Statement of Volatility – Dell EMC PowerEdge R340

This Statement of Volatility provides the information related to volatile and non-volatile components within the PowerEdge R340 Infrastructure. Volatile components lose their data when power has been removed from the system, whereas, non-volatile components continue to retain their data when the power has been removed.

The following table provides information of different configurations of the PowerEdge R340 servers.

Item	Non-Volatile or Volatile	Quantity	Reference Designator	Size of memory	Type of memory (e.g. Flash PROM, EEPROM)	Can user programs or operating system write data to it during normal operation?	What is the Purpose? (e.g. boot code)	How is data written to this memory?	How is memory write-protected?	How is memory cleared?
Planar										
PCH Internal CMOS RAM	Non-Volatile	1	U_PCH1	256 Bytes	Battery-backed CMOS RAM	No	Real-time clock and BIOS configuration settings	BIOS	N/A – BIOS only control	Perform the following steps: 1) Set NVRAM_CLR jumper to clear BIOS configuration settings at boot and reboot system; 2) AC power off system, remove coin cell battery for 30 seconds, replace battery and power on; 3) Restore default configuration in F2 system setup menu.

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BIOS Password (part of PCH internal CMOS RAM)	Non-Volatile	1	U_PCH1	16 Bytes (out of 256 bytes used for PCH Internal CMOS RAM)	Battery-backed CMOS RAM	No	Password to change BIOS settings	Keyboard	N/A – BIOS only control	1) Place shunt on CN1001 jumper pins 2 and 4. 2) AC power off is required after placing the shunt. 3) AC power on with the shunt in place and then can be removed
BIOS SPI Flash	Non-Volatile	1	U_ BIOS_SPI1	32 MB	SPI Flash	No	Boot code	SPI interface via PCH	Software write-protected	You cannot remove the memory with any utilities or applications. **Note:** When memory is corrupted or removed, System becomes non-functional

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iDRAC SPI Flash	Non-Volatile	1	U_BMC_SPI1	4 MB	SPI Flash	No	iDRAC Uboot (bootloader)	SPI interface via iDRAC	Embedded iDRAC subsystem firmware actively controls sub area based write protection as needed.	User cannot clear the memory completely. However, user data, lifecycle log and archive, SEL, firmware image repository can be cleared via Delete Configuration and Retire System, accessible in Lifecycle Controller interface
BMC EMMC	Non-Volatile	1	U_EMMC1	4 GB	eMMC NAND Flash	No	Operational iDRAC FW, Lifecycle Controller (LC) USC partition, LC service diags, LC OS drivers, USC firmware	NAND Flash interface via iDRAC	Embedded FW write protected	User cannot clear the memory completely. However, user data, lifecycle log and archive, SEL, firmware image repository can be cleared via Delete Configuration and Retire System, accessible in Lifecycle Controller interface
CPU Vcore regulator	Non-Volatile	2	PU1	16 KB	ROM	No	Operational parameters	Programmed at factory via I2C	Not write-protected	User cannot clear the memory.

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System CPLD RAM	Volatile	1	U_CPLD1	92 Kb	RAM	No	Not utilized	Not utilized	Not accessible	Not accessible
System CPLD FLASH	Non-Volatile	1	U_CPLD1	256 Kb	Flash	No	Power on System Firmware	Firmware update	BIOS Security Protocols	User cannot clear the memory.
System Memory: UDIMM	Volatile	Up to 4	DIMMA1, DIMMA2, DIMMB1, DIMMB2	Up to 16 GB per DIMM	DRAM	Yes	System OS RAM	System OS	OS Control	Reboot or power down the system.
Internal USB Key	Non-Volatile	Up to 1	INT_USB1	Varies (not factory installed	Flash	Yes	General purpose USB key drive	USB interface via PCH. Accessed via system OS	Not write-protected	Can be cleared in system OS
CPU	Volatile	1	CPU1	Various	Cache + registers	Yes	Processor cache + registers	Various	Various	Remove A/C
iDRAC DDR	Volatile	1	U_IDRAC9_DRAM1	512 Mb	DRAM	No	iDRAC local memory	iDRAC Firmware	Not write- protect	Remove A/C

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iDRAC	Volatile	1	U_BMC1	For CPU: 128 KB + Registers Co-proc: 64 Kb + Registers	Cache + registers	No	Processor cache + registers	iDRAC Firmware	Not write-protected	Remove A/C
PIROM	Non- Volatile	1	CPU1	256 Bytes	EEPROM	No	Processor info + scratchpad	SMBus interface to iDRAC	Out of 256 bytes, 128 bytes are protected by Intel. The other 128 bytes are not write-protected.	User cannot clear the memory.
Recovery BIOS SPI	Non- Volatile	1	U_REC_SPI_BIOS1	16 MB	SPI Flash	No	Recovery image	SPI interface via iDRAC	Not write-protected.	User cannot clear the memory.
LOM SPI	Non-Volatile	1	U_LOM_SPI1	8 Mb	SPI Flash	No	LOM FW	Pre-programmed before assembly. Can be updated using Dell/ BRCM tools	Not write-protected.	User cannot clear the memory.

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8x2.5" 1U Backplane										
SEP internal flash	Non-Volatile	1	U_SEP	Flash: 32 KB+4 KB EEPROM: 2 KB	Integrated Flash+EEPROM	No	Firmware + FRU	I2C interface via iDRAC	Program write-protected.	User cannot clear the memory.

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4x3.5" 1U Backplane										
SEP internal flash	Non-Volatile	1	U_SEP1	Flash: 32 KB+4 KB EEPROM: 2 KB	Integrated Flash+EEPROM	No	Firmware + FRU	I2C interface via iDRAC	Program write-protected.	User cannot clear the memory.

