


# Dell PowerEdge VRTX Storage Subsystem Compatibility Matrix

<b>Chapter 1:</b> .....	<b>4</b>
Minimum version requirement for baselines.....	4
Current baseline.....	4
Legacy baselines.....	4
Baseline threshold guidelines.....	6
Storage subsystem baseline types.....	6
Baseline v9— Support for additional Operating systems.....	6
Baseline v8— Support for additional Operating systems.....	7
Baseline v7— Support for PowerEdge M640.....	8
Baseline v6—current baseline Support for Self-Encrypting Drives and bug fixes.....	10
Baseline v5—Shared Storage Expansion through Shared PERC 8 external controllers.....	11
Baseline v4—Fault tolerant support for Linux operating systems and bug fixes.....	12
Updating firmware.....	12
Updating server modules.....	13
Updating PowerEdge VRTX enclosure components.....	13
Documentation resources.....	14

## Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

**Topics:**

- [Minimum version requirement for baselines](#)
- [Baseline threshold guidelines](#)
- [Storage subsystem baseline types](#)
- [Updating firmware](#)
- [Updating server modules](#)
- [Updating PowerEdge VRTX enclosure components](#)
- [Documentation resources](#)

## Minimum version requirement for baselines

The following are the baseline releases for the PowerEdge VRTX storage subsystem. Each baseline represents the release of a validated code stack. It also defines the minimum versions required for each component and the supported operating system for that baseline.

### Current baseline

The current baseline is the most recently released and validated code stack. Dell recommends that you configure the VRTX system to comply with the current baseline. Only the current baseline has updates and bug fixes. This document might not reflect the latest updates and bug fixes. See [Dell.com/support/home](https://Dell.com/support/home) for the latest updates.

**Table 1. Current baseline**

Current baseline	Description
Baseline v9	This baseline adds support for additional operating systems.

### Legacy baselines

Legacy baselines include formerly released code stacks. Baselines are numbered in the order of release. For example, baseline v1 was the initial release for the VRTX system.

**Table 2. Legacy baseline**

Legacy baseline	Description
Baseline v8	This baseline adds support for additional operating systems.
Baseline v7	Defines the minimum version baseline requirements for the PowerEdge VRTX unit to support Dell PowerEdge M640. This baseline also provides support for additional operating systems
Baseline v6	Defines the minimum version baseline requirements for the PowerEdge VRTX storage subsystem to support FIPS-certified self-encrypting drives (SED). This baseline also provides support for additional operating systems. Improvements for both single and dual Shared PERC 8 configurations over the previous baselines.

**Table 2. Legacy baseline (continued)**

Legacy baseline	Description
Baseline v5	<p>Defines the minimum version baseline requirements for the PowerEdge VRTX storage subsystem that is associated with the introduction of Shared Storage Expansion via Shared PERC 8 external controllers and PowerVault MD1200 or MD1220 Storage Enclosures.</p> <p>This baseline provides:</p> <ul style="list-style-type: none"> <li>● Added support for Shared Storage Expansion via Shared PERC 8 external controllers and PowerVault MD1200 or MD1220 Storage Enclosures</li> <li>● Support for additional operating systems</li> <li>● Improvements for both single and dual Shared PERC 8 configurations over the previous baselines</li> <li>● Support both single and dual Shared PERC 8 configurations for all supported operating systems</li> </ul>
Baseline v4	<p>Defines the minimum version baseline requirements for the PowerEdge VRTX storage subsystem that is associated with the introduction of the Fault Tolerance support in Linux.</p> <p>This baseline provides:</p> <ul style="list-style-type: none"> <li>● Fault tolerance on supported Linux operating systems</li> <li>● Support for additional operating systems</li> <li>● Improvements on both single and dual Shared PERC 8 configurations</li> </ul>
Baseline v3	<p>Defines the minimum version baseline requirements for the VRTX storage subsystem that is associated with the introduction of the Write Back Cache support in a fault tolerant (dual controller) Shared PERC 8 configuration.</p> <p>This baseline:</p> <ul style="list-style-type: none"> <li>● Provides Write Back caching in both single and fault tolerant configurations</li> <li>● Provides improvements on both single and dual Shared PERC 8 configurations over the previous baselines</li> <li>● Does not have backward compatibility with later baselines (Baseline v4) and will not be updated going forward</li> </ul>
Baseline v2	<p>Defines the minimum version baseline requirements for the VRTX storage subsystem that is associated with the introduction of fault tolerant (dual controller) Shared PERC 8 configuration.</p> <p>This baseline:</p> <ul style="list-style-type: none"> <li>● Provides support for both single and dual Shared PERC 8 configurations</li> <li>● Provides Write Back caching in single controller configuration. Write Through caching in dual controller configurations</li> <li>● Provides improvements on both single and dual Shared PERC 8 configurations over the previous baselines</li> <li>● Does not have backward compatibility with later baselines (Baseline v3) and will not be updated going forward</li> </ul>
Baseline v1	<p>Defines the minimum version baseline requirements for the VRTX storage subsystem that has only single Shared PERC 8.</p> <p>This baseline:</p>

