IO Identity Setup Using Lifecycle Controller

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Introduction

The capability of programmatically configuring a network controller card is powerful feature of Dell's Lifecycle Controller. Lifecycle Controller provides the capability of overriding the I/O identity attributes of the card with its Virtual Attributes. This provides more flexibility in deployments that need rapid re-configuration of system workloads to another system.

IO Identity is the following five virtual addresses

- Virtual MAC Address
- Virtual iSCSI MAC Address
- Virtual FIP MAC Address
- Virtual WWN
- Virtual WWPN

IO Identity can be set remotely. It cannot be set locally by system setup (press F2 to enter) or iDRAC GUI.

Any virtual address that is set to all zeros will cause the device to erase the virtual address value previously set and revert to the default permanent address set by the factory/burned in during manufacturing.

IO Identity will lose when AC power loss. Currently it will also lose when cold reset (For QLogic Mezz card). From the vendor's point of view, this is how the IO identity is going to lose.

IO Identity workflow

The workflow for different vendor' card is different since the cards have quite different features. This paper will present the workflows for Broadcom, Intel , and QLogic cards.

First, delete all pending jobs and pending values as they may prevent further configuration changes.

1) FQDD selection

Select the network device you want to set up IO Identity by the Fully Qualified Device Descriptor (FQDD). The FQDD (for example, NIC.Mezzanine.2B-1-1) of the network device uniquely identifies the device. This information can be acquired by enumerating the **DCIM_NICView** class. The **InstanceID** field is the FQDD of the device.

If the FQDD is not visible on the target server, one of the following two circumstances is possible:

- The server does not contain such a device
- The device is disabled in the BIOS and needs to be enabled prior to configuration

See "Appexdix: Sample winrm commands and sample trimmed results 1. Select FQDD" for sample winrm commands and sample results

2) Device enablement

To use the NIC card, the card must be enabled, and to enable a disabled device, we must identify the type of network device, i.e. whether it is on-board, a daughter card, or an add-in. The FQDD contains this information: for example NIC.Mezzanine.2B-1-1 is an add-in Mezzanine card.

For Dell PowerEdge 12th generation servers, NDC and add-in controllers can be disabled in the BIOS. If the target device is disabled and not visible in the **DCIM_NICView** enumeration, that device must be enabled in the BIOS prior to configuring IO identity.

To enable these devices in the BIOS, the following BIOS attributes must be manipulated:

- For NDC on Dell PowerEdge 12th generation servers
  i. **IntegratedNetwork1 = Enabled** for 1-1, 1-2, 1-1-1,1-1-4, etc
  ii. **IntegratedNetwork2 = Enabled** for 2-1, 2-2, 2-1-1, etc
  iii. …
- Add-ins on Dell PowerEdge 12th generation servers
  i. **Set Slot1 = Enabled** for Slot.1-1 or Mezzanine.1-1
  ii. **Set Slot2 = Enabled** for Slot.2-1 or Mezzanine.2-1
  iii. …

Using the **SetAttributes()** method on the **DCIM_BIOSService** class to set up these attributes as required.

Since a BIOS job is being scheduled, Dell recommends disabling all boot sources on the system. This will ensure that the system will not boot into another source until IO identity configuration is completed. Disabling boot sources can be done with the **ChangeBootSourceState()** method on the **DCIM_BIOSService** class on every source.

All boot sources on the system can be listed by enumerating the **DCIM_BootSourceSetting** class.

Next, using the **CreateTargetedConfigJob()** method on the **DCIM_BIOSService** class, create a BIOS job in order for the changes to be committed.

Since boot source changes only occur after reboot, they get detected only after CSIOR completes and the iDRAC database (configDB) is refreshed. This information can be polled by invoking the **GetRemoteServicesAPIStatus()** method from the **DCIM_LCService** class.

See "Appexdix: Sample winrm commands and sample trimmed results 2. Check if NIC is enabled and 3.Enable NIC" for sample winrm commands and sample results

3) FQDD check

After a disabled NIC is enabled and the BIOS job is completed, re-enumerate the **DCIM_NICView** class to ensure that the target FQDD is now present.

