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1 Scope

The DCIM CMC Profile describes the properties and interfaces for executing system management tasks related to the management of basic properties of CMC. The profile standardizes and aggregates the description of CMC properties into a CMC attribute representation, and provides static methodology for the clients to set the CMC attributes without substantial traversal of the model.

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) applies.

- DMTF DSP1033, Profile Registration Profile 1.0.0
- DMTF DSP0226, Web Services for Management (WS-Management) Specification 1.1.0
- DMTF DSP0227, WS-Management CIM Binding Specification 1.0.0
- Dell Lifecycle Controller Best Practices Guide v1.0, <link TBD>
- Dell Tech Center MOF Library:
  - http://www.delltechcenter.com/page/DCIM.Library.MOF
- Related Managed Object Format (MOF) files:
  - DCIM_CMCAttribute.mof
  - DCIM_CMCInteger.mof
  - DCIM_CMCService.mof
  - DCIM_CMCEnumeration.mof
  - DCIM_CMCString.mof
  - DCIM_ElementConformsToCMCProfile.mof
  - DCIM_CMCRegisteredProfile.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.
3.14
**Implementation Namespace: root/dcim**

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

3.15
**ENUMERATE** – Refers to WS-MAN ENUMERATE operation as described in Section 8.2 of DSP0226_V1.1 and Section 9.1 of DSP0227_V1.0

3.16
**GET** – Refers to WS-MAN GET operation as defined in Section 7.3 of DSP00226_V1.1 and Section 7.1 of DSP0227_V1.0

4 **Symbols and Abbreviated Terms**

4.1 **CIM** - Common Information Model

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

4.3 **CMC** - Chassis Manager Controller – management controller for the modular chassis

4.4 **WBEM** - Web-Based Enterprise Management

4.5 **SSO** - Single Sign On

4.6 **CSR** - Certificate Signing Request
5 Synopsis

Profile Name: CMC
Version:
Organization: Dell
CIM Schema Version: 2.26 Experimental
Dell Schema Version: 1.0.0
Interop Namespace: root/interop
Implementation Namespace: root/dell/cmc
Central Class: DCIM_CMCService
Scoping Class: DCIM_ComputerSystem

The Dell CMC Profile is a component profile that contains the Dell specific implementation requirements for CMC properties.
DCIM_CMCService shall be the Central Class.
Table 1 identifies profiles that are related to this profile.

<table>
<thead>
<tr>
<th>Profile Name</th>
<th>Organization</th>
<th>Version</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile Registration Profile</td>
<td>DCIM</td>
<td>1.0</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Dell Job Control</td>
<td>DCIM</td>
<td>1.0</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>
6 Description

The Dell CMC Profile describes the platform’s CMC attributes.

Figure 1 details typical Dell CMC Profile implementation for a platform with a CMC. For the client to discover the instrumentation’s support of this profile, CMCProfile is instantiated in the Namespace:root/dell/cmc

The DCIM_CMCRegisteredProfile instance describes the information about the implemented profile-most importantly, the name and version of the profile and the organization name that produced the profile.

Figure 1 – CMC Profile Implementation
7 Implementation Description

This section describes the requirements and guidelines for implementing Dell CMC Profile.

Table 2 – Class Requirements: CMC Profile

<table>
<thead>
<tr>
<th>Element Name</th>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Classes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCIM_CMCEnumeration</td>
<td>Mandatory</td>
<td>The class shall be implemented in the Implementation Namespace: root/dcim.</td>
</tr>
<tr>
<td>DCIM_CMCString</td>
<td>Mandatory</td>
<td>The class shall be implemented in the Implementation Namespace: root/dcim.</td>
</tr>
<tr>
<td>DCIM_CMCInteger</td>
<td>Mandatory</td>
<td>The class shall be implemented in the Implementation Namespace: root/dcim.</td>
</tr>
<tr>
<td>DCIM_CMCService</td>
<td>Mandatory</td>
<td>The class shall be implemented in the Implementation Namespace: root/dell/cmc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[4] See section 7.5</td>
</tr>
<tr>
<td>DCIM_ElementConformsToCMCProfile</td>
<td>Mandatory</td>
<td>The class shall be implemented in the Implementation Namespace: root/dell/cmc</td>
</tr>
<tr>
<td>DCIM_ElementConformsToCMCProfile</td>
<td>Mandatory</td>
<td>The class shall be implemented in the Interop Namespace: root/interop</td>
</tr>
<tr>
<td>DCIM_CMCRegisteredProfile</td>
<td>Mandatory</td>
<td>The class shall be implemented in the Interop Namespace: root/interop</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[5] See section 7.6</td>
</tr>
</tbody>
</table>

Indications

None defined in this profile

7.1 DCIM_CMCEnumeration

This section describes the implementation for the DCIM_CMCEnumeration class.

This class shall be instantiated in the Implementation Namespace: root/dell/cmc.