**Table 2. Legacy baseline (continued)**

Legacy baseline	Description
	<ul style="list-style-type: none"> <li>Provides support for a single Shared PERC 8 configuration. Storage subsystem redundancy (dual Shared PERC 8) is not supported with this baseline</li> <li>Does not have backward compatibility with later baselines (Baselines v2) and will not be updated going forward</li> </ul>

## Baseline threshold guidelines

- The storage subsystem should be compliant with only one baseline version.  
When any component in the storage subsystem is compliant with the minimum version requirements defined in one baseline, all components must also be brought into compliance with that same baseline.
- Some operating systems are introduced with a particular baseline and are not supported with previous baselines. See the baseline definitions for operating system support.
- Downgrading the storage subsystem from one baseline to an earlier baseline is not a supported operation.
- It is recommended that the storage subsystem be updated to the current baseline. As the baselines define only the minimum version requirements, it is recommended that components be updated to the latest firmware and driver releases as provided in [Dell.com/support/home](http://Dell.com/support/home).

## Storage subsystem baseline types

### Baseline v9— Support for additional Operating systems

**Table 3. Baseline v9— Support for additional Operating systems**

Shared PERC8 OS Driver or Chassis Components firmware	Version
CMC firmware	3.21
Chassis Infrastructure firmware	2.21
Shared PERC8 internal firmware	23.14.06.0013
Shared PERC8 external firmware	23.14.06.0013
Internal Expander backplane firmware	2.0
PowerVault MD1200/MD1220 Storage Enclosure firmware	1.06
Microsoft Windows Server 2012 R2	6.805.03.00
Microsoft Windows Server 2016	6.805.03.00
Microsoft Windows Server 2019	6.805.03.00
VMWare ESXi 6.5 U3	6.806.90.00
VMWare ESXi 6.7 U1	6.806.90.00
VMWare ESXi 6.7 U3	6.806.90.00
VMWare ESXi 7.0	6.806.92.00
VMWare ESXi 7.0 U1	6.806.92.00
SLES 12	6.904.09.00
SLES 12 SP1	6.904.09.00
SLES 12 SP2	6.904.09.00

**Table 3. Baseline v9— Support for additional Operating systems (continued)**

Shared PERC8 OS Driver or Chassis Components firmware	Version
SLES 12 SP3	7.703.06.00
SLES 15	7.705.06.00
SLES 15 SP1	07.707.50.00 (I)
SLES 15 SP2	07.713.01.00 (I)
RHEL 7.5	7.705.05.00
RHEL 7.6	7.705.05.00
RHEL 7.7	07.707.50.00 (I)
RHEL 7.8	07.707.50.00 (I)
RHEL 7.9	07.707.50.00 (I)
RHEL 8.0	07.707.50.00 (I)
RHEL 8.1	07.707.50.00 (I)
RHEL 8.2	07.707.50.00 (I)
RHEL 8.3	07.714.04.00 (I)

**NOTE:** Shared PERC8 was validated with Linux Inbox drivers, however Shared PERC the driver is shared with PERC9 and PERC10 controllers also, please use the latest Linux driver for installation with blades having PERC9 and PERC10 controllers.

