material, physical, or causal.

3.3
conditional - Indicates requirements to be followed strictly in order to conform to the document when the specified conditions are met.

3.4
mandatory - Indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted.

3.5
may - Indicates a course of action permissible within the limits of the document.

3.6
need not - Indicates a course of action permissible within the limits of the document.

3.7
optional - 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
Interop Namespace: root/interop

Interop Namespace: root/interop is where instrumentation instantiates classes to advertise its capabilities for client discovery.

165 **3.14**

166 **Implementation Namespace: root/dcim**

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

169 **3.15**

170 `ENUMERATE`

171 Refers to WS-MAN `ENUMERATE` operation as described in Section 8.2 of DSP0226_V1.1 and Section
172 9.1 of DSP0227_V1.0

173 **3.16**

174 `GET`

175 Refers to WS-MAN `GET` operation as defined in Section 7.3 of DSP00226_V1.1 and Section 7.1 of
176 DSP0227_V1.0

177 **4 Symbols and Abbreviated Terms**

178 **4.1**
179 **CIM -** Common Information Model

180 **4.2**
181 **DCIM -** Dell Common Information Model

182 **5 Synopsis**

183 **Profile Name: Software Update**

184 **Version:** 1.0.0

185 **Organization:** DCIM

186 **CIM Schema Version:** 2.26 Experimental

187 **Central Class:** DCIM_SoftwareInstallationService

188 **Scoping Class:** DCIM_ComputerSystem

189 The Software Update Profile extends the management capability of the referencing profiles by adding the
190 capability to update the platform's firmware or software.

191 DCIM_InstallationService shall be the Central Class. CIM_ComputerSystem shall be the Scoping Class.
192 Table 1 identifies profiles that are related to this profile.

193   **Table 1 – Related Profiles**

Profile Name	Organization	Version	Relationship
Profile Registration	DCIM	1.0	Reference
Job Control Profile	Dell	1.0.0	Mandatory

194 6 Description

195 The Software Update Profile describes the management interface for driver/firmware updates.

196 Figure 1 represents the class schema for the Software Update Profile. The software update in a managed
197 system is represented by the instance of DCIM_SoftwareInstallationService class. The software update
198 profile information is represented with the instance of LC_RegisteredProfile. The result of a software
199 update represented as the instance of DCIM_SoftUpdateConcreteJob.

200

```
                    ┌─────────────────────────────────────────┐
                    │     DCIM_LCRegisteredProfile              │
                    ├─────────────────────────────────────────┤
                    │  RegisteredProfile = "Software Update"    │
                    │  OtherRegisteredOrganization = "DCIM"     │
        Interop     └─────────────────────────────────────────┘
       Namespace  ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─
     Implementation
       Namespace        DCIM_LCElementConformsToProfile

                    ┌─────────────────────────────────────────┐
                    │     DCIM_SoftwareInstallationService      │
                    ├─────────────────────────────────────────┤
                    │                                           │
                    └─────────────────────────────────────────┘
```

201
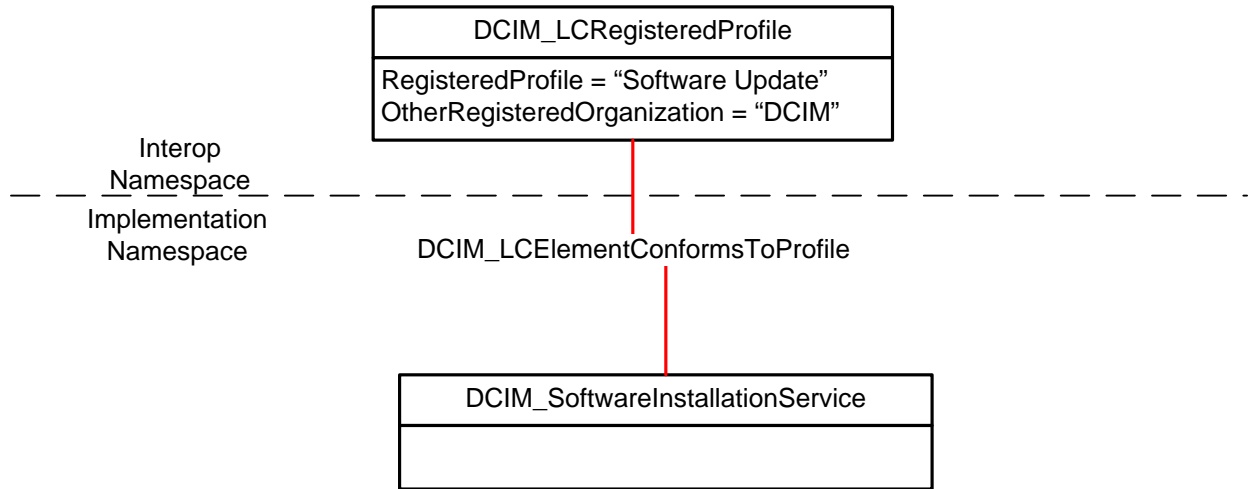
202   **Figure 1 – Software Update Profile: Class Diagram**