7.1.1 Resource URIs for WinRM®

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

The key property shall be the InstanceID.

The instance Resource URI for DCIM_CMCEnumeration instance shall be:

“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_CMCEnumeration?__cimnamespace=root/dell/cmc+InstanceId=<FQDD>&#<GroupID>&#<AttributeName>”
The following table lists the implemented operations on DCIM_CMCEnumeration.

### Table 3 – DCIM_CMCEnumeration - Operations

<table>
<thead>
<tr>
<th>Operation Name</th>
<th>Requirements</th>
<th>Required Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get</td>
<td>Mandatory</td>
<td>Instance URI</td>
</tr>
<tr>
<td>Enumerate</td>
<td>Mandatory</td>
<td>Class URI</td>
</tr>
<tr>
<td>DCIM_CMCService.ApplyAttributes()</td>
<td>Mandatory</td>
<td>See section 8.1</td>
</tr>
</tbody>
</table>

The following table details the implemented properties for DCIM_CMCEnumeration instance representing a CMC enumeration attribute. The “Requirements” column shall denote whether the property is implemented (for requirement definitions, see section 3). The “Additional Requirements” column shall denote either possible values for the property, or requirements on the value formulation.

### Table 4 – Class: DCIM_CMCEnumeration

<table>
<thead>
<tr>
<th>Properties</th>
<th>Type</th>
<th>Notes</th>
<th>Additional Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>InstanceID</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be formed as follows: “&lt;FQDD property value&gt;#&lt;GroupID&gt;#&lt;AttributeName property value&gt;”.</td>
</tr>
<tr>
<td>AttributeName</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be from the “AttributeName” column in Tables in section 7.4.</td>
</tr>
<tr>
<td>AttributeDisplayName</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be from the “AttributeDisplayName” column in Tables in section 7.4.</td>
</tr>
<tr>
<td>GroupID</td>
<td>String</td>
<td>Mandatory</td>
<td>See section 7.4.</td>
</tr>
<tr>
<td>GroupDisplayName</td>
<td>String</td>
<td>Mandatory</td>
<td>See section 7.4.</td>
</tr>
<tr>
<td>CurrentValue[]</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be one of the values in the “PossibleValues” column at the corresponding row in Tables in section 7.4.</td>
</tr>
<tr>
<td>PendingValue[]</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be one of the values in the “PossibleValues” column at the corresponding row in Tables in section 7.4.</td>
</tr>
<tr>
<td>DefaultValue[]</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall represent the default value of the attribute.</td>
</tr>
<tr>
<td>IsReadOnly</td>
<td>Boolean</td>
<td>Mandatory</td>
<td>The property value shall be from the “IsReadOnly” column in Tables in section 7.4.</td>
</tr>
<tr>
<td>FQDD</td>
<td>String</td>
<td>Mandatory</td>
<td>FQDD of the CMC that the attribute belongs to. This property shall have value “CMC.Integrated.1”.</td>
</tr>
<tr>
<td>DisplayOrder</td>
<td>uint16</td>
<td>Mandatory</td>
<td>The property shall represent the sequence number denoting the preferred placement of the attribute in the list of all CMC attributes.</td>
</tr>
<tr>
<td>Dependency</td>
<td>String</td>
<td>Optional</td>
<td>The property shall be formatted as XML describing the attributes dependence on other attribute(s).</td>
</tr>
<tr>
<td>PossibleValues[]</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be equal to the array of the values in “PossibleValues” column at the corresponding row in in Tables in section 7.4.</td>
</tr>
</tbody>
</table>
7.2 DCIM_CMCString

This section describes the implementation for the DCIM_CMCString class.

This class shall be instantiated in the Implementation Namespace: root/dell/cmc.

7.2.1 Resource URIs for WinRM®

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

The key property shall be the InstanceID.

The instance Resource URI for DCIM_CMCString instance shall be:

“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_CMCString?__cimnamespace=root/dell/cmc+InstanceID=<FQDD>#<GroupID>#<AttributeName>”

7.2.2 Operations

The following table lists the implemented operations on DCIM_CMCString.

Table 5 – DCIM_CMCString - Operations

<table>
<thead>
<tr>
<th>Operation Name</th>
<th>Requirements</th>
<th>Required Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get</td>
<td>Mandatory</td>
<td>Instance URI</td>
</tr>
<tr>
<td>Enumerate</td>
<td>Mandatory</td>
<td>Class URI</td>
</tr>
<tr>
<td>DCIM_CMCService.ApplyAttributes()</td>
<td>Mandatory</td>
<td>See section 8.1</td>
</tr>
</tbody>
</table>

7.2.3 Class Properties

The following table details the implemented properties for DCIM_CMCString instance representing a CMC string attribute. The “Requirements” column shall denote whether the property is implemented (for requirement definitions, see section 3). The “Additional Requirements” column shall denote either possible values for the property, or requirements on the value formulation.
### Table 6 – Class: DCIM_CMCString

