
Web Service Eventing Support for iDRAC7 1.30.30

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Aug 2013 | Version 1.0

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References

The following documents are included for reference.

Document Name	Document link
LC Integration Best Practices	http://en.community.dell.com/techcenter/extras/m/white_papers/20066173.aspx
WS-Eventing Specification	DSP0226, Web Services for Management 1.1.1
DMTF Indication Profile	DSP1054_1.0.0.pdf, Indication Profile
DCIM Job Control Profile	Dell Job Control Profile
DCIM Event Filter Profile	Dell Event Filter Profile
DCIM iDRAC Card Profile	Dell iDrac Card Profile

Glossary

Acronym	Definition
iDRAC	integrated Dell Remote Access Controller
LC	Lifecycle Controller
WS-Man	Web Services for Management – a Web services protocol designed for manageability
Console	The management application a user would utilize to perform remote platform management tasks
WS-Eventing	Web Service Eventing
MOF	Managed Object Format
iDRAC	Integrated Dell Remote Access Controller
LC	Lifecycle Controller
WS-Man	Web Services for Management – a web services protocol designed for manageability

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 [\[References\]](#).

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].

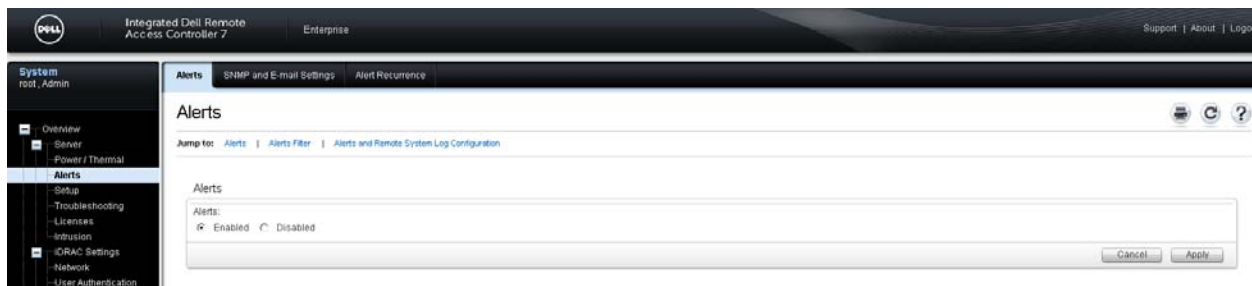
Clients can send a request of the following form to globally enable the Alerts.

Figure 1 WS-Man Request to Enable Alerts

```
<?xml version="1.0"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing" xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd" xmlns:n1="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_iDRACCardService">
  <s:Header>
    <wsa:Action s:mustUnderstand="true">http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_iDRACCardService/ApplyAttributes</wsa:Action>
    <wsa:To s:mustUnderstand="true">https://<idrac-ip>/wsman</wsa:To>
    <wsman:ResourceURI s:mustUnderstand="true">http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_iDRACCardService</wsman:ResourceURI>
    <wsa:MessageID s:mustUnderstand="true">uuid:ca5a9e2a-ca91-1a91-8002-ae3560b92600</wsa:MessageID>
    <wsa:ReplyTo>
      <wsa:Address>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsman:SelectorSet>
      <wsman:Selector Name="Name">DCIM:iDRACCardService</wsman:Selector>
      <wsman:Selector Name="SystemName">DCIM:ComputerSystem</wsman:Selector>
      <wsman:Selector Name="SystemCreationClassName">DCIM_ComputerSystem</wsman:Selector>
      <wsman:Selector Name="CreationClassName">DCIM_iDRACCardService</wsman:Selector>
      <wsman:Selector Name="_cimnamespace">root/dcim</wsman:Selector>
    </wsman:SelectorSet>
  </s:Header>
  <s:Body>
    <n1:ApplyAttributes_INPUT>
      <n1:Target>iDRAC.Embedded.1</n1:Target>
      <n1:AttributeName>IPMILan.1#AlertEnable</n1:AttributeName>
      <n1:AttributeValue>Enabled</n1:AttributeValue>
    </n1:ApplyAttributes_INPUT>
  </s:Body>
</s: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

