Migrating Dell EMC PowerEdge blade servers between PowerEdge M1000e and PowerEdge VRTX chassis

This Dell EMC technical white paper provides information about updating and preparing PowerEdge servers to make them compatible and interchangeable for use in both the VRTX and M1000e chassis. Where available, links to micro videos are provided to demonstrate the handling of hardware components in a PowerEdge server and chassis.

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Revisions

Date	Description
January 2014	Initial release
April 2014	Added info about the M820 references
April 2015	Added info about blade migration into M1000e chassis
July 2018	Updated info about interchangeably using the M1000e blades on a VRTX chassis and vice versa.

Contents

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Acronyms

Acronym	Expansion
BIOS	Basic Input/Output System
CLI	Command Line Interface
CPLD	Complex Programmable Logic Device
Dell EMC iDRAC	Dell EMC Integrated Dell Remote Access Controller
Dell ESSA	Dell Energy Smart Solution Advisor
DHCP	Dynamic Host Configuration Protocol
DUP	Dell Update Package
FTP	File Transfer Protocol
FW	Firmware
GUI	Graphical User Interface
LOM	LAN over Motherboard
OS	Operating System
PERC	Dell PowerEdge RAID Card
QRL	Quick Resource Locator

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Executive summary

This technical white paper provides information about the procedure to migrate blade servers from a PowerEdge M1000e to a PowerEdge VRTX chassis and vice versa.
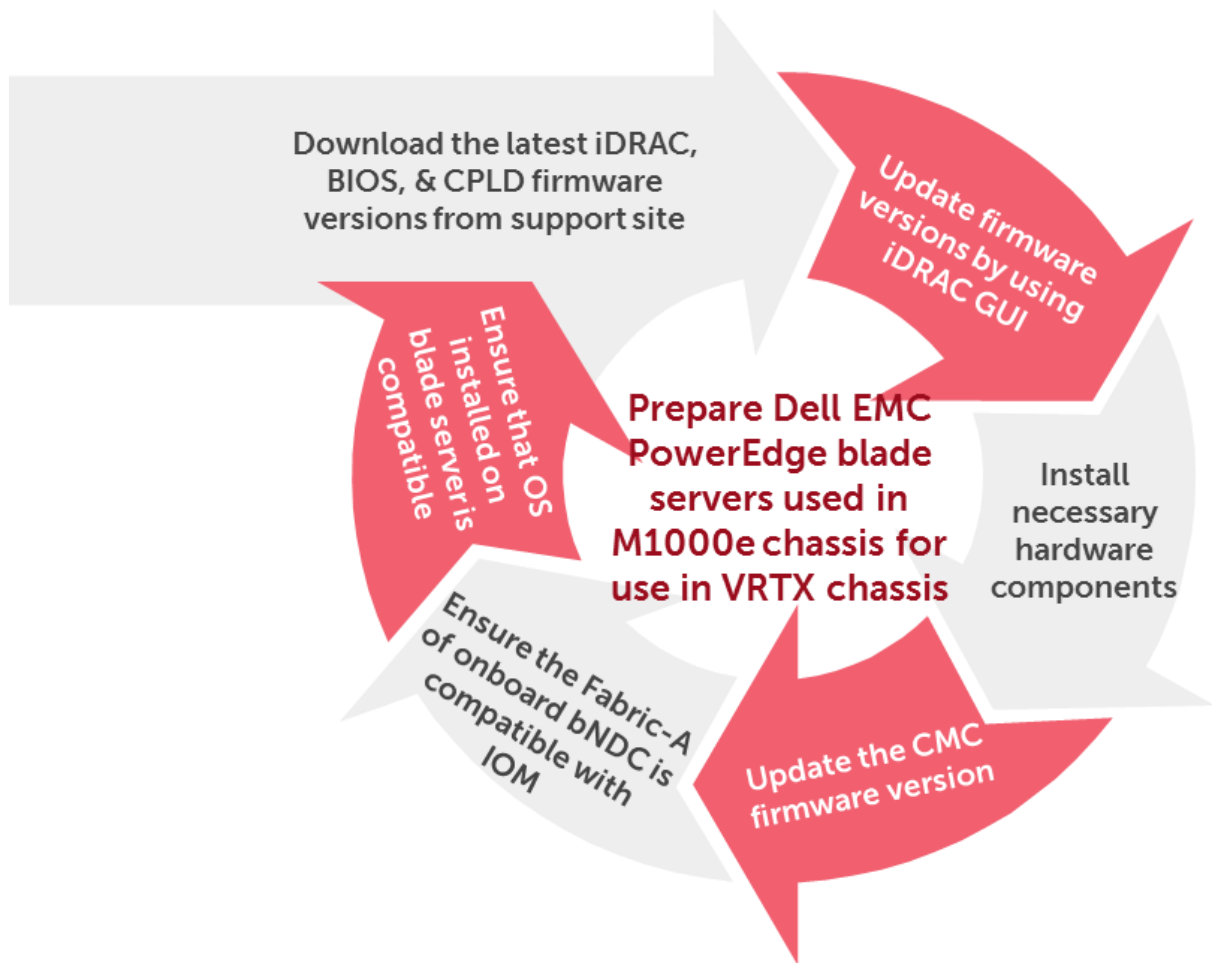
The scope of this technical white paper is to describe, by using M620 as an example, the tasks relevant for PowerEdge blade server by using the iDRAC Graphical User Interface (GUI). You must have an iDRAC Enterprise license to complete this process. As a customer of Dell PowerEdge servers, now, you have the option of migrating your PowerEdge servers between M1000e and VRTX chassis. For more information about VRTX chassis, go the support site. The scope of this paper is limited to migrating PowerEdge M520, M620, M630, M640, M820, and M830 using iDRAC web interface. If you prefer using RACADM commands, see the RACADM Command Line Reference Guide for iDRAC and CMC available at www.dell.com/idracmanuals. Where available, links to the videos are provided to quickly demonstrate a task.