<table>
<thead>
<tr>
<th>Properties</th>
<th>Type</th>
<th>Notes</th>
<th>Additional Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>InstanceID</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be formed as follows: &quot;&lt;FQDD property value&gt;#&lt;GroupID&gt;#&lt;AttributeName property value&gt;&quot;.</td>
</tr>
<tr>
<td>AttributeName</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be from the &quot;AttributeName&quot; column in Tables in section 7.4.</td>
</tr>
<tr>
<td>AttributeDisplayName</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be from the &quot;AttributeDisplayName&quot; column in Tables in section 7.4.</td>
</tr>
<tr>
<td>GroupID</td>
<td>String</td>
<td>Mandatory</td>
<td>See section 7.4.</td>
</tr>
<tr>
<td>GroupDisplayName</td>
<td>String</td>
<td>Mandatory</td>
<td>See section 7.4.</td>
</tr>
<tr>
<td>CurrentValue[]</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall represent the current value of the attribute.</td>
</tr>
<tr>
<td>PendingValue[]</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall represent the current value of the attribute.</td>
</tr>
<tr>
<td>DefaultValue[]</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall represent the default value of the attribute.</td>
</tr>
<tr>
<td>IsReadOnly</td>
<td>Boolean</td>
<td>Mandatory</td>
<td>The property value shall be from the &quot;IsReadOnly&quot; column in Tables in section 7.4.</td>
</tr>
<tr>
<td>FQDD</td>
<td>String</td>
<td>Mandatory</td>
<td>FQDD of the CMC that the attribute belongs to. The property shall have value &quot;CMC.Integrated.1&quot;.</td>
</tr>
<tr>
<td>DisplayOrder</td>
<td>uint16</td>
<td>Mandatory</td>
<td>The property shall represent the sequence number denoting the preferred placement of the attribute in the list of all CMC attributes.</td>
</tr>
<tr>
<td>Dependency</td>
<td>String</td>
<td>Optional</td>
<td>The property shall be formatted as XML describing the attributes dependence on other attribute(s).</td>
</tr>
<tr>
<td>MinLength</td>
<td>uint64</td>
<td>Mandatory</td>
<td>The property value shall be the value in the &quot;MinLength&quot; column at the corresponding row in in Tables in section 7.4. The omission or NULL shall denote that no known constraint exists on the CurrentValue and PendingValue properties.</td>
</tr>
<tr>
<td>MaxLength</td>
<td>uint64</td>
<td>Mandatory</td>
<td>The property value shall be the value in the &quot;MaxLength&quot; column at the corresponding row in in Tables in section 7.4. The omission or NULL shall denote that no known constraint exists on the CurrentValue and PendingValue properties.</td>
</tr>
</tbody>
</table>

### 7.3 DCIM_CMCInteger

This section describes the implementation for the DCIM_CMCInteger class.

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

#### 7.3.1 Resource URIs for WinRM®

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

The key property shall be the InstanceID.
The instance Resource URI for DCIM_CMCInteger instance shall be:

```
"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_CMCInteger?__cimnamespace=root/dell/cmc+InstanceID=<FQDD>#<GroupID>#<AttributeName>"
```

### 7.3.2 Operations

The following table lists the implemented operations on DCIM_CMCInteger.

<table>
<thead>
<tr>
<th>Operation Name</th>
<th>Requirements</th>
<th>Required Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get</td>
<td>Mandatory</td>
<td>Instance URI</td>
</tr>
<tr>
<td>Enumerate</td>
<td>Mandatory</td>
<td>Class URI</td>
</tr>
<tr>
<td>DCIM_CMCService.ApplyAttributes()</td>
<td>Mandatory</td>
<td>See section 8.1</td>
</tr>
</tbody>
</table>

### 7.3.3 Class Properties

The following table details the implemented properties for DCIM_CMCInteger instance representing a CMC integer attribute. The “Requirements” column shall denote whether the property is implemented (for requirement definitions, see section 3). The “Additional Requirements” column shall denote either possible values for the property, or requirements on the value formulation.
### Table 8 – Class: DCIM_CMCInteger

