Lifecycle Controller (LC) XML Schema Guide

Interpretation of XML schema used by LC

Steven Zessin
Divya Vijayvargiya
Pushkala Iyer

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LC **XML Schema Guide**

1 Scope

The Lifecycle controller (LC) XML Schema Guide describes the content in various XML logs comprising of attributes, elements, and events.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Associated Schema XSD files are located:
http://en.community.dell.com/techcenter/extras/m/white_papers/20441019

Dell Lifecycle Controller Best Practices Guide v1.0
http://en.community.dell.com/techcenter/systems-management/w/wiki/1979.lifecycle-controller.aspx

3 Terms and Definitions

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

FQDD
Fully Qualified Device Descriptor is used to identify a particular component in a system.

4 Symbols and Abbreviated Terms

CIM
Common Information Model

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

5 Lifecycle Log xml

This section provides a detailed description of the Lifecycle Log XML schema and definitions for all element values.

5.1 Element and Attribute Descriptions

The Lifecycle Log XML comprises of a root element, *LCLogEvents*. *LCLogEvents* element further comprises or one or more *Event* elements.
Each *Event* element describe an event captured in the Lifecycle Log. Each *Event* element further contains elements and attributes describing a particular event. Table 1 details each of the sub-elements of *Event* element, and Table 2 details each of the attributes of *Event* element.

Table 1 – Lifecycle Log XML *Event* Elements

Element Name	Description	Value Format
Message	The value associated with this element represents the message/text associated with this log entry.	Alphanumeric text string including punctuation and angle brackets.
MessageID	MessageID is an alphanumeric string that uniquely identifies a type of message. Given a MessageID, users can retrieve additional information about the event like Recommended Action and Detailed Description.	Maximum 8 character string. The first 4 characters are alphabetic and the last 4 are numeric.
MessageArgs	Message substitution variables values that were used to generate the message when logging this entry.	Contains Arg sub-element describing the substation variables values.
FQDD	The FQDD acronym stands for the Fully Qualified Device Descriptor. The FQDD specifies type and location information about a system component in a pattern that is the same for all components in the system.	
RawEventData	This contains the raw event bytes. In case of the IPMI System Event Llog (SEL), this contains the 16 byte SEL.	
Comment	User input string associated with this log entry.	See Error!
ConfigResults	Detailed information about any configuration changes made.	See section 6

Table 2 – Lifecycle Log XML *Event* Element Attributes

Attribute Name	Description	Value Format
AgentID	Represents the agent that logged this entry.	UEFI SS/USC, Customer OS Update, UEFI Inventory, iDRAC, UEFI DCS, SEL, RACLOG, DM, WSMAN, RACADM, iDRAC_GUI, AutoDiscovery
Category	Represents the category for this entry.	System Health, Storage, Updates, Audit, Configuration, Work Notes
Severity	Severity of this log entry	Critical, Warning, Informational
Timestamp	Combined date and time in UTC format.	Date is represented first, the value between 'T' and 'Z' represents UTC time
Sequence	Unique identifier for the log entry.	Positive integer value starting with 1 and monotonically increasing.

Comment element describes user comments associated with a particular event. Table 3 details the *Comment element attributes.*

Table 3 – Lifecycle Log XML *Comment* Element Attributes

Element Name	Description	Value Format
Username	The user who edited or inserted the comment	
Timestamp	Comment entry combined date and time in UTC format.	

5.2 Sample XML

The section contains a sample Lifecycle Log XML that contains a single configuration event and includes configuration results further described in section 6.

```
<?xml version="1.0" encoding="UTF-8"?>
<LCLogEvents Version="1">
  <Event AgentID="iDRAC" Category="Configuration" Severity="Warning" Timestamp="2001-01-
12T00:43:14Z" Sequence="3">
    <Message>Some of the configuration values could not be applied to device: PowerEdge
R720(Setup 1-1)</Message>
    <MessageID>PR16</MessageID>
    <FQDD/>
    <MessageArgs>
      <Arg>PowerEdge R720(Setup 1-1)</Arg>
    </MessageArgs>
    <RawEventData/>
    <Comment/>
    <ConfigResults>
      <JobID>JID_792596417931</JobID>
      <Operation name="CHANGE">
        <DisplayValue>AcPwrRcvry</DisplayValue>
        <Name>AcPwrRcvry</Name>
        <Detail>
          <OldValue>On</OldValue>
          <NewValue>On</NewValue>
        </Detail>
        <Status>Success</Status>
        <ErrorCode>0</ErrorCode>
      </Operation>
      <Operation name="CHANGE">
        <DisplayValue>MemTest</DisplayValue>
        <Name>MemTest</Name>
        <Detail>
          <OldValue>Enabled</OldValue>
        </Detail>
        <Status>Failure</Status>
        <ErrorCode>901</ErrorCode>
      </Operation>

    </ConfigResults>
  </Event>
</LCLogEvents>
```

5.3 XSD

The section contains a sample Lifecycle Log XML that contains a single configuration event and includes configuration results further described in section 6.

```
<?xml version="1.0" encoding="UTF-8"?>
<!--   Copyright © 2010 Dell, Inc. All rights reserved. -->
<xs:schema targetNamespace="http://schemas.dell.com/lclog/1/0/events"
elementFormDefault="qualified" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:evt="http://schemas.dell.com/lclog/1/0/events">
  <xs:element name="Event">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="Message" type="xs:string"/>
        <xs:element name="MessageID" type="xs:string"/>
        <xs:element name="FQDD" type="xs:string"/>
        <xs:element name="MessageArgs" minOccurs="0">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="Arg" type="xs:string" maxOccurs="unbounded"/>
            </xs:sequence>
          </xs:complexType>
        </xs:element>
        <xs:element name="RawEventData" type="xs:base64Binary" minOccurs="0"/>
        <xs:element name="Comment" minOccurs="0">
          <xs:complexType>
            <xs:attribute name="TimeStamp" type="xs:dateTime" use="required"/>
            <xs:attribute name="Username" type="xs:string" use="required"/>
          </xs:complexType>
        </xs:element>
        <xs:element name="ConfigResults" minOccurs="0">
          <xs:complexType>
            <xs:sequence maxOccurs="unbounded">
              <xs:element name="JobID" type="xs:string" minOccurs="0"/>
              <xs:element name="Operation">
                <xs:complexType>
                  <xs:sequence maxOccurs="unbounded">
                    <xs:element name="DisplayValue" type="xs:string"/>
                    <xs:element name="Name" type="xs:string"/>
                    <xs:element name="Detail" minOccurs="0">
                      <xs:complexType>
                        <xs:sequence>
                          <xs:element name="OldValue" type="xs:string" minOccurs="0"/>
                          <xs:element name="NewValue" type="xs:string" minOccurs="0"/>
                        </xs:sequence>
                      </xs:complexType>
                    </xs:element>
                    <xs:element name="Status" type="xs:string"/>
                    <xs:element name="ErrorCode" type="xs:long"/>
                  </xs:sequence>
                  <xs:attribute name="name" type="xs:string" use="required"/>
                </xs:complexType>
              </xs:element>
            </xs:sequence>
          </xs:complexType>
        </xs:element>
      </xs:sequence>
      <xs:attribute name="AgentID" type="xs:string" use="required"/>
      <xs:attribute name="Category" type="xs:string" use="required"/>
      <xs:attribute name="Severity" type="xs:string" use="required"/>
```

```
      <xs:attribute name="Timestamp" type="xs:dateTime" use="required"/>
      <xs:attribute name="Sequence" type="xs:int" use="required"/>
    </xs:complexType>
  </xs:element>
  <xs:element name="LCLogEvents">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="evt:Event" maxOccurs="unbounded"/>
      </xs:sequence>
      <xs:attribute name="lang" type="xs:string" use="optional"/>
      <xs:attribute name="schemaVersion" type="xs:string" use="optional"/>
      <xs:attribute name="timeStamp" type="xs:dateTime" use="optional"/>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

6 Configuration Results XML

This section provides a detailed description of the Configuration Results XML schema and definitions for all element values.

6.1 Element and Attribute Descriptions

Table of Configuration Results element descriptions for <ConfigResults> element:

Table 4 – Configuration Results XML Event Elements

Element Name	Description	Value Format
JobID	The job identifier for the job spawned to change a configuration.	Alphanumeric text string that starts with “JID_” string and is followed by a unique integer to identify the job.
Operation	The type of operation performed and the information on the outcome of the operation.	See Table 5

Table of element descriptions:

Table 5 – Configuration Results XML Operation Elements

Element Name	Description	Value Format
DisplayValue	Affected configuration attribute display name	
Name	Affected configuration attribute name	
Detail	Details of the operation	See Table 6
Status	Status of the operation	“Success”, “Failure”
ErrorCode	ErrorCode of the operation	0 value denotes successful operation.

Table of Element Descriptions:

Table 6 – Configuration Results XML Comment Detail Element

Element Name	Description	Value Format
OldValue	Affected configuration attribute's old value	
NewValue	Affected configuration attribute's new value	
MessageID	Optional, the message ID corresponding to the error code	
Message	Optional, a string describing the condition that caused the error condition	

6.2 Sample XML

Each entry in Config Results xml is represented as an <ConfigResults> element.