If the FQDD is still not returned by the enumeration, the device FQDD is invalid.

4) Disable the FlexAddress

To prevent the CMC assigning IO identity value to the card, FlexAddress need to be disabled for modular server. Or else, the IO identity set by the wsman commands will be overwritten by the CMC assigned values.

To disable the FlexAddress, use **SetAttributes()** method on **DCIM_LCService** class with AttributeName=VirtualAddressManagement AttributeValue=Console.

For monolithic server, the FlexAdress is always disabled by default, i.e. VirtualAddressManagement only has one value, which is Console.

See "Appexdix: Sample winrm commands and sample trimmed results 4. Disable the FlexAddress" for sample winrm commands and sample results

5) Set IO Identity

For different vendor's card, setting IO identity is different. In the following, we will cover Broadcom, Intel, and QLogic card one by one.

a. Broadcom Card

Check if partition is enabled. If not, enable the partition. VirtFIPMacAddr, VirtWWN,and VirtWWPN are all readonly if partition is diabled, therefore can't be set remotely by WSMAN commands.

To check the partition, enumerate the DCIM_NICEnumeration class, and Look for AttributeName = NicPartitioning and check its CurrentValue. If the CurrentValue = Disabled. Need to enable it. If the CurrentValue = Enalbed. No further work need to be done.

To enable the partition, a **SetAttributes()** call on the **DCIM_NICService** class can be used to set NicPartitioning=Enabled. Then, using the **CreateTargetedConfigJob()** method on the **DCIM_NICService** class to create a NIC job in order for the changes to be committed.

See "Appexdix: Sample winrm commands and sample trimmed results 5. Check if partition is enabled and 6. Enable partition" for sample winrm commands and sample results

A partition can have Ethernet protocol enabled and one of the two protocols, i.e. iSCSI protocol or FCoE protocol enabled. A partition can't have both iSCSI protocol and FCoE enabled. Only one of the two can be enabled.

If the partition is Ethernet protocol, set the following attributes:

- VirtMacAddr = the Virtual Mac Address you want

If the partition is iSCSI protocol, set the following attributes;

- VirtMacAddr = the Virtual Mac Address you want
- VirtIscsiMacAddr = the Virtual ISCSI Mac Address you want

If the partition is FCoE protocol, set the following attributes:

- VirtMacAddr = the Virtual Mac Address you want
- VirtFIPMacAddr = the Virtual FIP Mac Address you want
- VirtWWN = the Virtual WWN Address you want
- VirtWWPN = the Virtual WWPN Address you want

Use **SetAttributes()** method on **DCIM_NICService** class to set up the attributes as required.

Next, using the **CreateTargetedConfigJob()** method on the **DCIM_NICService** class to create a NIC job in order for the changes to be committed.

Note (for Broadcom card)

1) For BCOM 57810 card, one more reboot (warm or cold) needed after enable the card.
2) If partition is disabled, VirtFIPMacAddr, VirtWWN, and VirtWWPN are all ready only and can't be set remotely with WSMAN commands.
3) At most two storage protocols are allowed for a port (two iSCSI protocols, or 1 iSCSI protocol and 1 FCoE protocol).

b. Intel Card

For Intel card, there is no partition. Therefore, all the IO identity setting is for the port not the partition.

If the port is Ethernet protocol, set the following attributes:
- VirtMacAddr = the Virtual Mac Address you want

If the port is FCoE protocol, set the following attributes:
- VirtMacAddr = the Virtual Mac Address you want
- VirtFIPMacAddr = the Virtual FIP Mac Address you want

Use SetAttributes() method on **DCIM_NICService** class to set up the attributes as required.

Next, using the **CreateTargetedConfigJob()** method on the **DCIM_NICService** class to create a NIC job in order for the changes to be committed.