<table>
<thead>
<tr>
<th>Properties</th>
<th>Type</th>
<th>Requirement</th>
<th>Additional Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>InstanceID</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be formed as follows: &quot;&lt;FQDD property value&gt;#&lt;GroupID&gt;#&lt;AttributeName property value&gt;&quot;.</td>
</tr>
<tr>
<td>AttributeName</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be from the &quot;AttributeName&quot; column in Tables in section 7.4.</td>
</tr>
<tr>
<td>AttributeDisplayName</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be from the &quot;AttributeDisplayName&quot; column in Tables in section 7.4.</td>
</tr>
<tr>
<td>GroupID</td>
<td>String</td>
<td>Mandatory</td>
<td>See section 7.4.</td>
</tr>
<tr>
<td>GroupDisplayName</td>
<td>String</td>
<td>Mandatory</td>
<td>See section 7.4.</td>
</tr>
<tr>
<td>CurrentValue[]</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be one of the values in the &quot;PossibleValues&quot; column at the corresponding row in Tables in section 7.4.</td>
</tr>
<tr>
<td>PendingValue[]</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall be one of the values in the &quot;PossibleValues&quot; column at the corresponding row in Tables in section 7.4.</td>
</tr>
<tr>
<td>DefaultValue[]</td>
<td>String</td>
<td>Mandatory</td>
<td>The property value shall represent the default value of the attribute.</td>
</tr>
<tr>
<td>IsReadOnly</td>
<td>Boolean</td>
<td>Mandatory</td>
<td>The property value shall be from the &quot;IsReadOnly&quot; column in Tables in section 7.4.</td>
</tr>
<tr>
<td>FQDD</td>
<td>String</td>
<td>Mandatory</td>
<td>FQDD of the CMC that the attribute belongs to. This property shall have value &quot;CMC.Integrated.1&quot;.</td>
</tr>
<tr>
<td>DisplayOrder</td>
<td>uint16</td>
<td>Mandatory</td>
<td>The property shall represent the sequence number denoting the preferred placement of the attribute in the list of all CMC attributes.</td>
</tr>
<tr>
<td>Dependency</td>
<td>String</td>
<td>Optional</td>
<td>The property shall be formatted as XML describing the attributes dependence on other attribute(s).</td>
</tr>
<tr>
<td>LowerBound</td>
<td>uint64</td>
<td>Mandatory</td>
<td>The property value shall be the value in the &quot;LowerBound&quot; column at the corresponding row in Tables in section 7.4. The omission or NULL shall denote that no known constraint exists on the CurrentValue and PendingValue properties.</td>
</tr>
<tr>
<td>UpperBound</td>
<td>uint64</td>
<td>Mandatory</td>
<td>The property value shall be the value in the &quot;UpperBound&quot; column at the corresponding row in Tables in section 7.4. The omission or NULL shall denote that no known constraint exists on the CurrentValue and PendingValue properties.</td>
</tr>
</tbody>
</table>

#### 7.4 CMC Attributes

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

##### 7.4.1 Active Directory

This section describes the attributes for CMC’s Active Directory Configuration.
The GroupID property for the DCIM_CMCEnumeration, DCIM_CMCString, and DCIM_CMCInteger shall be “ActiveDirectory.1”.

The GroupDisplayName property for the DCIM_CMCEnumeration, DCIM_CMCString, and DCIM_CMCInteger shall be “Active Directory”.

The following table describes the values for the DCIM_CMCEnumeration of this group. Each column heading corresponds to a property name on the DCIM_CMCEnumeration class. The Description column contains the description for each of the attribute. Each row contains the values for the properties listed in the column headings. The PossibleValues property is an array property represented in the table as comma delimited list.

<table>
<thead>
<tr>
<th>AttributeName</th>
<th>AttributeDisplayName</th>
<th>IsReadOnly</th>
<th>DisplayOrder</th>
<th>PossibleValues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable</td>
<td>Active Directory Enable</td>
<td>FALSE</td>
<td>771</td>
<td>“Disabled”, “Enabled”</td>
</tr>
<tr>
<td>Schema</td>
<td>Active Directory Schema Type</td>
<td>FALSE</td>
<td>775</td>
<td>“Extended Schema”, “Standard Schema”</td>
</tr>
<tr>
<td>CertValidationEnable</td>
<td>Certificate Validation Enable</td>
<td>FALSE</td>
<td>782</td>
<td>“Disabled”, “Enabled”</td>
</tr>
<tr>
<td>SSOEnable</td>
<td>SSO Enable</td>
<td>FALSE</td>
<td>1063</td>
<td>“Disabled”, “Enabled”</td>
</tr>
<tr>
<td>DCLookupEnable</td>
<td>Domain Controller Lookup Enable</td>
<td>FALSE</td>
<td>785</td>
<td>“Disabled”, “Enabled”</td>
</tr>
<tr>
<td>DCLookupByUserDomain</td>
<td>Domain Controller Lookup By User Domain</td>
<td>FALSE</td>
<td>788</td>
<td>“Disabled”, “Enabled”</td>
</tr>
<tr>
<td>GLookupEnable</td>
<td>Global Catalog Server Lookup Enable</td>
<td>FALSE</td>
<td>784</td>
<td>“Disabled”, “Enabled”</td>
</tr>
</tbody>
</table>

The following table describes the values for the DCIM_CMCString of this group. Each column heading corresponds to a property name on the DCIM_CMCString class. The Value Expression column contains constraints on string value formulation. Each row contains the values for the properties listed in the column headings.