```
<ConfigResults xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="C:\Users\khachatur_papanyan\Documents\work\DellProfiles\Structured
Data\configresults.xsd">
  <JobID>JID_001274442920</JobID>
  <Operation name="CHANGE">
    <DisplayValue>TCP Port:</DisplayValue>
    <Name>TCP Port:</Name>
    <Detail>
      <OldValue>326</OldValue>
      <NewValue>3260</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrorCode>0</ErrorCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>Boot LUN:</DisplayValue>
    <Name>Boot LUN:</Name>
    <Detail>
      <OldValue>1</OldValue>
      <NewValue>0</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrorCode>0</ErrorCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>iSCSI Name:</DisplayValue>
    <Name>iSCSI Name:</Name>
    <Detail>
      <OldValue>iqn.test-example</OldValue>
    </Detail>
    <Status>Failure</Status>
    <ErrorCode>8000000000000002</ErrorCode>
  </Operation>
</ConfigResults>
```

6.3 Sample XML RTS+

The input in this case contained 2 attributes, but the first one had a bad attribute value and the second one had a typo (misspelled attribute). The sample shows the messages that are logged in this case as part of ConfigResults.

```
<ConfigResults>
<JobID>JID_461686954303</JobID>
<FQDD>System.Embedded.1</FQDD>
<JobName>Import Configuration</JobName>
<JobDisplayName>Configure: Import system configuration XML
file</JobDisplayName>
<Operation name="CHANGE">
<DisplayValue>Event Generation Interval</DisplayValue>
<Name>ThermalConfig.1#EventGenerationInterval</Name>
<Detail>
<OldValue>30</OldValue>
</Detail>
<MessageID>RAC007</MessageID>
<Message>Input out of Range</Message>
<Status>Failure</Status>
<ErrCode>9219</ErrCode>
</Operation>
<Operation name="CHANGE">
<DisplayValue></DisplayValue>
<Name>ThermalConfig.1#CriticalEventGenerationInter</Name>
<Detail>
<OldValue></OldValue>
</Detail>
<MessageID>RAC014</MessageID>
<Message>Invalid Attribute was entered</Message>
<Status>Failure</Status>
<ErrCode>9235</ErrCode>
</Operation>
</ConfigResults>
```

The input contained an invalid character, making the XML invalid. The output shows the message logged in this case.

```
<ConfigResults>
  <JobID>JID_461683071407</JobID>
  <JobName>Import Configuration</JobName>
  <Messages>
    <MessageID>SYS048</MessageID>
    <Message>
      Systemconfiguration XML input file contains invalid characters,
AMPERSAND at
      line 12
    </Message>
  </Messages>
</ConfigResults>
```

```
The input contained attributes from multiple FQDDs (System, iDRAC, BIOS and
NIC). The output has the successful configuration results of all these
```

attributes, and has an FQDD that identifies the set of attributes that changed.

```
<ConfigResults>
  <JobID>JID_461694258191</JobID>
  <FQDD>NIC.Slot.1-2</FQDD>
  <JobName>Import Configuration</JobName>
  <JobDisplayName>Configure: Import system configuration XML
file</JobDisplayName>
  <Operation name="CHANGE">
    <DisplayValue>WakeOnLan</DisplayValue>
    <Name>WakeOnLan</Name>
    <Detail>
      <OldValue>Enabled</OldValue>
      <NewValue>Disabled</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrorCode>0</ErrorCode>
  </Operation>
</ConfigResults>
<ConfigResults>
  <JobID>JID_461694258191</JobID>
  <FQDD>NIC.Integrated.1-1</FQDD>
  <JobName>Import Configuration</JobName>
  <JobDisplayName>Configure: Import system configuration XML
file</JobDisplayName>
  <Operation name="CHANGE">
    <DisplayValue>BlnkLeds</DisplayValue>
    <Name>BlnkLeds</Name>
    <Detail>
      <OldValue>0</OldValue>
      <NewValue>1</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrorCode>0</ErrorCode>
  </Operation>
</ConfigResults>
<ConfigResults>
  <JobID>JID_461694258191</JobID>
  <FQDD>BIOS.Setup.1-1</FQDD>
  <JobName>Import Configuration</JobName>
  <JobDisplayName>Configure: Import system configuration XML
file</JobDisplayName>
  <Operation name="CHANGE">
    <DisplayValue>MemTest</DisplayValue>
    <Name>MemTest</Name>
    <Detail>
      <OldValue>Disabled</OldValue>
      <NewValue>Enabled</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrorCode>0</ErrorCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>AssetTag</DisplayValue>
    <Name>AssetTag</Name>
```

```
    <Detail>
      <OldValue/>
      <NewValue>12345</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrorCode>0</ErrorCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>NumLock</DisplayValue>
    <Name>NumLock</Name>
    <Detail>
      <OldValue>Off</OldValue>
      <NewValue>On</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrorCode>0</ErrorCode>
  </Operation>
</ConfigResults>
<ConfigResults>
  <JobID>JID_461694258191</JobID>
  <FQDD>System.Embedded.1</FQDD>
  <JobName>Import Configuration</JobName>
  <JobDisplayName>Configure: Import system configuration XML
file</JobDisplayName>
  <Operation name="CHANGE">
    <DisplayValue>LCD Configuration</DisplayValue>
    <Name>LCD.1#Configuration</Name>
    <Detail>
      <OldValue>User Defined</OldValue>
      <NewValue>Service Tag</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>Critical Event Generation Interval</DisplayValue>
    <Name>ThermalConfig.1#CriticalEventGenerationInterval</Name>
    <Detail>
      <OldValue>30</OldValue>
      <NewValue>31</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>Event Generation Interval</DisplayValue>
    <Name>ThermalConfig.1#EventGenerationInterval</Name>
    <Detail>
      <OldValue>30</OldValue>
      <NewValue>31</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
</ConfigResults>
<ConfigResults>
  <JobID>JID_461694258191</JobID>
```