```
<?xml version="1.0"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsmn="http://schemas.dmtf.org/wbem/wsmn/1/wsmn.xsd"
  xmlns:n1="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_EFConfigurationService">
  <s:Header>
    <wsa:Action s:mustUnderstand="true">http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_EFConfigurationService/SetEventFilterByInstanceIDs</wsa:Action>
    <wsa:To s:mustUnderstand="true">https://<idrac-ip>/wsmn</wsa:To>
    <wsmn:ResourceURI s:mustUnderstand="true">http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_EFConfigurationService</wsmn:ResourceURI>
    <wsa:MessageID s:mustUnderstand="true">uuid:91c9e1bd-caa6-1aa6-8002-ae3560b92600</wsa:MessageID>
    <wsa:ReplyTo>
      <wsa:Address>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsmn:SelectorSet>
      <wsmn:Selector Name="Name">DCIM:EFConfigurationService</wsmn:Selector>
      <wsmn:Selector Name="SystemName">systemc</wsmn:Selector>
      <wsmn:Selector Name="CreationClassName">DCIM_EFConfigurationService</wsmn:Selector>
      <wsmn:Selector Name="SystemCreationClassName">DCIM_SPComputerSystem</wsmn:Selector>
      <wsmn:Selector Name="__cimnamespace">root/dcim</wsmn:Selector>
    </wsmn:SelectorSet>
  </s:Header>
  <s:Body>
    <n1:SetEventFilterByInstanceIds_INPUT>
      <n1:InstanceID>iDRAC.Embedded.1#RACEvtFilterCfgRoot#JCP_5_3</n1:InstanceID>
      <n1:RequestedNotification>6</n1:RequestedNotification>
      <n1:RequestedAction>0</n1:RequestedAction>
    </n1:SetEventFilterByInstanceIds_INPUT>
  </s:Body>
</s:Envelope>
```

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

Alerts and Remote System Log Configuration ▲ Back to Top

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Category	Alert	Severity	Email	SNMP Trap	IPMI Alert	Remote System Log	WS Eventing	Action
Storage	Virtual Disk		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No Action
Storage	Virtual Disk		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No Action
Storage	Virtual Disk		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No Action
Configuration	Hardware Config		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Action
Configuration	Hardware Config		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Action
Configuration	Hardware Config		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Action
Configuration	iDRAC IP Address		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Action
Configuration	Job Control		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No Action

Page 12 of 14 Apply

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 version="1.0"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd" xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
  <s:Header>
    <wsa:Action s:mustUnderstand="true">http://schemas.xmlsoap.org/ws/2004/08/eventing/Subscribe</wsa:Action>
    <wsa:To s:mustUnderstand="true">https://<idrac-ip>/wsman</wsa:To>
    <wsman:ResourceURI s:mustUnderstand="true">http://schemas.dmtf.org/wbem/wscim/1/*</wsman:ResourceURI>
    <wsa:MessageID s:mustUnderstand="true">uuid:807b9094-c887-1887-8002-ae3560b92600</wsa:MessageID>
    <wsa:ReplyTo>
      <wsa:Address>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsman:SelectorSet>
      <wsman:Selector Name="__cimnamespace">root/dcim</wsman:Selector>
    </wsman:SelectorSet>
  </s:Header>
  <s:Body>
    <wse:Subscribe>
      <wse:Delivery Mode="http://schemas.xmlsoap.org/ws/2004/08/eventing/DeliveryModes/Push">
        <wse:NotifyTo>
          <wsa:Address>http://<eventsink-ip>:<port>/eventsink</wsa:Address>
        </wse:NotifyTo>
      </wse:Delivery>
      <wse:Expires>PT300.000000S</wse:Expires>
      <wsman:Filter Dialect="http://schemas.dmtf.org/wbem/cql/1/dsp0202.pdf">SELECT * FROM DCIM_LifecycleJobAlertIndication</wsman:Filter>
    </wse:Subscribe>
  </s:Body>
</s:Envelope>
```

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

Figure 6 Subscription Response from iDRAC

```
<?xml version="1.0"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd" xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
  <s:Header>
    <wsa:Action s:mustUnderstand="true">http://schemas.xmlsoap.org/ws/2004/08/eventing/Unsubscribe</wsa:Action>
    <wsa:To s:mustUnderstand="true">https://10.35.155.107:443/wsman</wsa:To>
    <wsa:MessageID s:mustUnderstand="true">uuid:a722c6a2-c887-1887-8002-ae3560b92600</wsa:MessageID>
    <wsa:ReplyTo>
      <wsa:Address>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsman:SelectorSet>
      <wsman:Selector Name="__cimnamespace">root/interop</wsman:Selector>
    </wsman:SelectorSet>
    <wse:Identifier>uuid:9e369e25-c894-1894-8016-335b54cb2b78</wse:Identifier>
  </s:Header>
  <s:Body>
    <wse:Unsubscribe/>
  </s:Body>
</s: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.

Figure 7 CIM_IndicationSubscription Instance

