

Dell EMC Ready Bundle for Red Hat OpenStack Platform

BIOS and Firmware Update Guide

Version 10.0.1



Dell EMC Converged Platforms and Solutions

Contents

| | |
|---|-----|
| List of Figures..... | iii |
| Trademarks..... | 4 |
| Notes, Cautions, and Warnings..... | 5 |
| | |
| Chapter 1: Overview..... | 6 |
| Summary..... | 7 |
| Intended Audience..... | 7 |
| Prerequisites..... | 7 |
| | |
| Chapter 2: Perform BIOS and Firmware Updates..... | 8 |
| Download Files..... | 9 |
| Update the SAH Node's BIOS and Firmware..... | 9 |
| Update the Controller Nodes' BIOS and Firmware..... | 12 |
| Update the Ceph Storage Nodes' BIOS and Firmware..... | 15 |
| Update the Compute Nodes' BIOS and Firmware..... | 18 |
| Dell EMC PowerEdge R430 Update Procedure..... | 21 |
| | |
| Appendix A: References..... | 22 |
| To Learn More..... | 23 |

List of Figures

| | |
|--|----|
| Figure 1: Lifecycle Controller..... | 10 |
| Figure 2: Select Update Repository..... | 10 |
| Figure 3: Enter Access Details..... | 11 |
| Figure 4: Select Updates..... | 11 |
| Figure 5: Lifecycle Controller..... | 13 |
| Figure 6: Select Update Repository..... | 13 |
| Figure 7: Enter Access Details..... | 14 |
| Figure 8: Select Updates..... | 14 |
| Figure 9: Lifecycle Controller..... | 16 |
| Figure 10: Select Update Repository..... | 16 |
| Figure 11: Enter Access Details..... | 17 |
| Figure 12: Select Updates..... | 17 |
| Figure 13: Lifecycle Controller..... | 19 |
| Figure 14: Select Update Repository..... | 20 |
| Figure 15: Enter Access Details..... | 20 |
| Figure 16: Select Updates..... | 21 |

Trademarks

Copyright © 2014-2017 Dell Inc. or its subsidiaries. All rights reserved.

Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the United States and/or other countries.

Red Hat®, Red Hat Enterprise Linux®, and Ceph are trademarks or registered trademarks of Red Hat, Inc., registered in the U.S. and other countries. Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries. Oracle® and Java® are registered trademarks of Oracle Corporation and/or its affiliates.

DISCLAIMER: The OpenStack® Word Mark and OpenStack Logo are either registered trademarks/service marks or trademarks/service marks of the OpenStack Foundation, in the United States and other countries, and are used with the OpenStack Foundation's permission. We are not affiliated with, endorsed or sponsored by the OpenStack Foundation or the OpenStack community.

Notes, Cautions, and Warnings

-  A **Note** indicates important information that helps you make better use of your system.
-  A **Caution** indicates potential damage to hardware or loss of data if instructions are not followed.
-  A **Warning** indicates a potential for property damage, personal injury, or death.

This document is for informational purposes only and may contain typographical errors and technical inaccuracies. The content is provided as is, without express or implied warranties of any kind.

Chapter 1

Overview

Topics:

- [Summary](#)
- [Intended Audience](#)
- [Prerequisites](#)

This guide provides instructions for updating the BIOS and firmware on the following servers, as deployed in the Dell EMC Ready Bundle for Red Hat OpenStack Platform:

- Dell EMC PowerEdge R430
- Dell EMC PowerEdge R630
- Dell EMC PowerEdge R730
- Dell EMC PowerEdge R730xd

Summary

Ensuring that your Dell EMC Ready Bundle for Red Hat OpenStack Platform environment's BIOS and firmware are updated to the latest revisions is of utmost importance, in order to maintain the highest security and peak performance. This guide describes the procedures required to update your cluster's BIOS and firmware.