```
  <FQDD>iDRAC.Embedded.1</FQDD>
  <JobName>Import Configuration</JobName>
  <JobDisplayName>Configure: Import system configuration XML
file</JobDisplayName>
  <Operation name="CHANGE">
    <DisplayValue>User Admin User Name</DisplayValue>
    <Name>Users.3#UserName</Name>
    <Detail>
      <OldValue></OldValue>
      <NewValue>test3</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>User Admin Password</DisplayValue>
    <Name>Users.3#Password</Name>
    <Detail>
      <OldValue>******</OldValue>
      <NewValue>******</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>User Admin Enable</DisplayValue>
    <Name>Users.3#Enable</Name>
    <Detail>
      <OldValue>Enabled</OldValue>
      <NewValue>Disabled</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>User Admin User Name</DisplayValue>
    <Name>Users.4#UserName</Name>
    <Detail>
      <OldValue>user4</OldValue>
      <NewValue>test4</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>UserAdmin Password</DisplayValue>
    <Name>Users.4#Password</Name>
    <Detail>
      <OldValue>******</OldValue>
      <NewValue>******</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>User Admin UserName</DisplayValue>
    <Name>Users.5#UserName</Name>
```

```
    <Detail>
      <OldValue>user5</OldValue>
      <NewValue>test5</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>User Admin Password</DisplayValue>
    <Name>Users.5#Password</Name>
    <Detail>
      <OldValue>******</OldValue>
      <NewValue>******</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>User Admin User Name</DisplayValue>
    <Name>Users.6#UserName</Name>
    <Detail>
      <OldValue>user6</OldValue>
      <NewValue>test6</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>User Admin Password</DisplayValue>
    <Name>Users.6#Password</Name>
    <Detail>
      <OldValue>******</OldValue>
      <NewValue>******</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>Enable Email Alerts</DisplayValue>
    <Name>EmailAlert.1#Enable</Name>
    <Detail>
      <OldValue>Disabled</OldValue>
      <NewValue>Enabled</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>Email Alert Address</DisplayValue>
    <Name>EmailAlert.1#Address</Name>
    <Detail>
      <OldValue></OldValue>
      <NewValue>a@yahoo.com</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
```

```
<Operation name="CHANGE">
  <DisplayValue>Email Alert Custom Message</DisplayValue>
  <Name>EmailAlert.1#CustomMsg</Name>
  <Detail>
    <OldValue></OldValue>
    <NewValue>test</NewValue>
  </Detail>
  <Status>Success</Status>
  <ErrCode>0</ErrCode>
</Operation>
<Operation name="CHANGE">
  <DisplayValue>Enable Email Alerts</DisplayValue>
  <Name>EmailAlert.2#Enable</Name>
  <Detail>
    <OldValue>Disabled</OldValue>
    <NewValue>Enabled</NewValue>
  </Detail>
  <Status>Success</Status>
  <ErrCode>0</ErrCode>
</Operation>
<Operation name="CHANGE">
  <DisplayValue>Email Alert Address</DisplayValue>
  <Name>EmailAlert.2#Address</Name>
  <Detail>
    <OldValue></OldValue>
    <NewValue>b@yahoo.com</NewValue>
  </Detail>
  <Status>Success</Status>
  <ErrCode>0</ErrCode>
</Operation>
<Operation name="CHANGE">
  <DisplayValue>Email Alert Custom Message</DisplayValue>
  <Name>EmailAlert.2#CustomMsg</Name>
  <Detail>
    <OldValue></OldValue>
    <NewValue>test</NewValue>
  </Detail>
  <Status>Success</Status>
  <ErrCode>0</ErrCode>
</Operation>
<Operation name="CHANGE">
  <DisplayValue>Enable Email Alerts</DisplayValue>
  <Name>EmailAlert.3#Enable</Name>
  <Detail>
    <OldValue>Disabled</OldValue>
    <NewValue>Enabled</NewValue>
  </Detail>
  <Status>Success</Status>
  <ErrCode>0</ErrCode>
</Operation>
<Operation name="CHANGE">
  <DisplayValue>Email Alert Address</DisplayValue>
  <Name>EmailAlert.3#Address</Name>
  <Detail>
    <OldValue></OldValue>
    <NewValue>c@yahoo.com</NewValue>
  </Detail>
```

```
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>Email Alert Custom Message</DisplayValue>
    <Name>EmailAlert.3#CustomMsg</Name>
    <Detail>
      <OldValue></OldValue>
      <NewValue>test</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>Enable Email Alerts</DisplayValue>
    <Name>EmailAlert.4#Enable</Name>
    <Detail>
      <OldValue>Disabled</OldValue>
      <NewValue>Enabled</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>Email Alert Address</DisplayValue>
    <Name>EmailAlert.4#Address</Name>
    <Detail>
      <OldValue></OldValue>
      <NewValue>d@yahoo.com</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>Email Alert Custom Message</DisplayValue>
    <Name>EmailAlert.4#CustomMsg</Name>
    <Detail>
      <OldValue></OldValue>
      <NewValue>test</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
  <Operation name="CHANGE">
    <DisplayValue>Enable</DisplayValue>
    <Name>Telnet.1#Enable</Name>
    <Detail>
      <OldValue>Disabled</OldValue>
      <NewValue>Enabled</NewValue>
    </Detail>
    <Status>Success</Status>
    <ErrCode>0</ErrCode>
  </Operation>
</ConfigResults>
```

6.4 XSD

```
<!--   Copyright © 2010 Dell, Inc. All rights reserved. -->
<xs:schema targetNamespace="http://schemas.dell.com/lclog/1/0/configresults"
elementFormDefault="qualified" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:cfg="http://schemas.dell.com/lclog/1/0/configresults">
  <xs:element name="ConfigResults">
    <xs:complexType>
      <xs:sequence maxOccurs="unbounded">
        <xs:element name="JobID" type="xs:string" minOccurs="0"/>
        <xs:element name="Operation">
          <xs:complexType>
            <xs:sequence maxOccurs="unbounded">
              <xs:element name="DisplayValue" type="xs:string"/>
              <xs:element name="Name" type="xs:string"/>
              <xs:element name="Detail" minOccurs="0">
                <xs:complexType>
                  <xs:sequence>
                    <xs:element name="OldValue" type="xs:string" minOccurs="0"/>
                    <xs:element name="NewValue" type="xs:string" minOccurs="0"/>
                  </xs:sequence>
                </xs:complexType>
              </xs:element>
              <xs:element name="Status" type="xs:string"/>
              <xs:element name="ErrorCode" type="xs:long"/>
            </xs:sequence>
            <xs:attribute name="name" type="xs:string" use="required"/>
          </xs:complexType>
        </xs:element>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

6.5 Modification for RTS+

```
<!-- Copyright © 2010 Dell, Inc. All rights reserved. -->
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:cfg="http://schemas.dell.com/lclog/1/0/configresults"
targetNamespace="http://schemas.dell.com/lclog/1/0/configresults" elementFormDefault="qualified">
  <xs:element name="ConfigResults">
    <xs:complexType>
      <xs:sequence maxOccurs="unbounded">
        <xs:element name="JobID" type="xs:string" minOccurs="0"/>
        <xs:element name="JobName" type="xs:string" minOccurs="0"/>
        <xs:element name="JobDisplayName" type="xs:string" minOccurs="0"/>
        <xs:element name="FQDD" type="xs:string" minOccurs="0"/>
        <xs:element name="Operation">
          <xs:complexType>
            <xs:sequence maxOccurs="unbounded">
              <xs:element name="DisplayValue" type="xs:string"/>
              <xs:element name="Name" type="xs:string"/>
              <xs:element name="Detail" minOccurs="0">
                <xs:complexType>
                  <xs:sequence>
                    <xs:element name="OldValue" type="xs:string" minOccurs="0"/>
                    <xs:element name="NewValue" type="xs:string" minOccurs="0"/>
                  </xs:sequence>
                </xs:complexType>
              </xs:element>
```

```
            <xs:element name="MessageID" type="xs:string" minOccurs="0"/>
            <xs:element name="Message" type="xs:string" minOccurs="0"/>
            <xs:element name="Status" type="xs:string"/>
            <xs:element name="ErrorCode" type="xs:long"/>
          </xs:sequence>
          <xs:attribute name="name" type="xs:string" use="required"/>
        </xs:complexType>
      </xs:element>
      <xs:element name="Messages">
        <xs:complexType>
          <xs:sequence maxOccurs="unbounded">
            <xs:element name="MessageID" type="xs:string" minOccurs="0"/>
            <xs:element name="Message" type="xs:string" minOccurs="0"/>
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
 </xs:element>
</xs:schema>
```

7 Hardware Inventory

This section provides a detailed description of the Hardware Inventory XML schema and definitions for all element values.