```

<?xml version="1.0" encoding="UTF-8"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wse="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
  xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd"
  xmlns:n1="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_IndicationSubscription"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <s:Header>
    <wsa:To>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:To>
    <wsa:Action>http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerateResponse</wsa:Action>
    <wsa:RelatesTo>uuid:dda20060-c8ec-18ec-8002-ae3560b92600</wsa:RelatesTo>
    <wsa:MessageID>uuid:d7ebe9aa-c8f9-18f9-801c-335b54cb2b78</wsa:MessageID>
  </s:Header>
  <s:Body>
    <wsen:EnumerateResponse>
      <wsman:Items>
        <n1:CIM_IndicationSubscription>
          <n1:AlertOnStateChange>false</n1:AlertOnStateChange>
          <n1:FailureTriggerTimeInterval xsi:nil="true"/>
          <n1:Filter>
            <wsa:EndpointReference>
              <wsa:Address>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:Address>
              <wsa:ReferenceParameters>
                <wsman:ResourceURI>http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_IndicationFilter</wsman:ResourceURI>
                <wsman:SelectorSet>
                  <wsman:Selector Name="SystemCreationClassName">CIM_ComputerSystem</wsman:Selector>
                  <wsman:Selector Name="SystemName">localhost.localdomain</wsman:Selector>
                  <wsman:Selector Name="CreationClassName">CIM_IndicationFilter</wsman:Selector>
                  <wsman:Selector Name="Name">9e369e25-c894-1894-8016-335b54cb2b78</wsman:Selector>
                  <wsman:Selector Name="__cimnamespace">root/interop</wsman:Selector>
                </wsman:SelectorSet>
              </wsa:ReferenceParameters>
            </wsa:EndpointReference>
          </n1:Filter>
          <n1:Handler>
            <wsa:EndpointReference>
              <wsa:Address>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:Address>
              <wsa:ReferenceParameters>
                <wsman:ResourceURI>http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_IndicationHandlerCIMXML</wsman:ResourceURI>
                <wsman:SelectorSet>
                  <wsman:Selector Name="SystemCreationClassName">CIM_ComputerSystem</wsman:Selector>
                  <wsman:Selector Name="SystemName">localhost.localdomain</wsman:Selector>
                  <wsman:Selector Name="CreationClassName">CIM_IndicationHandlerCIMXML</wsman:Selector>
                  <wsman:Selector Name="Name">9e369e25-c894-1894-8016-335b54cb2b78</wsman:Selector>
                  <wsman:Selector Name="__cimnamespace">root/interop</wsman:Selector>
                </wsman:SelectorSet>
              </wsa:ReferenceParameters>
            </wsa:EndpointReference>
          </n1:Handler>
          <n1:LastIndicationIdentifier xsi:nil="true"/>
          <n1:LastIndicationProductionDateTime xsi:nil="true"/>
          <n1:OnFatalErrorPolicy>2</n1:OnFatalErrorPolicy>
          <n1:OtherOnFatalErrorPolicy xsi:nil="true"/>
          <n1:OtherRepeatNotificationPolicy xsi:nil="true"/>
          <n1:OtherSubscriptionState xsi:nil="true"/>
          <n1:RepeatNotificationCount xsi:nil="true"/>
          <n1:RepeatNotificationGap xsi:nil="true"/>
          <n1:RepeatNotificationInterval xsi:nil="true"/>
          <n1:RepeatNotificationPolicy>2</n1:RepeatNotificationPolicy>
          <n1:SubscriptionDuration>300</n1:SubscriptionDuration>
          <n1:SubscriptionInfo xsi:nil="true"/>
          <n1:SubscriptionStartTime>20120905145815.472566-300</n1:SubscriptionStartTime>
          <n1:SubscriptionState>2</n1:SubscriptionState>
          <n1:SubscriptionTimeRemaining xsi:nil="true"/>
          <n1:TimeOfLastStateChange xsi:nil="true"/>
        </n1:CIM_IndicationSubscription>
      </wsman:Items>
    </wsen:EnumerateResponse>
  </s:Body>
</s:Envelope>

```

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"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
  <s:Header>
    <wsa:To>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:To>
    <wsa:Action>http://schemas.xmlsoap.org/ws/2004/08/eventing/fault</wsa:Action>
    <wsa:RelatesTo>uuid:1e24f3d2-c8d8-18d8-8002-ae3560b92600</wsa:RelatesTo>
    <wsa:MessageID>uuid:b2d76412-5d01-1d01-8002-d278f9642500</wsa:MessageID>
  </s:Header>
  <s:Body>
    <s:Fault>
      <s:Code>
        <s:Value>s:Sender</s:Value>
        <s:Subcode>
          <s:Value>wse:InvalidExpirationTime</s:Value>
        </s:Subcode>
      </s:Code>
      <s:Reason>
        <s:Text xml:lang="en">The expiration time is invalid</s:Text>
      </s:Reason>
    </s:Fault>
  </s:Body>
</s: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