Caution: The procedures in this guide must be completed with an active OpenStack deployment *prior to installing updated processors and memory.*

Intended Audience

This guide is written for OpenStack administrators or deployment engineers who are responsible for installation and ongoing operation of OpenStack clusters. It assumes that the reader is familiar with:

- OpenStack
- Red Hat Enterprise Linux (RHEL)
- Red Hat OpenStack Platform (RHOSP) documentation
- Networking and system administration
- Using Dell EMC's iDRAC utility

Prerequisites

Prerequisites for updating your Dell EMC Ready Bundle for Red Hat OpenStack Platform cluster's BIOS and firmware include:

- Network access to <http://www.dell.com/support>
- All nodes have access to their respective iDRACs

Chapter 2

Perform BIOS and Firmware Updates

Topics:

- [Download Files](#)
- [Update the SAH Node's BIOS and Firmware](#)
- [Update the Controller Nodes' BIOS and Firmware](#)
- [Update the Ceph Storage Nodes' BIOS and Firmware](#)
- [Update the Compute Nodes' BIOS and Firmware](#)
- [Dell EMC PowerEdge R430 Update Procedure](#)

This chapter describes the procedures you will follow to complete BIOS and firmware updates on your Dell EMC Ready Bundle for Red Hat OpenStack Platform servers.



Note: For the Dell EMC PowerEdge R430, the *steps* to update everything is the same as for the other servers, but different *versions* of the BIOS and Firmware updates are required. See [Dell EMC PowerEdge R430 Update Procedure](#) on page 21 for more information.

Download Files

Download the files required to update your Dell EMC Ready Bundle for Red Hat OpenStack Platform servers' BIOS and/or firmware.

1. Using a Web browser, navigate to <http://www.dell.com/support>.
2. Enter one of the systems' *service tag* in the **Enter a Service Tag or other product ID** text box, and then click on the **Submit** button.
 -  **Note:** You do not need to enter the service tag for every Dell EMC PowerEdge R630 or Dell EMC PowerEdge R730xd in the cluster, since they are all in the same server family and use the same firmware versions. The Dell EMC PowerEdge R430, however, uses a different version.
3. On the next screen, select the **Drivers & downloads** link.
4. On the same Web page, scroll down to **Systems Management**.
 - a. Select the **down arrow** to expand the list, and then look for *Dell Server Update Utility, Windows 64 bit Format, v.x.x.x*.
 -  **Note:** The latest version will be displayed.
 - b. Click on the **Download** button, and save the file to a local machine.
5. Copy this file to a system that has access to the iDRAC IP addresses of the systems that need to be updated.
 -  **Note:** The iDRAC must be able to access this file and load them to perform the updates.
6. Proceed to [Update the SAH Node's BIOS and Firmware](#) on page 9.

Update the SAH Node's BIOS and Firmware

Update your SAH node's system BIOS and firmware.

1. Log into the SAH node's iDRAC using your **iDRAC username and password**.
2. On the right hand side in the *Virtual Console Preview* box, click on the **Launch** button.
 - a) The dialogue window asks for a few Java verifications, and then takes you to the system's Virtual Console.
3. On the top bar of the *Virtual Console* window, click on the **Virtual Media** button.
4. Click on the **Connect Virtual Media** button.
5. Once connected, click on the **Virtual Media** button.
6. Click on the **Map CD/DVD...** button.
7. Browse to the **ISO file** downloaded in [Download Files](#) on page 9, and then click on the **Map Device** button.
8. On the top bar of the *Virtual Console* window, click on the **Next Boot** button.
9. Click on the **Lifecycle Controller** button.
10. Reboot the SAH node:


```
$ sudo reboot
```
11. On the *Lifecycle Controller* screen, click on the **Firmware Update** button.



Figure 1: Lifecycle Controller

12. Click on the **Launch Firmware Update** button.

13. On the next screen, select **Local Drive (CD or DVD or USB)** and then click on the **Next** button.



Figure 2: Select Update Repository

14. You are directed to a screen that should display the correct ISO image mapped.

Firmware Update: Launch Firmware Update

Step 2 of 3: Enter Access Details

Select the local drive.

