

Fiber Channel Profile

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Fiber Channel Profile

142 1 Scope

143 The Fiber Channel Profile extends the management capabilities of referencing profiles by adding the
144 capability to represent the configuration of fiber channel host bus adapters (FC HBA). The FC HBAs are
145 modeled as views and attributes where there is a view for each individual controller and multiple attributes
146 that allow FC HBA configuration.

147 2 Normative References

148 Refer to the following documents for more information.

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

- 151 • DMTF DSP1033, *Profile Registration Profile 1.0.0*
- 152 • DMTF DSP1061, *Management Profile 1.0.0*
- 153 • DMTF DSP0200, *CIM Operations over HTTP 1.2.0*
- 154 • DMTF DSP0004, *CIM Infrastructure Specification 2.3.0*
- 155 • DMTF DSP1000, *Management Profile Specification Template*
- 156 • DMTF DSP1001, *Management Profile Specification Usage Guide*
- 157 • DMTF DSP0226, *Web Services for Management (WS-Management) Specification 1.1.0*
- 158 • DMTF DSP0227, *WS-Management CIM Binding Specification 1.0.0*
- 159 • *Dell Lifecycle Controller Best Practices Guide 1.0*,
- 160 http://en.community.dell.com/techcenter/extras/m/white_papers/20066173.aspx
- 161 • *Dell WSMAN Licenses and Privileges 1.0*
- 162 • ISO/IEC Directives, Part 2, Rules for the structure and drafting of International Standards:
163 <http://isotc.iso.org/livelink/livelink.exe?func=ll&objId=4230456&objAction=browse&sort=subtype>
- 164 • Unified Modeling Language (UML) from the Open Management Group (OMG):
165 <http://www.uml.org>
- 166 • Dell Tech Center MOF Library:
167 <http://www.delltechcenter.com/page/DCIM.Library.MOF>
- 168 • Related Managed Object Format (MOF) files:
 - 169 ○ DCIM_FCAttribute
 - 170 ○ DCIM_FCEnumeration.mof
 - 171 ○ DCIM_FCInteger.mof
 - 172 ○ DCIM_FCService.mof
 - 173 ○ DCIM_FCString.mof
 - 174 ○ DCIM_FCView.mof
 - 175 ○ DCIM_FCCapabilities.mof
 - 176 ○ DCIM_FCStatistics.mof

178

- DCIM_LCRegisteredProfile.mof

179



180 **3 Terms and Definitions**

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

182 **3.1**

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

184 **3.2**

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

186 **3.3**

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

189 **3.4**

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

192 **3.5**

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

194 **3.6**

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

196 **3.7**

197 **optional** - Indicates a course of action permissible within the limits of the document.

198 **3.8**

199 **referencing profile** - Indicates a profile that owns the definition of this class and can include a reference
200 to this profile in its "Related Profiles" table.

201 **3.9**

202 **shall** - Indicates requirements to be followed strictly in order to conform to the document and from which
203 no deviation is permitted

204 **3.10**

205 **shall not** – Indicates requirements to be followed strictly in order to conform to the document and from
206 which no deviation is permitted.

207 **3.11**

208 **should** – Indicates that among several possibilities, one is recommended as particularly suitable, without
209 mentioning or excluding others, or that a certain course of action is preferred but not necessarily required.

210 **3.12**

211 **should not** – Indicates that a certain possibility or course of action is deprecated but not prohibited.

212 **3.13**

213 **Interop Namespace: root/interop**

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

216 **3.14**

217 **Implementation Namespace: root/dcim**

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

220 **3.15**

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

223 **3.16**

224 `GET` – Refers to WS-MAN `GET` operation as defined in Section 7.3 of DSP00226_V1.1 and Section
225 7.1 of DSP0227_V1.0

226 **4 Symbols and Abbreviated Terms**

227 **4.1**

228 **CIM** - Common Information Model

229 **4.2**

230 **iDRAC** - Integrated Dell Remote Access Controller – management controller for blades and monolithic
231 servers

232 **4.3**

233 **CMC** - Chassis Management Controller – management controller for the modular chassis

234 **4.4**

235 **iSCSI** - Internet Small Computer System Interface, an Internet Protocol (IP)-based storage networking
236 standard for linking data storage facilities.

237 **4.5**

238 **WBEM** - Web-Based Enterprise Management

239 **4.6**

240 **SRIOV** - Singel Root I/O Virtualization

241 **4.7**

242 **NPIV** - N_Port ID Virtualization

243 **4.8**

244 **DCB** - Data Center Bridging

245 **4.9**

246 **FCF** - FCoE Forwarders

247 **4.10**

248 **FC HBA** – Fiber Channel Host Bus Adapter

249

250

251 5 Synopsis

252 **Profile Name:** Fiber Channel

253 **Version:** 1.0.1

254 **Organization:** Dell Inc.

255 **CIM Schema Version:** 2.26 Experimental

256 **Central Class:** DCIM_FCService

257 **Scoping Class:** CIM_ComputerSystem

258 The Fiber Channel Profile extends the management capability of the referencing profiles by adding the
259 capability to describe fibre channel (FC) controllers in a simple way. In this profile, a FC HBA is
260 represented by a view instance that aggregates zero or more instances of the DCIM_FCAttribute class,
261 each representing an FC HBA related configurable property.

262 DCIM_FCService shall be the Central Class.

263 CIM_ComputerSystem shall be the Scoping Class.

264 Instance of DCIM_FCService shall be the Central Instance.

265 Instance of CIM_ComputerSystem shall be the Scoping Instance.

266 Table 1 identifies profiles that are related to this profile.

267

Table 1 – Related Profiles

Profile Name	Organization	Version	Relationship
Profile Registration	DCIM	1.0	Reference

268 6 Description

269 The Fiber Channel Profile describes FC HBA's representation and configuration. The profile also
270 describes the relationship of the Fiber Channel Profile classes to the Dell profile version information.

271 Figure 1 represents the class schema for the Fiber Channel Profile. For simplicity, the prefix CIM_ has
272 been removed from the names of the classes.

273 The DCIM_FCView class is a FC HBA's representation that contains controllers' properties.

274 The DCIM_FCCapabilities class represents FC HBA's capabilities.

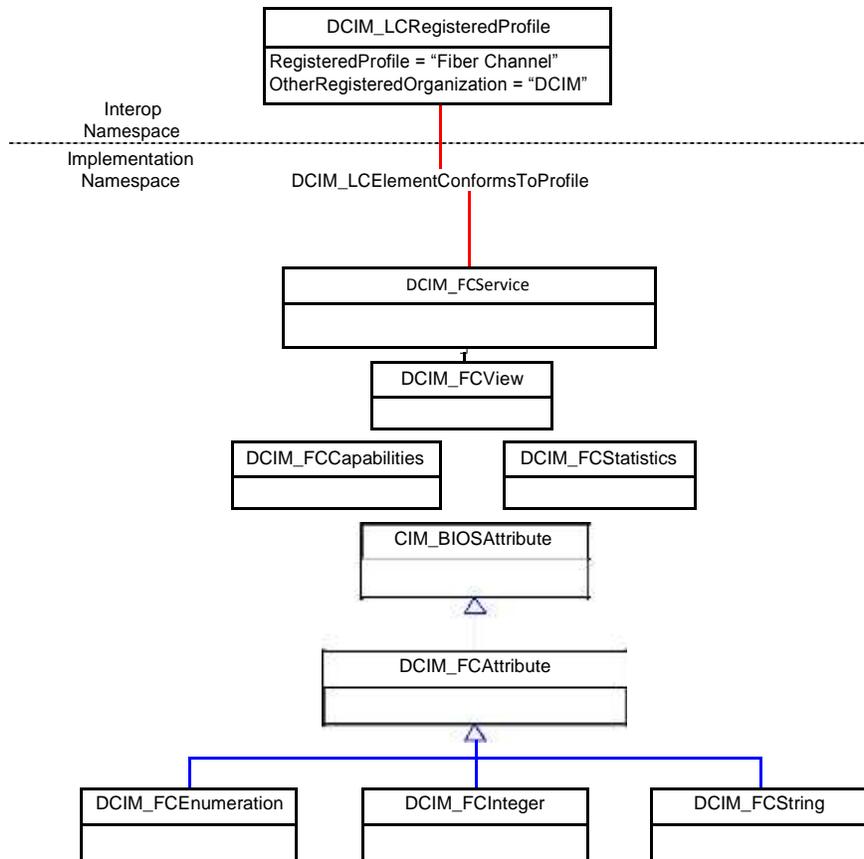
275 The DCIM_FCStatistics class represents FC HBA's port statistics.