```
<?xml version="1.0"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd" xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
  <s:Header>
    <wsa:Action s:mustUnderstand="true">http://schemas.xmlsoap.org/ws/2004/08/eventing/Renew</wsa:Action>
    <wsa:To s:mustUnderstand="true">https://<idrac-ip>/wsman</wsa:To>
    <wsa:MessageID s:mustUnderstand="true">uuid:a3b7ae7c-c8d6-18d6-8002-ae3560b92600</wsa:MessageID>
    <wsa:ReplyTo>
      <wsa:Address>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsman:SelectorSet>
      <wsman:Selector Name="__cimnamespace">root/interop</wsman:Selector>
    </wsman:SelectorSet>
    <wse:Identifier>uuid:9e369e25-c894-1894-8016-335b54cb2b78</wse:Identifier>
  </s:Header>
  <s:Body>
    <wse:Renew>
      <wse:Expires>PT60000.000000S</wse:Expires>
    </wse:Renew>
  </s:Body>
</s:Envelope>
```

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

Figure 10 Renew response

```
<?xml version="1.0" encoding="UTF-8"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
  <s:Header>
    <wsa:To>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:To>
    <wsa:Action>http://schemas.xmlsoap.org/ws/2004/08/eventing/RenewResponse</wsa:Action>
    <wsa:RelatesTo>uuid:a3b7ae7c-c8d6-18d6-8002-ae3560b92600</wsa:RelatesTo>
    <wsa:MessageID>uuid:9df95803-c8e3-18e3-8005-335b54cb2b78</wsa:MessageID>
  </s:Header>
  <s:Body>
    <wse:RenewResponse>
      <wse:Expires>PT60000.000000S</wse:Expires>
    </wse:RenewResponse>
  </s:Body>
</s: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 version="1.0" encoding="UTF-8"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd">
  <s:Header>
    <wsa:To>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:To>
    <wsa:Action>http://schemas.dmtf.org/wbem/wsman/1/wsman/fault</wsa:Action>
    <wsa:RelatesTo>uuid:dbc50a7f-c8d6-18d6-8002-ae3560b92600</wsa:RelatesTo>
    <wsa:MessageID>uuid:9599b5cc-5d7b-1d7b-8023-d278f9642500</wsa:MessageID>
  </s:Header>
  <s:Body>
    <s:Fault>
      <s:Code>
        <s:Value>s:Sender</s:Value>
        <s:Subcode>
          <s:Value>wsman:AccessDenied</s:Value>
        </s:Subcode>
      </s:Code>
      <s:Reason>
        <s:Text xml:lang="en">The sender was not authorized to access the resource.</s:Text>
      </s:Reason>
    </s:Fault>
  </s:Body>
</s:Envelope>
```

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 version="1.0"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd" xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