7.1 Element and Attribute Descriptions

The Hardware Inventory XML comprises of a root element defined by *Instance Classname* and *InstanceID* pair. Each *Instance Classname* and *InstanceID* pair describes a hardware entity captured in the Hardware Inventory Log. Each *Instance Classname* and *InstanceID* pair further contains elements and attributes describing a particular hardware entity. Table 7 details each of the sub-elements of the hardware entity, while Table 8 details the properties.

Table 7 – Hardware Inventory XML Elements

Element Name	Description	Value Format
CIM	Root element	Double, example 2.0
Message	The values associated with this element represents the ID and protocol associated with this entry.	The ID is represented by an integer and the protocol version is represented by a double
Classname	The value associated with this element represents the DCIM class of the hardware entry.	One of the various DCIM profiles, such as DCIM_ControllerView
InstanceID	InstanceID is an alphanumeric string that uniquely identifies a hardware entity. Given an InstanceID, users can retrieve additional information about the entity like Driver Version and Dislay Name.	String type of one of the various profile instanceIDs, such as RAID.Slot.1-1
Property Name	Represents the name of the hardware property	String type, examples include DriverVersion, ManufactureDate, PCISubDeviceID, etc.
Value	Represents the value of the property	String or integer
Display Value	Represents the value for this entry	Alphanumeric string type, examples include Dell, Intel, 8086, Bus, etc.

7.2 Sample XML

Each entry in the hardware inventory xml represents a hardware element.

```
<?xml version="1.0"?>
<CIM CIMVERSION="2.0" DTDVERSION="2.0">
<MESSAGE ID="4711" PROTOCOLVERSION="1.0">
```

```
<SIMPLEREQ>
<VALUE.NAMEDINSTANCE xmlns:fo="http://www.w3.org/1999/XSL/Format"><INSTANCENAME
CLASSNAME="DCIM_ControllerView">
<KEYBINDING NAME="InstanceID">
<KEYVALUE VALUETYPE="string">RAID.Slot.1-1</KEYVALUE>
</KEYBINDING>
</INSTANCENAME><INSTANCE CLASSNAME="DCIM_ControllerView"><PROPERTY NAME="DriverVersion"
TYPE="string"><DisplayValue/></PROPERTY><PROPERTY NAME="KeyID"
TYPE="string"><DisplayValue/></PROPERTY><PROPERTY NAME="SASAddress"
TYPE="string"><VALUE>5782BCB00C577600</VALUE><DisplayValue>5782BCB00C577600</DisplayValue></PROPE
RTY><PROPERTY NAME="ProductName" TYPE="string"><VALUE>PERC H310 Adapter</VALUE><DisplayValue>PERC
H310 Adapter</DisplayValue></PROPERTY><PROPERTY NAME="DeviceCardSlotType"
TYPE="string"><VALUE>PCI Express x8</VALUE><DisplayValue>PCI Express
x8</DisplayValue></PROPERTY><PROPERTY NAME="DeviceCardManufacturer"
TYPE="string"><VALUE>DELL</VALUE><DisplayValue>DELL</DisplayValue></PROPERTY><PROPERTY
NAME="PCISubDeviceID"
TYPE="string"><VALUE>1F4E</VALUE><DisplayValue>1F4E</DisplayValue></PROPERTY><PROPERTY
NAME="PCIDeviceID"
TYPE="string"><VALUE>73</VALUE><DisplayValue>73</DisplayValue></PROPERTY><PROPERTY
NAME="PCISubVendorID"
TYPE="string"><VALUE>1028</VALUE><DisplayValue>1028</DisplayValue></PROPERTY><PROPERTY
NAME="PCIVendorID"
TYPE="string"><VALUE>1000</VALUE><DisplayValue>1000</DisplayValue></PROPERTY><PROPERTY
NAME="Function" TYPE="string"><VALUE>0</VALUE><DisplayValue>0</DisplayValue></PROPERTY><PROPERTY
NAME="Device" TYPE="string"><VALUE>0</VALUE><DisplayValue>0</DisplayValue></PROPERTY><PROPERTY
NAME="Bus" TYPE="string"><VALUE>1</VALUE><DisplayValue>1</DisplayValue></PROPERTY><PROPERTY
NAME="ControllerFirmwareVersion" TYPE="string"><VALUE>20.10.1-0066</VALUE><DisplayValue>20.10.1-
0066</DisplayValue></PROPERTY><PROPERTY NAME="PCISlot"
…
</SIMPLEREQ>
```

7.3 XSD

```
<?xml version="1.0" encoding="UTF-8"?>
<!--   Copyright © 2010 Dell, Inc. All rights reserved. -->
<xs:schema targetNamespace="http://schemas.dell.com/HWinventory/1/0/events"
elementFormDefault="qualified" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:evt="http://schemas.dell.com/HWinventory/1/0/events">
  <xs:element name="CIM">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="MESSAGE">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="SIMPLEREQ">
                <xs:complexType>
                  <xs:sequence>
                    <xs:element maxOccurs="unbounded" name="VALUE.NAMEDINSTANCE">
                      <xs:complexType>
                        <xs:sequence>
                          <xs:element name="INSTANCENAME">
                            <xs:complexType>
                              <xs:sequence>
                                <xs:element name="KEYBINDING">
                                  <xs:complexType>
                                    <xs:sequence>
                                      <xs:element name="KEYVALUE">
```

```
                                        <xs:complexType>
                                          <xs:simpleContent>
                                            <xs:extension base="xs:string">
                                              <xs:attribute name="VALUETYPE" type="xs:string"
use="required" />
                                            </xs:extension>
                                          </xs:simpleContent>
                                        </xs:complexType>
                                      </xs:element>
                                    </xs:sequence>
                                    <xs:attribute name="NAME" type="xs:string" use="required" />
                                  </xs:complexType>
                                </xs:element>
                              </xs:sequence>
                              <xs:attribute name="CLASSNAME" type="xs:string" use="required" />
                            </xs:complexType>
                          </xs:element>
                          <xs:element name="INSTANCE">
                            <xs:complexType>
                              <xs:sequence>
                                <xs:element minOccurs="0" name="PROPERTY.ARRAY">
                                  <xs:complexType>
                                    <xs:sequence>
                                      <xs:element name="VALUE.ARRAY">
                                        <xs:complexType>
                                          <xs:sequence>
                                            <xs:element name="VALUE" type="xs:string" />
                                            <xs:element name="DisplayValue" type="xs:string" />
                                          </xs:sequence>
                                        </xs:complexType>
                                      </xs:element>
                                    </xs:sequence>
                                    <xs:attribute name="NAME" type="xs:string" use="required" />
                                    <xs:attribute name="TYPE" type="xs:string" use="required" />
                                  </xs:complexType>
                                </xs:element>
                                <xs:element maxOccurs="unbounded" name="PROPERTY">
                                  <xs:complexType>
                                    <xs:sequence>
                                      <xs:element minOccurs="0" name="VALUE" type="xs:string" />
                                      <xs:element name="DisplayValue" type="xs:string" />
                                    </xs:sequence>
                                    <xs:attribute name="NAME" type="xs:string" use="required" />
                                    <xs:attribute name="TYPE" type="xs:string" use="required" />
                                  </xs:complexType>
                                </xs:element>
                              </xs:sequence>
                              <xs:attribute name="CLASSNAME" type="xs:string" use="required" />
                            </xs:complexType>
                          </xs:element>
                        </xs:sequence>
                      </xs:complexType>
                    </xs:element>
                  </xs:sequence>
                </xs:complexType>
              </xs:element>
            </xs:sequence>
            <xs:attribute name="ID" type="xs:int" use="required" />
            <xs:attribute name="PROTOCOLVERSION" type="xs:decimal" use="required" />
          </xs:complexType>
        </xs:element>
      </xs:sequence>
```

```
      <xs:attribute name="CIMVERSION" type="xs:decimal" use="required" />
      <xs:attribute name="DTDVERSION" type="xs:decimal" use="required" />
    </xs:complexType>
  </xs:element>
</xs:schema>
```