Local Drive SUJ762_60-x64WIN (Virtual CD) ▾

File Path or Update Package Path

Path

Figure 3: Enter Access Details

15. Click on the **Next** button to display a screen that allows you to select updates for different components in the system.

Firmware Update: Launch Firmware Update

Step 3 of 3: Select Updates

Use the table to select available updates.

Catalog File: Catalog.xml.gz

Source: USB or CD or DVD (SUJ762_60-x64WIN (Virtual CD):\repository\)

Available System Updates

| Component | Current | Available |
|---|---------|-----------|
| <input type="checkbox"/> OS COLLECTOR 1.1, OSC_1.1, A00 | OSC_1.1 | OSC_1.1 |
| <input type="checkbox"/> BIOS | 2.17 | 2.15 |
| <input type="checkbox"/> BP13G+ 0:1 | 2.23 | 2.23 |
| <input type="checkbox"/> Intel(R) Ethernet 10G 2P X520 Adapter - A0:36:9F:A13A:1C | 17.5.10 | 17.0.12 |

 System will reboot after selected updates are applied.

Figure 4: Select Updates

16. Click on the **Apply** button to launch the firmware update.
17. When complete, the system will reboot. You are returned to the Lifecycle Controller's *Firmware Update* screen.
18. Repeat step 11 on page 9 to step 16 on page 11 to ensure that everything was updated. Sometimes the NIC drivers update must be repeated.
 - a) If that is the case, click on the **Apply** button again, and let the process go through its cycle.
19. Once everything has been updated successfully, disconnect the Virtual Media:
 - a) On the top bar of the *Virtual Console* window, click on the **Virtual Media** button.
 - b) Click on the **Disconnect Virtual Media** button.
20. After the SAH has been updated, log into the Director Node VM.

21. Ensure that everything is running properly:

```
$ sudo systemctl list-units "openstack*" "neutron*" "openvswitch"
```



Note: It may take approximately 10 minutes for the `openstack-nova-compute` to become active after a reboot.

22. Verify the existence of your Overcloud and its nodes:

```
$ source ~/stackrc
$ openstack server list
$ openstack baremetal node list
$ openstack stack list
```

23. Proceed to [Update the Controller Nodes' BIOS and Firmware](#) on page 12.

Update the Controller Nodes' BIOS and Firmware

Update your Controller nodes' system BIOS and firmware.



Caution: You can only update the BIOS and firmware on *one Controller node at a time*, in order to ensure proper High Availability (HA) operation.

1. Log into the first Controller node's iDRAC using your **iDRAC username and password**.
2. On the right hand side in the *Virtual Console Preview* box, click on the **Launch** button.
 - a) The dialogue window asks for a few Java verifications, and then takes you to the system's Virtual Console.
3. On the top bar of the *Virtual Console* window, click on the **Virtual Media** button.
4. Click on the **Connect Virtual Media** button.
5. Once connected, click on the **Virtual Media** button.
6. Click on the **Map CD/DVD...** button.
7. Browse to the **ISO file** downloaded in [Download Files](#) on page 9, and then click on the **Map Device** button.
8. On the top bar of the *Virtual Console* window, click on the **Next Boot** button.
9. Click on the **Lifecycle Controller** button.
10. Reboot the Controller node:

```
$ sudo reboot
```