Notes (for Intel card)

1) Set Virtual Mac address / Virtual FIP Mac address without setting virtual WWN/WWPN, will result in Virtual WWN/WWPN = 20:00/20:01 + Virtual FIP Mac address.
2) Set Virtual WWN/WWPN to values with the lowest 48 bits different from Virtual FIP Mac address, the Virtual WWN/WWPN will not be the setting value. The result is Virtual WWN/WWPN = 20:00/20:01 + Virtual FIP Mac address.
3) Set virtual WWN/WWPN without setting virtual FIP Mac address, Virtual FIP Mac address /WWN/WWPN did not change.
4) Virtual WWN/WWPN is calculated from Virtual FIP Mac address. There is no need to set Virtual WWN/WWPN.

c. QLogic Card

Partition 1 and partition 2 are Ethernet protocol, set the following attributes:
- VirtMacAddr = the Virtual Mac Address you want

Partition 3 is iSCSI protocol, set the following attributes;
- VirtMacAddr = the Virtual Mac Address you want
- VirtIscsiMacAddr = the Virtual ISCSI Mac Address you want

Partition 4 is FCoE protocol, set the following attributes:
- VirtMacAddr = the Virtual Mac Address you want
- VirtFIPMacAddr = the Virtual FIP Mac Address you want
- VirtWWN = the Virtual WWN Address you want
- VirtWWPN = the Virtual WWPN Address you want

Use SetAttributes() method on **DCIM_NICService** class to set up the attributes as required.

Next, using the **CreateTargetedConfigJob()** method on the **DCIM_NICService** class to create 4 NIC jobs on 4 targets, which are FQDD of partition 1, partition 2, paritition 3 and partition 4 in order for the changes to be committed.

See "Appexdix: Sample winrm commands and sample trimmed results 7.Set IO identity" for sample winrm commands and sample results

Notes (for QLogic card):

1) Virtual WWN/WWPN will back to default value if you only set virtual FIP Mac address. It will not lose after just power on/off server. It lost after setting virtual FIP Mac address.
2) Virtual FIP Mac address will back to default if you only set virtual WWN/WWPN. It will not lose after just power on / off server. It lost after setting virtual WWN/WWPN.
3) Seems the virtual WWN/WWPN is not calculated from virtual FIP Mac address. They can be set to different values, which conflict with FlexAddressing spec.
4) You can't set just one virtual value. If you need to change one virtual value, you need to set the three together, even if the value(s) does not change. If you don't , it will back to default value.
5) Virtual Mac address will always be the same as virtual FIP address. Set either one of them, the other will also change to the new set value.
6) For Qlogic Mezz card only, IO identity will lose after cold reboot.
7) For 12G system. There are three ways to do reboot
   a. Using the **CreateRebootJob()** method on the **DCIM_SoftwareInstallationService** class
   b. Using the **RequestStateChange()** method on the **DCIM_ComputerSystem** class
   c. Using the **RequestPowerStateChange()** method on the **DCIM_CSPowerManagementService** class

CreateRebootJob(): RebootJobType	**RequestStateChange(): RequestState**	**RequestPowerStateChange(): PowerState**	**Boot type:**
1	11	5	Cold
2		9	Cold
3			Cold
		10	warm

Currently only the following reboot method is a warm reboot
RequestPowerStateChange PowerState=10

See "Appexdix: Sample winrm commands and sample trimmed results 8. Boot and power management" for sample winrm commands and sample results

Appendix: Sample winrm commands and sample trimmed results

For all the following sample winrm commands, you need to change “your iDRAC IP Address” in the command to your actually iDRAC IP address and the username/password to your system’s username/password before you run any of them.