276 The DCIM_FCAttribute class derives from the CIM_BIOSAttribute class and represents each FC's
277 configurable attribute. Depending on the data type of the attribute, DCIM_FCAttribute is either instantiated
278 as DCIM_FCEnumeration, DCIM_FCString, or DCIM_FCInteger instance.

279 DCIM_FCView instance represents the FC HBA.

280 The DCIM_FCService class is used to configure the FC HBA through its attributes. The SetAttribute() and
281 SetAttributes() methods on the DCIM_FCService class configure FC HBA attributes, DCIM_FCAttribute
282 subclass instances.

283 The Fiber Channel Profile information is represented with the instance of CIM_RegisteredProfile.



284

285

Figure 1 – Fiber Channel Profile: Class Diagram

286 **6.1 Fully Qualified Device Descriptor (FQDD)**

287 Fully Qualified Device Descriptor (FQDD) is a component identifier that uniquely represents a specific
 288 system device or component in a platform independent of the operating system, and the device vendor.

289 The DCIM data model utilizes FQDDs to correlate different aspects of representing a component, such as
 290 hardware inventory view, configurable attribute, software inventory and so on. FQDDs are used by
 291 software, such as BIOS, UEFI applications that link Unified Server Configurator (USC), and remote
 292 management applications to identify various system components in a persistent way.

293 For FC HBA, the FQDD is used to uniquely identify a particular port. See Table 2 - FC HBA FQDD
 294 examples.

295

Table 2 - FC HBA FQDD examples

FQDD	Friendly Name
FC.Slot.3-2	FC HBA in Slot 3 Port 2
FC.Mezzanine.1B-1	FC HBA in Mezzanine 1 Port 1

297

398 **6.2 Virtual Address attributes**

299 Virtual address attributes include the following attributes:

- 300 • Virtual World Wide Node Name (VirtualWWN)
- 301 • Virtual World Wide Port Name (VirtualWWPN)

302 The default values of these virtual attributes is equal to the permanent addresses programmed onto the
303 controller.

304 To set these attributes, see Section 8.1 and 8.2 for more details. Virtual address attributes behave
305 differently from the other attributes in the following way:

306 **6.2.1 Read Write behavior**

307 Generally, the virtual address attributes, as listed above, are read-write attributes through the Lifecycle
308 Controller Remote Services WSMAN interface. This feature allows a remote application to change the
309 virtual identities of FC HBA. However, on number of FC HBA cards these attributes may not be settable,
310 such as the later revisions of QLogic™ 8Gb Fibre Channel Adapter. For those FC HBA adapters, the
311 IsReadOnly property on the virtual attribute instances will have value TRUE.

312 **6.2.2 Reset behavior**

313 Setting a particular virtual address attribute to zeros causes that particular address to be erased and reset
314 to the default permanent address. The attributes can be set to default permanent values: as equivalent to
315 resetting to factory default and removing a virtual address attribute from a system.

316 When there is AC Power loss to the system, all the virtual address attributes are erased and reset to
317 default addresses when AC Power is restored to the system. AC Power loss includes power loss to both
318 MAIN and AUX power bus.

319 **7 Implementation Description**

320 Requirements and guidelines for propagating and formulating certain properties of the classes are
321 discussed in this section. Methods are listed in section 8.

322 Table 3 shows the instances of CIM Elements for this profile. Instances of the CIM Elements shall be
323 implemented as described in Table 3. Sections 7 (“Implementation Requirements” and “Methods”) may
324 impose additional requirements on these elements.

Table 3 – CIM Elements: Fiber Channel Profile

Element Name	Requirement	Description
Classes		
DCIM_FCService	Mandatory	The class maybe implemented in the <i>Implementation Namespace: root/dcim</i> . See sections 7.8
DCIM_FCView	Mandatory	The class shall be implemented in the <i>Implementation Namespace: root/dcim</i> . See section 7.1
DCIM_FCCapabilities	Mandatory ¹	The class shall be implemented in the <i>Implementation Namespace: root/dcim</i> . See section 7.2
DCIM_FCStatistics	Mandatory ¹	The class shall be implemented in the <i>Implementation Namespace: root/dcim</i> . See section 7.3
DCIM_FCEnumeration	Mandatory	The class shall be implemented in the <i>Implementation Namespace: root/dcim</i> . See section 7.4 and 7.7
DCIM_FCInteger	Mandatory	The class shall be implemented in the <i>Implementation Namespace: root/dcim</i> . See section 7.6 and 7.7
DCIM_FCString	Mandatory	The class shall be implemented in the <i>Implementation Namespace: root/dcim</i> . See section 7.5 and 7.7
DCIM_LCElementConformsToProfile	Mandatory	The class shall be implemented in the <i>Implementation Namespace: root/dcim</i> and <i>Namespace:root/interop</i> . See section 7.9
DCIM_LCRegisteredProfile	Mandatory	The class shall be implemented in the <i>Interop Namespace: root/interop</i> . See section 7.9
Indications		
None defined in this profile		

326 NOTE: ¹ DCIM_FCStatistics and DCIM_FCCapabilities are not available for QLogicTM 8Gb Fibre Channel Adapter.

327 7.1 FC HBA View – DCIM_FCView

328 This section describes the implementation for the DCIM_FCView class.

329 This class shall be instantiated in the Implementation Namespace: root/dcim.

330 7.1.1 Resource URIs for WinRM[®]

331 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-
332 schema/2/DCIM_FCView?__cimnamespace=root/dcim”

333 The key property shall be the InstanceID.

334 The instance Resource URI for DCIM_FCView instance shall be:

335 “http://schemas.dell.com/wbem/wscim/1/cim-
336 schema/2/DCIM_FCView?__cimnamespace=root/dcim+InstanceID=<FQDD>”

337 **7.1.2 Operations**

338 The following table lists the implemented operations on DCIM_FCView.

339 **Table 4 – DCIM_FCView - Operations**

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

340 **7.1.3 Class Properties**

341 The following table details the implemented properties for DCIM_FCView instance representing a FC
 342 HBA in a system. The “Requirements” column shall denote whether the property is implemented (for
 343 requirement definitions, see section 3). The “Additional Requirements” column shall denote either
 344 possible values for the property, or requirements on the value formulation.