Note: The behavior of a server after updating firmware versions of iDRAC, BIOS, and CPLD are different. This technical white paper discusses about such behaviors in the later sections.

Note: The procedures in this paper are described using PowerEdge M620 as an example.

You can download a firmware by using different options such as entering your Service Tag or detecting your product by using the support site. However, this technical white paper describes the tasks to be followed for downloading by using the **Drivers & downloads** feature on the support site. For more information about using these features on the support site, use the options provided on the support site or contact your Dell EMC service provider.

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1 Prepare a blade server for migration from an M1000e chassis to VRTX chassis

Download the latest iDRAC, BIOS, & CPLD firmware versions from support site

Update firmware versions by using iDRAC GUI

Ensure that OS installed on blade server is compatible

Prepare Dell EMC PowerEdge blade servers used in M1000e chassis for use in VRTX chassis

Install necessary hardware components

Ensure the Fabric-A of onboard bNDC is compatible with IOM

Update the CMC firmware version

1.1 Prerequisites for preparing blade server for migration from an M1000e to a VRTX chassis

- Ensure that you have the iDRAC7, IDRAC8, or IDRAC9 version with an Enterprise license.
- To update an M620 server used in M1000e chassis, and then make it usable in a VRTX chassis, you must complete the following tasks:
  - Download firmware versions from the Dell EMC support site
  - Update firmware versions using the iDRAC GUI
  - Install appropriate hardware components
  - Update to the latest CMC version
  - Ensure that fabric A of the on-board bNDC is compatible with IOM
  - For migration to a VRTX chassis, ensure that the Operating System (OS) installed on the blade server is supported. See the *Dell PowerEdge VRTX Storage Subsystem Compatibility Matrix* available on the support site.

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1.2 Download firmware from the Dell EMC support site

You must download the following 32-bit firmware and install on the blade servers installed in the M1000e chassis. The table here lists the minimum firmware revisions supported for migration to a VRTX chassis. It is recommended that you select the latest available versions in all the cases.

	M520	M620	M630	M640	M820	M830
BIOS	2.7.0	2.7.0	2.8.0	1.4.8	2.7.0	2.8.0
iDRAC	1.66.65	1.66.65	2.60.60.60	3.21.21.22	1.66.65	2.60.60.60
CPLD	1.0.6	1.0.7	1.0.5	1.0.0	1.0.3	1.0.2

You can update a firmware by using the following file types:

- .exe (DUP—Dell Update Package)
- .d7
- .usc
- .pm

However, this technical paper describes the methods only to update the firmware by using a DUP or .exe file. For more information about other file types, see the *iDRAC User's Guide* available at www.dell.com/idracmanuals.

1.2.1 Download the latest version of iDRAC, BIOS, and CPLD by using Service Tag

1. Go to www.dell.com/support.
2. In the **Which product do you need help with?** section, if you know the Service Tag of the server:
   a. Enter in the **Enter your Service Tag** box.
   b. Click **Submit**, and then complete the tasks by using the on-screen instructions.

1.2.2 Download the latest version of iDRAC, BIOS, and CPLD by using Drivers & downloads

1. Click **Choose from all products**.
2. In the **All products** dialog box, select **Servers, Storage, & Networking**.
3. Select **PowerEdge**.
4. From the list of PowerEdge server, select **PowerEdge M620**.
5. On the **Support for PowerEdge M620** page, click **Drivers & downloads**.

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Figure 1   The Drivers & downloads link on the Support for PowerEdge M620 page

6. From the **Operating system** drop-down menu, select **Windows Server 2008 x86**.
    The selection of this implies that you want to download a 32-bit iDRAC firmware version. All the latest
    compatible versions of server components are displayed. For example, BIOS, CMC, iDRAC, and CPLD.

Figure 2   The Download list of PowerEdge M620 server

7. Click the **Download** link corresponding to the iDRAC version.
8. Else, to download more than one file at a time, select the check boxes corresponding to the items in the list, and then click **Download Selected Files**.