11. On the *Lifecycle Controller* screen, click on the **Firmware Update** button.



Figure 5: Lifecycle Controller

12. Click on the **Launch Firmware Update** button.

13. On the next screen, select **Local Drive (CD or DVD or USB)** and then click on the **Next** button.

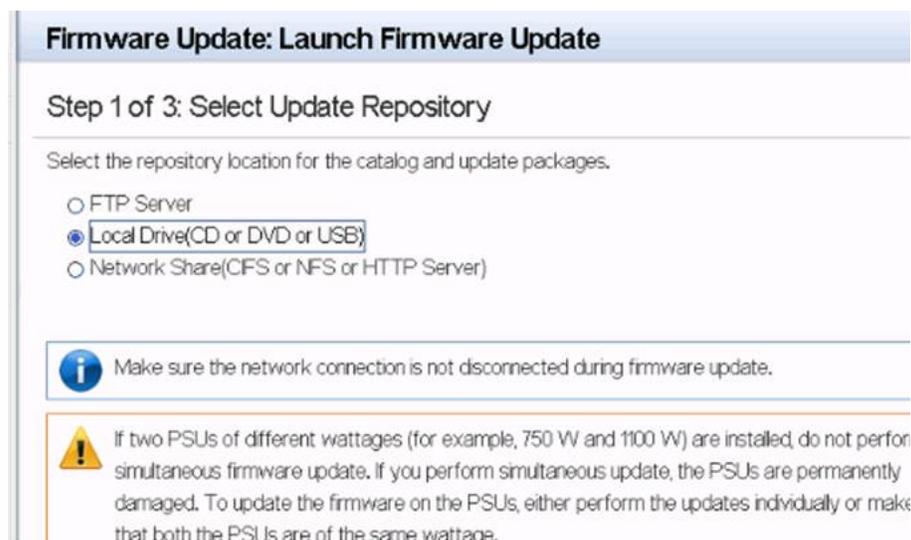


Figure 6: Select Update Repository

14. You are directed to a screen that should display the correct ISO image mapped.

Firmware Update: Launch Firmware Update

Step 2 of 3: Enter Access Details

Select the local drive.

Local Drive SUJ762_60-x64WIN (Virtual CD) ▾

File Path or Update Package Path

Figure 7: Enter Access Details

15. Click on the **Next** button to display a screen that allows you to select updates for different components in the system.

Firmware Update: Launch Firmware Update

Step 3 of 3: Select Updates

Use the table to select available updates.

Catalog File: Catalog.xml.gz

Source: USB or CD or DVD (SUJ762_60-x64WIN (Virtual CD):repository\)

Available System Updates

| Component | Current | Available |
|---|---------|-----------|
| <input type="checkbox"/> OS COLLECTOR 1.1, OSC_1.1, A00 | OSC_1.1 | OSC_1.1 |
| <input type="checkbox"/> BIOS | 2.17 | 2.15 |
| <input type="checkbox"/> BP13G+ 0:1 | 2.23 | 2.23 |
| <input type="checkbox"/> Intel(R) Ethernet 10G 2P X520 Adapter - A0:36:9F:A13A:1C | 17.5.10 | 17.0.12 |

 System will reboot after selected updates are applied.

Figure 8: Select Updates

16. Click on the **Apply** button to launch the firmware update.
17. When complete, the system will reboot. You are returned to the Lifecycle Controller's *Firmware Update* screen.
18. Repeat step 11 on page 12 to step 16 on page 14 to ensure that everything was updated. Sometimes the NIC drivers update must be repeated.
 - a) If that is the case, click on the **Apply** button again, and let the process go through its cycle.
19. Once everything has been updated successfully, disconnect the Virtual Media:
 - a) On the top bar of the *Virtual Console* window, click on the **Virtual Media** button.
 - b) Click on the **Disconnect Virtual Media** button.
20. Download the update files (see [Download Files](#) on page 9).

21.Reboot the node:

```
$ sudo reboot
```

22.After the Controller node has been updated, log into it.

23.Execute the following command:

```
$ sudo pcs status
```

- a) If any services fail after the reboot, execute the following command to clean the errors, and set the state of each resource to Started:

```
$ sudo pcs resource cleanup
```

- b) If any errors persist, contact Support to request guidance and assistance.

24.Check that all `systemd` services on the Controller node are active:

```
$ sudo systemctl list-units "openstack*" "neutron*" "openvswitch"
```

-  **Note:** It may take approximately 10 minutes for the `openstack-nova-compute` to become active after a reboot.

25.Log out of the Controller node.

26.Repeat this procedure, sequentially, for the remainder of the Controller nodes.

27.Proceed to [Update the Ceph Storage Nodes' BIOS and Firmware](#) on page 15.