345 **Table 5 – DCIM_FCView - Properties**

Property Name	Requirement	Type	Requirement and description
InstanceID	Mandatory	String	The property value shall be the FQDD property value.
FQDD	Mandatory	String	A string containing the Fully Qualified Device Description, a user-friendly name for the object.
DeviceDescription	Mandatory	String	A string containing the friendly Fully Qualified Device Description, a property that describes the device and its location
Bus	Mandatory	Uint32	This property represents the bus number of the PCI device.
ChipType	Optional	String	This property represents the chip type.
Device	Mandatory	Uint32	This property represents the device number of the PCI device
DeviceName	Mandatory	String	This property represents FC HBA device name.
EFIVersion	Mandatory	String	This property represents the firmware version on the device.
FabricLoginRetryCount	Mandatory	Uint32	This property represents the Fabric Login Retry Count
FabricLoginTimeout	Optional	Uint32	This property represents the Fabric Login Timeout in miliseconds.
FCTapeEnable	Mandatory	Uint8	This property represents the FC Tape Enable state. 0 - Unknown 2 – Enabled 3 – Disabled
FamilyVersion	Mandatory	String	This property represents the firmware version.
FirstFCTargetWWPN	Mandatory	String	This property represents the First FC Target World Wide Port Name.

Property Name	Requirement	Type	Requirement and description
FramePayloadSize	Mandatory	String	This property represents the frame payload size.
FirstFCTargetLUN	Mandatory	Uint16	This property represents the First FC Target LUN
Function	Mandatory	Uint32	This property represents the function number of the PCI device.
HardZoneAddress	Mandatory	Uint32	This property represents the Hard Zone Address.
HardZoneEnable	Mandatory	Uint8	This property represents the Hard Zone Enable. 0 - Unknown 2 - Enabled 3 - Disabled
LinkDownTimeout	Optional	Uint32	This property represents the Link Down Timeout in milliseconds.
LinkStatus	Mandatory	Uint8	This property represents the Link Status. 0 - Unknown 1 - Other 2 - Up 3 - Down
LoopResetDelay	Optional	Uint8	This property represents the Loop Reset Delay in seconds.
PCIDeviceID	Mandatory	String	This property represents the device identifier.
PortDownRetryCount	Mandatory	Uint32	This property represents the Port Down Retry.
PortDownTimeout	MandatoryOptional	Uint32	This property represents the Port Down Timeout in milliseconds.
PortNumber	Mandatory	Uint16	This property represents the Port Number.
PortLoginRetryCount	Mandatory	Uint32	This property represents the Port Login Retry Count.
PortLoginTimeout	MandatoryOptional	Uint32	This property represents the Port Login Timeout in milliseconds.
PortSpeed	Mandatory	Uint16	This property represents the Port Speed. 0 - Unknown 1 - Other 2 - No Link 3 - 2 Gbps 4 - 4 Gbps 5 - 8 Gbps 6 - 16 Gbps 7 - 32 Gbps
SecondFCTargetLUN	Mandatory	Uint16	This property represents the Second FC Target LUN."
SecondFCTargetWWPN	Mandatory	String	This property represents the Second FC Target World Wide Port Name.

Property Name	Requirement	Type	Requirement and description
VendorName	Mandatory	String	This property represents the Vendor Name.
VirtualWWN	Mandatory	String	This property represents the Virtual World Wide Name
VirtualWWPN	Mandatory	String	This property represents the Virtual World Wide Port Name.
WWN	Mandatory	String	This property represents the World Wide Name.
WWPN	Mandatory	String	This property represents the World Wide Port Name.

346 7.2 FC HBA Capabilities – DCIM_FCCapabilities

347 This section describes the implementation for the DCIM_FCCapabilities class.

348 This class shall be instantiated in the Implementation Namespace: root/dcim.

349 7.2.1 Resource URIs for WinRM®

350 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-
351 schema/2/DCIM_FCCapabilities?__cimnamespace=root/dcim”

352 The key property shall be the InstanceID.

353 The instance Resource URI for DCIM_FCCapabilities instance shall be:

354 “http://schemas.dell.com/wbem/wscim/1/cim-
355 schema/2/DCIM_FCCapabilities?__cimnamespace=root/dcim+InstanceID=<FQDD>”

356 7.2.2 Operations

357 The following table lists the implemented operations on DCIM_FCCapabilities.

358 **Table 6 – DCIM_FCCapabilities - Operations**

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

359

360 7.2.3 Class Properties

361 The following table lists the implemented properties for DCIM_FCCapabilities instance representing FC
362 HBA capabilities in a system. The “Requirements” column shall denote whether the property is
363 implemented (for requirement definitions, see section 3). The “Additional Requirements” column shall
364 denote either possible values for the property, or requirements on the value formulation.

365 **Table 7 – DCIM_FCCapabilities - Properties**

Property Name	Requirement	Type	Requirement and description
FQDD	Mandatory	string	A string containing the Fully Qualified Device Description, a user-friendly name for the object.
InstanceID	Mandatory	string	The property value shall be the FQDD property value.



Property Name	Requirement	Type	Requirement and description
FCMaxIOsPerSession	Mandatory	uint16	This property represents the maximum number of I/Os per connection
FCMaxNumberLogins	Mandatory	uint16	This property represents the maximum number of logins per port
FCMaxNumberExchanges	Mandatory	uint16	This property represents the maximum number of exchanges
FCMaxNPIVPerPort	Mandatory	uint16	This property represents the maximum NPIV per port
FCMaxNumberOfFCTargets	Mandatory	uint16	This property represents the maximum number of FC Targets supported
FCMaxNumberOutStandingCommands	Mandatory	uint16	This property represents the maximum number of outstanding commands across all connections
FlexAddressingSupport	Mandatory	uint8	This property represents whether Flex Addressing is supported 0 – Unknown 2 – Supported 3 – Not Supported
uEFISupport	Mandatory	uint8	This property represents whether UEFI is supported 0 – Unknown 2 – Supported 3 – Not Supported
FCBootSupport	Mandatory	uint8	This property represents whether FC Boot is supported 0 – Unknown 2 – Supported 3 – Not Supported
OnChipThermalSensor	Mandatory	uint8	This property represents whether On Chip Thermal Sensor is supported 0 – Unknown 2 – Supported 3 – Not Supported
FeatureLicensingSupport	Mandatory	uint8	This property represents whether Feature Licensing is supported 0 – Unknown 2 – Supported 3 – Not Supported

366 7.3 FC HBA Statistics – DCIM_FCStatistics

367 This section describes the implementation for the DCIM_FCStatistics class.

368 This class shall be instantiated in the Implementation Namespace:root/dcim.

369 7.3.1 Resource URIs for WinRM®

370 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-
371 schema/2/DCIM_FCStatistics?__cimnamespace=root/dcim”

372 The key property shall be the InstanceID.

373 The instance Resource URI for DCIM_FCStatistics instance shall be:
 374 "http://schemas.dell.com/wbem/wscim/1/cim-
 375 schema/2/DCIM_FCStatistics?__cimnamespace=root/dcim+InstanceID=<FQDD>"

376 **7.3.2 Operations**

377 The following table lists the implemented operations on DCIM_FCStatistics.

378 **Table 8 – DCIM_FCStatistics - Operations**

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

379 **7.3.3 Properties**

380 The following table details the implemented properties for DCIM_FCStatistics instance representing FC
 381 port statistics in a system. The "Requirements" column shall denote whether the property is implemented
 382 (for requirement definitions, see section 3). The "Additional Requirements" column shall denote either
 383 possible values for the property, or requirements on the value formulation.