- To view information about the selected iDRAC firmware version, expand the **iDRAC *<version number>*** link.
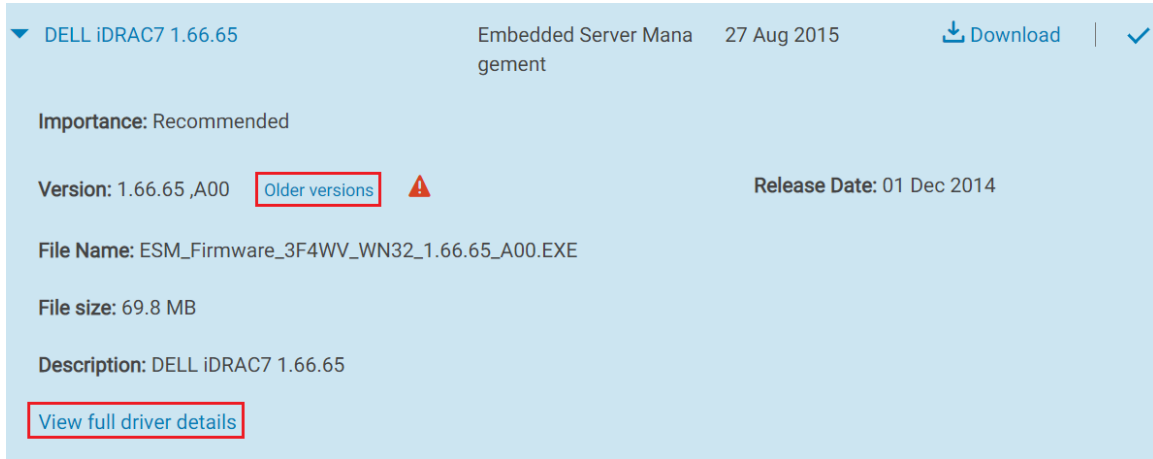
Figure 3   The **iDRAC *<version number>*** link is expanded

- To view compatible iDRAC versions that are earlier than the currently displayed version, click **Older versions**.
   a. The **Older versions** dialog box lists all the relevant iDRAC firmware versions with its importance level.
- To view other information about the driver—such as fixes and enhancements, Release Notes, compatible systems and OSs, and installation instructions—click **View full driver details**.

9. Wait for the file to get downloaded. This may take approximately 5–10 minutes.

Figure 4   Download the iDRAC firmware file

Similarly, download only the Windows 32-bit firmware of BIOS and CPLD to a known file folder location.

1.3 Update firmware versions by using the iDRAC 7 GUI

Note: To update a firmware version by using an iDRAC 9 GUI, complete the tasks listed in the KB article here: https://www.dell.com/support/article/us/en/19/sln292363/poweredge-server-updating-firmware-through-the-idrac?lang=en.
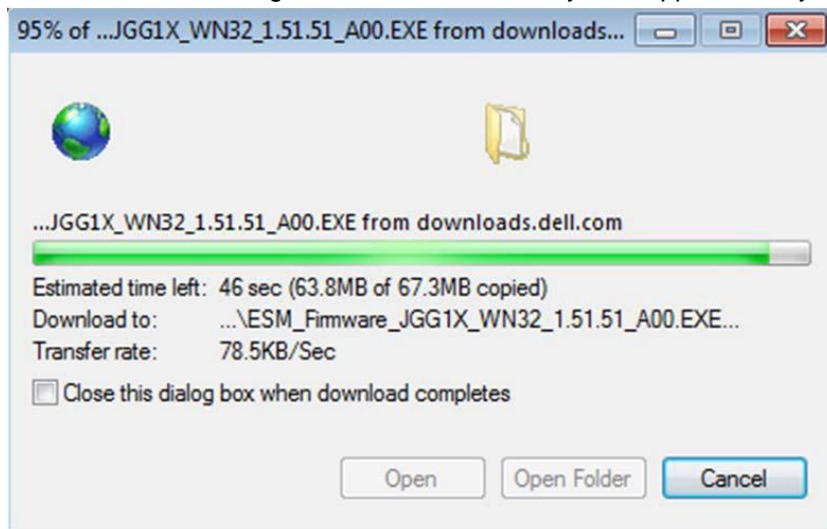
Before you update firmware by using Dell Update Package (DUP), make sure to:

- Install and enable the IPMI and managed system drivers.
- If your server is running a Windows operating system, enable and start the Windows Management Instrumentation (WMI) service.

To update a firmware:

1. Insert the server in to the M1000e chassis. Make sure that iDRAC receives a client-accessible IP address either by using a DHCP server or in a static mode.

   To watch a micro video about installing an M620 server into an M1000e chassis, click Installing the PowerEdge M620 server in an M1000e chassis.

2. Log in to the iDRAC GUI by using a username (root) and password (calvin).
3. In the left pane, expand **iDRAC Settings**, and then click **Update and Rollback**.

   In case of iDRAC versions earlier than 1.20.20, click **iDRAC Firmware Update**.

