Web Service Eventing Support for iDRAC7 1.30.30

Author(s)
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Glossary

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<th>Acronym</th>
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<td>iDRAC</td>
<td>integrated Dell Remote Access Controller</td>
</tr>
<tr>
<td>LC</td>
<td>Lifecycle Controller</td>
</tr>
<tr>
<td>WS–Man</td>
<td>Web Services for Management – a Web services protocol designed for manageability</td>
</tr>
<tr>
<td>Console</td>
<td>The management application a user would utilize to perform remote platform management tasks</td>
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<td>WS–Eventing</td>
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<td>MOF</td>
<td>Managed Object Format</td>
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<tr>
<td>iDRAC</td>
<td>Integrated Dell Remote Access Controller</td>
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<td>LC</td>
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# Introduction

The WS–Eventing Specification [References] defines a protocol for a client service (subscriber) to register interest (subscription) with a server web service (event source) in receiving the messages containing the server’s events (notifications or event messages). Clients interested in receiving the WS–Eventing from the integrated Dell Remote Access Controller (iDRAC) version 1.30.30 and later versions, can subscribe for Lifecycle Controller job-related events.

This document describes the Web Service Eventing (WS–Eventing) support on Dell PowerEdge Management Servers. This document is intended for the users or application developers interested in receiving asynchronous notifications for changes related to Lifecycle Controller jobs. For more information about the Lifecycle Controller jobs related to job types, job statuses, job creation or deletion, and so on, refer to the Dell Common Information Model (DCIM) Job Control Profile [Referencess].

This document is not intended to describe the WS–Eventing specification. Refer to the DSP0226 (DMTF WS–Man Specification), Section 10 Notifications (Eventing) for the WS–Eventing specification.

## WS–Eventing on iDRAC 7

iDRAC implements the WS–Eventing protocol [0] to deliver support for asynchronous notifications. This feature includes:

- Creation and deletion of event subscriptions
- Renewal of subscriptions before the expiry datetime
- Event message delivery configuration

## Prerequisites to Enable WS–Eventing on iDRAC

WS–Eventing is enabled only for a subset of the iDRAC–generated events. The DCIM Event Filter Profile [0] describes the data model for controlling the events that are available using WS–Eventing. iDRAC version 1.30.30 and later supports notification through WS–Eventing only for Job Control alerts under the Configuration category.

Following are the prerequisites to receive WS–Eventing notifications for job-related events:

1. Alerts on iDRAC must be enabled
2. WS–Eventing notification must be enabled for Job Control alerts
Enabling Alerts

To enable or disable the Alerts globally, clients can use the `DCIM_iDRACCARDService.ApplyAttributes()` or `DCIM_iDRACCARDService.SetAttribute()` method from DCIM iDRAC Card Profile [0].

Clients can send a request of the following form to globally enable the Alerts.

Figure 1 WS-Man Request to Enable Alerts

```xml
<?xml version="1.0"?>
xmlns:cim="http://schemas.dmtf.org/wbem/cim/v2"
xmlns:dcim="http://schemas.dmtf.org/wbem/cim/v2/root/dcnm/DCIM_iDRACCARDService">
<Header/>
<Body>
<ns1:ApplyAttributes_INPUT>
<ns1:Target>dcim:Embedded.1/hs/Target</ns1:Target>
<ns1:Attribute Name="YMLAN.1.AlertEnable"><ns1:AttributeValue>true</ns1:AttributeValue>
</ns1:ApplyAttributes_INPUT>
</Body>
</Envelope>
```

Users can also log in to iDRAC Web interface and go to the Alerts page to enable the alerts. A sample screen shot of the Alerts page is given here.

Figure 2 iDRAC Web GUI—Alerts Page
Enabling WS–Eventing Alerts on iDRAC

Clients can enable the WS–Eventing notification using the DCIM_EFConfigurationService.SetEventFilterByInstanceIDs() or DCIM_EFConfigurationService.SetEventFilterByCategory() method from DCIM Event Filter profile [0]. Clients can send a request of the following form to enable the WS–Eventing notification.

Figure 3 WS–MAN Request to Enable WS–Eventing Alerts

Users can also log in to iDRAC Web interface and navigate to Configuration category and Job Control Alert row on the same Alerts page and enable the WS–Eventing notification.