384 **Table 9 – DCIM_FCStatistics - Properties**

Property Name	Requirement	Type	Requirement and description
FQDD	Mandatory	string	A string containing the Fully Qualified Device Description, a user-friendly name for the object.
InstanceID	Mandatory	string	The property value shall be the FQDD property value.
FCRxTotalFrames	Mandatory	uint32	This property represents total FC frames received
FCTxTotalFrames	Mandatory	uint32	This property represents total FC frames transmitted
FCRxKBCount	Mandatory	uint32	This property represents receive KB count
FCTxKBCount	Mandatory	uint32	This property represents transmit KB count
FCRxSequences	Mandatory	uint32	This property represents FC sequences received
FCTxSequences	Mandatory	uint32	This property represents FC sequences transmitted
FCLinkFailures	Mandatory	uint32	This property represents link failures
FCLossOfSignals	Mandatory	uint32	This property represents loss of signals
FCInvalidCRCs	Mandatory	uint32	This property represents invalid CRCs
PortSpeed	Mandatory	uint16	This property represents port speed 0 – Unknown 1 – Other 2 – No Link 3 – 2 Gbps 4 – 4 Gbps 5 – 8 Gbps 6 – 16 Gbps 7 – 32 Gbps
PortStatus	Mandatory	uint8	This property represents port status 0 – Unknown 1 – Other 2 – Up 3 – Down

Property Name	Requirement	Type	Requirement and description
OSDriverState	Mandatory	uint8	This property represents OS driver state 0 – Unknown 1 – Other 2 – Not Applicable 3 – Operational 4 – Non-operational

385

386 **7.4 DCIM_FCEnumeration**

387 This section describes the implementation for the DCIM_FCEnumeration class.

388 Each DCIM_FCEnumeration instance is logically associated to a DCIM_FCView instance.

389 This class shall be instantiated in the Implementation Namespace:root/dcim.

390 **7.4.1 Resource URIs for WinRM[®]**

391 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-
392 schema/2/DCIM_FCEnumeration?__cimnamespace=root/dcim”

393 The key property shall be the InstanceID.

394 The instance Resource URI for DCIM_FCEnumeration instance shall be:

395 “http://schemas.dell.com/wbem/wscim/1/cim-

396 schema/2/DCIM_FCEnumeration?__cimnamespace=root/dcim+InstanceID= <FQDD>

397 where <FQDD> is the FQDD property value and <AttributeName> is the AttributeName property value.

398 **7.4.2 Operations**

399 The following table lists the implemented operations on DCIM_FCEnumeration.

400

Table 10 – DCIM_FCEnumeration - Operations

Operation Name	Requirements	Required Input
Get	Mandatory	Instance URI
Enumerate	Mandatory	Class URI
DCIM_FCService.SetAttribute()	Mandatory	See section 8.1
DCIM_FCService.SetAttributes()	Mandatory	See section 8.2

401 **7.4.3 Class Properties**

402 The following table details the implemented properties for DCIM_FCEnumeration instance representing a

403 FC HBA enumeration attribute. The “Requirements” column shall denote whether the property is

404 implemented (for requirement definitions, see section 3). The “Additional Requirements” column shall

405 denote either possible values for the property, or requirements on the value formulation.

Table 11 – Class: DCIM_FCEnumeration

Properties	Type	Notes	Additional Requirements
InstanceID	String	Mandatory	The property value shall be formed as follows: “<FQDD property value>:<AttributeName property value>”.
AttributeName	String	Mandatory	The property value shall be from the “AttributeName” column in Tables in section 7.7.
AttributeDisplayName	String	Mandatory	The property value shall be NULL.
CurrentValue[]	String	Mandatory	The property value shall be one of the values in the “PossibleValues” column in the corresponding row in Tables in section 7.7.
PendingValue[]	String	Mandatory	The property value shall be one of the values in the “PossibleValues” column in the corresponding row in Tables in section 7.7.
IsReadOnly	Boolean	Mandatory	The property value shall be from the “IsReadOnly” column in Tables in section 7.7.
FQDD	String	Mandatory	FQDD of the FC HBA that the attribute belongs to.
Dependency	String	Optional	The property shall be formatted as XML describing the attributes dependence on other attribute(s).
PossibleValues[]	String	Mandatory	The property value is an array of strings containing possible value definitions for the attribute. If a NULL value is received that implies that the element’s value is unknown. The possible values are Enabled and Disabled.
PossibleValuesDescription[]	String	Mandatory	The array property shall be NULL.

407 7.5 DCIM_FCString

408 This section describes the implementation for the DCIM_FCString class.

409 Each DCIM_FCString instance is logically associated to a DCIM_FCView instance, where the
410 DCIM_FCString.FQDD property is equal to the FQDD property on the DCIM_FCView instance.

411 This class shall be instantiated in the Implementation Namespace:root/dcim.

412 7.5.1 Resource URIs for WinRM[®]

413 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-
414 schema/2/DCIM_FCString?__cimnamespace=root/dcim”

415 The key property shall be the InstanceID.

416 The instance Resource URI for DCIM_FCString instance shall be:

417 [419 where <FQDD> is the FQDD property value, and <AttributeName> is the AttributeName property value.](http://schemas.dell.com/wbem/wscim/1/cim-
418 schema/2/DCIM_FCString?__cimnamespace=root/dcim+InstanceID= <FQDD>:<AttributeName</p>
</div>
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420 7.5.2 Operations

421 The following table lists the implemented operations on DCIM_FCString.

422

Table 12 – DCIM_FCString - Operations

Operation Name	Requirements	Required Input
Get	Mandatory	Instance URI
Enumerate	Mandatory	Class URI
DCIM_FCService.SetAttribute()	Mandatory	See section 8.1
DCIM_FCService.SetAttributes()	Mandatory	See section 8.2

423

424 **7.5.3 Class Properties**

425 The following table details the implemented properties for DCIM_FCString instance representing a FC
426 HBA string attribute. The “Requirements” column shall denote whether the property is implemented (for
427 requirement definitions, see section 3). The “Additional Requirements” column shall denote either
428 possible values for the property, or requirements on the value formulation.

Table 13 – Class: DCIM_FCString

Properties	Type	Notes	Additional Requirements
InstanceID	String	Mandatory	The property value shall be formed as follows: “<FQDD property value>:<AttributeName property value>”.
AttributeName	String	Mandatory	The property value shall be from the “AttributeName” column in Tables in section 7.7.
AttributeDisplayName	String	Mandatory	The property value shall be NULL.
CurrentValue[]	String	Mandatory	The property value shall be the current value of the attribute.
PendingValue[]	String	Mandatory	The property value shall be the pending value of the attribute.
IsReadOnly	Boolean	Mandatory	The property value shall be from the “IsReadOnly” column in Tables in section 7.7.
FQDD	String	Mandatory	FQDD of the FC HBA that the attribute belongs to.
Dependency	String	Optional	The property shall be formatted as XML describing the attributes dependence on other attribute(s).
MinLength	uint64	Mandatory	The property value shall be the value in the “MinLength” column at the corresponding row in Tables in section 7.7. The omission or NULL shall denote that no known constraint exists on the CurrentValue and PendingValue properties.
MaxLength	uint64	Mandatory	The property value shall be the value in the “MaxLength” column at the corresponding row in Tables in section 7.7 The omission or NULL shall denote that no known constraint exists on the CurrentValue and PendingValue properties.
ValueExpression	String	Conditional	The property shall be implemented, if the IsReadOnly property has value FALSE. The omission or NULL shall denote that no known constraint exists on the CurrentValue and PendingValue properties.

430

431 7.6 DCIM_FCInteger

432 This section describes the implementation for the DCIM_FCInteger class.

433 Each DCIM_FCInteger instance is logically associated to a DCIM_FCView instance, where the
434 DCIM_FCInteger.FQDD property is equal to the FQDD property on the DCIM_FCView instance.