## Baseline v8— Support for additional Operating systems

**Table 4. Baseline v8— Support for additional Operating systems**

Shared PERC8 OS Driver or Chassis Components firmware	Version
CMC firmware	3.20
Chassis Infrastructure firmware	2.21
Shared PERC8 internal firmware	23.14.06.0013
Shared PERC8 external firmware	23.14.06.0013
Internal Expander backplane firmware	2.0
PowerVault MD1200/MD1220 Storage Enclosure firmware	1.06
Microsoft Windows Server 2019	6.805.03.00
Microsoft Windows Server 2016	6.805.03.00
Microsoft Windows Server 2012 R2	6.805.03.00
Microsoft Windows Server 2012	6.805.03.00
Microsoft Windows Server 2008 R2	6.805.03.00
MWare ESXi 6.7 U1	6.806.90.00
VMWare ESXi 6.5 U3	6.806.90.00
VMWare ESXi 6.5 U2	6.806.90.00
VMWare ESXi 6.5 U1	6.806.90.00
VMWare ESXi 6.0 U3	6.805.56.00

**Table 4. Baseline v8— Support for additional Operating systems (continued)**

<b>Shared PERC8 OS Driver or Chassis Components firmware</b>	<b>Version</b>
VMWare ESXi 6.0 U2	6.805.56.00
VMWare ESXi 6.0 U1	6.805.56.00
VMWare ESXi 6.0 Patch 01	6.805.56.00
VMWare ESXi 5.5 U3	6.805.56.00
VMWare ESXi 5.5 U2	6.805.56.00
VMWare ESXi 5.5 U1	6.805.56.00
VMWare ESXi 5.5	6.805.56.00
VMWare ESXi 5.1 U3	6.805.56.00
VMWare ESXi 5.1 U2	6.805.56.00
VMWare ESXi 5.1 U1	6.805.56.00
SLES 15	7.705.06.00
SLES 12 SP3	6.904.09.00
SLES 12 SP2	6.904.09.00
SLES 12 SP1	6.904.09.00
SLES 12	6.904.09.00
SLES 11 SP4	6.904.09.00
SLES 11 SP3	6.904.09.00
RHEL 7.6	7.705.05.00
RHEL 7.5	7.705.05.00
RHEL 7.4	7.703.06.00
RHEL 7.3	06.811.02.00-rh1
RHEL 7.2	06.807.10.00
RHEL 7.1	06.805.06.01-rc1
RHEL 6.10	7.705.05.00
RHEL 6.9	6.904.09.00
RHEL 6.8	6.904.09.00
RHEL 6.7	6.904.09.00
RHEL 6.6	6.904.09.00
RHEL 6.5	6.904.09.00

## Baseline v7— Support for PowerEdge M640

**Table 5. Baseline v7— Support for PowerEdge M640**

<b>Shared PERC8 OS Driver or Chassis Components firmware</b>	<b>Version</b>
CMC firmware	3.00
Chassis Infrastructure firmware	2.21
Shared PERC8 internal firmware	23.14.06.0013