<table>
<thead>
<tr>
<th>AttributeName</th>
<th>Attribute Description</th>
<th>IsReadOnly</th>
<th>DisplayOrder</th>
<th>MinLength</th>
<th>MaxLength</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMCName</td>
<td>Active Directory CMC Name</td>
<td>FALSE</td>
<td>772</td>
<td>0</td>
<td>254</td>
</tr>
<tr>
<td>CMCDomain</td>
<td>Active Directory CMC Domain</td>
<td>FALSE</td>
<td>773</td>
<td>0</td>
<td>254</td>
</tr>
<tr>
<td>DomainController1</td>
<td>Domain Controller 1</td>
<td>FALSE</td>
<td>776</td>
<td>0</td>
<td>254</td>
</tr>
<tr>
<td>DomainController2</td>
<td>Domain Controller 2</td>
<td>FALSE</td>
<td>777</td>
<td>0</td>
<td>254</td>
</tr>
<tr>
<td>DomainController3</td>
<td>Domain Controller 3</td>
<td>FALSE</td>
<td>778</td>
<td>0</td>
<td>254</td>
</tr>
<tr>
<td>GlobalCatalog1</td>
<td>Global Catalog 1</td>
<td>FALSE</td>
<td>779</td>
<td>0</td>
<td>254</td>
</tr>
<tr>
<td>GlobalCatalog2</td>
<td>Global Catalog 2</td>
<td>FALSE</td>
<td>780</td>
<td>0</td>
<td>254</td>
</tr>
<tr>
<td>GlobalCatalog3</td>
<td>Global Catalog 3</td>
<td>FALSE</td>
<td>781</td>
<td>0</td>
<td>254</td>
</tr>
</tbody>
</table>
The following table describes the values for the DCIM_CMCInteger of this group. Each column heading corresponds to a property name on the DCIM_CMCInteger class. Each row contains the values for the properties listed in the column headings.

**Table 11 – DCIM_CMCInteger Active Directory**

<table>
<thead>
<tr>
<th>AttributeName</th>
<th>AttributeDisplayName</th>
<th>IsReadOnly</th>
<th>DisplayOrder</th>
<th>MinLength</th>
<th>MaxLength</th>
</tr>
</thead>
<tbody>
<tr>
<td>AuthTimeout</td>
<td>Active Directory Authentication Timeout</td>
<td>FALSE</td>
<td>774</td>
<td>15</td>
<td>300</td>
</tr>
</tbody>
</table>

### 7.4.2 Active Directory Group Configuration

This section describes the attributes for CMC’s Active Directory Group Configuration.

The GroupID property for the DCIM_CMCEnumeration, DCIM_CMCString, and DCIM_CMCInteger shall be “ADGroup.<#>” where “<#>” is a number 1 through 5.

The GroupDisplayName property for the DCIM_CMCEnumeration, DCIM_CMCString, and DCIM_CMCInteger shall be “AD Group Configuration”.

The following table describes the values for the DCIM_CMCString of this group. Each column heading corresponds to a property name on the DCIM_CMCString class. The Value Expression column contains constraints on string value formulation. Each row contains the values for the properties listed in the column headings.

**Table 12 – DCIM_CMCString AD Group Configuration**

<table>
<thead>
<tr>
<th>AttributeName</th>
<th>AttributeDescription</th>
<th>IsReadOnly</th>
<th>DisplayOrder</th>
<th>MinLength</th>
<th>MaxLength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>AD Role Group Name</td>
<td>FALSE</td>
<td>801, 811, 821, 831, 841</td>
<td>0</td>
<td>254</td>
</tr>
<tr>
<td>Domain</td>
<td>AD Group Domain</td>
<td>FALSE</td>
<td>802, 812, 822, 832, 842</td>
<td>0</td>
<td>254</td>
</tr>
</tbody>
</table>

The following table describes the values for the DCIM_CMCInteger of this group. Each column heading corresponds to a property name on the DCIM_CMCInteger class. Each row contains the values for the properties listed in the column headings.
### 7.4.3 Smart Card Configuration

This section describes the attributes for CMC’s Smart Card Configuration.

The GroupID property for the DCIM_CMCEnumeration, DCIM_CMCString, and DCIM_CMCInteger shall be “SmartCard.1”.

The GroupDisplayName property for the DCIM_CMCEnumeration, DCIM_CMCString, and DCIM_CMCInteger shall be “Smart Card Configuration”.

The following table describes the values for the DCIM_CMCEnumeration of this group. Each column heading corresponds to a property name on the DCIM_CMCEnumeration class. The Description column contains the description for each of the attribute. Each row contains the values for the properties listed in the column headings. The PossibleValues property is an array property represented in the table as comma delimited list.