8 Message Registry

This section provides a detailed description of the Message Registry XML schema and definitions for all element values.

8.1 Element and Attribute Descriptions

The Message Registry XML comprises of a root element defined by *Instance message name* and *MessageID* pair. Each pair describes a message entity captured in the Message Registry Log. Each pair further contains elements and attributes describing a particular message entity. Table 8 details each of the sub-elements of the message entity, while Table 9 details the properties.

Table 8 – Message Registry XML Elements

Element Name	Description	Value Format
identification	Unique identification of the message registry, though the attributes NAME and VERSION	String type
specification	References the specification document that the message registry was created for	String type
Owning entity	The name of the owning entity of the message registry	String type, such as DCIM
Message Name	The value represents the name of the message and is unique within the message registry.	String type, such as AMP0306
Message_ID	The message identifier consists of PREFIX and SEQUENCE_NUMBER attributes. The combination of these two attribute values shall be unique across all message registries.	String type, such as AMP
Message_Description	The value represents the description of the message.	String of characters
Message_Components	Contains an ordered sequence of static and dynamic elements	
identification	Unique identification of the message registry, though the attributes NAME and VERSION	

Table 9 – Message Registry XML Attributes

Attribute Name	Description	Value Format
Static_Element	A message component representing a static element within the message.	String type, such as Disk Drive Bay, Finalizing backup file, etc.
Dynamic_Element	Contains the name for the dynamic element for programmatic use, which is unique within the message.	Consists of NAME, SOURCE_PROPERTY, and DATATYPE
CIM status code	Represents the decimal string representation of the value to be used for the property	integer
Error type	Represents the value constraint for the error type property in CIM error	integer
Other error type	The property is used only if the error type property has a value of 1 (other)	String type
Error source	The element content shall be the value to be used for the property.	String type
Recommended action	Description of what actions the user should take to resolve the problem	String type
Perceived severity	Represents the approximated severity of the problem	String type, such as CRITICAL

8.2 Sample XML

Each entry in the Message Registry xml represents a message element.

```
    <MESSAGE NAME="AMP0306">
      <MESSAGE_ID PREFIX="AMP" SEQUENCE_NUMBER="0306"/>
      <MESSAGE_DESCRIPTION>None</MESSAGE_DESCRIPTION>
      <MESSAGE_COMPONENTS>
        <STATIC_ELEMENT>Disk drive bay </STATIC_ELEMENT>
        <DYNAMIC_ELEMENT NAME="arg1" SOURCE_PROPERTY="name" DATATYPE="string"/>
        <STATIC_ELEMENT> current is less than the lower warning threshold.</STATIC_ELEMENT>
      </MESSAGE_COMPONENTS>
      <FIXED_MESSAGE_INSTANCE_VALUES TYPE="ERROR">
        <CIMSTATUSCODE EXISTENCE_IS="optional"><DESCRIPTION></DESCRIPTION></CIMSTATUSCODE>
        <ERROR_TYPE EXISTENCE_IS="optional"><DESCRIPTION></DESCRIPTION></ERROR_TYPE>
        <OTHER_ERROR_TYPE><DESCRIPTION>System Health</DESCRIPTION></OTHER_ERROR_TYPE>
        <ERROR_SOURCE EXISTENCE_IS="discouraged"><DESCRIPTION></DESCRIPTION></ERROR_SOURCE>
       <RECOMMENDED_ACTION>
         <DESCRIPTION>Review system power policy, check system logs for power related failures,
and review system configuration changes.</DESCRIPTION>
       </RECOMMENDED_ACTION>
        <PERCEIVED_SEVERITY><DESCRIPTION>Warning</DESCRIPTION></PERCEIVED_SEVERITY>
      </FIXED_MESSAGE_INSTANCE_VALUES>
    </MESSAGE>
```

8.3 XSD

```
<?xml version="1.0" encoding="UTF-8"?>
<!--   Copyright © 2010 Dell, Inc. All rights reserved. -->
<xs:schema targetNamespace="http://schemas.dell.com/messageregistry/1/0/entries"
elementFormDefault="qualified" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:evt="http://schemas.dell.com/messageregistry/1/0/entries">
  <xs:element name="REGISTRY">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="REGISTRY_DECLARATION">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="IDENTIFICATION">
                <xs:complexType>
                  <xs:attribute name="NAME" type="xs:string" use="required" />
                  <xs:attribute name="VERSION" type="xs:string" use="required" />
                  <xs:attribute name="LANGUAGE" type="xs:string" use="required" />
                </xs:complexType>
              </xs:element>
              <xs:element name="SPECIFICATION">
                <xs:complexType>
                  <xs:attribute name="NAME" type="xs:string" use="required" />
                  <xs:attribute name="VERSION" type="xs:string" use="required" />
                </xs:complexType>
              </xs:element>
              <xs:element name="OWNING_ENTITY" type="xs:string" />
              <xs:element name="DESCRIPTION" type="xs:string" />
            </xs:sequence>
          </xs:complexType>
        </xs:element>
        <xs:element name="REGISTRY_ENTRIES">
          <xs:complexType>
            <xs:sequence>
              <xs:element maxOccurs="unbounded" name="MESSAGE">
                <xs:complexType>
                  <xs:sequence>
                    <xs:element name="MESSAGE_ID">
                      <xs:complexType>
                        <xs:attribute name="PREFIX" type="xs:string" use="required" />
                        <xs:attribute name="SEQUENCE_NUMBER" type="xs:unsignedShort"
use="required" />
                      </xs:complexType>
                    </xs:element>
                    <xs:element name="MESSAGE_DESCRIPTION" type="xs:string" />
                    <xs:element name="MESSAGE_COMPONENTS">
                      <xs:complexType>
                        <xs:sequence>
                          <xs:choice maxOccurs="unbounded">
                            <xs:element name="STATIC_ELEMENT" type="xs:string" />
                            <xs:element name="DYNAMIC_ELEMENT">
                              <xs:complexType>
                                <xs:attribute name="NAME" type="xs:string" use="required" />
                                <xs:attribute name="SOURCE_PROPERTY" type="xs:string"
use="required" />
                                <xs:attribute name="DATATYPE" type="xs:string" use="required" />
                              </xs:complexType>
                            </xs:element>
                          </xs:choice>
                        </xs:sequence>
                      </xs:complexType>
                    </xs:element>
                    <xs:element name="FIXED_MESSAGE_INSTANCE_VALUES">
```

```
                    <xs:complexType>
                      <xs:sequence>
                        <xs:element name="CIMSTATUSCODE">
                          <xs:complexType>
                            <xs:sequence>
                              <xs:element name="DESCRIPTION" />
                            </xs:sequence>
                            <xs:attribute name="EXISTENCE_IS" type="xs:string" use="required"
/>
                          </xs:complexType>
                        </xs:element>
                        <xs:element name="ERROR_TYPE">
                          <xs:complexType>
                            <xs:sequence>
                              <xs:element name="DESCRIPTION" />
                            </xs:sequence>
                            <xs:attribute name="EXISTENCE_IS" type="xs:string" use="required"
/>
                          </xs:complexType>
                        </xs:element>
                        <xs:element name="OTHER_ERROR_TYPE">
                          <xs:complexType>
                            <xs:sequence>
                              <xs:element name="DESCRIPTION" type="xs:string" />
                            </xs:sequence>
                          </xs:complexType>
                        </xs:element>
                        <xs:element name="ERROR_SOURCE">
                          <xs:complexType>
                            <xs:sequence>
                              <xs:element name="DESCRIPTION" />
                            </xs:sequence>
                            <xs:attribute name="EXISTENCE_IS" type="xs:string" use="required"
/>
                          </xs:complexType>
                        </xs:element>
                        <xs:element name="RECOMMENDED_ACTION">
                          <xs:complexType>
                            <xs:sequence>
                              <xs:element name="DESCRIPTION" type="xs:string" />
                            </xs:sequence>
                          </xs:complexType>
                        </xs:element>
                        <xs:element name="PERCEIVED_SEVERITY">
                          <xs:complexType>
                            <xs:sequence>
                              <xs:element name="DESCRIPTION" type="xs:string" />
                            </xs:sequence>
                          </xs:complexType>
                        </xs:element>
                      </xs:sequence>
                      <xs:attribute name="TYPE" type="xs:string" use="required" />
                    </xs:complexType>
                  </xs:element>
                </xs:sequence>
                <xs:attribute name="NAME" type="xs:string" use="required" />
              </xs:complexType>
            </xs:element>
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
```

```
    </xs:complexType>
  </xs:element>
</xs:schema>
```