4. On the **Firmware Update** page, click **Local** or **Network Share** or **FTP** to indicate the folder where the file is stored. In this example, we are storing it on a local folder.
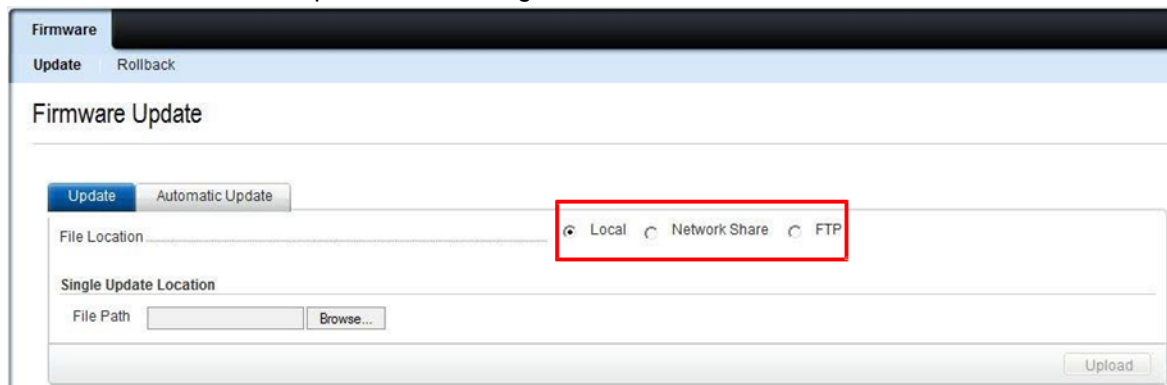

Figure 5   Store the iDRAC firmware version file on a local folder

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5. Click the **Browse** button to browse through to the DUP file, select the file, and then click **Open**.
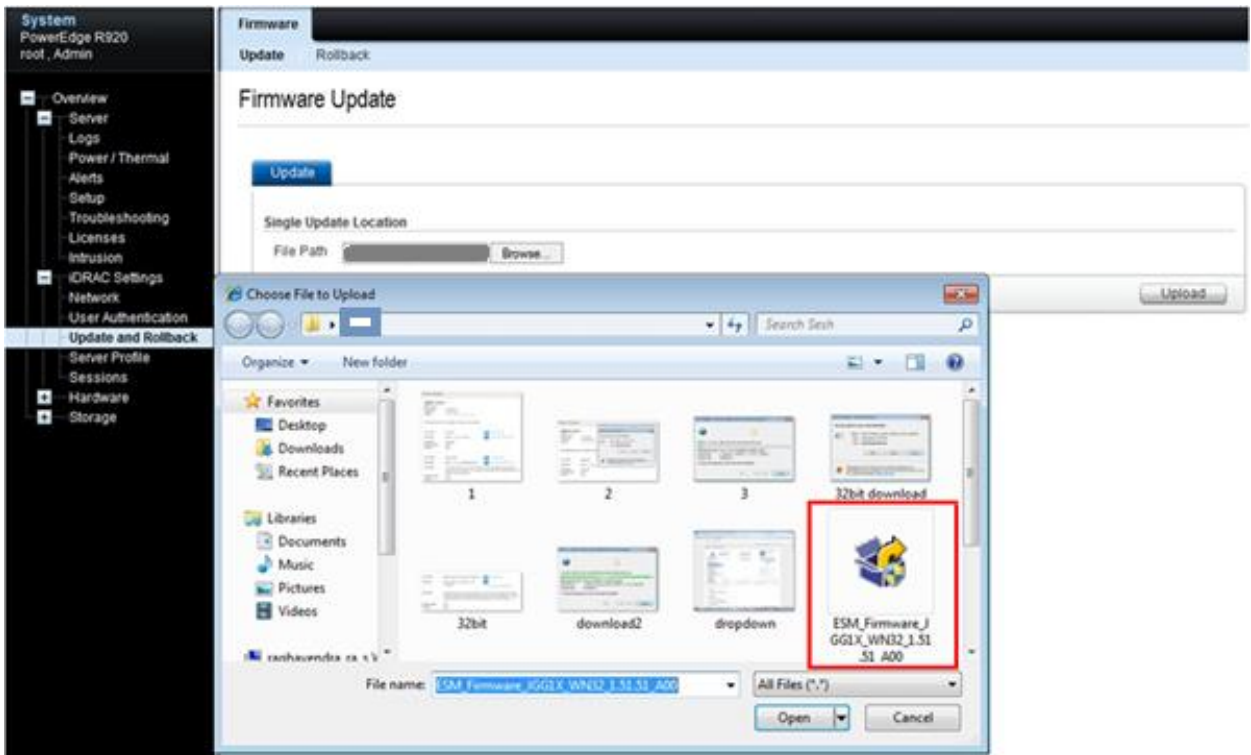
Figure 6   Browse to the iDRAC firmware file

The firmware upload operation is started and the status is displayed.
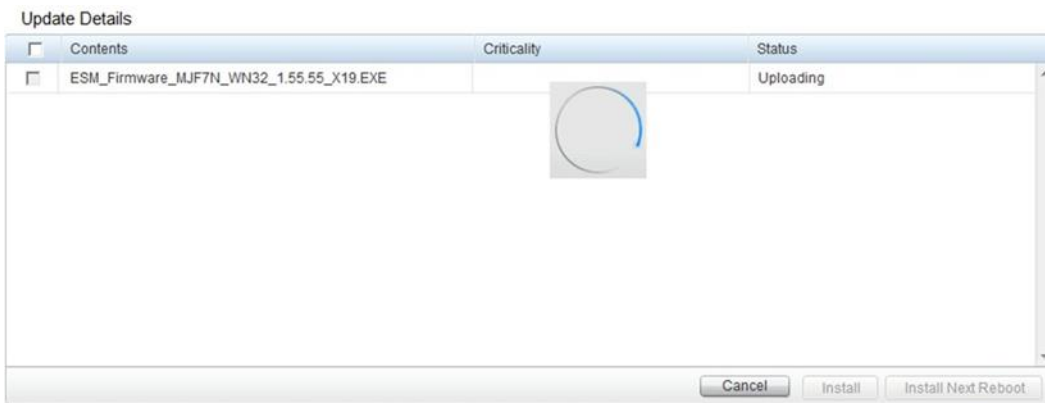
Figure 7   Status of uploading iDRAC firmware file

After the file is downloaded, the **Status** column indicates that the package is successfully downloaded and ready for installation.