435 This class shall be instantiated in the Implementation Namespace:root/dcim.

436 7.6.1 Resource URIs for WinRM[®]

437 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-
438 schema/2/DCIM_FCInteger?__cimnamespace=root/dcim”

439 The key property shall be the InstanceID.

440 The instance Resource URI for DCIM_FCInteger instance shall be:
441 [http://schemas.dell.com/wbem/wscim/1/cim-
schema/2/DCIM_FCInteger?_cimnamespace=root/dcim+InstanceID= <FQDD>:<Attribute>](http://schemas.dell.com/wbem/wscim/1/cim-
442 schema/2/DCIM_FCInteger?_cimnamespace=root/dcim+InstanceID= <FQDD>:<Attribute>)

443 where <FQDD> is the FQDD property value, and <Attribute> is the AttributeName property value.

444 7.6.2 Operations

445 The following table lists the implemented operations on DCIM_FCInteger.

446 **Table 14 – DCIM_FCInteger - Operations**

Operation Name	Requirements	Required Input
Get	Mandatory	Instance URI
Enumerate	Mandatory	Class URI
DCIM_FCService.SetAttribute()	Mandatory	See section 8.1
DCIM_FCService.SetAttributes()	Mandatory	See section 8.2

447

448 7.6.3 Properties

449 The following table details the implemented properties for DCIM_FCInteger instance representing a FC
450 HBA integer attribute. The “Requirements” column shall denote whether the property is implemented (for
451 requirement definitions, see section 3). The “Additional Requirements” column shall denote either
452 possible values for the property, or requirements on the value formulation.

Table 15 – Class: DCIM_FCInteger

Properties	Type	Requirement	Additional Requirements
InstanceID	String	Mandatory	The property value shall be formed as follows: “<FQDD property value>:<AttributeName property value>”.
AttributeName	String	Mandatory	The property value shall be from the “AttributeName” column in Tables in section 7.7.
AttributeDisplayName	String	Mandatory	The property value shall be NULL.
CurrentValue[]	String	Mandatory	The property value shall be the current value of the Attribute.
PendingValue[]	String	Mandatory	The property value shall be the pending value of the Attribute.
IsReadOnly	Boolean	Mandatory	The property value shall be from the “IsReadOnly” column in Tables in section 7.
FQDD	String	Mandatory	FQDD of the FC HBA that the attribute belongs to.
Dependency	String	Optional	The property shall be formatted as XML describing the attributes dependence on other attribute(s).
LowerBound	uint64	Mandatory	The property value shall be the value in the “LowerBound” column in the corresponding row in Tables in section 7. The omission or NULL shall denote that no known constraint exists on the CurrentValue and PendingValue properties.
UpperBound	uint64	Mandatory	The property value shall be the value in the “UpperBound” column at the corresponding row in Tables in section 7. The omission or NULL shall denote that no known constraint exists on the CurrentValue and PendingValue properties.

454

455 7.7 FC HBA Attributes

456 This section lists and describes the attributes and their logical grouping.

457 7.7.1 Port Configuration

458 This section describes the attributes for Port Configuration.

459 The following table describes the values for the DCIM_FCEnumeration of this group. Each of the column
460 headings correspond to a property name on the DCIM_FCEnumeration class. The Description column
461 contains the description for each of the attribute. Each of the rows contain the values for the properties
462 listed in the column headings. The PossibleValues property is an array property represented in the table
463 as comma delimited list.

464

Table 16 – DCIM_FCEnumeration Port Configuration

AttributeName	Attribute Description	IsReadOnly	PossibleValues	Description
---------------	-----------------------	------------	----------------	-------------

AttributeName	Attribute Description	IsReadOnly	PossibleValues	Description
PortSpeed	Port Speed	FALSE	"Auto", "1G", "2G", "4G", "8G", "16G"	Link Speed

465 The following table describes the values for the DCIM_FCInteger of this group. Each of the column
466 headings correspond to a property name on the DCIM_FCInteger class. Each of the rows contain the
467 values for the properties listed in the column headings.

468 **Table 17 – DCIM_FCInteger Port Configuration**

AttributeName	Attribute Description	IsReadOnly	LowerBound	UpperBound
PortNumber	Port Number	TRUE	0	Vendor Specific ¹

469 NOTE: ¹The UpperBound property for the PortNumber attribute is specific to the FC card model. For example, for
470 EmulexTM, the value is 255; for QlogicTM 8GB is 2; and for QlogicTM 16Gb is 3.

471 The following table describes the values for the DCIM_FCString of this group. Each of the column
472 headings correspond to a property name on the DCIM_FCString class. Each of the rows contain the
473 values for the properties listed in the column headings.

474 **Table 18 – DCIM_FCString Port Configuration**

AttributeName	Attribute Description	IsReadOnly	MinLength	MaxLength
DeviceName	Device Name	TRUE	0	Vendor Specific ²
WWN	World Wide Name	TRUE	23	23
VirtualWWN	Virtual World Wide Name	FALSE ³	23	23
WWPN	World Wide Port Name	TRUE	23	23
VirtualWWPN	Virtual World Wide Port Name	FALSE ³	23	23

475 NOTE: ²The MaxLength property for the DeviceName attribute is specific to the FC card model. For example,
476 EmulexTM 16 Gb cards, the value is 50; for QlogicTM 8Gb, the value is 16 and for QlogicTM 16Gb cards, the value is
477 32.

478 NOTE: ³The virtual address attributes such as VirtualWWN and VirtualWWPN are read-only on the QLogicTM 8Gb
479 Fibre Channel Adapter.

480 7.7.2 Fiber Channel Target Configuration

481 This section describes the attributes for Fiber Channel Target Configuration.

482 The following table describes the values for the DCIM_FCEnumeration of this group. Each of the column
483 headings correspond to a property name on the DCIM_FCEnumeration class. The Description column
484 contains the description for each of the attribute. Each of the rows contain the values for the properties
485 listed in the column headings. The PossibleValues property is an array property represented in the table
486 as comma delimited list.

487

Table 19 – DCIM_FCEnumeration Fiber Channel Target Configuration

AttributeName	Attribute Description	IsReadOnly	PossibleValues	Description
BootScanSelection	Boot Scan Selection	FALSE	“Disabled”, “FirstLUN” ¹ “SpecifiedLUN”	Boot scan Selection

488 NOTE: ¹The “FirstLUN” value in the PossibleValues array property shall be present only on the QlogicTM adapters.

489 The following table describes the values for the DCIM_FCInteger of this group. Each of the column
490 headings correspond to a property name on the DCIM_FCInteger class. Each of the rows contain the
491 values for the properties listed in the column headings.

492

Table 20 – DCIM_FCInteger Fiber Channel Target Configuration

AttributeName	Attribute Description	IsReadOnly	LowerBound	UpperBound
FirstFCTargetLUN	First FC Target LUN	FALSE ²	0	Vendor Specific ³
SecondFCTargetLUN	Second FC Target LUN	FALSE ²	0	Vendor Specific ³

493 NOTE: ²FirstFCTargetLUN and SecondFCTargetLUN attributes shall be read-only and IsReadOnly property shall
494 be set to TRUE, if the BootScanSelection attribute’s CurrentValue property has value “Disabled”.

495 NOTE: ³The UpperBound property for the FirstFCTargetLUN and SecondFCTargetLUN is specific to the FC card
496 vendor. For example, for EmulexTM cards, the value is 255 and for QlogicTM cards, the value is 65535.