9 Attribute Registry

This section provides a detailed description of an Attribute Registry XML schema and definitions for all element values.

9.1 Element and Attribute Descriptions

The Attribute Registry XML comprises of a root element defined by *attribute name*. Each attribute describes an attribute entity captured in the Attribute Registry. Each further contains elements and attribute values describing a particular attribute entity. Table 10 details each of the sub-elements of the message entity, while Table 11 details the properties.

Table 10 – Attribute Registry XML Elements

Element Name	Description	Value Format
Identification	Unique identification of the message registry, though the attributes attribute and display name	Dell Attribute Registry
Specification	References the specification document that the message registry was created for	Simple NIC, iDRAC, BIOS
CIM_SCHEMA	The value represents the version of the schema.	2.17.0
Owning Entity	The value represents the originator of the information.	Dell
Editor	The value represents the editor.	
Description	The value represents a description of the registry.	

Table 11 – Attribute Registry XML Attributes

Attribute Name	Description	Value Format
AttributeName	The attribute name, which is unique within the registry and may be used for programmatic use	String type, such as BootOptionROM or RAIDccMode
DisplayName	Contains the display name for the attribute which may contain spaces and is unique within the registry.	String type, such as Chip Type or Device Name
helpText	Represents a string of text used to explain a particular attribute	String type
AttributeType	Type of attribute	Integer, string, etc.
GroupName	Group representing the attribute, groups are used categorically to help simplify overall structure	String type
GroupDisplayName	The display value of the group name.	String type
DisplayOrder	Represents the order in which attributes are displayed	integer
IsReadOnly	The value may be displayed but read only	True or false
BrowserRead	A modifier which indicates whether the attribute is readable via browser	Yes or no
BrowserWrite	A modifier which indicates whether the attribute is writeable via browser	Yes or no
ProgrammaticRead	modifier which indicates whether the attribute is programmatically readable	Yes or no
ProgrammaticWrite	modifier which indicates whether the attribute is programmatically writeable	Yes or no
LUN	A logical unit which is addressed by the SCSI protocol or similar protocol	String such as Target
Partition	Represents whether the current content is partitionable	Yes or no
Regex	Values allowed for text matching of strings	String type, such as `^.{12,16}$`
Min		Integer
Max		integer
ValueName	Attribute value name	String
DisplayValueName	Display name of the attribute value	string

9.2 Sample XML

Each entry in the Message Registry xml represents a message element.

```
    <?xml version="1.0" encoding="UTF-8"?>
<!--   Copyright © 2010 Dell, Inc. All rights reserved. -->
```

```
<xs:schema targetNamespace="http://schemas.dell.com/AttributeRegistry/1/0/events"
elementFormDefault="qualified" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:evt="http://schemas.dell.com/AttributeRegistry/1/0/events">

          <REGISTRY_DECLARATION>
            <IDENTIFICATION NAME="Dell Attribute Registry" VERSION="1.0.0" LANGUAGE="en"/>
            <SPECIFICATION NAME="Simple NIC Profile" VERSION="1.1.0"/>
            <CIM_SCHEMA VERSION="2.17.0"/>
            <OWNING_ENTITY NAME="Dell"/>
            <EDITOR EMAIL="Dell_Support@Dell.com" NAME="Dell Support" ORGANIZATION="Dell"/>
            <DESCRIPTION>This Registry defines a representation of system hardware or firmware
Attribute instances, such as BIOS or NIC Attributes, as defined by Dell.</DESCRIPTION>
          </REGISTRY_DECLARATION>
          <REGISTRY_ENTRIES>
        <Attribute>
               <AttributeName>Boot LUN  Target</AttributeName>
               <DisplayName>SecondFCBootTargetLUN</DisplayName>
               <AttributeType>Integer</AttributeType>
               <GroupName>FCSecondTgtParams</GroupName>
               <GroupDisplayName>FC Second Target Parameters</GroupDisplayName>
               <DisplayOrder>403</DisplayOrder>
               <IsReadOnly>true</IsReadOnly>
               <Modifiers>
                      <BrowserRead>Yes</BrowserRead>
                      <BrowserWrite>Yes</BrowserWrite>
                      <ProgrammaticRead>Yes</ProgrammaticRead>
                      <ProgrammaticWrite>Yes</ProgrammaticWrite>
                      <LUN>Target</LUN>
                      <RegEx>N/A</RegEx>
               </Modifiers>
```