Figure 4 iDRAC Web GUI WS–Eventing Notification for Job Control
Creating Event Subscriptions

To create a subscription to receive events related to Lifecycle Job, a subscriber sends a request message to the iDRAC. A sample screen shot of the request is given here.

Figure 5 Subscription Request for Receiving DCIM_LifecycleAlertIndication Events

```xml
<?xml version="1.0"?>
  <Header>
    <To xmlns:mustUnderstand="true">https://idrac-iip.iwm.com</To>
    <Resource xmlns:mustUnderstand="true">http://schemas.dmtf.org/wbemschem.a/1.99.0</Resource>
    <MessageID xmlns:mustUnderstand="true">uuid:087b6994-0877-1987-6022-aa336b526b00</MessageID>
  </Header>
  <Body>
    <soap:Header/>
    <ns1:subscribe>
      <notify>true</notify>
      <Address>http://eventing-iip_iwm.com/eventsink-iip</Address>
    </ns1:subscribe>
  </Body>
</envelope>
```

Response from the subscription manager running on iDRAC is similar to the screen shot given here.

Figure 6 Subscription Response from iDRAC

```xml
<?xml version="1.0"?>
  <Header>
    <To xmlns:mustUnderstand="true">https://idrac-iip.iwm.com</To>
    <Resource xmlns:mustUnderstand="true">http://schemas.dmtf.org/wbemschem.a/1.99.0</Resource>
    <MessageID xmlns:mustUnderstand="true">uuid:a7120e10-0877-1987-6002-aa336b526b00</MessageID>
  </Header>
  <Body>
    <ns1:Subscribe/>
    <ns1:SubscribeResponse/>
    <ns1:Interoperable/>
    <ns1:Identifier>uuid:5e36e25-0894-1994-335b5c3b2d76</ns1:Identifier>
  </Body>
</envelope>
```

To minimize the resources on iDRAC, users with read-only privileges are not allowed to create subscriptions, because users must have the **Login and Configure** privilege to create the subscriptions.

iDRAC creates an instance of CIM_IndicationSubscription after the subscription request is accepted. Clients can query iDRAC by enumerating CIM_IndicationSubscription class to get all the active subscriptions.

An instance of CIM_IndicationSubscription for the subscription is shown in the screen shot here.
For more information about this class and its properties, refer to the DMTF Indication Profile specification [References].
Event Sink

Event Sink is a Web service that receives the event notifications. The address of the event sink has to be specified as part of the subscription request.

Following describes the normative constraint for specifying the event sink:

```
/s:Envelope/s:Body/*/wse:Delivery
```

It specifies the delivery destination for event messages using some delivery mode. For more information about Delivery Modes, refer to WS–Eventing specification Section 1.2 [References].

Value of `/s:Envelope/s:Body/*/wse:Delivery` is a single element, `wse:NotifyTo`, that contains the endpoint reference to which notification messages should be sent.

Expiry Time

All subscriptions may expire over time and clients can specify the expiry duration of the subscription. The ‘Expires’ element in a request specifies the expected expiry time of subscription. An event source (iDRAC) defines the actual expiration and may use a lesser or greater time period than the requested one. The expiration time may be a date time or duration from the subscription’s creation time. Both date times and durations are interpreted on the basis of iDRAC’s clock.

The upper limit for expiry time defined by the subscription manager running on iDRAC is 315360000 seconds, which is approximately 10 years. If the expiry duration is greater than 315360000 seconds, Subscription manager will reject all the subscription requests by displaying an error message as shown in the screen shot here.

Figure 8 Subscription request with expiry duration greater than 315360000 seconds

```
<xml version="1.0" encoding="UTF-8"/>
  <Header/>
  <Body>
    <Fault>
      <Code/>
      <Value/>
      <Subcode/>
      <Value>ws:InvalidExpirationTime</Value>
    </Subcode>
    <Reason>-
      <Text>The expiration time is invalid</Text>
    </Reason>
  </Fault>
</Envelope>
```

If the ‘Expires’ element is not specified in the request, then the request is for an infinite subscription that will not expire. Such subscription may also be requested by specifying ‘0’ for the ‘Expires’ element. However, the infinite subscriptions without expiry time or with ‘0’ expiry time will be removed from the subscription manager when iDRAC resets. If the subscriptions are required to be persisted across iDRAC reboots, then clients must use a valid expiry time (ranging from 1 to 315360000 seconds).
Subscription Identifier

After iDRAC successfully subscribes a client, iDRAC responds to the client’s subscription request with a message that contains a unique identifier (such as `uuid:9e369e25-c894-1894-8016-335b54cb2b78`) as shown in the Figure 6 earlier in this white paper. A client shall maintain this identifier in order to manage the subscription on the iDRAC and to identify the events received for this subscription. A client can also send enumeration request for CIM_IndicationSubscription class to iDRAC in order to get the identifiers of all the active subscriptions.