497

Table 21 – DCIM_FCString Fiber Channel Target Configuration

AttributeName	Attribute Description	IsReadOnly	Min Length	Max Length
FirstFCTargetWWPN	First FC Target World Wide Port Name	FALSE ⁴	23	23
SecondFCTargetWWPN	Second FC Target World Wide Port Name	FALSE ⁴	23	23

498 NOTE: ⁴FirstFCTargetWWPN and SecondFCTargetWWPN attributes shall be read-only and IsReadOnly property
499 shall be set to TRUE, if the BootScanSelection attribute’s CurrentValue property has value “Disabled”.

500 7.7.3 HBA Configuration

501 This section describes the attributes for HBA Configuration.

502 The following table describes the values for the DCIM_FCEnumeration of this group. Each of the column
503 headings correspond to a property name on the DCIM_FCEnumeration class. The Description column
504 contains the description for each of the attribute. Each of the rows contain the values for the properties
505 listed in the column headings. The PossibleValues property is an array property represented in the table
506 as comma delimited list.

507

Table 22 – DCIM_FCEnumeration HBA Configuration

AttributeName	Attribute Description	IsReadOnly	PossibleValues	Description
---------------	-----------------------	------------	----------------	-------------

AttributeName	Attribute Description	IsReadOnly	PossibleValues	Description
FCtape ¹	FC Tape Enable	FALSE	"Disabled", "Enabled"	FC Tape Enable
HardZone ¹	Hard Zone Enable	FALSE	"Disabled", "Enabled"	Hard Zone Enable
FramePayloadSize ¹	Frame Payload Size	FALSE	"Auto", "512", "1024", "2048", "2112"	Frame Payload Size

508 NOTE: ¹Attribute is optional and may not be available on enumerations.

509 The following table describes the values for the DCIM_FCInteger of this group. Each of the column
510 headings correspond to a property name on the DCIM_FCInteger class. Each of the rows contain the
511 values for the properties listed in the column headings.

512 **Table 23 – DCIM_FCInteger HBA Configuration**

AttributeName	Attribute Description	IsReadOnly	LowerBound	UpperBound
LoopResetDelay ²	Loop Reset Delay	FALSE	0	60
FabricLoginRetryCount ²	Fabric Login Retry Count	FALSE	1	255
FabricLoginTimeout ²	Fabric Login Timeout	FALSE	1	255000
PortLoginRetryCount ²	Port Login Retry Count	FALSE	0	255
PortLoginTimeout ²	Port Login Timeout	FALSE	1	255000
PortDownTimeout ²	Port Down Timeout	FALSE	1	255000
PortDownRetryCount ²	Port Down Retry Count	FALSE	0	255
LinkDownTimeout ²	Link Down Timeout	FALSE	1	255000

513 NOTE: ²Attribute is optional and may not be available on enumerations.

514 7.7.4 Firmware and Device Information

515 This section describes the attributes Firmware and Device Information. Partition attributes are also used
516 to configure the physical port.

517 The GroupID property for the DCIM_FCString shall be "FWDeviceForm".

518 The GroupDisplayName property for the DCIM_FCString shall be "Firmware and Device Information".

519 The following table describes the values for the DCIM_FCString of this group. Each of the column
520 headings correspond to a property name on the DCIM_FCString class. The Value Expression column
521 contains constraints on string value formulation. Each of the rows contain the values for the properties
522 listed in the column headings.

523 **Table 24 – DCIM_FCString Firmware and Device Information**

AttributeName	Attribute Description	IsReadOnly	Min Length	Max Length
ChipMdl ¹	Chip Type	TRUE	0	Vendor Specific ²

AttributeName	Attribute Description	IsReadOnly	Min Length	Max Length
PCIDeviceID	PCI Device ID	TRUE	4	4
BusDeviceFunction	Bus:Device:Function	TRUE	8	8
FamilyVersion	Firmware Family Version	TRUE	5	8
EFIVersion	EFI	TRUE	5	8

524 NOTE: ¹Attribute is optional and may not be available on enumerations.

525 NOTE: ²The MaxLength property for the ChipMdl is specific to the FC card vendor. For example, for EmulexTM
526 cards, the value is 6; for QlogicTM 8Gb cards, the value is 15; and for QlogicTM 16Gb cards, the value is 13.

527 7.8 DCIM_FCService

528 This section describes the implementation for the DCIM_FCService class.

529 This class shall be instantiated in the Implementation Namespace:root/dcim.

530 The DCIM_LCElementConformsToProfile association(s)' ManagedElement property shall reference the
531 DCIM_FCService instance(s).

532 7.8.1 Resource URIs for WinRM[®]

533 The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-
534 schema/2/DCIM_FCService?__cimnamespace=root/dcim"

535 The key properties shall be the SystemCreationClassName, CreationClassName, SystemName, and
536 Name.

537 The instance Resource URI for DCIM_FCService instance shall be:

538 "http://schemas.dell.com/wbem/wscim/1/cim-
539 schema/2/DCIM_FCService?__cimnamespace=root/dcim+SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_FCService+ SystemName=DCIM:ComputerSystem+Name= DCIM:FCService"

541 7.8.2 Operations

542 The following table lists the implemented operations on DCIM_FCService.

543 **Table 25 – DCIM_FCService – Operations**

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

544

545 7.8.3 Properties

546 The following table details the implemented properties for DCIM_FCService instance representing a
547 system in a system. The "Requirements" column shall denote whether the property is implemented (for
548 requirement definitions, see section 3). The "Additional Requirements" column shall denote either
549 possible values for the property, or requirements on the value formulation.

550

551

Table 26 – Class: DCIM_FCService

Properties and Methods	Requirement	Description
SystemCreationClassName	Mandatory	The property value shall be “DCIM_ComputerSystem”.
CreationClassName	Mandatory	The property value shall be “DCIM_FCService”.
ElementName	Mandatory	The property value shall be “FC Service”
SystemName	Mandatory	The property value shall be “DCIM:ComputerSystem”.
Name	Mandatory	The property value shall be “DCIM:FCService”

552 **7.9 Fiber Channel Profile Registration**

553 This section describes the implementation for the DCIM_LCRegisteredProfile class.

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

555 The DCIM_ElementConformsToProfile association(s)' ConformantStandard property shall reference the
556 DCIM_LCRegisteredProfile instance.

557 **7.9.1 Resource URIs for WinRM®**

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

560 The key property shall be the InstanceID property.

561 The instance Resource URI shall be: “http://schemas.dell.com/wbem/wscim/1/cim-
562 schema/2/DCIM_LCRegisteredProfile?__cimnamespace=root/interop+InstanceID=DCIM:FC:1”

563 **7.9.2 Operations**

564 The following table lists the implemented operations on DCIM_FCView.

565

Table 27 – DCIM_LCRegisteredProfile - Operations

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

566

567 **7.9.3 Properties**

568 The following table details the implemented properties for DCIM_LCRegisteredProfile instance
569 representing Fiber Channel Profile implementation. The “Requirements” column shall denote whether the
570 property is implemented (for requirement definitions, see section 3). The “Additional Requirements”
571 column shall denote either possible values for the property, or requirements on the value formulation.

572

Table 28 – Class: DCIM_LCRegisteredProfile

Properties	Requirement	Type	Description
InstanceID	Mandatory	String	"DCIM:FC:1"
RegisteredName	Mandatory	String	This property shall have a value of

| | | "Fiber Channel". |

RegisteredVersion	Mandatory	String	This property shall have a value of "1.0.0".
RegisteredOrganization	Mandatory	String	This property shall have a value of 1 (Other).
OtherRegisteredOrganization	Mandatory	Uint16	This property 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.