<table>
<thead>
<tr>
<th>AttributeName</th>
<th>AttributeDisplayName</th>
<th>IsReadOnly</th>
<th>DisplayOrder</th>
<th>PossibleValues</th>
</tr>
</thead>
<tbody>
<tr>
<td>SmartCardLogonEnable</td>
<td>Smart Card Logon Enable</td>
<td>FALSE</td>
<td>1061</td>
<td>“Disabled”, “Enabled”</td>
</tr>
<tr>
<td>SmartCardCRLEnable</td>
<td>Smart Card CRL Enable</td>
<td>FALSE</td>
<td>1062</td>
<td>“Disabled”, “Enabled”</td>
</tr>
</tbody>
</table>

### 7.5 DCIM_CMCService – CMC Service

This section describes the implementation for the DCIM_CMCService class. It is used to host the ApplyAttributes method which is used to change the values of the CMC attribute values.

#### 7.5.1 Resource URIs for WinRM®

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

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

The instance Resource URI for DCIM_CMCService instance shall be:

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

The following table lists the implemented operations on DCIM_CMCService.

<table>
<thead>
<tr>
<th>Operation Name</th>
<th>Requirements</th>
<th>Required Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Properties and Methods</td>
<td>Requirements</td>
<td>Type</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------</td>
<td>------</td>
</tr>
<tr>
<td>SystemCreationClassName</td>
<td>Mandatory</td>
<td>string</td>
</tr>
<tr>
<td>CreationClassName</td>
<td>Mandatory</td>
<td>string</td>
</tr>
<tr>
<td>SystemName</td>
<td>Mandatory</td>
<td>string</td>
</tr>
<tr>
<td>Name</td>
<td>Mandatory</td>
<td>string</td>
</tr>
<tr>
<td>ElementName</td>
<td>Mandatory</td>
<td>string</td>
</tr>
</tbody>
</table>

### 7.5.2 Class Properties

The following table details the implemented properties for DCIM_CMCServcie instance representing the integer type attributes of a remote access card in a system. The “Requirements” column shall denote whether the property is implemented (for requirement definitions, see section 3). The “Additional Requirements” column shall denote either possible values for the property, or requirements on the value formulation.

### 7.6 CMC Profile Profile Registration

This section describes the implementation for the DCIM_CMCRegisteredProfile class.

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

### 7.6.1 Resource URIs for WinRM®

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

The key property shall be the InstanceID property.


### 7.6.2 Operations

The following table lists the implemented operations on DCIM_CMCRegisteredProfile.
### Table 19 – DCIM_CMCRegisteredProfile - Operations

<table>
<thead>
<tr>
<th>Operation Name</th>
<th>Requirements</th>
<th>Required Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get</td>
<td>Mandatory</td>
<td>Instance URI</td>
</tr>
<tr>
<td>Enumerate</td>
<td>Mandatory</td>
<td>Class URI</td>
</tr>
</tbody>
</table>

### 7.6.3 Class Properties

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

### Table 20 – DCIM_CMCRegisteredProfile - Properties

<table>
<thead>
<tr>
<th>Property Name</th>
<th>Requirement</th>
<th>Type</th>
<th>Additional Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>InstanceID</td>
<td>Mandatory</td>
<td>String</td>
<td>DCIM:CMC:1.0.0</td>
</tr>
<tr>
<td>RegisteredName</td>
<td>Mandatory</td>
<td>String</td>
<td>This property shall have a value of &quot;CMC&quot;</td>
</tr>
<tr>
<td>RegisteredVersion</td>
<td>Mandatory</td>
<td>String</td>
<td>This property shall have a value of &quot;1.0.0&quot;</td>
</tr>
<tr>
<td>RegisteredOrganization</td>
<td>Mandatory</td>
<td>Uint16</td>
<td>This property shall have a value of 1 (Other)</td>
</tr>
<tr>
<td>OtherRegisteredOrganization</td>
<td>Mandatory</td>
<td>String</td>
<td>The property value shall match &quot;DCIM&quot;</td>
</tr>
<tr>
<td>AdvertisedTypes[]</td>
<td>Mandatory</td>
<td>Uint16</td>
<td>This property array shall contain [1(Other), 1(Other)]</td>
</tr>
<tr>
<td>AdvertiseTypeDescriptions[]</td>
<td>Mandatory</td>
<td>String</td>
<td>This property array shall contain [&quot;WS-Identify&quot;, &quot;Interop Namespace&quot;]</td>
</tr>
<tr>
<td>ProfileRequireLicense[]</td>
<td>Mandatory</td>
<td>String</td>
<td>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.</td>
</tr>
<tr>
<td>ProfileRequireLicenseStatus[]</td>
<td>Mandatory</td>
<td>String</td>
<td>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.</td>
</tr>
</tbody>
</table>

### 8 Methods

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

#### 8.1 DCIM_CMCServices.ApplyAttributes()

The ApplyAttributes() method is used to set or change the values of a group of attributes. Invocation of the ApplyAttributes() method shall change the values of the DCIM_CMCAttribute.CurrentValue or PendingValue properties that correspond to the names specified by the AttributeName parameter and the values specified by the AttributeValue parameter if the respective DCIM_CMCAttribute.IsReadOnly property is FALSE. Invocation of this method when the respective DCIM_CMCAttribute.IsReadOnly property is TRUE shall result in no change to the corresponding value of the DCIM_CMCAttribute.CurrentValue property.
NOTE: If setting numerous attributes at the same time, please make sure that WSMAN client has a timeout of at least 120 seconds.