Clients can send request to renew an active subscription or to modify the duration of subscription by using the corresponding subscription identifier. For more information about renewing a subscription, see Section Renew Subscriptions.

Clients can also unsubscribe when they do not want events for a particular subscription. For more information about deleting a subscription, refer to section Deleting Subscriptions.

Renew Subscriptions

To update the expiration for a subscription, subscription managers running on iDRAC supports the requests to renew subscriptions.

To renew a subscription, the subscriber sends a request of the following form to the subscription manager.

![Figure 9 Renew Request](image)

If the subscription manager successfully processes the above request to renew the subscription, iDRAC replies with response of the following form.
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Figure 10 Renew response

```xml
<?xml version="1.0" encoding="UTF-8"?>
  <soap:Header/>
  <soap:Body>
    <webservice:RenewResponse>
      <webservice:Expires>2023-01-01T00:00:00Z</webservice:Expires>
    </webservice:RenewResponse>
  </soap:Body>
</soap:Envelope>
```

If the requested expiration is duration, then the implied start of that duration is the time when the subscription manager starts processing the Renew request.

Subscription manager running on iDRAC has the added security for `renew` operation. Only the user with credentials used for subscription request can renew the corresponding subscription. That is, user credentials, the exact username and password, used for creating the subscription has to be used for renewing the subscription. Otherwise, subscription manager denies the request with appropriate authorization error message as shown in the screen shot here.

In future iDRAC implementation, new support will be added to allow users with server control and admin privileges to renew the subscription created by different users.

Figure 11 Response for Unauthorized user trying to renew a subscription

```xml
<?xml version="1.0" encoding="UTF-8"?>
  <soap:Header/>
  <soap:Body>
    <soap:Fault>
      <faultcode>s:ServerFault</faultcode>
      <faultstring>Access denied</faultstring>
      <faultactor>s:Server</faultactor>
      <faultdetail/>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>
```

The sender was not authorized to access the resource.
Deleting Subscriptions

Although subscriptions with expiry times would expire eventually, to minimize resources, the subscribed client can explicitly request to delete a subscription when it no longer needs to receive notifications associated with the subscription.

To explicitly delete a subscription, a subscribing client sends a request of the following form to the subscription manager.

Figure 12 Unsubscribe Request

```xml
<?xml version="1.0" encoding="UTF-8"?>
 xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wsse-1.0.xsd"
 xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
  <s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
    <s:Header>
      <wsu:Action xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
        http://schemas.xmlsoap.org/soap/protocol/Unsubscribe</wsu:Action>
      </s:Header>
      <s:Body>
        <ns1:UnsubscribeRequest xmlns:ns1="http://schemas.xmlsoap.org/soap/protocol/">
          <ns1:Identifier xmlns:ns1="urn:interoperability:selector"/>
          <ns1:Selector Name="__cimnamespace"/>
        </ns1:UnsubscribeRequest>
      </s:Body>
    </s:Envelope>
  </s:Envelope>
```

If the subscription manager accepts a request to delete the subscription, it replies with a response of the following form.

Figure 13 Unsubscribe Response

```xml
<?xml version="1.0" encoding="UTF-8"?>
 xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wsse-1.0.xsd"
 xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
  <s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
    <s:Header>
      <wsu:Action xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
      </s:Header>
      <s:Body>
        <ns1:UnsubscribeResponse xmlns:ns1="http://schemas.xmlsoap.org/soap/protocol/">
          <ns1:Identifier xmlns:ns1="urn:interoperability:selector"/>
          <ns1:Selector Name="__cimnamespace"/>
        </ns1:UnsubscribeResponse>
      </s:Body>
    </s:Envelope>
  </s:Envelope>
```

Similar to renew operation and user credentials, the exact username and password used for creating the subscription has to be used for deleting (unsubscribe) the subscription. Otherwise, subscription manager denies the request with appropriate authorization error message as shown in the Figure 11.