203 7 Implementation Description

204 This section describes the implementation of Dell Software Update Profile.

205   **Table 2 – CIM Elements: Software Update Profile**

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

206

7.1   DCIM_SoftwareInstallationService

208   This section describes the implementation for the DCIM_SoftwareInstallationService.

209   This class is instantiated in the Implementation Namespace: root/dcim.

210   The DCIM_LCElementConformsToProfile association's ManagedElement property shall references the
211   DCIM_SoftwareInstallationService instance(s).

7.1.1   Resource URIs for WinRM®

213   The class Resource URI shall be:

214   http://schemas.dell.com/wbem/wscim/1/cim-schema/2 / DCIM_SoftwareInstallationService
215   ?__cimnamespace=root/dcim

216   The key properties are SystemCreationClassName, CreationClassName, SystemName, and Name.

217   The instance Resource URI for DCIM_SoftwareInstallationService instance shall be:

218   http://schemas.dell.com/wbem/wscim/1/cim-schema/2/
219   DCIM_SoftwareInstallationService?__cimnamespace=root/dcim+SystemCreationClassName=DCIM_Co
220   mputerSystem+SystemName= IDRAC:ID +CreationClassName= DCIM_SoftwareInstallationService
221   +Name= SoftwareUpdate

7.1.2   Operations

223   The following table lists the operations implemented on DCIM_SoftwareInstallationService.

224   **Table 3 – DCIM_SoftwareInstallationService.- Operations**

Operation Name	Requirements	Required Input
Get	Mandatory	Instance URI
Enumerate	Mandatory	Class URI
Invoke	Mandatory	Instance URI and Method parameters

225

7.1.3   Class Properties

227   The following table lists the implemented properties for DCIM_SoftwareInstallationService instance in a
228   system. The "Requirements" column shall denote whether the property is implemented (for requirement
229   definitions, see section 0). The "Additional Requirements" column shall denote either possible values for
230   the property, or requirements on the value formulation.

231   **Table 4 – DCIM_SoftwareInstallationService- Properties**

Property Name	Type	Requirement	Additional Requirement
CreationClassName	String	Mandatory	The property value shall be "DCIM_SoftwareInstallationService".
Name	String	Mandatory	The property value shall be "SoftwareUpdate".
ElementName	String	Mandatory	The property value shall be "Software Installation Service".
SystemCreationClassName	String	Mandatory	The property value shall be "DCIM_ComputerSystem".
SystemName	String	Mandatory	The property value shall be "IDRAC:ID".

7.2 Software Update Profile   Registration – DCIM_LCRegisteredProfile

233 This section describes the implementation for the DCIM_LCRegisteredProfile class.

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

235 The DCIM_LCElementConformsToProfile association(s)' ConformantStandard property shall reference
236 the DCIM_LCRegisteredProfile instance.