Figure 8   The iDRAC firmware file is successfully downloaded

6. In the **Update Details** section, select the option corresponding to the firmware version you want to install, and then click **Install**.

Note: Before you update the firmware, make sure that the Lifecycle Controller of this iDRAC is started.

Figure 9   Select the iDRAC firmware version for installation

A message is displayed to indicate that the installation process is started.

1. To view the status of installation, click **Job Queue** in the alert message box.
2. Else, click **Server → Job Queue**.

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Figure 10　View the iDRAC firmware update status by using Job Queue

After the firmware is updated, the status is displayed.

Figure 11　The iDRAC version is successfully updated

1.4 After updating the iDRAC version of a blade server installed in an M1000e chassis

After the iDRAC firmware is updated, it takes around two (2) minutes for the changes to become effective. During this period, the iDRAC will not be available for use. For more information about whether or not a server restart is required for the firmware update to be effective, see the *Lifecycle Controller User's Guide* available at dell.com/support/.

To verify whether or not the firmware is updated correctly:

1. In the left pane of the iDRAC GUI, click **Server**.
2. On the **System Summary** page, in the **Server Information** section, ensure that the updated version is displayed in the **Firmware Version** row.

For more information about the description of fields that appear on an iDRAC page, see the *Online Help* documentation by clicking the question mark symbol (**?**) in the upper-right corner of a page. For more information about the tasks that you can perform on a page, see the *iDRAC User's Guide* available at www.dell.com/idracmanuals.

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1.5 Update the BIOS and CPLD versions of a blade server installed in an M1000e chassis

As described in the [Update firmware versions using iDRAC GUI](#) section earlier in this technical white paper, upload and update the BIOS and CPLD firmware DUPs that you have downloaded.

1.6 After updating the BIOS and CPLD versions of a blade server installed in an M1000e chassis

After updating the firmware versions of BIOS and CPLD, the server is automatically restarted to affect the update in Lifecycle Controller, and then power cycled after the update is effective.

After a CPLD firmware version is updated, the server is virtually reseated, which results in the iDRAC being not available for use for approximately two (2) minutes. This is because the iDRAC is being restarted and the server is automatically turned off. After the iDRAC restarts, the server is automatically restarted.

1.7 Remove the updated blade server from an M1000 chassis and insert in a VRTX chassis

1. After you update firmware versions of the iDRAC, BIOS, and CPLD, ensure that the versions are correctly appearing on the iDRAC GUI.
2. Turn off the server, and then remove the server from the M1000e chassis.
3. Open the top cover, and then remove the installed mezzanine cards in Fabric B and Fabric C, if any. Refer to the Dell PowerEdge blade server Installation and Service Manual.

> To watch the short video about removing the top cover, click [Removing the PowerEdge M620 server top cover](#).