1. **Select FQDD**

winrm enumerate "cimv2/root/dcim/DCIM_NICView" -r:https://your iDRAC IP address/wsman -u:root -p:*** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty

DCIM_NICView

FQDD = NIC.Mezzanine.1C-1-1

2. **Check if NIC is enabled**

winrm enumerate "cimv2/root/dcim/DCIM_BIOSEnumeration" -r:https://your iDRAC IP address/wsman -u:root -p:*** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty

DCIM_BIOSEnumeration

AttributeDisplayName = Mezzanine Slot 1C

AttributeName = Slot1

CurrentValue = Disabled

Dependency

DisplayOrder = 1102

FQDD = BIOS.Setup.1-1

GroupDisplayName = Mezzanine Slot Disablement

GroupID = SlotDisablement

InstanceID = BIOS.Setup.1-1:Slot1

IsReadOnly = false

PendingValue

PossibleValues = Enabled

PossibleValues = Disabled

PossibleValues = BootDriverDisabled

PossibleValuesDescription = Enabled

PossibleValuesDescription = Disabled

PossibleValuesDescription = Boot Driver Disabled

3. Enable NIC

1) Use the following winrm command to set the attributes

winrm invoke SetAttributes "cimv2/root/dcim/DCIM_BIOSService?SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_BIOSService+SystemName=DCIM:ComputerSystem+Name=DCIM:BIOSService" -r:https://your iDRAC IP address/wsman -u:root -p:*** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty -file:c:\your xml file name

<p:SetAttributes_INPUT xmlns:p="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_BIOSService">

<p:AttributeName>Slot1</p:AttributeName>

<p:AttributeName>BootMode</p:AttributeName>

<p:AttributeValue>Enabled</p:AttributeValue>

<p:AttributeValue>Bios</p:AttributeValue>

<p:Target>BIOS.Setup.1-1</p:Target>

</p:SetAttributes_INPUT>

SetAttributes_OUTPUT

Message = The command was successful

MessageID = BIOS001

RebootRequired = Yes

ReturnValue = 0

SetResult = Set PendingValue

2) Use the following winrm command to execute the job and apply the changes

winrm invoke CreateTargetedConfigJob "cimv2/root/dcim/DCIM_BIOSService?SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_BIOSService+SystemName=DCIM:ComputerSystem+Name=DCIM:BIOSService" @{RebootJobType="1";ScheduledStartTime="TIME_NOW";Target="BIOS.Setup.1-

1";UntilTime="20211111111111"} -r:https://your iDRAC IP address/wsman -u:root -p:*** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty

CreateTargetedConfigJob_OUTPUT

Job

EndpointReference

Address = http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous

ReferenceParameters

ResourceURI = http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_LifecycleJob

SelectorSet

InstanceID = JID_383876520602

__cimnamespace = root/dcim

ReturnValue = 4096

4. **Disable the FlexAddress**

winrm invoke SetAttributes "cimv2/root/dcim/DCIM_LCService?SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_LCService+SystemName=DCIM:ComputerSystem+Name=DCIM:LCService" -r:https://your iDRAC IP Address/wsman -u:root -p:***** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty -file:c:\users\zhan_liu\appdata\local\temp\tmpwfst17

<p:SetAttributes_INPUT xmlns:p="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_LCService">

<p:AttributeName>VirtualAddressManagement</p:AttributeName>

<p:AttributeValue>Console</p:AttributeValue>

</p:SetAttributes_INPUT>

SetAttributes_OUTPUT

Message = The command was successful

MessageID = LC001

RebootRequired = No

ReturnValue = 0

SetResult = Set CurrentValue

5. **Check if partition is enabled**

winrm get "cimv2/root/dcim/DCIM_NICEnumeration?InstanceID=NIC.Mezzanine.1C-1-1:NicPartitioning" -r:https://your iDRAC IP Address/wsman -u:root -p:*** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty

DCIM_NICEnumeration

AttributeDisplayName = NIC Partition

AttributeName = NicPartitioning

CurrentValue = Disabled

Dependency

FQDD = NIC.Mezzanine.1C-1-1

GroupDisplayName = Device Configuration

GroupID = DeviceLevelConfig

InstanceID = NIC.Mezzanine.1C-1-1:NicPartitioning

IsReadOnly = false

PendingValue

PossibleValues = Disabled

PossibleValues = Enabled

PossibleValuesDescription = Disabled

PossibleValuesDescription = Enabled

6. **Enable partition**

1) **Use the following winrm command to set the attributes**

winrm invoke SetAttributes "cimv2/root/dcim/DCIM_NICService?SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_NICService+SystemName=DCIM:ComputerSystem+Name=DCIM:NICService" -r:https://your iDRAC IP address/wsman -u:root -p:*** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty -file:your xml file name