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H730 PERC										
NVSRAM	Non-Volatile	1	U1032	128 KB	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	Not write-protected. Not visible to Host Processor	User cannot clear the memory.
FRU	Non-Volatile	1	U1019	256 B	FRU	No	Card manufacturing information	Programmed at ICT during production.	Not write-protected.	User cannot clear the memory.
SPD	Non-Volatile	1	U22	256 B	SPD	No	Memory configuration data	Pre-programmed before assembly	Not write-protected. Not visible to Host Processor	User cannot clear the memory.

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H730 PERC										
Flash	Non-Volatile	1	U1049	16 MB	Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/LSI tools	Not write-protected. Not visible to Host Processor	User cannot clear the memory.
SBR	Non-Volatile	1	U1020	8 KB	Serial Boot ROM	No	Bootloader	Pre-programmed before assembly	Not write-protected. Not visible to Host Processor	User cannot clear the memory.
SDRAM	Volatile	9	U1043-U1047	4 GB	SDRAM	No	Cache for HDD I/O	ROC writes to this memory - using it as cache for data IO to HDDs	Not write-protected. Not visible to Host Processor	Cache can be cleared by powering off the card
1-Wire EEPROM	Non-Volatile	1	U1004	128 B	1-Wire EEPROM	No	Holds default controller properties/settings	ROC writes data to this memory	Not write-protected. Not visible to Host Processor	User cannot clear the memory.

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H330 PERC										
NVSRAM	Non-Volatile	1	U1033	128 KB	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	Not write-protected. Not visible to Host Processor	User cannot clear the memory.
FRU	Non-Volatile	1	U1019	256 B	FRU	No	Card manufacturing information	Programmed at ICT during production	Not write-protected.	User cannot clear the memory.
1-Wire EEPROM	Non-Volatile	1	U1004	128 B	1-Wire EEPROM	No	Holds default controller properties/settings	ROC writes data to this memory	Not write-protected. Not visible to Host Processor	User cannot clear the memory.
SBR	Non-Volatile	1	U1020	8 KB	Serial Boot ROM	No	Bootloader	Pre-programmed before assembly	Not write-protected. Not visible to Host Processor	User cannot clear the memory.
Flash	Non-Volatile	1	U3	16 MB	Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/LSI tools	Not write-protected. Not visible to Host Processor	User cannot clear the memory.

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HBA330 PERC										
NVSRAM	Non-Volatile	1	U1033	128 KB	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	Not write-protected. Not visible to Host Processor	User cannot clear the memory.
FRU	Non-Volatile	1	U1019	256 B	FRU	No	Card manufacturing information	Programmed at ICT during production	Not write-protected.	User cannot clear the memory.
SBR	Non-Volatile	1	U1020	8 KB	Serial Boot ROM	No	Bootloader	Pre-programmed before assembly	Not write-protected. Not visible to Host Processor	User cannot clear the memory.
Flash	Non-Volatile	1	U3	16 MB	Flash	No	Card firmware	Pre-programmed before assembly.	Not write-protected. Not visible to Host Processor	User cannot clear the memory.
TPM										
Trusted Platform Module (TPM)	Non-Volatile	1	U_TPM	128 Bytes	EEPROM	Yes	Storage of encryption keys	Using TPM Enabled operating systems	Software write-protected	F2 Setup option

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Right Control Panel										
SPI Flash	Non-Volatile	1	U_SPI_FLASH1	32 Mb	SPI Flash	No	EasyRestore functionality: contains Service Tag, Copy of SEL logs	SPI interface from iDRAC to Right Cntl Panel	Embedded iDRAC subsystem firmware actively controls sub area based write protection as needed.	User cannot clear the memory.
IDSDM - vFlash										
vFlash (uSD)	Non-Volatile	1	J3	16 GB	NAND flash	yes	populate out-of-band or optionally connect to the host as mass storage and boot mechanism	User can provide data to iDRAC (entirely in the iDRAC domain) to be pushed into vFlash	Not write-protected.	1. Card may be physically removed and destroyed or cleared via standard means, on a separate computer. OR 2. User has access to the card in the host

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iDSDM (uSD1, uSD2)	Non-Volatile	2	J1, J2	16 GB, 32 GB, 64 GB	NAND Flash	Yes	Provides mass storage	device resides in host domain; they are exposed to the user via an internally connected, non-removable USB mass storage device	Physical write-protect switch on ACE card	1. Card may be physically removed and destroyed or cleared via standard means, on a separate computer. OR 2. User has access to the card in the host domain and can clear it manually
SPI Flash	Non-Volatile	2	U2	1 MB	SPI Flash	SPI flash is only indirectly connected to iDRAC. iDRAC can read any address in the SPI flash, but may only write the primary firmware storage area as a part of a firmware update procedure.	Boot firmware storage, configuration and state data for IDSDM.	User can initiate a firmware update of the IDSDM device.	There is no mechanism provided to iDRAC to write any SPI NOR area outside of the primary IDSDM firmware region.	iDRAC may issue a clear command to erase all contents of the SPI NOR. This action may leave the IDSDM non-functional.

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LCD Bezel										
Microcontroller	Non-Volatile	1	IC1	256 KB	Internal Flash	No	Bootloader and software implementation of LCD command set	Updated as part of secure iDRAC software update. Configuration parameters can change only as part of iDRAC update	Writes are only allowed as part of secure iDRAC update	User cannot clear the memory.
PSU										
Microcontroller	Non-Volatile	Up to 3	Microchip	Up to 64 KB	Flash PROM and EEPROM	Yes	Report PSU information and control firmware	The data is flash via Dell Update Package (DUP)	Using signature and manufacture key to write-protect the memory.	The memory is cleared before firmware update

NOTE: For any information that you may need, direct your questions to your Dell Marketing contact.