4. Install the Dell PCIe Mezzanine adapters.
   The part number is 3N9XX in both Fabric B and Fabric C mezzanine slots of M520, M620, M630, and M640, and also in all the four Fabric B1, C1, B2, and C2 mezzanine slots of M820 and M830 servers.
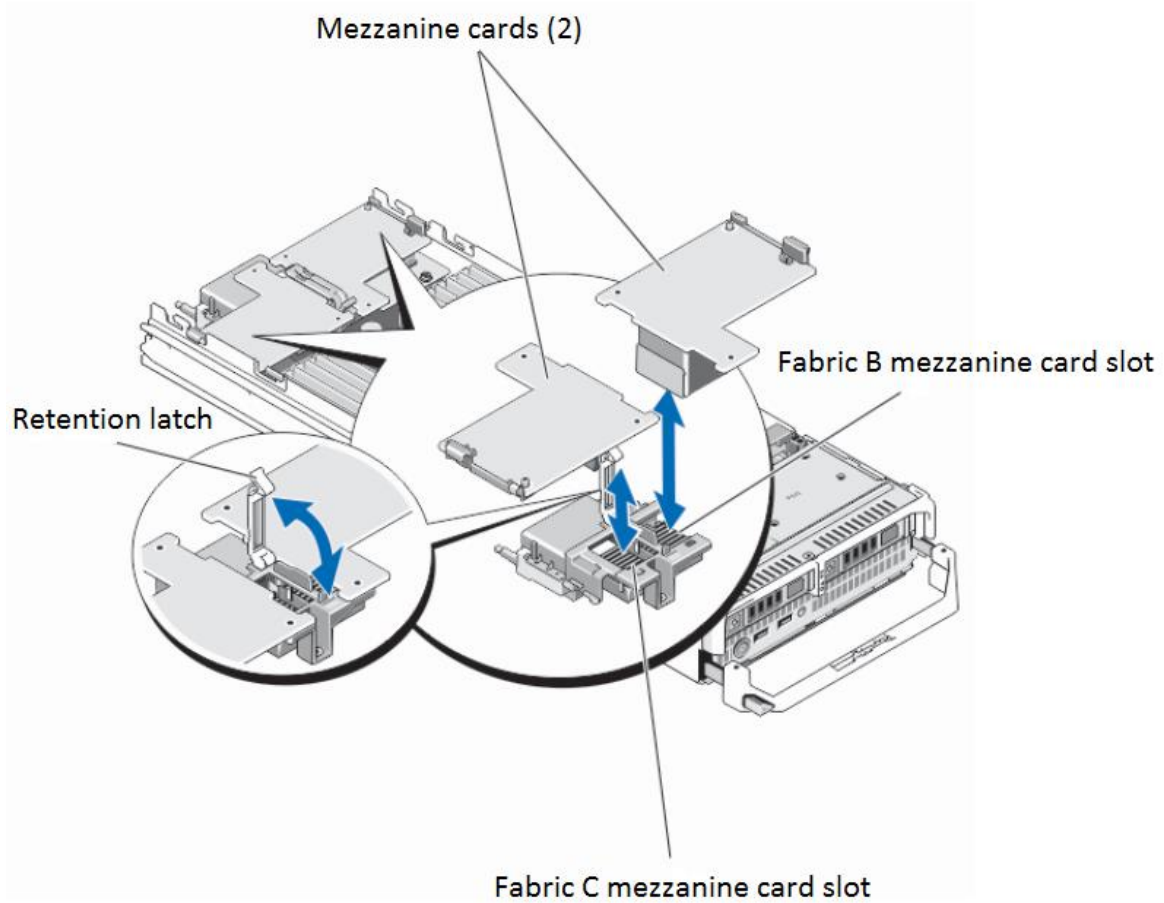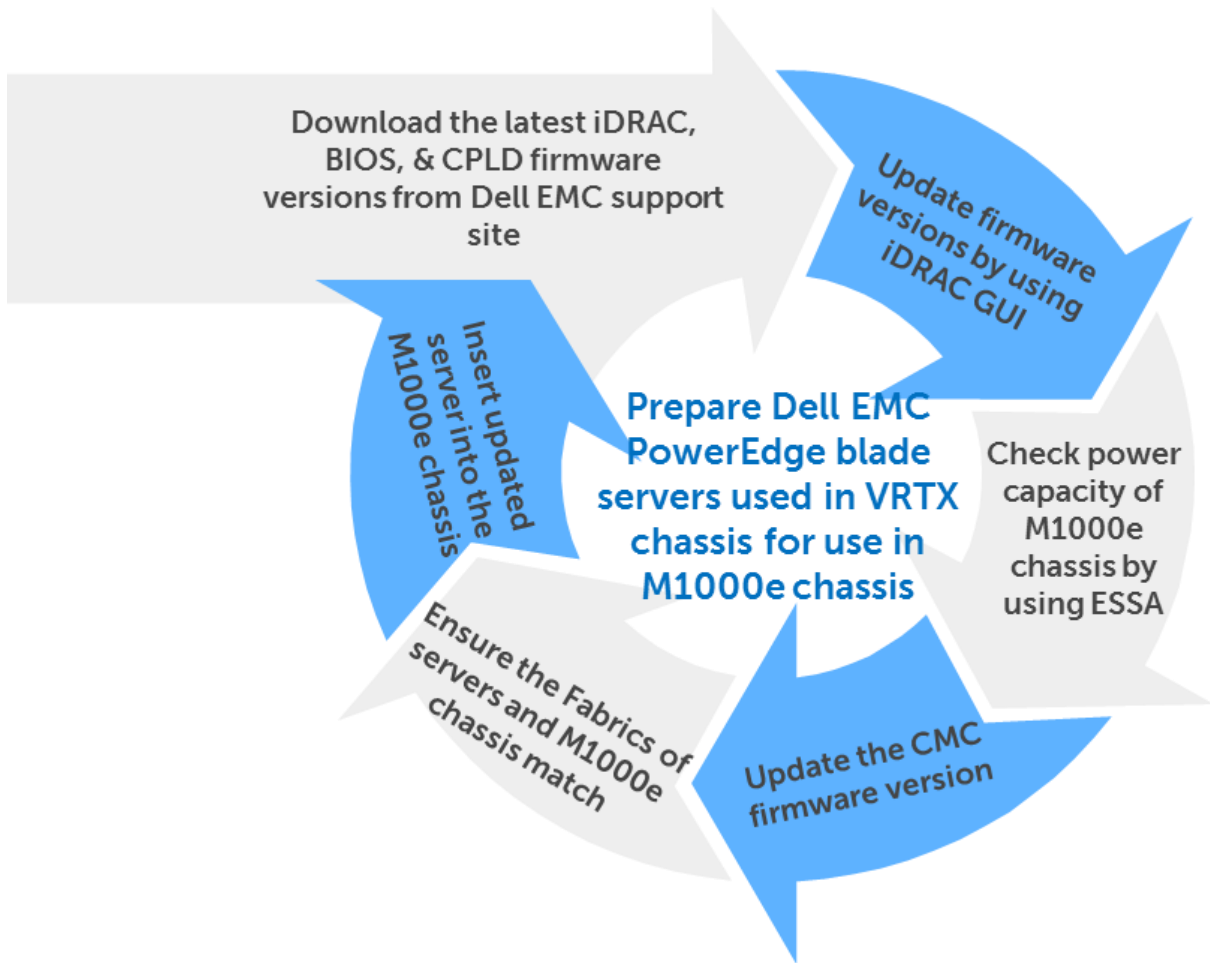
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Figure 12 Install the PCIe mezzanine card in the M1000e blade

To watch the micro video about inserting a PCIe mezzanine card, click Removing a mezzanine card from a PowerEdge M620 server.