  <s:Header>
    <wsa:Action s:mustUnderstand="true">http://schemas.xmlsoap.org/ws/2004/08/eventing/Unsubscribe</wsa:Action>
    <wsa:To s:mustUnderstand="true">https://<idrac-ip>/wsman</wsa:To>
    <wsa:MessageID s:mustUnderstand="true">uuid:a722c6a2-c887-1887-8002-ae3560b92600</wsa:MessageID>
    <wsa:ReplyTo>
      <wsa:Address>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsman:SelectorSet>
      <wsman:Selector Name="__cimnamespace">root/interop</wsman:Selector>
    </wsman:SelectorSet>
    <wse:Identifier>uuid:9e369e25-c894-1894-8016-335b54cb2b78</wse:Identifier>
  </s:Header>
  <s:Body>
    <wse:Unsubscribe/>
  </s:Body>
</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 version="1.0" encoding="UTF-8"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing">
  <s:Header>
    <wsa:To>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:To>
    <wsa:Action>http://schemas.xmlsoap.org/ws/2004/08/eventing/UnsubscribeResponse</wsa:Action>
    <wsa:RelatesTo>uuid:a722c6a2-c887-1887-8002-ae3560b92600</wsa:RelatesTo>
    <wsa:MessageID>uuid:a158e18b-c894-1894-8016-335b54cb2b78</wsa:MessageID>
  </s:Header>
  <s:Body/>
</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"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd" xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
  <s:Header>
    <wsa:Action s:mustUnderstand="true">http://schemas.xmlsoap.org/ws/2004/08/eventing/Subscribe</wsa:Action>
    <wsa:To s:mustUnderstand="true">https://<idrac-ip>/wsman</wsa:To>
    <wsman:ResourceURI s:mustUnderstand="true">http://schemas.dmtf.org/wbem/wscim/1/*</wsman:ResourceURI>
    <wsa:MessageID s:mustUnderstand="true">uuid:807b9094-c887-1887-8002-ae3560b92600</wsa:MessageID>
    <wsa:ReplyTo>
      <wsa:Address>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsman:SelectorSet>
      <wsman:Selector Name="__cimnamespace">root/dcim</wsman:Selector>
    </wsman:SelectorSet>
  </s:Header>
  <s:Body>
    <wse:Subscribe>
      <wse:Delivery Mode="http://schemas.xmlsoap.org/ws/2004/08/eventing/DeliveryModes/Push">
        <wse:NotifyTo>
          <wsa:Address>http://<eventsink-ip>:<port>/eventsink</wsa:Address>
        </wse:NotifyTo>
      </wse:Delivery>
      <wse:Expires>PT3000.000000S</wse:Expires>
      <wsman:Filter Dialect="http://schemas.dmtf.org/wbem/cql/1/dsp0202.pdf">SELECT * FROM DCIM_LifecycleJobCreateAlertIndication</wsman:Filter>
    </wse:Subscribe>
  </s:Body>
</s:Envelope>
```