**Table 5. Baseline v7— Support for PowerEdge M640 (continued)**

<b>Shared PERC8 OS Driver or Chassis Components firmware</b>	<b>Version</b>
Shared PERC8 external firmware	23.14.06.0013
Internal Expander backplane firmware	2.0
PowerVault MD1200/MD1220 Storage Enclosure firmware	1.06
Microsoft Windows Server 2016	6.805.03.00
Microsoft Windows Server 2012 R2	6.805.03.00
Microsoft Windows Server 2012	6.805.03.00
Microsoft Windows Server 2008 R2	6.805.03.00
VMWare ESXi 6.5 U1	6.806.90.00
VMWare ESXi 6.0 U3	6.805.56.00
VMWare ESXi 6.0 U2	6.805.56.00
VMWare ESXi 6.0 U1	6.805.56.00
VMWare ESXi 6.0 Patch 01	6.805.56.00
VMWare ESXi 5.5 U3	6.805.56.00
VMWare ESXi 5.5 U2	6.805.56.00
VMWare ESXi 5.5 U1	6.805.56.00
VMWare ESXi 5.5	6.805.56.00
VMWare ESXi 5.1 U3	6.805.56.00
VMWare ESXi 5.1 U2	6.805.56.00
VMWare ESXi 5.1 U1	6.805.56.00
SLES 12 SP3	6.904.09.00
SLES 12 SP2	6.904.09.00
SLES 12 SP1	6.904.09.00
SLES 12	6.904.09.00
SLES 11 SP4	6.904.09.00
SLES 11 SP3	6.904.09.00
RHEL 7.4	7.703.06.00
RHEL 7.3	06.811.02.00-rh1
RHEL 7.2	06.807.10.00
RHEL 7.1	06.805.06.01-rc1
RHEL 6.9	6.904.09.00
RHEL 6.8	6.904.09.00
RHEL 6.7	6.904.09.00
RHEL 6.6	6.904.09.00
RHEL 6.5	6.904.09.00

## Baseline v6—current baseline Support for Self-Encrypting Drives and bug fixes

**Table 6. Baseline v6—current baseline: Support for self-encrypting drives and bug fixes**

<b>Shared PERC8 OS Driver or Chassis Components firmware</b>	<b>Version</b>
CMC firmware	2.20
Chassis Infrastructure firmware	2.21
Shared PERC8 internal firmware	23.14.06.0013
Shared PERC8 external firmware	23.14.06.0013
Internal Expander backplane firmware	2.0
PowerVault MD1200/MD1220 Storage Enclosure firmware	1.06
Microsoft Windows Server 2016	6.805.03.00
Microsoft Windows Server 2012 R2	6.805.03.00
Microsoft Windows Server 2012	6.805.03.00
Microsoft Windows Server 2008 R2	6.805.03.00
VMware ESXi 6.5 U1	6.806.90.00
VMWare ESXi 6.0 U2	6.805.56.00
VMWare ESXi 6.0 U1	6.805.56.00
VMWare ESXi 6.0 Patch 01	6.805.56.00
VMWare ESXi 5.5 U3	6.805.56.00
VMWare ESXi 5.5 U2	6.805.56.00
VMWare ESXi 5.5 U1	6.805.56.00
VMWare ESXi 5.5	6.805.56.00
VMWare ESXi 5.1 U3	6.805.56.00
VMWare ESXi 5.1 U2	6.805.56.00
VMWare ESXi 5.1 U1	6.805.56.00
SLES 12 SP1	6.904.07.00
SLES 12	6.904.07.00
SLES 11 SP4	6.904.07.00
SLES 11 SP3	6.904.07.00
RHEL 7.2	6.904.07.00
RHEL 7.1	6.904.07.00
RHEL 6.8	6.904.07.00
RHEL 6.7	6.904.07.00
RHEL 6.6	6.904.07.00
RHEL 6.5	6.904.07.00

## Baseline v5—Shared Storage Expansion through Shared PERC 8 external controllers

**Table 7. Baseline v5: Shared Storage Expansion through Shared PERC 8 external controllers**

<b>Shared PERC8 OS Driver or Chassis Components firmware</b>	<b>Version</b>
CMC firmware	2.1
Chassis Infrastructure firmware	2.21
Shared PERC 8 internal firmware	23.13.16-0013
Shared PERC 8 external firmware	23.13.16-0013
Internal Expander backplane firmware	2.0
PowerVault MD1200/MD1220 Storage Enclosure firmware	1.06
Microsoft Windows Server 2016	6.805.03.00
Microsoft Windows Server 2012 R2	6.805.01.00
Microsoft Windows Server 2012	6.805.01.00
Microsoft Windows Server 2008 R2	6.805.01.00
VMWare ESXi 6.0 U1	6.805.56.00
VMWare ESXi 6.0 Patch 01	6.805.56.00
VMWare ESXi 5.5 U3	6.805.56.00
VMWare ESXi 5.5 U2	6.805.56.00
VMWare ESXi 5.5 U1	6.805.56.00
VMWare ESXi 5.5	6.805.56.00
VMWare ESXi 5.1 U3	6.805.56.00
VMWare ESXi 5.1 U2	6.805.56.00
VMWare ESXi 5.1 U1	6.805.56.00
SLES 12	6.903.05.00
SLES 11 SP4	6.903.05.00
SLES 11 SP3	6.903.05.00
RHEL 7.1	6.903.05.00
RHEL 6.7	6.903.05.00
RHEL 6.6	6.903.05.00
RHEL 6.5	6.903.05.00