7.2.1 Resource URIs for WinRM®

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

240 The key property shall be the InstanceID property.

241 The instance Resource URI shall be: "http://schemas.dell.com/wbem/wscim/1/cim-
242 schema/2/DCIM_LCRegisteredProfile?__cimnamespace=root/interop+InstanceID=DCIM:SoftwareUpdate
243 :1.0.0"

7.2.2 Operations

245 The following table lists the operations implemented on DCIM_LCRegisteredProfile.

246 **Table 5 – DCIM_LCRegisteredProfile - Operations**

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

247

7.2.3 Class Properties

249 The following table lists the implemented properties for DCIM_LCRegisteredProfile instance representing
250 Software Update Profile implementation. The "Requirements" column shall denote whether the property is
251 implemented (for requirement definitions, see section 0). The "Additional Requirements" column shall
252 denote either possible values for the property, or requirements on the value formulation.

253 **Table 6 – Class: DCIM_LCRegisteredProfile**

Properties	Type	Requirement	Additional Requirements
InstanceID	string	Mandatory	This property shall have a value of "DCIM:SoftwareUpdate:1.0.0"
RegisteredName	string	Mandatory	This property shall have a value of "Software Update".
RegisteredVersion	string	Mandatory	This property shall have a value of "1.0.0".
RegisteredOrganization	uint16	Mandatory	This property shall have a value of 1 (Other).
OtherRegisteredOrganization	string	Mandatory	This property shall match "DCIM".
AdvertiseTypes[]	uint16	Mandatory	This property array shall have values: "1(Other)" and "1(Other)".
AdvertiseTypeDescriptions[]	string	Mandatory	This property array shall have values "WS-Identify" and "Interop Namespace".

Properties	Type	Requirement	Additional Requirements
ProfileRequireLicense[]	string	Mandatory	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[]	string	Mandatory	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.

254

255 8 Methods

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

258 8.1 DCIM_SoftwareInstallationService.InstallFromURI ()

259 InstallFromURI method is used to generate the JobID for the update operation.

260 **Table 7 – DCIM_SoftwareInstallationService.InstallFromURI () Method: Return Values**

Value	Description
2	Error
4096[1]	Job started[1]

261 **Table 8 – SoftwareInstallationService.InstallFromURI () Method: Parameters**

Qualifiers	Name	Type	Description/Values
IN	URI	String	URI location of firmware to update a component.
IN	Target	CIM_SoftwareIdentity REF	Reference to CIM_SoftwareIdentity. InstanceID value of this instance maps with firmware to be updated.
OUT	Message	string	Job Completed Error Message in English.
OUT	MessageID	string	Error Message ID may be used to look-up in the Dell Message registry files. For more information, see Error Message Registry.
OUT	Message Arguments[]	string	Substitution variables for dynamic error message.
OUT	Job[1]	CIM_ConcreteJob REF	Reference to concrete job. InstanceID value of this instance contains the generated JobID for the update operation.[1]

262 NOTE: 1 – If return code is 4096 (Job Created), the newly created job does not execute if the LC core
263 services are not running (DCIM_LCEnumeration with AttributeName equal to "LifecycleControllerState"
264 has the CurrentValue property equal to "Disabled").

265 **Table 9 – SoftwareInstallationService.InstallFromURI () Method: Standard Messages**

MessageID (OUT parameter)	Message	MessageArguments[]
SUP001	Insufficient Method Parameters	NA
SUP002	Job Creation Failure	NA
SUP003	Either URI or Target or both are missing OR exceeding in length	NA
SUP004	Invalid Namespace	NA
SUP019	Lifecycle Controller is not enabled.	NA
SUP024	Invalid InstanceID	NA
SUP007	Component is not updateable	NA
SUP006	Could not create job file	NA

266

267 8.2   DCIM_SoftwareInstallationService.InstallFromSoftwareIdentity ()

268 The successful execution of this method shall create a job to install software that is referenced by the
269 Target parameter.