In future iDRAC implementations, new support will be added to allow users with server control and admin privileges to renew the subscription created by different users.
Job Control Notifications (WS–Events) Generated by iDRAC

Various system management tasks such as firmware updates, reboots, and configurations require a prolonged duration to complete. In order to provide for asynchronous running of these tasks, jobs are created for individual or group of tasks that can be run immediately or at a scheduled time.

Different tasks typically have different job state sequences represented by different job statuses. For the purposes of managing these tasks as jobs, several job types have been identified. These are: gathering system inventory information, firmware update, firmware configuration, and reboot. Each job type may have different sequence of job statuses. The job may have a single status change, or there may be a series of status changes as part of the running a job.

iDRAC generates the notifications for these jobs based on the subscription requests. Clients can subscribe to

- DCIM_LifecycleJobAlertIndication: all the job-related events
- DCIM_LifecycleJobCreateAlertIndication: job creation events
- DCIM_LifecycleJobUpdateAlertIndication: job status change events

Refer to DCIM Job control profile [0] on detailed description job creation, lifecycle of the job, job status changes, and job deletion.

Job Creation Events

Clients can subscribe to job creation events by sending a request of the following form.

```
Figure 14 Subscribe Request for Job Creation Events
```

```
<?xml version="1.0"?>


<soap:En
```

The filter specified “SELECT * FROM DCIM_LifecycleJobCreateAlertIndication” is a query that filters the iDRAC7–generated events.

A client should be ready to receive the iDRAC–generated events even before sending the subscription request. iDRAC starts generating the events after the successful response to subscribe request on the
basis of filter expression. For example, a job creation event generated by iDRAC will be of the following form.

Figure 15 WS–Eventing for Job Creation

```xml
<?xml version="1.0" encoding="UTF-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
               xmlns:ns="http://schemas.xmlsoap.org/soap/envelope/"
               xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss保安rification-ProtocolProfile-1.0"

<soap:Header>
</soap:Header>

<soap:Body>
</soap:Body>
</soap:Envelope>
```

In the example here, the JobID, JobName, JobType, and JobStatus elements are specific to the job created by iDRAC for performing Hardware Inventory Export. for different values of JobType and JobStatus properties along with a detailed description, refer to the Appendix section.

Job Status Change Events

Clients can subscribe to job status change events by sending a request of the following form.

Figure 16 Subscribe Request for Job Status Change Events

```xml
<?xml version="1.0" encoding="UTF-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
               xmlns:ns="http://schemas.xmlsoap.org/soap/envelope/"
               xmlns:wsa="http://schemas.xmlsoap.org/soap/envelope/"
               xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss保安rification-ProtocolProfile-1.0"

<soap:Header>
</soap:Header>

<soap:Body>
</soap:Body>
</soap:Envelope>
```
iDRAC will start generating the events after the successful response to subscribe request based on the filter expression. A job status change event generated by iDRAC will be of the following form.

**Figure 17 WS–Eventing for Job Status Change**

```xml
  xmlns:soap="http://schemas.xmlsoap.org/wsse/1.0"
  xmlns:wssec="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss保安Sec-1.0.xsd"
  xmlns:wsu="http://schemas.xmlsoap.org/soap/uri/2001/12/uri"
  xmlns:wssec="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-sec-1.0.xsd">
  <Header/>
  <Body>
    <n1:ProbableCauseDescription>Job Operation</n1:ProbableCauseDescription>
    <n1:ProbableCause>1</n1:ProbableCause>
    <n1:IndicationTime>20120901144015.472566-300</n1:IndicationTime>
    <n1:Description>Job status updated</n1:Description>
    <n1:AlertType>1</n1:AlertType>
    <n1:OtherAlertType>Job Execution Alert</n1:OtherAlertType>
    <n1:PerceivedSeverity>2</n1:PerceivedSeverity>
    <n1:JobID>JID_467042197567</n1:JobID>
    <n1:JobName>HW Export</n1:JobName>
    <n1:JobType>2</n1:JobType>
    <n1:JobStatus>Failed</n1:JobStatus>
    <n1:Message>Job status updated</n1:Message>
    <n1:MessageID>305100000000000000</n1:MessageID>
    <n1:IndicatorName FilterName="a4b3ab25-0894-1894-8016-355b54cb2078"/>
    <n1:MessageArguments/>
  </Body>
</Envelope>
```

The above event is generated when the job status changes from "New" to "Failed" for corresponding job JID_467042197567. Refer to Section [Appendix](#) for different values of JobType and JobStatus properties along with a detailed description.