2 Prepare server installed in a VRTX chassis for migration to an M1000e chassis

Download the latest iDRAC, BIOS, & CPLD firmware versions from Dell EMC support site

Update firmware versions by using iDRAC GUI

Insert updated server into the M1000e chassis

Prepare Dell EMC PowerEdge blade servers used in VRTX chassis for use in M1000e chassis

Check power capacity of M1000e chassis by using ESSA

Ensure the Fabrics of servers and M1000e chassis match

Update the CMC firmware version

2.1 Prerequisites for preparing server installed in a VRXT chassis for migration to an M1000e chassis

It is recommended to:

- Update all blade servers and M1000e firmware versions prior to migration. For information about downloading and upgrading, see Download firmware versions from the Dell EMC support site.
- Ensure the M1000e chassis has enough power to support the migrated blades.
- Ensure the M1000e chassis and the blades' fabrics (A, B, and C) are matched.

2.2 Download and update firmware for server and M1000e CMC

- For information about downloading and updating the firmware version, see the Owner's Manual of the chassis available on the support site.

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- Search for relevant firmware versions by using the example procedure described in Download firmware versions from the Dell EMC support site.

2.3 Check the M1000e chassis power capacity by using Dell EMC ESSA

Ensure that the M1000e chassis has sufficient power by using the Dell EMC Energy Smart Solution Advisor (ESSA or similar) to calculate the power necessary for the operation of the blade system(s) to be added to the M1000e chassis.

1. Go to www.dell.com/calc.
   ESSA user tips and FAQs are available on the Dell ESSA website.

2.4 Check compatibility of M1000e chassis and the fabrics of server installed in a VRTX chassis

- Fabric A is the on-board bNDC or LOM.
- Fabrics B and C are the mezzanine cards in the blades.
- Fabrics A, B, and C in the M1000e correspond to the IOM bays (A1, A2, B1, B2, C1, and C2) in the rear of the chassis.
- If there is a fabric mismatch, the system will not boot and the Critical Alert message is displayed when the blade server is installed in an M1000e chassis.
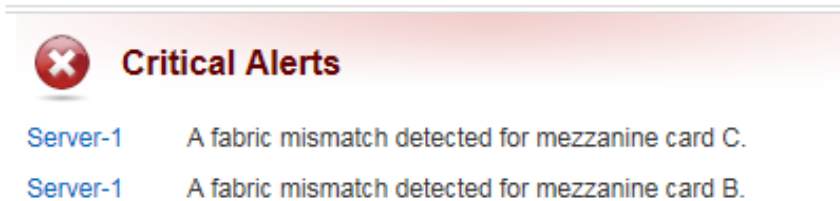
Critical Alerts

Server-1   A fabric mismatch detected for mezzanine card C.

Server-1   A fabric mismatch detected for mezzanine card B.

Figure 13   Alert indicating a fabric mismatch between VRTX server and M1000e fabrics

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- For more information about the supported fabrics, see the Installation and Service Manual of the specific blade server.

2.5 Remove the updated blade server from VRTX chassis and install into an M1000e chassis

1. After the blade server firmware is updated, ensure the correct firmware versions appear on the iDRAC GUI.
2. Turn off the blade server and remove from the VRTX chassis.
3. Remove the top cover of the blade server, and then remove any installed Dell PCIe mezzanine cards.

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4. Install the necessary Dell Mezzanine card(s) to properly match the IOM fabrics of the M1000e.
5. Replace the top cover of the blade and install the blade into the M1000e chassis.