573 8 Methods

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

576 8.1 DCIM_FCService.SetAttribute()

577 The SetAttribute() method is used to set or change the value of a FC attribute.

578 Invocation of the SetAttribute() method shall change the value of the DCIM_FCAttribute.CurrentValue or
579 DCIM_FCAttribute.PendingValue property to the value specified by the AttributeValue parameter if the
580 DCIM_FCAttribute.IsReadOnly property is FALSE. Invocation of this method when the
581 DCIM_FCAttribute.IsReadOnly property is TRUE shall result in no change to the value of the
582 DCIM_FCAttribute.CurrentValue property. The results of changing this value is described with the
583 SetResult parameter.

584 Return code values for the SetAttribute() method are specified in Table 29 and parameters are specified
585 in Table 30. Invoking the SetAttribute() method multiple times can result in the earlier requests being
586 overwritten or lost.

587

Table 29 – DCIM_FCService.SetAttribute() Method: Return Code Values

Value	Description
0	Completed with no error
2	Failed

588

Table 30 – DCIM_FCService.SetAttribute() Method: Parameters

Qualifiers	Name	Type	Description/Values
IN, REQ	Target	String	FQDD of the FC
IN, REQ	AttributeName	String	Shall contain the AttributeName property value for the attribute to be modified.
IN, REQ	AttributeValue[]	String	Shall contain the desired attribute value. If the value is valid, the CurrentValue or PendingValue property of the specified attribute will be modified.
OUT	SetResult	String	Returns: <ul style="list-style-type: none"> • "Set CurrentValue property" when the attributes current value is set. • "Set PendingValue" when the attributes pending value is set.
OUT	RebootRequired	String	Returns: <ul style="list-style-type: none"> • "Yes" if reboot is required, • "No" if reboot is not required.
OUT	MessageID	String	Error MessageID
OUT	Message	String	Error Message
OUT	MessageArguments[]	String	Error MessageArguments

589

Table 31 – DCIM_FCService.SetAttribute() Method: Standard Messages

MessageID (OUT parameter)	Message	MessageArguments[]
FC001	The command was successful	
FC002	Resource allocation failure	
FC003	Missing required parameter	
FC004	Invalid parameter value for <parameter name>	Parameter
FC005	Mismatch in AttributeName and AttributeValue count	
FC006	Configuration job already created, cannot set attribute on specified target until existing job is completed or is cancelled	
FC007	Configuration job already created, cannot create another config job on specified target until existing job is completed or is cancelled	
FC008	No pending data is present to create a Configuration job	
FC009	Lifecycle Controller is currently in use.	
	Lifecycle Controller is not enabled,	

FC010

cannot create Configuration job.

MessageID (OUT parameter)	Message	MessageArguments[]
FC011	Configuration job already created, pending data cannot be deleted	
FC012	No pending data present to delete	
FC013	Invalid AttributeName <parameter name>	AttributeName
FC014	Invalid AttributeValue for AttributeName <parameter name>	AttributeName
FC015	AttributeValue cannot be changed for read only AttributeName <parameter name>	AttributeName
FC016	AttributeValue cannot be changed for disabled AttributeName <parameter name>	AttributeName
FC017	Cannot perform the operation due to an unknown error in iDRAC	
FC018	Set operation failed as the attribute is read only.	
LC062	An instance of Export or Import System Configuration is already running.	

590

591 8.2 DCIM_FCService.SetAttributes()

592 The SetAttributes() method is used to set or change the values of a group of attributes.

593 Successful SetAttributes() method invocation shall change the values of the CurrentValue or
594 PendingValue properties of the DCIM_FCAttribute instance that correspond to the names specified by the
595 AttributeName parameter, with the values specified by the AttributeValue parameter.

596 If the respective DCIM_FCAttribute.IsReadOnly property is TRUE, the method invocation shall fail and
597 shall result in no change to the corresponding value of the DCIM_FCAttribute.CurrentValue property.

598 Return code values for the SetAttributes() method are specified in Table 32, and parameters are
599 specified in Table 33.

600 Invoking the SetAttributes() method multiple times can result in the earlier requests being overwritten or
601 lost.

602 **Table 32 – DCIM_FCService.SetAttributes() Method: Return Code Values**

Value	Description
0	Completed with no error
2	Failed

603 **Table 33 – DCIM_FCService.SetAttributes() Method: Parameters**

Qualifiers	Name	Type	Description/Values
IN, REQ	Target	String	FQDD of the FC
IN, REQ	AttributeName[]	String	Shall contain an array of the AttributeName

		property values for the attributes to be modified.
--	--	--

Qualifiers	Name	Type	Description/Values
IN, REQ	AttributeValue[]	String	Shall contain the desired attribute values. If the value is valid, the CurrentValue or PendingValue property of the specified attribute will be modified.
OUT	SetResult[]	String	Returns: <ul style="list-style-type: none"> • "Set CurrentValue property" when the attributes current value is set. • "Set PendingValue property" when the attributes pending value is set.
OUT	RebootRequired[]	String	Returns: <ul style="list-style-type: none"> • "Yes" if reboot is required, • "No" if reboot is not required.
OUT	MessageID[]	String	Error MessageID
OUT	Message[]	String	Error Message
OUT	MessageArguments[]	String	Error MessageArguments

604

Table 34 – DCIM_FCService.SetAttributes() Method: Standard Messages

MessageID (OUT parameter)	Message	MessageArguments[]
FC001	The command was successful	
FC002	Resource allocation failure	
FC003	Missing required parameter	
FC004	Invalid parameter value for <parameter name>	Parameter
FC005	Mismatch in AttributeName and AttributeValue count	
FC006	Configuration job already created, cannot set attribute on specified target until existing job is completed or is cancelled	
FC007	Configuration job already created, cannot create another config job on specified target until existing job is completed or is cancelled	
FC008	No pending data is present to create a Configuration job	
FC009	Lifecycle Controller is currently in use.	
FC010	Lifecycle Controller is not enabled, cannot create Configuration job.	
FC011	Configuration job already created, pending data cannot be deleted	
FC012	No pending data present to delete	
FC013	Invalid AttributeName <parameter name>	AttributeName
	Invalid AttributeValue for	

MessageID (OUT parameter)	Message	MessageArguments[]
FC015	AttributeValue cannot be changed for read only AttributeName <parameter name>	AttributeName
FC016	AttributeValue cannot be changed for disabled AttributeName <parameter name>	AttributeName
FC017	Cannot perform the operation due to an unknown error in iDRAC	
FC018	Set operation failed as the attribute is read only.	
LC062	An instance of Export or Import System Configuration is already running.	

605 **8.3 DCIM_FCService.CreateTargetedConfigJob()**

606 The CreateTargetedConfigJob() method is used to apply the pending values created by the SetAttribute
607 and SetAttributes methods. The successful execution of this method creates a job for application of
608 pending attribute values.

609 CreateTargetedConfigJob method supports the following optional input parameters

- 610 1. RebootJobType: When provided in the input parameters, creates a specific reboot job to
611 "PowerCycle", "Graceful Reboot without forced shutdown", or "Graceful Reboot with forced shutdown".
612 This parameter only creates the RebootJob and does not schedule it.
- 613 2. ScheduledStartTime: When provided in the input parameters, schedules the "configuration job" and the
614 optional "reboot job" at the specified start time. A special value of "TIME_NOW" schedules the job(s)
615 immediately.
- 616 3. UntilTime: This parameter has a dependency on "ScheduledStartTime", together "ScheduledStartTime" and
617 "UntilTime" define a time window for scheduling the job(s). Once scheduled, jobs will be executed within the
618 time window.

