Lifecycle Controller Part Replacement

This Dell Technical White Paper provides information on the Lifecycle Controller Part Replacement feature on Dell™ PowerEdge™ servers.

Authors
Sundar Dasar
Texas Roemer
Lifecycle Controller Part Replacement

Contents
Introduction ........................................................................................................................................4
Before You Begin ..................................................................................................................................4
Configuration Update .............................................................................................................................5
  Script example to change configuration options .................................................................................5
Firmware Update .....................................................................................................................................6
  Script example to change firmware update options ...........................................................................6
Additional Information ..........................................................................................................................7
Summary ................................................................................................................................................8
More Information .................................................................................................................................8
Lifecycle Controller Part Replacement

Introduction
Part Replacement (PR) is a licensed feature that provides automatic firmware and/or configuration updates when an old part or component is replaced by a new part of the same type. This feature reduces the amount of manual effort required to reapply the configuration and firmware to a replacement part or component. Currently PR supports the following components: RAID controllers, Add-in NIC cards, and Power Supply units (PSU). In this paper, you will learn how to use the Lifecycle Controller PR feature and details on:

- The prerequisites for PR.
- Firmware-update options using a python script.
- How to use a configuration change options script.

Before You Begin
Here is a list of prerequisites you must be aware of before using the PR feature.

Part Replacement
1. PR is an integrated Dell Remote Access Controller (iDRAC) licensed feature. Make sure you have a valid iDRAC Enterprise license installed. For more details on iDRAC licenses, go to: www.dell.com\techcentre\licenseing.

2. The Collect System Inventory On Restart (CSIOR) attribute must be set to enabled. CSIOR is disabled by default for 11th generation servers, but more recent generations come with CSIOR enabled by default.

3. PR features are disabled by default, so these features should be enabled before replacing the old part with the new part. The feature can be enabled either using the Lifecycle Controller Remote Services API based on the Web Services for Management (WSMAN) protocol, or the Lifecycle Controller Unified Server Configurator (USC) local pre-OS embedded configuration tool accessed by pressing <F10> during system POST. For more information, go to:

   WSMAN link: www.dell.com\techcentre\WSMAN

   USC Link: www.dell.com\techcentre\USC

4. User can enable all or any PR feature options.

5. The firmware version of the replacement part must be up-to-date using one of the Dell supported update methods. Systems and components that come directly from Dell are setup to support the PR feature.

For example: a user installs a new add-in NIC card with firmware version 2.0; the user must update the NIC card using a Dell-supported update method to the same or any Dell supported firmware version.
Lifecycle Controller Part Replacement

Scripts

1. Check that the target system is a Dell PowerEdge™ server that has iDRAC enabled and configured, and has a network that can utilize the WSMAN protocol. For more information, refer to the scripting Lifecycle Controller section of the Dell TechCenter.

2. For Windows® users, check that the native winrm command line utility is configured and ready. For more information, refer to: Installation and Configuration of a Windows Remote Management.

3. For Linus users, check that the open source openwsman command line tool is built, installed, and ready. For more information, refer to Openwsman Home and join the mailing list for access to technical help.

4. Check that Python version [2.7] is installed on your system. For more information, refer to Python Home.

5. Download the python scripts from [LINK HERE]
   a. [part_config_update.py]
   b. [part_fw_update.py]

Configuration Update

Configuration update is the process of applying the configuration from an old part to its replacement part. All of the old parts' configuration settings are transferred, or applied, to the new part. The configuration update process gives you two options to select from:

1. **Apply Always** - when a part is replaced, it doesn't matter what firmware is on the new part since the system is always going to apply the configuration changes.

2. **Apply Only if Firmware Match** - when a part is replaced, the firmware version on the old and new part must match or the configuration changes will not be applied.

Script example to change configuration options

```
[part_config_update.py]
```

Execute `part_config_update.py -h` to get command usage information

```
part_config_update.py -i [iDRAC IP] -u [USER NAME] -p [PASSWORD] -t
```

Sample Output/Example running in interactive mode: (Current setting is “Disabled” and changing to “Apply always”)

```
part_config_update.py -i 192.168.0.120 -u root -p calvin -t
```

Getting "Part Configuration Update" state. Waiting for response. Response received.
"Part Configuration Update" state is "Disabled".

Change state? (Disabled, Apply always, Apply only if firmware match)

Enter requested state: Apply always

Setting "Part Configuration Update" state to "Apply always". Waiting for response. Response received.

Verifying "Part Configuration Update" state change is ready to apply. Response received.

Applying "Part Configuration Update" state change. Response received.

Checking job status. Job finished.

Verifying "Part Configuration Update" state has changed. Waiting for response. Response received.

"Part Configuration Update" state has been changed to "Apply always".

To trigger "Part Configuration Update" to perform, the system must be rebooted.

Reboot the system?

  0 - No reboot
  1 - Powercycle
  2 - Graceful reboot without forced shutdown (Recommended)
  3 - Graceful reboot with forced shutdown

Enter reboot type: 2

Creating reboot job. Waiting for response. Response received.

A reboot job is created. (RID_784389766721)

Schedule time for reboot. (TIME_NOW, YYYYMMDDHHMMSS)

Enter scheduled time: TIME_NOW

Scheduling reboot job. Waiting for response. Response received.