9.3 XSD

```
<?xml version="1.0" encoding="UTF-8"?>
<!--   Copyright © 2010 Dell, Inc. All rights reserved. -->
<xs:schema xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
attributeFormDefault="unqualified" elementFormDefault="qualified"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="REGISTRY">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="REGISTRY_DECLARATION">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="IDENTIFICATION">
                <xs:complexType>
                  <xs:attribute name="NAME" type="xs:string" use="required" />
                  <xs:attribute name="VERSION" type="xs:string" use="required" />
                  <xs:attribute name="LANGUAGE" type="xs:string" use="required" />
                </xs:complexType>
              </xs:element>
              <xs:element name="SPECIFICATION">
                <xs:complexType>
                  <xs:attribute name="NAME" type="xs:string" use="required" />
                  <xs:attribute name="VERSION" type="xs:string" use="required" />
                </xs:complexType>
              </xs:element>
              <xs:element name="CIM_SCHEMA">
                <xs:complexType>
                  <xs:attribute name="VERSION" type="xs:string" use="required" />
                </xs:complexType>
              </xs:element>
              <xs:element name="OWNING_ENTITY">
                <xs:complexType>
                  <xs:attribute name="NAME" type="xs:string" use="required" />
                </xs:complexType>
```

```
            </xs:element>
            <xs:element name="EDITOR">
              <xs:complexType>
                <xs:attribute name="EMAIL" type="xs:string" use="required" />
                <xs:attribute name="NAME" type="xs:string" use="required" />
                <xs:attribute name="ORGANIZATION" type="xs:string" use="required" />
              </xs:complexType>
            </xs:element>
            <xs:element name="DESCRIPTION" type="xs:string" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element name="REGISTRY_ENTRIES">
        <xs:complexType>
          <xs:sequence>
            <xs:element maxOccurs="unbounded" name="Attribute">
              <xs:complexType>
                <xs:sequence>
                  <xs:element name="AttributeName" type="xs:string" />
                  <xs:element minOccurs="0" name="DisplayName" type="xs:string" />
                  <xs:element name="AttributeType" type="xs:string" />
                  <xs:element minOccurs="0" name="HelpText" type="xs:string" />
                  <xs:element minOccurs="0" name="GroupName" type="xs:string" />
                  <xs:element minOccurs="0" name="GroupDisplayName" type="xs:string" />
                  <xs:element minOccurs="0" name="DisplayOrder" type="xs:unsignedShort" />
                  <xs:element minOccurs="0" name="IsReadOnly" type="xs:boolean" />
                  <xs:element minOccurs="0" name="Modifiers">
                    <xs:complexType>
                      <xs:sequence>
                        <xs:element minOccurs="0" name="BrowserRead" type="xs:string" />
                        <xs:element minOccurs="0" name="BrowserWrite" type="xs:string" />
                        <xs:element minOccurs="0" name="ProgrammaticRead" type="xs:string" />
                        <xs:element minOccurs="0" name="ProgrammaticWrite" type="xs:string" />
                        <xs:element minOccurs="0" name="LUN" type="xs:string" />
                        <xs:element minOccurs="0" name="Partition" type="xs:string" />
                        <xs:element minOccurs="0" name="RegEx" type="xs:string" />
                      </xs:sequence>
                    </xs:complexType>
                  </xs:element>
                  <xs:element minOccurs="0" name="Min" type="xs:int" />
                  <xs:element minOccurs="0" name="Max" type="xs:int" />
                  <xs:element minOccurs="0" maxOccurs="unbounded" name="AttributeValue">
                    <xs:complexType>
                      <xs:sequence>
                        <xs:element name="ValueName" type="xs:string" />
                        <xs:element name="DisplayValueName" type="xs:string" />
                      </xs:sequence>
                    </xs:complexType>
                  </xs:element>
                </xs:sequence>
              </xs:complexType>
            </xs:element>
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
</xs:element>
</xs:schema>
```

10 Dependency XML

This section provides a detailed description of Dependency XML schema and definitions for all element values.

10.1 Element and Attribute Descriptions

The Dependency XML comprises of a root element defined by *attribute name*. Each attribute describes an attribute entity captured in the dependency XML. Each further contains attribute and element values describing a particular dependency entity. Table 12 details each of the attributes of the dependency entity, while Table 13 details the elements. See table 14 for complex type entities.

Table 12 – Dependency XML Attributes

Attribute Name	Description	Value Format
DefaultID	This is the HII default Id. For example, per UEFI spec. an Id of 0 is for Standard Defaults, an Id of 1 is for Manufacturing Defaults, etc.	integer
FQDD	Fully Qualified Device Description which identifies the device that this data is associated with (Required)	String type, such as "BIOS.setup.1" or "NIC.Integrated.1-1", etc.
Lang	Lang specifies the language of the string and follows the language tag format from RFC 4646. Currently used values are en-US, fr-FR, de-DE, es-ES, ja-JP, and zh-Hans. If Lang is not specified then it is assumed to be en-US.	Language type
ReadOnly	When true, indicates that the associated item is Read Only. When false, indicates that the associated item is writeable. If the ReadOnly attribute is not specified then it is assumed false.	Boolean
AttrLev	Indicates attribute level dependency	XML tag for attribute; max level is 1
ValLev	Indicates the dependencies that apply to the attribute value	Can be unbounded
OpType	Operation that can be applied in connection with the dependency	Example: AND, OR, NOT
ROIf (read only if)	Used when an attribute becomes read-only or “grayed out” depending on the value (AttributeValue) of a parent attribute (AttributeName)	Dependency condition
SupIf (suppress if)	Used when an attribute becomes hidden from the user depending on the value (AttributeValue) of a parent attribute (AttributeName). (These modifiers are allowed only for options within a question instead of the questions themselves.)	Dependency condition
ForceIf	Used to force an attribute to a certain value depending on the value (AttributeValue) of a parent attribute (AttributeName)	Dependency condition
SetIf	Used to indicate if the attribute can be set based on whether the parent attribute has been set	Dependency condition
Suppressed	When true, indicates that the associated item is Read Only. When false, indicates that the associated item is writeable. If the ReadOnly attribute is not specified then it is assumed false.	Boolean

Table 13 –Dependency XML Elements

10.2 Sample XML

Sample #1

SataPortA attribute will configurable only if attribute EmbSata is set to AtaMode.

For value level (ValLev) dependencies, there are:

- Auto: the value auto is forced if EmbSata is AhciMode or RAIDMode
- Off: the value off is suppressed if EmbSata is AhciMode or RAIDMode

```
<Dep><AttrLev Op="OR"><ROIf Op="NOT" Name="EmbSata">AtaMode</ROIf></AttrLev><ValLev Val="Auto" Op="OR"><ForceIf Name="EmbSata">AhciMode</ForceIf><ForceIf Name="EmbSata">RaidMode</ForceIf></ValLev><ValLev Val="Off" Op="OR"><SupIf Name="EmbSata">AhciMode</SupIf><SupIf Name="EmbSata">RaidMode</SupIf></ValLev></Dep>
```

Sample #2

Cannot change NIC Speed unless AutoNeg is set to Disabled

```
<Dep><AttrLev Op="OR"><SetIf Op="NOT" Name="NIC.1#AutoNeg">Enabled</SetIf></AttrLev></Dep>
```

10.3 XSD

```
<?xml version="1.0" encoding="UTF-8"?>
<!--   Copyright © 2010 Dell, Inc. All rights reserved. -->
- <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified"
attributeFormDefault="unqualified">
- <xs:element name="Dep">
- <xs:annotation>
  <xs:documentation>Describes dependencies for an attribute and for its possible
values</xs:documentation>
  </xs:annotation>
- <xs:complexType>
- <xs:sequence>
  <xs:element ref="AttrLev" minOccurs="0" maxOccurs="1" />
  <xs:element ref="ValLev" minOccurs="0" maxOccurs="unbounded" />
  </xs:sequence>
  </xs:complexType>
  </xs:element>
- <xs:simpleType name="OpType">
- <xs:annotation>
  <xs:documentation>Operation Types for dependency elements</xs:documentation>
  </xs:annotation>
- <xs:restriction base="xs:string">
  <xs:enumeration value="OR" />
  <xs:enumeration value="AND" />
  <xs:enumeration value="NOT" />
  </xs:restriction>
  </xs:simpleType>
- <xs:complexType name="Condition">
```

```
- <xs:annotation>
  <xs:documentation>Condition types for dependency elements</xs:documentation>
  </xs:annotation>
- <xs:simpleContent>
- <xs:extension base="xs:string">
  <xs:attribute name="Name" type="xs:string" use="required" />
  <xs:attribute name="Op" type="OpType" default="OR" />
  </xs:extension>
  </xs:simpleContent>
  </xs:complexType>
  <xs:element name="ROIf" type="Condition" />
  <xs:element name="SupIf" type="Condition" />
  <xs:element name="ForceIf" type="Condition" />
  <xs:element name="SetIf" type="Condition" />
  <xs:element name="AttrLev" type="BaseDep" />
  <xs:element name="ValLev" type="ValueDep" />
- <xs:complexType name="DepRoot">
- <xs:annotation>
  <xs:documentation>Dependencies Root</xs:documentation>
  </xs:annotation>
- <xs:sequence>
  <xs:element ref="ForceIf" minOccurs="0" maxOccurs="unbounded" />
  </xs:sequence>
  <xs:attribute name="Op" type="OpType" default="OR" />
  </xs:complexType>
- <xs:complexType name="BaseDep">
- <xs:annotation>
  <xs:documentation>Describes dependencies that applies to an attribute</xs:documentation>
  </xs:annotation>
- <xs:complexContent>
- <xs:extension base="DepRoot">
- <xs:sequence>
  <xs:element ref="ROIf" minOccurs="0" maxOccurs="unbounded" />
  <xs:element ref="SetIf" minOccurs="0" maxOccurs="unbounded" />
  </xs:sequence>
  </xs:extension>
  </xs:complexContent>
  </xs:complexType>
- <xs:complexType name="ValueDep">
- <xs:annotation>
  <xs:documentation>Describes dependencies that applies to the possible value of an
attribute</xs:documentation>
  </xs:annotation>
- <xs:complexContent>
- <xs:extension base="DepRoot">
- <xs:sequence>
  <xs:element ref="SupIf" minOccurs="0" maxOccurs="unbounded" />
  </xs:sequence>
  <xs:attribute name="Val" type="xs:string" use="required" />
  </xs:extension>
  </xs:complexContent>
  </xs:complexType>
  </xs:schema>
```