Update the Ceph Storage Nodes' BIOS and Firmware

Update your Ceph Storage nodes' system BIOS and firmware.

 **Caution:** You can only update the BIOS and firmware on *one Ceph Storage node at a time*.

1. Log into the first Ceph Storage nodes' iDRAC using your **iDRAC username and password**.
2. On the right hand side in the *Virtual Console Preview* box, click on the **Launch** button.
 - a) The dialogue window asks for a few Java verifications, and then takes you to the system's Virtual Console.
3. On the top bar of the *Virtual Console* window, click on the **Virtual Media** button.
4. Click on the **Connect Virtual Media** button.
5. Once connected, click on the **Virtual Media** button.
6. Click on the **Map CD/DVD...** button.
7. Browse to the **ISO file** downloaded in [Download Files](#) on page 9, and then click on the **Map Device** button.
8. On the top bar of the *Virtual Console* window, click on the **Next Boot** button.
9. Click on the **Lifecycle Controller** button.
- 10.Log into a Ceph Storage MON or Controller node
- 11.Download the update files (see [Download Files](#) on page 9).
- 12.Temporarily disable Ceph Storage cluster rebalancing:

```
$ sudo ceph osd set noout
$ sudo ceph osd set norebalance
```

13.Select the first Ceph Storage node to reboot, and then log into it.

14. Reboot the Ceph Storage node:

```
$ sudo reboot
```

15. On the *Lifecycle Controller* screen, click on the **Firmware Update** button.



Figure 9: Lifecycle Controller

16. Click on the **Launch Firmware Update** button.

17. On the next screen, select **Local Drive (CD or DVD or USB)** and then click on the **Next** button.



Figure 10: Select Update Repository

18. You are directed to a screen that should display the correct ISO image mapped.

Firmware Update: Launch Firmware Update

Step 2 of 3: Enter Access Details

Select the local drive.

Local Drive SUJ762_60-x64WIN (Virtual CD) ▾

File Path or Update Package Path

Path

Figure 11: Enter Access Details

19. Click on the **Next** button to display a screen that allows you to select updates for different components in the system.

Firmware Update: Launch Firmware Update

Step 3 of 3: Select Updates

Use the table to select available updates.

Catalog File: Catalog.xml.gz

Source: USB or CD or DVD (SUJ762_60-x64WIN (Virtual CD):\repository\)

Available System Updates

| Component | Current | Available |
|---|---------|-----------|
| <input type="checkbox"/> OS COLLECTOR 1.1, OSC_1.1, A00 | OSC_1.1 | OSC_1.1 |
| <input type="checkbox"/> BIOS | 2.17 | 2.15 |
| <input type="checkbox"/> BP13G+ 0:1 | 2.23 | 2.23 |
| <input type="checkbox"/> Intel(R) Ethernet 10G 2P X520 Adapter - A0:36:9F:A13A:1C | 17.5.10 | 17.0.12 |

 System will reboot after selected updates are applied.

Figure 12: Select Updates

20. Click on the **Apply** button to launch the firmware update.
21. When complete, the system will reboot. You are returned to the Lifecycle Controller's *Firmware Update* screen.
22. Repeat step 15 on page 16 to step 20 on page 17 to ensure that everything was updated. Sometimes the NIC drivers update must be repeated.
- a) If that is the case, click on the **Apply** button again, and let the process go through its cycle.
23. Once the node has rebooted, log into it again.
24. Check the cluster status:

```
$ sudo ceph -s
```

25. Check that the `pgmap` reports all placement groups as normal (`active+clean`).
26. Log out of the Ceph Storage node.
27. Repeat this procedure, sequentially, for the remainder of the Ceph Storage nodes.
28. When complete, log into a Ceph Storage MON or Controller node.
29. Re-enable cluster rebalancing:

```
$ sudo ceph osd unset noout
$ sudo ceph osd unset norebalance
```

30. Perform a final status check to verify the cluster reports `HEALTH_OK`:

```
$ sudo ceph status
```

31. Proceed to [Update the Compute Nodes' BIOS and Firmware](#) on page 18.

Update the Compute Nodes' BIOS and Firmware

Update your Compute nodes' system BIOS and firmware.