270 **Table 10 – DCIM_SoftwareInstallationService.InstallFromSoftwareIdentity () Method: Return**
271 **Values**

Value	Description
2	Error
4096[1]	Job started[1]

272 **Table 11 – DCIM_SoftwareInstallationService.InstallFromSoftwareIdentity () Method: Parameters**

Qualifiers	Name	Type	Description/Values
IN	Target	CIM_SoftwareIdentity REF	Reference to CIM_SoftwareIdentity. InstanceID value of this instance maps with firmware to be updated.
OUT	Message	string	Job Completed Error Message in English.
OUT	MessageID	string	Error Message ID may be used to look-up in the Dell Message registry files. For more information, see Error Message Registry.
OUT	Message Arguments[]	string	Substitution variables for dynamic error message.
OUT	Job[1]	CIM_ConcreteJob REF	Reference to concrete job. InstanceID value of this instance contains generated JobID for update operation.[1]

273 NOTE: 1 – If return code is 4096 (Job Created), the newly created job does not execute if the LC core services are
274 not running (DCIM_LCEnumeration with AttributeName equal to "LifecycleControllerState" has the CurrentValue
275 property equal to "Disabled").

276 **Table 12 – DCIM_SoftwareInstallationService.InstallFromSoftwareIdentity () Method: Standard**
277 **Messages**

MessageID (OUT parameter)	Message	MessageArguments[]
SUP001	Insufficient Method Parameters	NA
SUP002	Job Creation Failure	NA
SUP003	Either URI or Target or both are missing OR exceeding in length	NA
SUP004	Invalid Namespace	NA
SUP019	Lifecycle Controller is not enabled.	NA
SUP024	Invalid InstanceID	NA
SUP007	Component is not updateable	NA
SUP006	Could not create job file	NA

278
279

280 8.3   DCIM_SoftwareInstallationService.CreateRebootJob ()

281   This method is used to generate the reboot job to apply the updates.

282   **Table 13 – DCIM_SoftwareInstallationService.CreateRebootJob ()Method: Return Values**

Value	Description
2	Error
4096[1]	Job started[1]

283   **Table 14 – DCIM_SoftwareInstallationService.CreateRebootJob ()Method: Parameters**

Qualifiers	Name	Type	Description/Values
IN	RebootStartTime	string	Scheduled start time of Reboot
IN	RebootJobType	string	Input parameter to represent the type of reboot RebootJobType shall be one of the following values: • "PowerCycle", • "Graceful Reboot without forced shutdown", • "Graceful Reboot with forced shutdown"
OUT	MessageID	string	Error Message ID may be used to look-up in the Dell Message registry files. For more information, see Error Message Registry.
OUT	Message Arguments[]	string	Substitution variables for dynamic error message.
OUT	Job[1]	CIM_ConcreteJob REF	Reference to concrete job. InstanceID value of this instance contains generated JobID for update operation[1]

284   NOTE: 1 – If return code is 4096 (Job Created), the newly created job will not execute if the LC core services are not
285   running (DCIM_LCEnumeration with AttributeName equal to "LifecycleControllerState" has the CurrentValue property
286   equal to "Disabled").

287   **Table 15 – DCIM_SoftwareInstallationService.CreateRebootJob () Method:: Standard Messages**

MessageID (OUT parameter)	Message	MessageArguments[]
SUP001	Insufficient Method Parameters	NA
SUP002	Job Creation Failure	NA
SUP004	Invalid Namespace	NA
SUP005	Value Invalid reboot value.	NA
SUP019	Lifecycle Controller is not enabled.	NA

288   9   Use Cases

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

10   CIM Elements

291   No other requirements are defined.

11   Privilege and License Requirement

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

296   **Table 16 – Privilege and License Requirements**

Class and Method	Operation	User Privilege Required	License Required
DCIM_SoftwareInstallationService	ENUMERATE, GET	Login	None.
DCIM_SoftwareInstallationService. InstallFromURI()	INVOKE	Login, Configure	LM_REMOTE_FIRWARE_UP DATE
DCIM_SoftwareInstallationService. InstallFromSoftwareIdentity()	INVOKE	Login, Configure	LM_REMOTE_FIRWARE_UP DATE
DCIM_SoftwareInstallationService. CreateRebootJob()	INVOKE	Login, Configure	LM_REMOTE_FIRWARE_UP DATE
DCIM_LCRegisteredProfile	ENUMERATE, GET	Login	None.
DCIM_LCElementConformsToProfile	ENUMERATE, GET	Login	None.

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