<p:SetAttributes_INPUT xmlns:p="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_NICService">

<p:AttributeName>NicPartitioning</p:AttributeName>

<p:AttributeValue>Enabled</p:AttributeValue>

<p:Target>NIC.Mezzanine.1C-1-1</p:Target>

</p:SetAttributes_INPUT>

SetAttributes_OUTPUT

Message = The command was successful

MessageID = NIC001

RebootRequired = Yes

ReturnValue = 0

SetResult = Set PendingValue

2) **Use the following winrm command to execute the job and apply the changes**

winrm invoke CreateTargetedConfigJob "cimv2/root/dcim/DCIM_NICService?SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_NICService+SystemName=DCIM:ComputerSystem+Name=DCIM:NICService" @{RebootJobType="1";ScheduledStartTime="TIME_NOW";Target="NIC.Mezzanine.1C-1-1";UntilTime="20211111111111"} -r:https://your iDRAC IP address/wsman -u:root -p:*** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty

CreateTargetedConfigJob_OUTPUT

Job

EndpointReference

Address = http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous

ReferenceParameters

ResourceURI = http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_LifecycleJob

SelectorSet

InstanceID = JID_383880001475

__cimnamespace = root/dcim

ReturnValue = 409

7. Set IO identity

1) Virtual Mac address

winrm invoke SetAttributes "cimv2/root/dcim/DCIM_NICService?SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_NICService+SystemName=DCIM:ComputerSystem+Name=DCIM:NICService" -r:https://your iDRAC IP address/wsman -u:root -p:***** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty -file:c:\users\zhan_liu\appdata\local\temp\tmpvyv_u8

```
<p:SetAttributes_INPUT xmlns:p="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_NICService">
    <p:AttributeName>VirtMacAddr</p:AttributeName>
    <p:AttributeValue>00:0E:1E:0A:A2:10</p:AttributeValue>
    <p:Target>NIC.Mezzanine.2B-1-1</p:Target>
</p:SetAttributes_INPUT>
```

```
SetAttributes_OUTPUT
    Message = The command was successful
    MessageID = NIC001
    RebootRequired = Yes
    ReturnValue = 0
    SetResult = Set PendingValue
```

2) Virtual iSCSIMac address

winrm invoke SetAttributes "cimv2/root/dcim/DCIM_NICService?SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_NICService+SystemName=DCIM:ComputerSystem+Name=DCIM:NICService" -r:https://your iDRAC IP address/wsman -u:root -p:***** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty -file:c:\users\zhan_liu\appdata\local\temp\tmpptclnq

```
<p:SetAttributes_INPUT xmlns:p="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_NICService">
    <p:AttributeName>iScsiOffloadMode</p:AttributeName>
```

<p:AttributeName>VirtIscsiMacAddr</p:AttributeName>

<p:AttributeValue>Enabled</p:AttributeValue>

<p:AttributeValue>00:0E:1E:0A:A2:20</p:AttributeValue>

<p:Target>NIC.Mezzanine.2B-1-3</p:Target>

</p:SetAttributes_INPUT>

SetAttributes_OUTPUT

Message = The command was successful

MessageID = NIC001

RebootRequired = Yes

ReturnValue = 0

SetResult = Set PendingValue

3) Virtual FIP Mac address

winrm invoke SetAttributes "cimv2/root/dcim/DCIM_NICService?SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_NICService+SystemName=DCIM:ComputerSystem+Name=DCIM:NICService" -r:https://your iDRAC IP address/wsman -u:root -p:***** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty -file:c:\users\zhan_liu\appdata\local\temp\tmpdunskb

<p:SetAttributes_INPUT xmlns:p="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_NICService">