619 If CreateTargetedConfigJob method is executed without the three optional parameters discussed above, then
620 configuration job is created but not scheduled. However, this configuration job can be scheduled later using the
621 DCIM_JobService.SetupJobQueue() method from the "Job Control Profile". DCIM_JobService.SetupJobQueue()
622 can be executed to schedule several configuration jobs including the reboot job. Refer to "Job Control Profile" for
623 more details.

624 Return code values for the CreateTargetedConfigJob() method are specified in Table 35, and parameters
625 are specified in Table 36.

626 Subsequent calls to CreateTargetedConfigJob after the first CreateTargetedConfigJob will result in error
627 until the first job is completed.

628 **Table 35 – DCIM_FCService.CreateTargetedConfigJob() Method: Return Code Values**

Value	Description
2	Failed
4096 ¹	Job Created ¹

Table 36 – DCIM_FCService.CreateTargetedConfigJob() Method: Parameters

Qualifiers	Name	Type	Description/Values
IN, REQ	Target	String	FQDD of the FC
IN	RebootJobType	Uint16	Shall contain the requested reboot type: <ul style="list-style-type: none"> • 1 - PowerCycle • 2 - Graceful Reboot without forced shutdown • 3 - Graceful Reboot with forced shutdown.
IN	ScheduledStartTime	String	Start time for the job execution in format: yyyyymmddhhmmss. The string "TIME_NOW" means immediate.
IN	UntilTime	String	End time for the job execution in format: yyyyymmddhhmmss. : If this parameter is not NULL, then ScheduledStartTime parameter shall also be specified.
OUT	Job ¹	CIM_ConcreteJob REF	Reference to the newly created pending value application job. ¹
OUT	MessageID	String	Error MessageID
OUT	Message	String	Error Message
OUT	MessageArguments[]	String	Error MessageArguments

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

633

Table 37 – DCIM_FCService.CreateTargetedConfigJob() Method: Standard Messages

MessageID (OUT parameter)	Message	MessageArguments[]
FC001	The command was successful	
FC002	Resource allocation failure	
FC003	Missing required parameter	
FC004	Invalid parameter value for <parameter name>	Parameter
FC005	Mismatch in AttributeName and AttributeValue count	
FC006	Configuration job already created, cannot set attribute on specified target until existing job is completed or is cancelled	
FC007	Configuration job already created, cannot create another config job on specified target until existing job is completed or is cancelled	
FC008	No pending data is present to create a Configuration job	
FC009	Lifecycle Controller is currently in use.	

MessageID (OUT parameter)	Message	MessageArguments[]
	cannot create Configuration job.	
FC011	Configuration job already created, pending data cannot be deleted	
FC012	No pending data present to delete	
FC013	Invalid AttributeName <parameter name>	AttributeName
FC014	Invalid AttributeValue for AttributeName <parameter name>	AttributeName
FC015	AttributeValue cannot be changed for read only AttributeName <parameter name>	AttributeName
FC016	AttributeValue cannot be changed for disabled AttributeName <parameter name>	AttributeName
FC017	Cannot perform the operation due to an unknown error in iDRAC	
FC018	Set operation failed as the attribute is read only.	
LC062	Export or Import server profile operation is already running.	

635 **8.4 DCIM_FCService.DeletePendingConfiguration()**

636 The DeletePendingConfiguration() method is used to cancel the pending values created by the
637 SetAttribute and SetAttributes methods. The DeletePendingConfiguration() method cancels the pending
638 configuration changes made before the configuration job is created with CreateTargetedConfigJob(). This
639 method only operates on the pending changes prior to CreateTargetedConfigJob() being called. After the
640 configuration job is created, the pending changes can only be canceled by calling DeleteJobQueue()
641 method in the Job Control profile.

642 Return code values for the DeletePendingConfiguration() method are specified in Table 38, and
643 parameters are specified in Table 39.

644 **Table 38 – DCIM_FCService.DeletePendingConfiguration() Method: Return Code Values**

Value	Description
0	Success
2	Failed

645 **Table 39 – DCIM_FCService.DeletePendingConfiguration() Method: Parameters**

Qualifiers	Name	Type	Description/Values
IN, REQ	Target	String	FQDD of the FC
OUT	MessageID	String	Error MessageID
OUT	Message	String	Error Message
OUT	MessageArguments[]	String	Error MessageArguments

Table 40 – DCIM_FCService.DeletePendingConfiguration() Method: Standard Messages

MessageID (OUT parameter)	Message	MessageArguments[]
FC001	The command was successful	
FC002	Resource allocation failure	
FC003	Missing required parameter	
FC004	Invalid parameter value for <parameter name>	Parameter
FC005	Mismatch in AttributeName and AttributeValue count	
FC006	Configuration job already created, cannot set attribute on specified target until existing job is completed or is cancelled	
FC007	Configuration job already created, cannot create another config job on specified target until existing job is completed or is cancelled	
FC008	No pending data is present to create a Configuration job	
FC009	Lifecycle Controller is currently in use.	
FC010	Lifecycle Controller is not enabled, cannot create Configuration job.	
FC011	Configuration job already created, pending data cannot be deleted	
FC012	No pending data present to delete	
FC013	Invalid AttributeName <parameter name>	AttributeName
FC014	Invalid AttributeValue for AttributeName <parameter name>	AttributeName
FC015	AttributeValue cannot be changed for read only AttributeName <parameter name>	AttributeName
FC016	AttributeValue cannot be changed for disabled AttributeName <parameter name>	AttributeName
FC017	Cannot perform the operation due to an unknown error in iDRAC	
FC018	Set operation failed as the attribute is read only.	
LC062	An instance of Export or Import System Configuration is already running.	

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

649 **10 CIM Elements**

650 No additional details specified.

651 **11 Privilege and License Requirement**

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

655 **Table 41 – Privilege and License Requirements**

Class and Method	Operation	User Privilege Required	License Required
DCIM_FCEnumeration	ENUMERATE, GET	Login	LM_REMOTE_CONFIGURATION
DCIM_FCInteger	ENUMERATE, GET	Login	LM_REMOTE_CONFIGURATION
DCIM_FCString	ENUMERATE, GET	Login	LM_REMOTE_CONFIGURATION
DCIM_FCView	ENUMERATE, GET	Login	LM_REMOTE_ASSET_INVENTORY
DCIM_FCStatistics	ENUMERATE, GET	Login	LM_DEVICE_MONITORING
DCIM_FCCapabilities	ENUMERATE, GET	Login	LM_REMOTE_ASSET_INVENTORY
DCIM_FCService	ENUMERATE, GET	Login	None.
DCIM_FCService.SetAttribute()	INVOKE	Login, Server Control	LM_REMOTE_CONFIGURATION
DCIM_FCService.SetAttributes()	INVOKE	Login, Server Control	LM_REMOTE_CONFIGURATION
DCIM_FCService.CreateTargetedConfigJob()	INVOKE	Login, Server Control	LM_REMOTE_CONFIGURATION
DCIM_FCService.DeletePendingConfiguration()	INVOKE	Login, Server Control	LM_REMOTE_CONFIGURATION
DCIM_LCRegisteredProfile	ENUMERATE, GET	Login	None.
DCIM_LCElementConformsToProfile	ENUMERATE, GET	Login	None.

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ANNEX A (informative)

Change Log

Version	Date	Description
1.0.0		Initial version.
1.0.0	8/30/2012	Adding DCIM_FCCapabilities and DCIM_FCStatistics.
1.0.0	9/26/2012	Remove from DCIM_FCView: PortEnable, PortStatus, OSDriverState, FirstFCTargetConnect, SecondFCTargetConnect
1.0.1	06/09/2013	Added DeviceDescription property in DCIM_FCView

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