**Conclusion**

iDRAC provides a new capability by adding WS–Eventing support for job-related events. With this new capability, clients or user applications can receive notifications for Lifecycle Controller job creation and job status change events.
## Appendix

### Job Types

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<th>JobType</th>
<th>Value</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update</td>
<td>1</td>
<td>The flashing of FW into the target device</td>
<td>Update:DCIM:InstanceID of SoftwareIdentity</td>
</tr>
<tr>
<td>Rollback</td>
<td>2</td>
<td>The flashing of Available FW into the device.</td>
<td>Rollback:DCIM:InstanceID of SoftwareIdentity</td>
</tr>
<tr>
<td>Reboot</td>
<td>3</td>
<td></td>
<td>Reboot1 = “PowerCycle”</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Restart of system</td>
<td>Reboot2 = “Graceful Reboot without forced shutdown”</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Reboot3 = “Graceful Reboot with forced shutdown”</td>
</tr>
<tr>
<td>Shutdown</td>
<td>6</td>
<td>Shutdown of system</td>
<td>Shutdown</td>
</tr>
<tr>
<td>RAID configuration</td>
<td>7</td>
<td>Applying the pending RAID configuration</td>
<td>ConfigRAID:&lt; RAID Controller FQDD&gt; Each RAID controller has an FQDD and is part of the DCIM_ControllerView instance. (DCIM_ControllerView.FQDD) • For example, ConfigRAID:RAID.Integrated.1-1 • For example, DCIM_ControllerView.FQDD = RAID.Integrated.1-1</td>
</tr>
<tr>
<td>BIOS configuration</td>
<td>8</td>
<td>Applying the pending BIOS configuration</td>
<td>ConfigBIOS: BIOS.Setup.1-1</td>
</tr>
<tr>
<td>NIC configuration</td>
<td>9</td>
<td>Applying the pending NIC configuration</td>
<td>ConfigNIC:&lt; NIC FQDD&gt; Each NIC has an FQDD and is part of the DCIM_NICView instance (DCIM_NICView.FQDD). • For example, DCIM_NICView.FQDD = NIC.Embedded.1-1 • For example, ConfigNIC: NIC.Embedded.1-1</td>
</tr>
<tr>
<td>JobType</td>
<td>Value Map</td>
<td>Description</td>
<td>Value</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------</td>
<td>--------------------------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>FC configuration</td>
<td>10</td>
<td>Applying the pending FC configuration</td>
<td>ConfigFC:&lt;FC FQDD&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Each FC has an FQDD and is part of the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DCIM_FCView instance (DCIM_FCView.FQDD).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• For example, DCIM_FCView.FQDD FC.Slot.1-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>For example, ConfigFC: FC.Slot.1-1</td>
</tr>
<tr>
<td>iDRAC Card</td>
<td>11</td>
<td>Applying the pending iDRAC configuration</td>
<td>iDRACConfig:&lt;FQDD&gt;</td>
</tr>
<tr>
<td>Configuration</td>
<td></td>
<td></td>
<td>• For example, iDRACConfig: iDRAC.Embedded.1</td>
</tr>
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<td>System Configuration</td>
<td>12</td>
<td>Applying the pending system configuration</td>
<td>SYSConfig:&lt;FQDD&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• For example, SYSConfig: System.Embedded.1</td>
</tr>
<tr>
<td>Export Configuration</td>
<td>13</td>
<td>Export the current configuration data</td>
<td>Export Configuration</td>
</tr>
<tr>
<td>Import Configuration</td>
<td>14</td>
<td>Apply the pending configuration data provided by the user</td>
<td>Import Configuration</td>
</tr>
<tr>
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<td>15</td>
<td>Initialize vFlash</td>
<td>VFlashInitialize:Media</td>
</tr>
<tr>
<td>vFlash</td>
<td>16</td>
<td>Create partition</td>
<td>VFlashCreate:Partition&lt;n&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Where n is equal to number of vFlash</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>partition indices (1 to 16)</td>
</tr>
<tr>
<td>vFlash</td>
<td>17</td>
<td>Create partition using image</td>
<td>VFlashCreateUsingImage:Partition1&lt;n&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Where n is equal to number of vFlash</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>partition indices (1 to 16)</td>
</tr>
<tr>
<td>vFlash</td>
<td>18</td>
<td>Format partition</td>
<td>VFlashFormat:Partition1&lt;n&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Where n is equal to number of vFlash</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>partition indices (1 to 16)</td>
</tr>
<tr>
<td>vFlash</td>
<td>19</td>
<td>Attach partition</td>
<td>VFlashAttach:Partition1&lt;n&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Where n is equal to number of vFlash</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>partition indices (1 to 16)</td>
</tr>
<tr>
<td>vFlash</td>
<td>20</td>
<td>Detach partition</td>
<td>VFlashAttach:Partition1&lt;n&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Where n is equal to number of vFlash</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>partition indices (1 to 16)</td>
</tr>
<tr>
<td>JobType</td>
<td>Value Map</td>
<td>Description</td>
<td>Value</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------</td>
<td>------------------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>vFlash</td>
<td>21</td>
<td>Export data from partition</td>
<td>VFlashExportData:Partition1(&lt;n&gt;)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Where n is equal to number of vFlash</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>partition indices (1 to 16)</td>
</tr>
<tr>
<td>LC Export</td>
<td>26</td>
<td>LCL log export</td>
<td>LC Export</td>
</tr>
<tr>
<td>HW Export</td>
<td>27</td>
<td>Hardware Inventory export</td>
<td>HW Export</td>
</tr>
<tr>
<td>Factory configuration</td>
<td>28</td>
<td>Factory configuration export</td>
<td>FACTORY CONFIG Export</td>
</tr>
<tr>
<td>export</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Job Statuses