 **Caution:** You can only update the BIOS and firmware on *one Compute node at a time*.

1. Log into the first Compute node's iDRAC using your **iDRAC username and password**.
2. On the right hand side in the *Virtual Console Preview* box, click on the **Launch** button.
 - a) The dialogue window asks for a few Java verifications, and then takes you to the system's Virtual Console.
3. On the top bar of the *Virtual Console* window, click on the **Virtual Media** button.
4. Click on the **Connect Virtual Media** button.
5. Once connected, click on the **Virtual Media** button.
6. Click on the **Map CD/DVD...** button.
7. Browse to the **ISO file** downloaded in [Download Files](#) on page 9, and then click on the **Map Device** button.
8. On the top bar of the *Virtual Console* window, click on the **Next Boot** button.
9. Click on the **Lifecycle Controller** button.
10. List all Compute nodes and their UUIDs:

```
$ nova list | grep "compute"
```

11. Select a Compute node to reboot, and then log into it.

12. Download the update files:

```
$ source ~/overcloudrc
$ openstack compute service list
$ openstack compute service set [hostname] nova-compute --disable
```

13. List all instances on the Compute node:

```
$ openstack server list --host [hostname] --all-projects
```

14. Migrate each instance from the disabled host to another Compute node by using one of the following methods:

a) Migrate the instance to a specific host of your choice:

```
$ openstack server migrate [instance-id] --live [target-host]--wait
```

b) Let nova-scheduler automatically select the target host:

```
$ nova live-migration [instance-id]
```

15. Once the migration completes, confirm the instance has migrated from the Compute node:

```
openstack server list --host [hostname] --all-projects
```

16. Repeat step 15 on page 19 until you have migrated all instances from the Compute Node.

17. Reboot the Compute node:

```
$ sudo reboot
```

18. On the *Lifecycle Controller* screen, click on the **Firmware Update** button.



Figure 13: Lifecycle Controller

19. Click on the **Launch Firmware Update** button.

20. On the next screen, select **Local Drive (CD or DVD or USB)** and then click on the **Next** button.

Firmware Update: Launch Firmware Update

Step 1 of 3: Select Update Repository

Select the repository location for the catalog and update packages.

FTP Server
 Local Drive(CD or DVD or USB)
 Network Share(CIFS or NFS or HTTP Server)

i Make sure the network connection is not disconnected during firmware update.

! If two PSUs of different wattages (for example, 750 W and 1100 W) are installed, do not perform simultaneous firmware update. If you perform simultaneous update, the PSUs are permanently damaged. To update the firmware on the PSUs, either perform the updates individually or make that both the PSUs are of the same wattage.

Figure 14: Select Update Repository

21. You are directed to a screen that should display the correct ISO image mapped.

Firmware Update: Launch Firmware Update

Step 2 of 3: Enter Access Details

Select the local drive.

Local Drive SUU762_60-x64WIN (Virtual CD) ▾

File Path or Update Package Path

Figure 15: Enter Access Details

22. Click on the **Next** button to display a screen that allows you to select updates for different components in the system.