Return code values for the ApplyAttributes() method are specified in Table 21, and parameters are specified in Table 22.

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

### Table 21 – ApplyAttributes() Method: Return Code Values

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Completed with no error</td>
</tr>
<tr>
<td>2</td>
<td>Failed</td>
</tr>
</tbody>
</table>

### Table 22 – ApplyAttributes() Method: Parameters

<table>
<thead>
<tr>
<th>Qualifiers</th>
<th>Name</th>
<th>Type</th>
<th>Description/Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN, REQ</td>
<td>Target</td>
<td>String</td>
<td>FQDD of the CMC, “CMC.Integrated.1”.</td>
</tr>
<tr>
<td>IN, REQ</td>
<td>AttributeName[]</td>
<td>String</td>
<td>An array of values where each value shall be formatted in the following way:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;GroupID property value&gt;#&lt;AttributeName property value&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Example: “MyGroup#MyAttribute”</td>
</tr>
<tr>
<td>IN, REQ</td>
<td>AttributeValue[]</td>
<td>String</td>
<td>Shall contain the desired attribute values. Array attributes shall not be set using this method. If the value is valid, the CurrentValue or PendingValue property of the specified attribute will be modified.</td>
</tr>
<tr>
<td>OUT</td>
<td>SetResult[]</td>
<td>String</td>
<td>Returns:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• &quot;Set CurrentValue&quot; when the attributes current value is set.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• “Set PendingValue” when the attributes pending value is set.</td>
</tr>
<tr>
<td>OUT</td>
<td>RebootRequired[]</td>
<td>String</td>
<td>Returns:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• “Yes” if reboot is required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• “No” if reboot is not required.</td>
</tr>
<tr>
<td>OUT</td>
<td>MessageID[]</td>
<td>String</td>
<td>Error Message ID may be used to look-up in the Dell Message registry files. For more information, see Error Message Registry.</td>
</tr>
<tr>
<td>OUT</td>
<td>Message[]</td>
<td>String</td>
<td>Error Message in English corresponding to MessageID is returned if the method fails to execute</td>
</tr>
<tr>
<td>OUT</td>
<td>MessageArguments[]</td>
<td>String</td>
<td>Substitution variables for dynamic error messages</td>
</tr>
</tbody>
</table>

### Table 23 – ApplyAttributes() Method: Standard Messages

<table>
<thead>
<tr>
<th>MessageID (OUT parameter)</th>
<th>Message</th>
<th>MessageArguments[]</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMC001</td>
<td>The command was successful</td>
<td></td>
</tr>
<tr>
<td>CMC002</td>
<td>General failure</td>
<td></td>
</tr>
<tr>
<td>CMC003</td>
<td>Missing required parameter</td>
<td>AttributeName, AttributeValue,</td>
</tr>
<tr>
<td>MessageID (OUT parameter)</td>
<td>Message</td>
<td>MessageArguments[]</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------</td>
<td>---------------------</td>
</tr>
<tr>
<td>CMC004</td>
<td>Invalid parameter value for <code>&lt;parameter&gt;</code></td>
<td>AttributeName, AttributeValue, Target</td>
</tr>
<tr>
<td>CMC005</td>
<td>Mismatch in AttributeName and AttributeValue count</td>
<td></td>
</tr>
<tr>
<td>CMC006</td>
<td>AttributeValue cannot be changed for ReadOnly Attribute Name</td>
<td></td>
</tr>
<tr>
<td>CMC007</td>
<td>Input out of range</td>
<td></td>
</tr>
<tr>
<td>CMC008</td>
<td>Invalid boolean Value</td>
<td></td>
</tr>
<tr>
<td>CMC009</td>
<td>Invalid character Value</td>
<td></td>
</tr>
<tr>
<td>CMC010</td>
<td>Invalid FQDD</td>
<td></td>
</tr>
<tr>
<td>CMC011</td>
<td>Invalid Attribute was Entered</td>
<td></td>
</tr>
<tr>
<td>CMC012</td>
<td>Not one of the Possible Values for AttributeName</td>
<td></td>
</tr>
<tr>
<td>CMC013</td>
<td>Invalid AttributeName</td>
<td></td>
</tr>
<tr>
<td>CMC014</td>
<td>Completed with Errors</td>
<td></td>
</tr>
<tr>
<td>CMC015</td>
<td>Failed</td>
<td>AttributeName</td>
</tr>
<tr>
<td>CMC016</td>
<td>Attribute dependency failed</td>
<td></td>
</tr>
<tr>
<td>CMC017</td>
<td>Unsupported parameter name</td>
<td></td>
</tr>
</tbody>
</table>

### 9 Use Cases

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

### 10 CIM Elements

No additional details specified.