<table>
<thead>
<tr>
<th>Status Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Job Type: Update</strong></td>
<td></td>
</tr>
<tr>
<td>New</td>
<td>New Job has been created.</td>
</tr>
<tr>
<td>Downloading</td>
<td>Job is Downloading firmware image.</td>
</tr>
<tr>
<td>Downloaded</td>
<td>Job Downloaded the firmware image. Note that this status is not applicable to the direct update jobs.</td>
</tr>
<tr>
<td>Scheduled</td>
<td>Job has been scheduled. Note that this status is not applicable to the direct update jobs.</td>
</tr>
<tr>
<td>Running</td>
<td>Job is being run. Note that this status is not applicable to the direct update jobs.</td>
</tr>
<tr>
<td>Completed</td>
<td>Job has been run.</td>
</tr>
<tr>
<td>Failed</td>
<td>Job could not be successfully run.</td>
</tr>
<tr>
<td>Deleted</td>
<td>Job has been deleted.</td>
</tr>
<tr>
<td><strong>Job Type: Rollback</strong></td>
<td></td>
</tr>
<tr>
<td>New</td>
<td>New Job has been created.</td>
</tr>
<tr>
<td>Scheduled</td>
<td>Job has been scheduled.</td>
</tr>
<tr>
<td>Running</td>
<td>Job is being executed.</td>
</tr>
<tr>
<td>Completed</td>
<td>Job has been completed.</td>
</tr>
<tr>
<td>Failed</td>
<td>Job has Failed.</td>
</tr>
<tr>
<td><strong>Job Type: Reboot</strong></td>
<td></td>
</tr>
<tr>
<td>Pending Reboot</td>
<td>Reboot Pending for this job.</td>
</tr>
<tr>
<td>Reboot Completed</td>
<td>Reboot Job completed.</td>
</tr>
<tr>
<td>Reboot Failed</td>
<td>Reboot Job failed.</td>
</tr>
<tr>
<td><strong>Job Type: vFlash</strong></td>
<td></td>
</tr>
<tr>
<td>New or NEW</td>
<td>New Job has been created.</td>
</tr>
<tr>
<td>Completed</td>
<td>Job has been completed.</td>
</tr>
<tr>
<td>Failed</td>
<td>Job failed.</td>
</tr>
<tr>
<td><strong>Job Type: LC Export, HW Export, FACTORY CONFIG Export</strong></td>
<td></td>
</tr>
<tr>
<td>New</td>
<td>New Job has been created.</td>
</tr>
<tr>
<td>Job Status</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Completed</td>
<td>Job has been completed.</td>
</tr>
<tr>
<td>Failed</td>
<td>Job failed.</td>
</tr>
</tbody>
</table>