## Baseline v4—Fault tolerant support for Linux operating systems and bug fixes

**Table 8. Baseline v4: Fault tolerant support for the Linux operating systems and bug fixes**

	Shared PERC 8 FW	Shared PERC 8 OS Driver	CMC FW	Chassis Infrastructure FW	Expander FW	Dual Controller Support
Microsoft Windows Server 2012 R2	23.12.56-0086	6.803.21.00	2.04	2.1	2.0	Yes
Microsoft Windows Server 2012	23.12.56-0086	6.803.21.00	2.04	2.1	2.0	Yes
Microsoft Windows Server 2008 R2	23.12.56-0086	6.803.21.00	2.04	2.1	2.0	Yes
Microsoft Windows Server 2008 SP2 including Hyper-V virtualization	23.12.56-0086	6.803.21.00	2.04	2.1	2.0	Yes
VMWare ESXi 6.0 Patch 01	23.12.56-0086	6.804.60.00	2.04	2.1	2.0	Yes
VMWare ESXi 5.5 U2	23.12.56-0086	6.804.60.00	2.04	2.1	2.0	Yes
VMWare ESXi 5.5 U1	23.12.56-0086	6.804.60.00	2.04	2.1	2.0	Yes
VMWare ESXi 5.5	23.12.56-0086	6.804.60.00	2.04	2.1	2.0	Yes
VMWare ESXi 5.1 U3	23.12.56-0086	6.804.60.00	2.04	2.1	2.0	Yes
VMWare ESXi 5.1 U2	23.12.56-0086	6.804.60.00	2.04	2.1	2.0	Yes
VMWare ESXi 5.1 U1	23.12.56-0086	6.804.60.00	2.04	2.1	2.0	Yes
SLES 12	23.12.56-0086	6.902.57.00	2.04	2.1	2.0	Yes
SLES 11 SP3	23.12.56-0086	6.902.57.00	2.04	2.1	2.0	Yes
RHEL 7.1	23.12.56-0086	6.902.57.00	2.04	2.1	2.0	Yes
RHEL 6.6	23.12.56-0086	6.902.57.00	2.04	2.1	2.0	Yes
RHEL 6.5	23.12.56-0086	6.902.57.00	2.04	2.1	2.0	Yes

## Updating firmware

You can update the PowerEdge VRTX enclosure and server modules installed in the enclosure by using the following interfaces:

- Windows Dell Update Packages (DUPs)
- Integrated Dell Remote Access Controller (iDRAC) web interface
- PowerEdge VRTX Chassis Management Controller (CMC) web interface
- RACADM commands

The following are the prerequisites for updating the firmware:

- iDRAC web interface for each server module is accessible from the management station.
- Local or remote access to Operating System (OS) management is enabled for each server module.
- PowerEdge VRTX enclosure CMC web interface is accessible from the management station.
- All server and enclosure components are in a healthy state. Any issues must be resolved before updating the firmware.