### 11 Privilege and License Requirement

The following table describes the privilege and license requirements for the listed operations.

<table>
<thead>
<tr>
<th>Class and Method</th>
<th>Instance (GroupID.Attribute Name)</th>
<th>Operation</th>
<th>Required User Privilege</th>
<th>Required License</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class and Method</td>
<td>Instance (GroupID.Attribute Name)</td>
<td>Operation</td>
<td>Required User Privilege</td>
<td>Required License</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------------</td>
<td>-----------------</td>
<td>-------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>DCIM_CMCService</td>
<td></td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>None.</td>
</tr>
<tr>
<td>DCIM_CMCService.</td>
<td></td>
<td>INVOKE</td>
<td>Login to CMC, Chassis Configure Admin</td>
<td>None.</td>
</tr>
<tr>
<td>DCIM_CMCService.</td>
<td>Users.Privilege</td>
<td>INVOKE</td>
<td>Login to CMC, Chassis Configure Admin, User Config Admin</td>
<td>None.</td>
</tr>
<tr>
<td>DCIM_ElementConformsToCMCProfile</td>
<td></td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>None.</td>
</tr>
<tr>
<td>DCIM_CMCRegisteredProfile</td>
<td></td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>None.</td>
</tr>
<tr>
<td>DCIM_CMCardInteger</td>
<td>Users.Privilege</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>None.</td>
</tr>
<tr>
<td>DCIM_CMEnumeration</td>
<td>AD.Enable</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCString</td>
<td>AD.CMCName</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCString</td>
<td>AD.CMCDomain</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCInteger</td>
<td>AD.AuthTimeout</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMEnumeration</td>
<td>AD.Schema</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCString</td>
<td>AD.DomainController1</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCString</td>
<td>AD.DomainController2</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCString</td>
<td>AD.DomainController3</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCString</td>
<td>AD.GlobalCatalog1</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCString</td>
<td>AD.GlobalCatalog2</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCString</td>
<td>AD.GlobalCatalog3</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMEnumeration</td>
<td>AD.CertValidationEnable</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMEnumeration</td>
<td>AD.SSOEnable</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMEnumeration</td>
<td>AD.DCLookupEnable</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>Class and Method</td>
<td>Instance (GroupID.Attribute Name)</td>
<td>Operation</td>
<td>Required User Privilege</td>
<td>Required License</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------</td>
<td>-----------</td>
<td>-------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>DCIM_CMCEnumeration</td>
<td>AD.DCLookupByUser Domain</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCString</td>
<td>AD.DCLookupDomain Name</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCEnumeration</td>
<td>AD.GCLookupEnable</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCString</td>
<td>AD.GCRootDomain</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_DIRECTOR_Y_SERVICES</td>
</tr>
<tr>
<td>DCIM_CMCEnumeration</td>
<td>SmartCard.SmartCard LogonEnable</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_TWO_FACT_OR_AUTHEN</td>
</tr>
<tr>
<td>DCIM_CMCEnumeration</td>
<td>SmartCard.SmartCard CRLEnable</td>
<td>ENUMERATE, GET</td>
<td>Login to CMC</td>
<td>LM_CMC_TWO_FACT_OR_AUTHEN</td>
</tr>
</tbody>
</table>
Privilege Information

The following annex describes the mapping for CMC privileges. The integer value returned for the privilege represents a bit mask, where each bit represents a specific privilege. If a particular bit is set, then the corresponding privilege exists. Table represents the bitmask mapping to the CMC privileges.

Table 25 – Privilege Bit Mask

<table>
<thead>
<tr>
<th>Bit</th>
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<tbody>
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<td>2</td>
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<td>3</td>
<td>User Configuration Administrator</td>
</tr>
<tr>
<td>4</td>
<td>Clear Logs Administrator</td>
</tr>
<tr>
<td>5</td>
<td>Chassis Control Administrator (Power Commands)</td>
</tr>
<tr>
<td>6</td>
<td>Super User</td>
</tr>
<tr>
<td>7</td>
<td>Server Administrator</td>
</tr>
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<td>8</td>
<td>Test Alert User</td>
</tr>
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<td>9</td>
<td>Debug Command Administrator</td>
</tr>
<tr>
<td>10</td>
<td>Fabric A Administrator</td>
</tr>
<tr>
<td>11</td>
<td>Fabric B Administrator</td>
</tr>
<tr>
<td>12</td>
<td>Fabric C Administrator</td>
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ANNEX B
(informative)

Change Log

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