6. For more information, see the Installation and Service Manual of the specific blade server available on the support site.
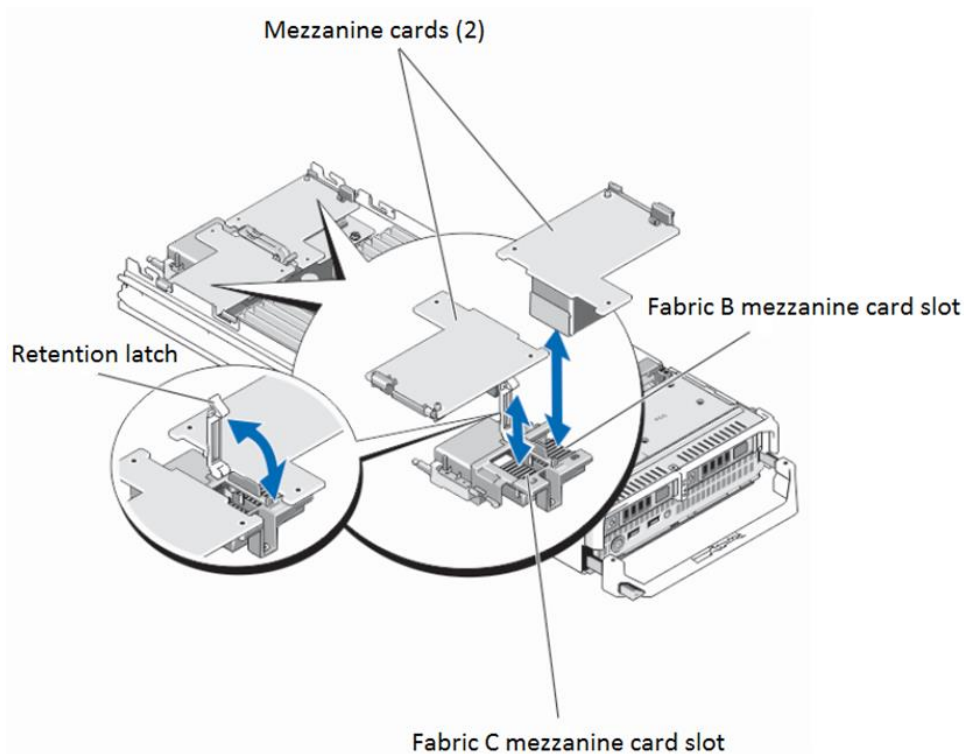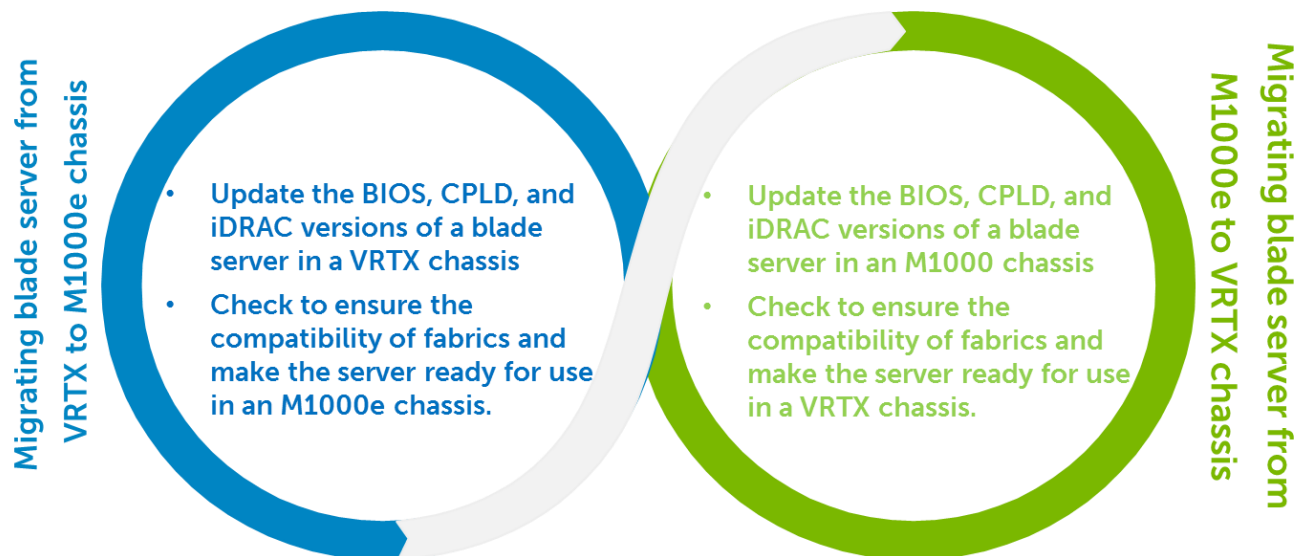

Figure 14 Install mezzanine card in the VRTX server

Conclusion

Dell EMC provides its customers with products that simplify and streamline their IT processes, freeing administrator's time to focus on activities that help grow the business. The PowerEdge servers of the 13th and 14th generation are now compatible to be interchangeably used between the VTRX and M1000e chassis. This versatility provides a one-stop solution for configuring your business-critical server settings and helps achieve optimal bandwidth, power, security, memory, and processor utilization.

This technical white paper provides comprehensive information about the tasks you can perform to migrate between these chassis by quickly upgrading the firmware versions. To maximize utilization, special notes and cautions are specified, where necessary. It provides screen shots to enhance readability and tabulated descriptions that enable you to rapidly identify items of interest. For more information about different Dell EMC PowerEdge servers, see the Dell PowerEdge Servers Portfolio Guide.

Migrating blade server from VRTX to M1000e chassis

- Update the BIOS, CPLD, and iDRAC versions of a blade server in a VRTX chassis
- Check to ensure the compatibility of fabrics and make the server ready for use in an M1000e chassis.

Migrating blade server from M1000e to VRTX chassis

- Update the BIOS, CPLD, and iDRAC versions of a blade server in an M1000 chassis
- Check to ensure the compatibility of fabrics and make the server ready for use in a VRTX chassis.

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A Technical support and resources

- Dell.com/support is focused on meeting customer needs with proven services and support.
- Dell Energy Smart Solution Advisor (ESSA) website:
  http://www.dell.com/learn/us/en/04/campaigns/config_calculator
- To watch quick and short videos about handling the PowerEdge server components, visit the QRL video website.

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