**Job Type: RAID Configuration**

<table>
<thead>
<tr>
<th>Job Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>New Job has been created.</td>
</tr>
<tr>
<td>Ready For Execution</td>
<td>Job is ready for execution.</td>
</tr>
<tr>
<td>Scheduled</td>
<td>Job has been scheduled.</td>
</tr>
<tr>
<td>Running</td>
<td>Job is being executed.</td>
</tr>
<tr>
<td>Completed</td>
<td>Job has been completed.</td>
</tr>
<tr>
<td>Failed</td>
<td>Job failed.</td>
</tr>
</tbody>
</table>

**Job Type: NIC Configuration**

<table>
<thead>
<tr>
<th>Job Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>New Job has been created.</td>
</tr>
<tr>
<td>Ready For Execution</td>
<td>Job is ready for execution.</td>
</tr>
<tr>
<td>Scheduled</td>
<td>Job has been scheduled.</td>
</tr>
<tr>
<td>Running</td>
<td>Job is being executed.</td>
</tr>
<tr>
<td>Completed</td>
<td>Job has been completed.</td>
</tr>
<tr>
<td>Completed with Errors</td>
<td>Job has been completed with one or more errors.</td>
</tr>
<tr>
<td>Failed</td>
<td>Job failed.</td>
</tr>
</tbody>
</table>

**Job Type: BIOS Configuration**

<table>
<thead>
<tr>
<th>Job Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>New Job has been created.</td>
</tr>
<tr>
<td>Ready For Execution</td>
<td>Job is ready for execution.</td>
</tr>
<tr>
<td>Scheduled</td>
<td>Job has been scheduled.</td>
</tr>
<tr>
<td>Running</td>
<td>Job is being executed.</td>
</tr>
<tr>
<td>Completed</td>
<td>Job has been completed.</td>
</tr>
<tr>
<td>Completed with Errors</td>
<td>Job has been completed with one or more errors.</td>
</tr>
<tr>
<td>Failed</td>
<td>Job failed.</td>
</tr>
</tbody>
</table>

**Job Type: IDRAC Card Configuration**

<table>
<thead>
<tr>
<th>Job Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>New Job has been created.</td>
</tr>
<tr>
<td>Ready For Execution</td>
<td>Job is ready for execution.</td>
</tr>
<tr>
<td>Completed</td>
<td>Job has been completed.</td>
</tr>
<tr>
<td>Completed with Errors</td>
<td>Job has been completed with one or more errors.</td>
</tr>
</tbody>
</table>
Failed Job failed.

**Job Type: System Configuration**

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>New Job has been created.</td>
</tr>
<tr>
<td>Ready For Execution</td>
<td>Job is ready for execution.</td>
</tr>
<tr>
<td>Completed</td>
<td>Job has been completed.</td>
</tr>
<tr>
<td>Completed with Errors</td>
<td>Job has been completed with one or more errors.</td>
</tr>
<tr>
<td>Failed</td>
<td>Job failed.</td>
</tr>
</tbody>
</table>

**Examples of WSMAN Commands Using openwsman Client**

Source for the WS–Man client can be found at [http://sourceforge.net/projects/openwsman/files/wsmancli/](http://sourceforge.net/projects/openwsman/files/wsmancli/). Users can download this source, compile, and then install it on a UNIX–based operating system to send the WS–Man commands. Some of the examples for sending WS–Man commands related to WS–Eventing are given here.

**Enabling Alerts**

```
```

**Enabling WS–Eventing Alerts**

```
wsman invoke -a SetEventFilterByInstanceIDs -h [idrac-ip] -P 443 -u [username] -p [password] -N root/dcim http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_EFConfigurationService?SystemCreationClassName="DCIM_SPComputerSystem",CreationClassName="DCIM_EFConfigurationService",SystemName="systemmc",Name="DCIM:EFConfigurationService" -k InstanceID=iDRAC.Embedded.1#RACEvtFilterCfgRoot#JCP_5_3 -k RequestedNotification=6 -k RequestedAction=0 -V -v -R -o -m 256 -c dummy
```

**Subscription Request**

```
```

**Renew Request**

```
```
Unsubscribe Request