11 Export / Import System Configuration XML

The Export / Import System Configuration feature provides the ability to take a snapshot of the system configuration in XML format. The user may then make changes to the generated XML to specify what configuration needs to be changed. The XML file specifying the desired configuration changes can then be imported on one or more targets. This section details the schema used in Export / Import System Configuration.

11.1 Element and Attribute Descriptions

The Export / Import System Configuration XML has a root element – SystemConfiguration and can have multiple component configuration sections, Components, that are distinguished by FQDDs. Each component configuration section lists the configuration for that device, in key-value pairs through Attribute elements. Most component configuration is not nested, except RAID, which can be nested up to 3 levels. The root SystemConfiguration element also has metadata attributes such as the Model, ServiceTag and TimeStamp. These correspond to the Model and ServiceTag of the system on which the configuration was captured and the timestamp at which this was configured.

Table 14 – Server Configuration XML Attributes

Attribute Name	Description	Value Format
Model	The Model of the system on which the configuration snapshot was captured (Required).	String
ServiceTag	The Service Tag of the system on which the configuration snapshot was captured (Required).	String
TimeStamp	The Time Stamp at which the configuration snapshot was captured (Required).	String
FQDD	The Fully Qualified Device Descriptor, identifying the device with which the configuration data is associated. (Required).	String
Name	The Name of the attribute that is being configured (Required).	String

Table 15 – Server Configuration XML Elements

Attribute Name	Description	Value Format
SystemConfiguration	The root element of the Server Configuration XML.	Model: String type. ServiceTag: String type. TimeStamp: String type. Component: Complex type.
Component	Element representing one set of attributes of a device that can be configured, identified by the FQDD.	FQDD: String type. Attribute: Complex type
Attribute	Element representing one entity that can be configured on a target	Name: String type.

11.2 Sample XML

```
<SystemConfiguration Model="PowerEdge R720" ServiceTag="" TimeStamp="Tue Aug 28 02:30:04
2012">
<Component FQDD="iDRAC.Embedded.1">
<Attribute Name="IPMILan.1#Enable">Enabled</Attribute>
<Attribute Name="IPMILan.1#PrivLimit">Administrator</Attribute>
<Attribute
Name="IPMILan.1#EncryptionKey">0000000000000000000000000000000000000000</Attribute>
<Attribute Name="IPMILan.1#CommunityName">public</Attribute>
<Attribute Name="IPMILan.1#AlertEnable">Disabled</Attribute>
<Attribute Name="Users.2#UserName">root</Attribute>
<!-- <Attribute Name="Users.2#Password">******</Attribute>
-->
<Attribute Name="Users.2#Privilege">511</Attribute>
<Attribute Name="Users.2#IpmiLanPrivilege">Administrator</Attribute>
<Attribute Name="Users.2#IpmiSerialPrivilege">Administrator</Attribute>
<Attribute Name="Users.2#Enable">Enabled</Attribute>
<Attribute Name="Users.2#SolEnable">Enabled</Attribute>
<Attribute Name="Users.2#ProtocolEnable"></Attribute>
…
…
…
</Component>
<Component FQDD="BIOS.Setup.1-1">
<Attribute Name="MemTest">Enabled</Attribute>
<Attribute Name="SerialDbgOut">Disabled</Attribute>
<Attribute Name="LogicalProc">Enabled</Attribute>
<Attribute Name="QpiSpeed">MaxDataRate</Attribute>
<Attribute Name="ProcVirtualization">Enabled</Attribute>
<Attribute Name="ProcAdjCacheLine">Enabled</Attribute>
<Attribute Name="ProcHwPrefetcher">Enabled</Attribute>
<Attribute Name="DcuStreamerPrefetcher">Enabled</Attribute>
<Attribute Name="DcuIpPrefetcher">Enabled</Attribute>
<Attribute Name="ProcExecuteDisable">Enabled</Attribute>
</Component>
</SystemConfiguration>
```

11.3 XSD

```
<?xml version="1.0" ?>
<!-- Copyright _ 2012 Dell, Inc. All rights reserved. -->
<xs:schema attributeFormDefault="unqualified" elementFormDefault="qualified"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
<xs:element name="SystemConfiguration">
        <xs:complexType>
                <xs:sequence>
                        <xs:element maxOccurs="unbounded" name="Component">
                                <xs:complexType>
                                <xs:sequence>
                                <xs:choice maxOccurs="unbounded">
                                <xs:element minOccurs="0" maxOccurs="unbounded" name="Attribute">
                                <xs:complexType>
                                <xs:simpleContent>
                                <xs:extension base="xs:string">
                                <xs:attribute name="Name" type="xs:string" use="required" />
                        </xs:extension>
                </xs:simpleContent>
        </xs:complexType>
</xs:element>
<xs:element minOccurs="0" maxOccurs="unbounded" name="Component">
        <xs:complexType>
        <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="Component">
        <xs:complexType>
        <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="Attribute">
                <xs:complexType>
                <xs:simpleContent>
                <xs:extension base="xs:string">
                <xs:attribute name="Name" type="xs:string" use="required" />
                </xs:extension>
        </xs:simpleContent>
        </xs:complexType>
        </xs:element>
</xs:sequence>
<xs:attribute name="FQDD" type="xs:string" use="required" />
        </xs:complexType>
        </xs:element>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="Attribute">
                <xs:complexType>
                <xs:simpleContent>
                        <xs:extension base="xs:string">
                        <xs:attribute name="Name" type="xs:string" use="required" />
                        </xs:extension>
                </xs:simpleContent>
                </xs:complexType>
        </xs:element>
        </xs:sequence>
        <xs:attribute name="FQDD" type="xs:string" use="required" />
        </xs:complexType>
        </xs:element>
        </xs:choice>
        </xs:sequence>
```

```
            <xs:attribute name="FQDD" type="xs:string" use="required" />
            </xs:complexType>
            </xs:element>
</xs:sequence>
<xs:attribute name="Model" type="xs:string" use="required" />
<xs:attribute name="ServiceTag" type="xs:string" use="required" />
<xs:attribute name="TimeStamp" type="xs:string" use="required" />
</xs:complexType>
</xs:element>
</xs:schema>
```