<p:AttributeName>FCoEOffloadMode</p:AttributeName>

<p:AttributeName>VirtFIPMacAddr</p:AttributeName>

<p:AttributeValue>Enabled</p:AttributeValue>

<p:AttributeValue>00:0E:1E:0A:A2:30</p:AttributeValue>

<p:Target>NIC.Mezzanine.2B-1-4</p:Target>

</p:SetAttributes_INPUT>

SetAttributes_OUTPUT

Message = The command was successful

MessageID = NIC001

RebootRequired = Yes

ReturnValue = 0

SetResult = Set PendingValue

4) Virtual WWN

winrm invoke SetAttributes "cimv2/root/dcim/DCIM_NICService?SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_NICService+SystemName=DCIM:ComputerSystem+Name=DCIM:NICService" -r:https://your iDRAC IP address/wsman -u:root -p:***** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty -file:c:\users\zhan_liu\appdata\local\temp\tmpjbbkqb

<p:SetAttributes_INPUT xmlns:p="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_NICService">

<p:AttributeName>VirtWWN</p:AttributeName>

<p:AttributeValue>20:00:00:0E:1E:0A:A2:40</p:AttributeValue>

<p:Target>NIC.Mezzanine.2B-1-4</p:Target>

</p:SetAttributes_INPUT>

SetAttributes_OUTPUT

Message = The command was successful

MessageID = NIC001

RebootRequired = Yes

ReturnValue = 0

SetResult = Set PendingValue

5) Virtual WWPN

winrm invoke SetAttributes "cimv2/root/dcim/DCIM_NICService?SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_NICService+SystemName=DCIM:ComputerSystem+Name=DCIM:NICService" -r:https://your iDRAC IP address/wsman -u:root -p:***** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty -file:c:\users\zhan_liu\appdata\local\temp\tmpbg9r9a

<p:SetAttributes_INPUT xmlns:p="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_NICService">

<p:AttributeName>VirtWWPN</p:AttributeName>

<p:AttributeValue>20:01:00:0E:1E:0A:A2:40</p:AttributeValue>

<p:Target>NIC.Mezzanine.2B-1-4</p:Target>

</p:SetAttributes_INPUT>

SetAttributes_OUTPUT

Message = The command was successful

MessageID = NIC001

RebootRequired = Yes

ReturnValue = 0

SetResult = Set PendingValue

8. **Boot and power management**

1) **CreateRebootJob**
winrm invoke CreateRebootJob "cimv2/root/dcim/DCIM_SoftwareInstallationService?CreationClassName=DCIM_SoftwareInstallationService+SystemCreationClassName=DCIM_ComputerSystem+SystemName=IDRAC:ID+Name=SoftwareUpdate" @{RebootJobType="2"} -r:https://Your iDRAC IP/wsman -u:root -p:***** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty

2) **RequestStateChange**

winrm invoke RequestStateChange "cimv2/root/dcim/DCIM_ComputerSystem?CreationClassName=DCIM_ComputerSystem+Name=srv:system" @{RequestedState="11"} -r:https:// Your iDRAC IP /wsman -u:root -p: ***** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty

3) **RequestPowerStateChange**

winrm invoke RequestPowerStateChange "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_CSPowerManagementService?CreationClassName=DCIM_CSPowerManagementService+SystemName=systemmc+SystemCreationClassName=DCIM_SPComputerSystem+__cimnamespace=root/dcim+Name=pwrmgtsvc:1" -r:https:// Your iDRAC IP /wsman -u:root -p:****** -SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic -format:pretty -file:c:\users\zhan_liu\appdata\local\temp\tmpgt54jr

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http://www.delltechcenter.com/page/Lifecycle+Controller

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http://www.delltechcenter.com/page/Lifecycle+Controller

Glossary

Acronym	Description
CSIOR	Collect System Inventory on Restart
BIOS	Basic Input / Output System
NIC	Network Interface Controller
NDC	Network Daughter Card
iDRAC	Integrated DELL Remote Access Controller