## Updating server modules

Before updating the server modules, ensure that you download the latest available Windows DUP versions of the following components from [Dell.com/support/home](https://Dell.com/support/home):

- Shared PERC 8 OS driver
    - NOTE:** VMware ESXi is part of the Dell ESXi image.
  - iDRAC
  - CPLD (Complex Programmable Logic Device)
  - BIOS
1. Update the operating system specific Shared PERC 8 driver on all the server modules.
    - NOTE:** For Windows and Linux operating systems, see the Shared PERC 8 *User's Guide* available at [Dell.com/support/home](https://Dell.com/support/home).
    - NOTE:** The VMware driver is part of the Dell customized ESXi image. For more information about the VMware drivers, see [vmware.com](https://vmware.com). For more information about installing async drivers, see [kb.vmware.com](https://kb.vmware.com).
  2. Update the iDRAC firmware for each server module by using Windows DUP and the iDRAC web interface. You can also update the iDRAC firmware of all the server modules at a time by using the PowerEdge VRTX CMC web interface.
    - NOTE:** You must activate the Enterprise license and enable the Extended Storage feature.
    - NOTE:** The update process may take several minutes.
  3. Update the CPLD on each server module by using Windows DUP and iDRAC web interface.
    - NOTE:** Select the **Install and Reboot** check box after uploading the DUP. It enables the server module to restart and update the CPLD.

The server module is power cycled that results in the iDRAC web interface being inaccessible for three minutes.
  4. Update the BIOS on each server module by using Windows DUP and the iDRAC web interface. You can also update the BIOS of all the server modules at a time by using the PowerEdge VRTX CMC web interface.
    - NOTE:** You must activate the Enterprise license.
    - NOTE:** Select the **Install and Reboot** check box after uploading the DUP. It enables the server module to restart and execute the BIOS update.

## Updating PowerEdge VRTX enclosure components

Download the latest available versions of the following components from [Dell.com/support/home](https://Dell.com/support/home):

- Hard drive firmware (Windows Dell Update Package)
- CMC firmware
- PowerEdge VRTX chassis infrastructure firmware
- PowerEdge VRTX storage backplane expander firmware (Windows DUP)
- Shared PERC 8 firmware (Windows DUP)

**NOTE:** You must turn off all server modules before updating any enclosure component.

To update the PowerEdge VRTX enclosure components, perform the following steps from the CMC Web interface:

1. Click **Storage > Update** to update the hard drive firmware for each installed shared storage hard drive.
2. Click **Chassis Overview > Update** to update the CMC firmware.

**NOTE:** Ensure that you update both the CMC firmware by selecting both the **Active** and **Standby controller** check boxes.

After the firmware update is complete, the CMC restarts. Access to the CMC web interface is lost for several minutes.

3. Click **Chassis Overview > Update** to update the PowerEdge VRTX enclosure infrastructure firmware. This update results in the PowerEdge VRTX enclosure automatically getting power cycled. CMC reset and the access to the CMC web interface are lost for several minutes.
4. Click **Storage > Update** to update the PowerEdge VRTX storage backplane expander firmware.
5. Enable all the Shared PERC 8 controllers installed in the enclosure. If the second Shared PERC 8 controller is set to **Disabled PERC (Integrated 2)**, use the CMC command `'racadm raid enableperc:RAID.ChassisIntegrated.2-1'` to enable the disabled controller. PowerEdge VRTX enclosure will execute an enclosure power cycle after running the Shared PERC 8 enablement command.
6. Click **Storage > Update** to update the Shared PERC 8 controller firmware on all installed controllers. Update both Shared PERC 8 controllers at the same time.

**NOTE:** After the controller firmware update, if you want to disable the second Shared PERC 8 controller for the storage backplane expander firmware update, use the following CMC command: `'racadm raid disableperc:Raid.ChassisIntegrated.2-1'`

Executing this command results in an enclosure power cycle.

## Documentation resources

The following documents are available at the Dell TechCenter and Dell support sites:

- Integrated Dell Remote Access Controller (iDRAC) User's Guide
- RACADM Command Line Reference Guide for iDRAC and CMC
- Chassis Management Controller for PowerEdge VRTX User's Guide
- RACADM Command Line Reference Guide for Chassis Management Controller for PowerEdge VRTX User's Guide
- Lifecycle Controller User's Guide
- Lifecycle Controller Remote Services Quick Start Guide
- Dell PowerEdge VRTX Storage Subsystem Compatibility Matrix