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 version="1.0" encoding="UTF-8"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd"
  xmlns:n1="http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_LifecycleJobCreateAlertIndication">
  <s:Header>
    <wsa:To>http://<eventsink-ip>:<port>/eventsink</wsa:To>
    <wsa:MessageID>uuid:c0d53e02-5d05-1d05-8036-d278f9642500</wsa:MessageID>
    <wsman:Action>http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_LifecycleJobCreateAlertIndication</wsman:Action>
  </s:Header>
  <s:Body>
    <n1:ProbableCauseDescription>Job Operation</n1:ProbableCauseDescription>
    <n1:ProbableCause>1</n1:ProbableCause>
    <n1:IndicationTime>20120905145815.472566-300</n1:IndicationTime>
    <n1:Description>New Lifecycle Controller job created</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>27</n1:JobType>
    <n1:JobStatus>New</n1:JobStatus>
    <n1:Message>Job created successfully.</n1:Message>
    <n1:MessageID>JCP027</n1:MessageID>
    <n1:IndicationFilterName>9e369e25-c894-1894-8016-335b54cb2b78</n1:IndicationFilterName>
    <n1:MessageArguments/>
  </s:Body>
</s: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 version="1.0"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd" xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
  <s:Header>
    <wsa:Action s:mustUnderstand="true">http://schemas.xmlsoap.org/ws/2004/08/eventing/Subscribe</wsa:Action>
    <wsa:To s:mustUnderstand="true">https://<idrac-ip>/wsman</wsa:To>
    <wsman:ResourceURI s:mustUnderstand="true">http://schemas.dmtf.org/wbem/wscim/1/*</wsman:ResourceURI>
    <wsa:MessageID s:mustUnderstand="true">uuid:807b9094-c887-1887-8002-ae3560b92600</wsa:MessageID>
    <wsa:ReplyTo>
      <wsa:Address>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsman:SelectorSet>
      <wsman:Selector Name="__cimnamespace">root/dcim</wsman:Selector>
    </wsman:SelectorSet>
  </s:Header>
  <s:Body>
    <wse:Subscribe>
      <wse:Delivery Mode="http://schemas.xmlsoap.org/ws/2004/08/eventing/DeliveryModes/Push">
        <wse:NotifyTo>
          <wsa:Address>http://<eventsink-ip>:<port>/eventsink</wsa:Address>
        </wse:NotifyTo>
      </wse:Delivery>
      <wse:Expires>PT3000.000000S</wse:Expires>
      <wsman:Filter Dialect="http://schemas.dmtf.org/wbem/cql/1/dsp0202.pdf">SELECT * FROM DCIM_LifecycleJobUpdateAlertIndication </wsman:Filter>
    </wse:Subscribe>
  </s:Body>
</s: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 version="1.0" encoding="UTF-8"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd"
  xmlns:n1="http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_LifecycleJobUpdateAlertIndication">
  <s:Header>
    <wsa:To>http://10.36.1.249:80/eventsink</wsa:To>
    <wsa:MessageID>uuid:c105ac78-5d05-1d05-8037-d278f9642500</wsa:MessageID>
    <wsman:Action>http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_LifecycleJobUpdateAlertIndication</wsman:Action>
  </s:Header>
  <s:Body>
    <n1:ProbableCauseDescription>Job Operation</n1:ProbableCauseDescription>
    <n1:ProbableCause>1</n1:ProbableCause>
    <n1:IndicationTime>20120905145815.472566-300</n1:IndicationTime>
    <n1:Description>Lifecycle Controller 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>27</n1:JobType>
    <n1:JobStatus>Failed</n1:JobStatus>
    <n1:Message>Job status updated.</n1:Message>
    <n1:MessageID>JCP028</n1:MessageID>
    <n1:IndicationFilterName>9e369e25-c894-1894-8016-335b54cb2b78</n1:IndicationFilterName>
    <n1:MessageArguments/>
  </s:Body>
</s: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

JobType	Value Map	Description	Value
Update	1	The flashing of FW into the target device	Update:DCIM:InstanceID of SoftwareIdentity
Rollback	2	The flashing of Available FW into the device.	Rollback:DCIM:InstanceID of SoftwareIdentity
Reboot	3	Restart of system	Reboot1 = "PowerCycle"
	4		Reboot2 = "Graceful Reboot without forced shutdown"
	5		Reboot3 = "Graceful Reboot with forced shutdown"
Shutdown	6	Shutdown of system	Shutdown
RAID configuration	7	Applying the pending RAID configuration	ConfigRAID:< RAID Controller FQDD> Each RAID controller has an FQDD and is part of the DCIM_ControllerView instance. (DCIM_ControllerView.FQDD) <ul style="list-style-type: none"> For example, ConfigRAID :RAID.Integrated.1-1 For example, DCIM_ControllerView.FQDD = RAID.Integrated.1-1
BIOS configuration	8	Applying the pending BIOS configuration	ConfigBIOS: BIOS.Setup.1-1
NIC configuration	9	Applying the pending NIC configuration	ConfigNIC:< NIC FQDD> Each NIC has an FQDD and is part of the DCIM_NICView instance (DCIM_NICView.FQDD). <ul style="list-style-type: none"> For example, DCIM_NICView.FQDD = NIC.Embedded.1-1 For example, ConfigNIC: NIC.Embedded.1-1