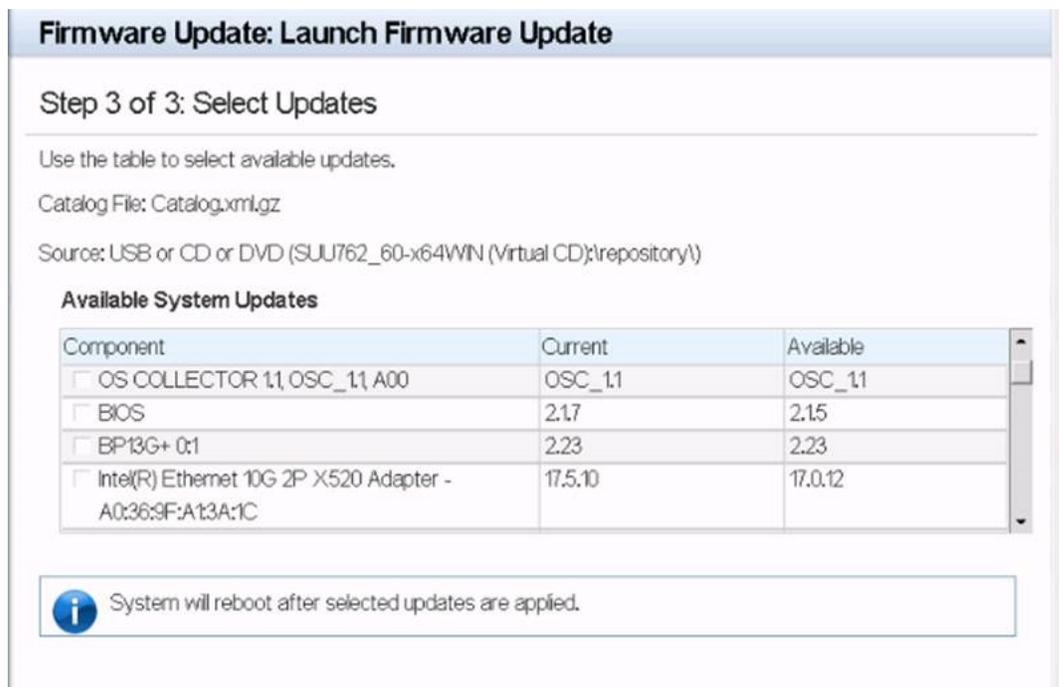


Figure 16: Select Updates

23. Click on the **Apply** button to launch the firmware update.
24. When complete, the system will reboot. You are returned to the Lifecycle Controller's *Firmware Update* screen.
25. Repeat step 18 on page 19 to step 23 on page 21 to ensure that everything was updated. Sometimes the NIC drivers update must be repeated.
 - a) If that is the case, click on the **Apply** button again, and let the process go through its cycle.
26. Once everything has been updated successfully, disconnect the Virtual Media:
 - a) On the top bar of the *Virtual Console* window, click on the **Virtual Media** button.
 - b) Click on the **Disconnect Virtual Media** button.
27. Once the Compute node has rebooted, re-enable it:


```
$ source ~/overcloudrc $ openstack compute service set [hostname] nova-compute --enable
```
28. Repeat this procedure, sequentially, for the remainder of the Compute nodes.

Dell EMC PowerEdge R430 Update Procedure

To update the BIOS and firmware on Dell EMC PowerEdge R430 systems:



Note: Dell EMC PowerEdge R430 systems are supported as Compute nodes only.

1. With the exceptions listed in step 2 on page 21, perform the following procedure in [Update the Compute Nodes' BIOS and Firmware](#) on page 18.
2. Exceptions include:
 - a) In the *BIOS pull-down*, select the **latest Dell Server BIOS PowerEdge R430/R530/T430 version**.
 - b) In the *Systems Management pull-down*, select the **latest Dell Server Update Utility, Windows 64 bit Format version**.

Appendix

A

References

Topics:

- [To Learn More](#)

Additional information can be obtained at <http://www.dell.com/en-us/work/learn/openstack-cloud> or by e-mailing openstack@dell.com.

If you need additional services or implementation help, please contact your Dell EMC sales representative.

To Learn More

For more information on the Dell EMC Ready Bundle for Red Hat OpenStack Platform visit <http://www.dell.com/learn/us/en/04/solutions/red-hat-openstack>.

Copyright © 2014-2017 Dell Inc. or its subsidiaries. All rights reserved. Trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Specifications are correct at date of publication but are subject to availability or change without notice at any time. Dell EMC and its affiliates cannot be responsible for errors or omissions in typography or photography. Dell EMC's Terms and Conditions of Sales and Service apply and are available on request. Dell EMC service offerings do not affect consumer's statutory rights.

Dell EMC, the DELL EMC logo, the DELL EMC badge, and PowerEdge are trademarks of Dell Inc.