The system is scheduled to reboot at TIME_NOW.
Lifecycle Controller Part Replacement

Sample Output/Example running in Non-interactive mode: (Current setting is “Disabled” and changing to “Apply always”)

D:\7_csior_partrepl_enable>part_config_update.py -i 172.23.16.55 -u root -p calvin -f file.txt

Getting "Part Configuration Update" state. Waiting for response. Response received.

"Part Configuration Update" state is "Disabled".

Setting "Part Configuration Update" state to "Apply always". Waiting for response. Response received.

Verifying "Part Configuration Update" state change is ready to apply. Response received.


Verifying "Part Configuration Update" state has changed. Waiting for response. Response received.

"Part Configuration Update" state has been changed to "Apply always".

The host system will not be rebooted.

Sample Text file with argument

D:\7_csior_partrepl_enable>type file.txt
AttributeValue=Apply always
RebootJobType=0
D:\7_csior_partrepl_enable>

Firmware Update

Firmware update is the process of applying the old part’s firmware to the new replacement part. The firmware update process gives you two options to select from:

1. **Match Firmware of Replaced Part** - when a part is replaced, it doesn’t matter what firmware is on the new part since the system is always going to apply the firmware update.
Lifecycle Controller Part Replacement

For example: the old part had 2.1 firmware, and it is replaced with a part that has 2.0 or 2.2 firmware; PR will apply 2.1 firmware to the new part.

2. Allow Version Upgrade Only - when a part is replaced, the firmware version on the old and new part must match or the firmware update will not be applied.

For example: the old part had 2.1 firmware; it must be replaced with a new part that has 2.0 or older firmware. If you replace it with a new part that has 2.2 or newer firmware, the firmware from the old part will not get applied to the new part.

Script example to change firmware update options

```
[part_fw_update.py]
```

Execute `part_fw_update.py -h` to get command usage information.

```
```

Sample Output/Example running in interactive mode: (Current setting is “Disabled” and changing to “Match Firmware of Replaced Part”)
```
part_fw_update.py -i 192.168.0.120 -u root -p calvin -t
```

Getting "Part Firmware Update" state. Waiting for response. Response received.

"Part Firmware Update" state is "Disable".

Change state? (Disable, Allow version upgrade only, Match firmware of replaced part)

Enter requested state: Match firmware of replaced part

Setting "Part Firmware Update" state to "Match firmware of replaced part". Waiting for response. Response received.

Verifying "Part Firmware Update" state change is ready to apply. Response received.

Applying "Part Firmware Update" state change. Response received.

Checking job status. Job finished.

Verifying "Part Firmware Update" state has changed. Waiting for response. Response received.

"Part Firmware Update" state has been changed to "Match firmware of replaced part."

To trigger "Part Firmware Update" to perform, the system must be rebooted.

Reboot the system?
Lifecycle Controller Part Replacement

0 - No reboot
1 - Powercycle
2 - Graceful reboot without forced shutdown (Recommended)
3 - Graceful reboot with forced shutdown

Enter reboot type: 2

Creating reboot job. Waiting for response. Response received.

A reboot job is created. (RID_784394613654)

Schedule time for reboot. (TIME_NOW, YYYYMMDDHHMMSS)

Enter scheduled time: TIME_NOW

Scheduling reboot job. Waiting for response. Response received.

The system is scheduled to reboot at TIME_NOW.

Sample Output/Example running in Non-interactive mode: (Current setting is “Disabled” and changing to “Match Firmware of Replaced Part”)

D:\7_csior_partrepl_enable\part_fw_update.py -i 172.23.16.55 -u root -p calvin -f file.txt

Getting "Part Firmware Update" state. Waiting for response. Response received.

"Part Firmware Update" state is "Disable".

Setting "Part Firmware Update" state to "Match firmware of replaced part". Waiting for response. Response received.

Verifying "Part Firmware Update" state change is ready to apply. Response received.

Applying "Part Firmware Update" state change. Response received.

Checking job status. Job finished.

Verifying "Part Firmware Update" state has changed. Waiting for response. Response received.

"Part Firmware Update" state has been changed to "Match firmware of replaced part".

The host system will not be rebooted.
Lifecycle Controller Part Replacement

Sample Text file with arguments

D:\7_csior_partrepl_enable>type file.txt
AttributeValue=Match firmware of replaced part
RebootJobType=0
D:\7_csior_partrepl_enable>

Additional Information

1. In a system configured with two PSU’s installed, you can hot swap one PSU with the same type of PSU and the PR feature will take effect on next Host reboot.

2. NIC card and RAID controller support configuration change and firmware update, while the PSU only supports firmware update.

3. RAID configuration change with PR only supports the controller attribute. RAID attributes and VD will not be applied to the new part; this is automatically imported through the option ROM during Power On Self-Test (POST).

4. The old part should be replaced with a new part of the same type and slot. For example, a Dell server has a Broadcom 5720 add-in NIC card in PCI Slot 2, you must replace it with a Broadcom 5720 add-in card in PCI slot 2.

5. Once the PR process is completed, all logs are stored in the Lifecycle Controller Log (LCL). These logs can be viewed using either WSMAN, iDRAC GUI or USC.

Summary

Part Replacement is a Lifecycle Controller licensed feature that can be enabled using either WSMAN or USC. This feature helps customers reduce the amount of manual effort involved with reapplying the previous configuration and firmware to new replacement parts and components.

More Information

http://www.delltechcenter.com/lc