JobType	Value Map	Description	Value
FC configuration	10	Applying the pending FC configuration	ConfigFC:<FC FQDD> Each FC has an FQDD and is part of the DCIM_FCView instance (DCIM_FCView.FQDD). <ul style="list-style-type: none"> For example, DCIM_FCView.FQDD FC.Slot.1-1 For example, ConfigFC: FC.Slot.1-1
iDRAC Card Configuration	11	Applying the pending iDRAC configuration.	iDRACConfig:<FQDD> <ul style="list-style-type: none"> For example, iDRACConfig: iDRAC.Embedded.1
System Configuration	12	Applying the pending system configuration.	SYSConfig:<FQDD> <ul style="list-style-type: none"> For example, SYSConfig: System.Embedded.1
Export Configuration	13	Export the current configuration data	Export Configuration
Import Configuration	14	Apply the pending configuration data provided by the user	Import Configuration
vFlash	15	Initialize vFlash	VFlashInitialize:Media
vFlash	16	Create partition	VFlashCreate:Partition<n> Where n is equal to number of vFlash partition indices (1 to 16)
vFlash	17	Create partition using image	VFlashCreateUsingImage:Partition1<n> Where n is equal to number of vFlash partition indices (1 to 16)
vFlash	18	Format partition	VFlashFormat:Partition1<n> Where n is equal to number of vFlash partition indices (1 to 16)
vFlash	19	Attach partition	VFlashAttach:Partition1<n> Where n is equal to number of vFlash partition indices (1 to 16)
vFlash	20	Detach partition	VFlashDetach:Partition1<n> Where n is equal to number of vFlash partition indices (1 to 16)

JobType	Value Map	Description	Value
vFlash	21	Export data from partition	VFlashExportData:Partition1<n> Where n is equal to number of vFlash partition indices (1 to 16)
LC Export	26	LCL log export	LC Export
HW Export	27	Hardware Inventory export	HW Export
Factory configuration export	28	Factory configuration export	FACTORY CONFIG Export

Job Statuses

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

Completed	Job has been completed.
Failed	Job failed.

Job Type: RAID Configuration

New	New Job has been created.
Ready For Execution	Job is ready for execution.
Scheduled	Job has been scheduled.
Running	Job is being executed.
Completed	Job has been completed.
Failed	Job failed.

Job Type: NIC Configuration

New	New Job has been created.
Ready For Execution	Job is ready for execution.
Scheduled	Job has been scheduled.
Running	Job is being executed.
Completed	Job has been completed.
Completed with Errors	Job has been completed with one or more errors.
Failed	Job failed.

Job Type: BIOS Configuration

New	New Job has been created.
Ready For Execution	Job is ready for execution.
Scheduled	Job has been scheduled.
Running	Job is being executed.
Completed	Job has been completed.
Completed with Errors	Job has been completed with one or more errors.
Failed	Job failed.

Job Type: iDRAC Card Configuration

New	New Job has been created.
Ready For Execution	Job is ready for execution.
Completed	Job has been completed.
Completed with Errors	Job has been completed with one or more errors.

Failed	Job failed.
Job Type: System Configuration	
New	New Job has been created.
Ready For Execution	Job is ready for execution.
Completed	Job has been completed.
Completed with Errors	Job has been completed with one or more errors.
Failed	Job failed.

Examples of WSMAN Commands Using openwsman Client

Source for the WS-Man client can be found at

<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

```
wsman invoke -a ApplyAttributes -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_iDRACCardService?CreationClassName="DCIM_iDRACCardService",Name="DCIM:iDRACCardService",SystemCreationClassName="DCIM_ComputerSystem",SystemName="DCIM:ComputerSystem" -k Target=iDRAC.Embedded.1 -k AttributeName=IPMILan.1#AlertEnable -k AttributeValue=Enabled -V -v -R -o -m 256 -c dummy
```

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_SPCComputerSystem",CreationClassName="DCIM_EFConfigurationService",SystemName="systemmmc",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

```
wsman subscribe 'http://schemas.dmtf.org/wbem/wscim/1/*' -x "SELECT * FROM
DCIM_LifecycleJobAlertIndicationN" -D 'http://schemas.dmtf.org/wbem/cql/1/dsp0202.pdf' -Z
'http://<event-sink ip>:<port>/eventsink' -h [idrac-ip] -P 443 -u [username] -p [password] -v -j utf-8 -
y basic -R -o -m 256 -N root/dcim -c dummy -V -r 3000
```

Renew Request

```
wsman renew -i uuid:9e369e25-c894-1894-8016-335b54cb2b78 -h [idrac-ip] -P 443 -u [username]
-p [password] -v -j utf-8 -y basic -R -o -m 256 -N root/interop -c dummy -V -r 12000
```

Unsubscribe Request

```
wsman unsubscribe -i uuid: 9e369e25-c894-1894-8016-335b54cb2b78 -h [idrac-ip] -P 443 -u  
[username] -p [password] -v -j utf-8 -y basic -R -o -m 256 -N root/interop -c dummy -V
```