PowerEdge R640 Information Update - Tech Sheet

June 2022
Rev. 1

DELL Technologies

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.

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Overview

The information in this document supersedes the information in the pertinent sections of the Installation and Service Manual, BIOS and UEFI Reference Guide, and Technical Specifications

For a complete list of information, see the documents available at https://www.dell.com/poweredgemanuals

Topics:

Revision history

This section provides a description of document changes.

Table 1. Document Revision history

Document Revision	Date	Description of changes
1	June, 2022	1. Updated storage_controller 2. Updated system_profile_settings

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Information Update

Topics:

Storage controller specifications

The PowerEdge R640 system supports:

- **Internal storage controller cards**: PowerEdge RAID Controller (PERC) H330, H350, HBA350i, H730P, H740P, H750 (adapter only), Software RAID (SWRAID) S140.
- **Boot Optimized Storage Subsystem**: HWRAID 2 x M.2 SSDs 240 GB, 480 GB.
  - The card supports up to two 6 Gbps M.2 SATA drives. The BOSS adapter card has a x8 connector using PCIe gen 2.0 x2 lanes, available only in the low-profile and half-height form factor.
- **External PERC (RAID)**: H840
- **12Gbps SAS HBAs (non-RAID)**:
  - External- 12 Gbps SAS HBA (non-RAID), HBA355e (adapter only, non-RAID)
  - Internal- HBA330 (non-RAID), HBA350i (non-RAID)

NOTE: The mini-PERC socket is not hot-pluggable.

NOTE: The PERC H750, H350 and HBA350i cards are not supported on 4x3.5 + 2x2.5 dual PERC, 10x2.5 + 2x2.5 dual PERC, or x10 NVMe configurations.

System Profile Settings details

About this task

The **System Profile Settings** screen details are explained as follows:

Option	Description
System Profile	Sets the system profile. If you set the System Profile option to a mode other than **Custom**, the BIOS automatically sets the rest of the options. You can only change the rest of the options if the mode is set to **Custom**.This option is set to **Performance Per Watt Optimized (DAPC)** by default. DAPC is Dell Active Power Controller. **NOTE:** All the parameters on the system profile setting screen are available only when the **System Profile** option is set to **Custom**.
CPU Power Management	Sets the CPU power management. This option is set to **System DBPM (DAPC)** by default. DBPM is Demand-Based Power Management.
Memory Frequency	Sets the speed of the system memory. You can select **Maximum Performance**, **Maximum Reliability**, or a specific speed. This option is set to **Maximum Performance** by default.
Turbo Boost	Enables or disables the processor to operate in the turbo boost mode. This option is set to **Enabled** by default.
C1E	Enables or disables the processor to switch to a minimum performance state when it is idle. This option is set to **Enabled** by default.
C States	Enables or disables the processor to operate in all available power states. This option is set to **Enabled** by default.
Write Data CRC	Enables or disables the Write Data CRC. This option is set to **Disabled** by default.

Option	Description
Memory Patrol Scrub	Sets the memory patrol scrub frequency. This option is set to **Standard** by default.
Memory Refresh Rate	Sets the memory refresh rate to either 1x or 2x. This option is set to **1x** by default.
Uncore Frequency	Enables you to select the **Processor Uncore Frequency** option.**Dynamic mode** enables the processor to optimize power resources across cores and uncores during runtime. The optimization of the uncore frequency to either save power or optimize performance is influenced by the setting of the **Energy Efficiency Policy** option.
Energy Efficient Policy	Enables you to select the **Energy Efficient Policy** option. The CPU uses the setting to manipulate the internal behavior of the processor and determines whether to target higher performance or better power savings. This option is set to **Balanced Performance** by default.
Number of Turbo Boost Enabled Cores for Processor 1	**NOTE:** If there are two processors installed in the system, you will see an entry for **Number of Turbo Boost Enabled Cores for Processor 2**. Controls the number of turbo boost enabled cores for Processor 1. The maximum number of cores is enabled by default.
Monitor/Mwait	Enables the Monitor/Mwait instructions in the processor. This option is set to **Enabled** for all system profiles, except **Custom** by default. **NOTE:** This option can be disabled only if the **C States** option in the **Custom** mode is set to **disabled**. **NOTE:** When **C States** is set to **Enabled** in the **Custom** mode, changing the Monitor/Mwait setting does not impact the system power or performance.
CPU Interconnect Bus Link Power Management	Enables or disables the CPU Interconnect Bus Link Power Management. This option is set to **Enabled** by default.
PCI ASPM L1 Link Power Management	Enables or disables the PCI ASPM L1 Link Power Management. This option is set to **Enabled** by default.
Intel Persistent Memory CR QoS	Controls the tuning recipe for Quality of Service (QoS) knobs. **Disabled** by default. **Recipe 1** is recommended for 2-2-2 memory configurations in App-Direct. **Recipe 2** is recommended for other memory configurations in App-Direct. **Recipe 3** is recommended for 1 DIMM per channel configurations.
Intel Persistent Memory Performance Setting	Controls the thresholds that trigger switching between near (RDIMM/LRDIMM) and far (PMem) memory. **BW Optimized**, selected by default, optimizes for RDIMM/LRDIMM and PMem bandwidth. **Latency Optimized** offers better RDIMM/LRDIMM latency in the presence of PMem. **Balanced Profile** optimizes performance with Memory Mode configured PMem.