



Statement of Volatility – Dell EMC PowerEdge MX840c

The Statement of Volatility provides you the information related to volatile and non-volatile components of different configurations of Dell EMC PowerEdge servers.

Volatile components lose their data when power cord is removed from the system, whereas, non-volatile components continue to retain their data when the power has been removed from the component.

The following table provides information of different configurations of the PowerEdge MX840c.

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_PCH	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 back on; 3) restore default configuration in F2 system setup menu.
BIOS Password (part of PCH internal CMOS RAM)				16 bytes (out of 256 bytes used for PCH Internal CMOS RAM)		Yes	Password to change BIOS settings	Keyboard	N/A – BIOS only control	1) Place shunt on J_PSWD_NVRAM jumper pins 4 and 6. 2) AC power off is required after placing the shunt.

Primary BIOS SPI Flash	Non-Volatile	1	U1	32MB	SPI Flash	No	Boot code	SPI interface via PCH	Software write protected	Not possible with any utilities or applications and system is not functional if corrupted/removed.
CPU Vcore Regulators	Non-Volatile	2	PAAU1, PBAU1	16 KB	ROM	No	Operational parameters	Programmed at factory via I2C	No write protect	Not user clearable
Vmem Regulators	Non-Volatile	2	PAEU1, PBEU1	16 KB	ROM	No	Operational parameters	Programmed at factory via I2C	no write protect	Not user clearable
System CPLD RAM	Volatile	1	U_CPL D1	240Kb	RAM	No	Not utilized	Not utilized	Not accessible	Not accessible
System CPLD FLASH	Non-Volatile	1	U_CPL D1	256Kb	FLASH	No	Power on System Firmware	Firmware update	BIOS Security Protocols	Not user clearable
System Memory: RDIMM and LRDIMM	Volatile	Up to 12 per CPU	CPU<2: 1>_CH< 5:0>_D <1:0>	Up to 32GB per RDIMM UP to 128GB Per LRDIMM	DRAM	Yes	System OS RAM	System OS	OS Control	Reboot or power down system

System Memory: NVDIMMM-N	Non-Volatile	Up to 6 per CPUs 1 and 2 (12 total in system)	CPU<2: 1>_CH< 5:0>_D 1	16GB per NVDIMM-N	Flash – NVDIMM	No	Data integrity	When system initiates a Save (AC loss, shutdown, etc.), NVDIMM-N controller will transfer data from DRAM to FlashNeither system nor SOS can access the flash, only a system initiated Save will trigger the NVDIMM-N controller to transfer data from DRAM to flash	Neither system nor OS can access the flash, only a system initiated Save will trigger the NVDIMM-N controller to transfer data from DRAM to flash	Using BIOS menu option, select NVDIMM factory reset
Internal USB Key	Non-Volatile	Up to 1	J_USB_INT	Varies (not factory installed)	Flash	Yes	General purpose USB key drive	USB interface via PCH. Accessed via system OS	No write protect	Can be cleared in system OS
CPU	Volatile	2	CPU1 / CPU2	Various	Cache + registers	Yes	Processor cache + registers	Various	Various	Remove A/C
FRU	Non-volatile	1	U9	512B	FRU	No	Planar manufacturing information	Programmed at ICT during production	No write protect	Not user clearable

PIROM	Non-Volatile	2	CPU1 / CPU2	256 Bytes	EEPROM	No	Processor info + scratchpad	SMBus interface to iDRAC	128 bytes protected by Intel/128 bytes not protected	Not user clearable
Recovery BIOS SPI	Non-Volatile	1	U5	16MB	SPI Flash	No	Recovery image	SPI interface via iDRAC	No write protect	Not user clearable

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PEM										
CPU Vcore Regulators	Non-Volatile	2	PAAU1, PBAU1	16 KB	ROM	No	Operational parameters	Programmed at factory via I2C	No write protect	Not user clearable
Vmem Regulators	Non-Volatile	2	PAEU1, PBEU1	16 KB	ROM	No	Operational parameters	Programmed at factory via I2C	no write protect	Not user clearable
System CPLD RAM	Volatile	1	U_CPLD1	74Kb	RAM	No	Not utilized	Not utilized	Not accessible	Not accessible
System CPLD FLASH	Non-Volatile	1	U_CPLD1	256Kb	FLASH	No	Power on System Firmware	Firmware update	BIOS Security Protocols	Not user clearable
System Memory: RDIMM and LRDIMM	Volatile	Up to 12 per CPU	CPU<4:3>_CH<5:0>_D<1:0>	Up to 32GB per RDIMM UP to 128GB Per LRDIMM	DRAM	Yes	System OS RAM	System OS	OS Control	Reboot or power down system

CPU	Volatile	0 or 2	CPU3 / CPU4	Various	Cache + registers	Yes	Processor cache + registers	Various	Various	Remove A/C
FRU	Non-volatile	1	U2	512B	FRU	No	Planar manufacturing information	Programmed at ICT during production	no write protect	Not user clearable

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iDRAC DC										
iDRAC SPI Flash	Non-Volatile	1	U46	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.	Not completely user clearable; however, user data, lifecycle log and archive, SEL, fw image repository can be cleared via Delete Configuration and Retire System, accessible in Lifecycle Controller interface

BMC eMMC	Non-Volatile	1	U_eMMC1	8GB	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	Not completely user clearable; however, user data, lifecycle log and archive, SEL, fw image repository can be cleared via Delete Configuration and Retire System, accessible in Lifecycle Controller interface
iDRAC DDR	Volatile	1	U_IDRAC9_D RAM1	4Gb	DRAM	No	iDRAC local memory	iDRAC Firmware	No write protect	Remove A/C
iDRAC	Volatile	1	U_IDRAC9	For CPU: 128KB + Registers	Cache + registers	No	Processor cache + registers	iDRAC Firmware	No write protect	Remove A/C
vFlash (uSD)	non-volatile	1	P2	16GB	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	No write protect	(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 may clear it manually

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6x2.5" Universal BP

SEP internal flash	Non-Volatile	1	U_SEP	Flash:64KB+4KB EEPROM:2KB	Integrated Flash+EEPROM	No	Firmware + FRU	I2C interface via iDRAC	Program write protect bit	Not user clearable
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8x2.5" Universal BP

SEP internal flash	Non-Volatile	1	U_SEP	Flash:64KB+4KB EEPROM:2KB	Integrated Flash+EEPROM	No	Firmware + FRU	I2C interface via iDRAC	Program write protect bit	Not user clearable
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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	What is the Purpose? (e.g. boot code)	How is data written to this memory?	How is memory write-protected?	How is memory cleared?
H745P MX										
NVSRAM	Non-volatile	1	U1087	128KB	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	no write protect. Not visible to Host Processor	Not user clearable
FRU	Non-volatile	1	U1019	8KB	FRU	No	Card manufacturing information	Programmed at ICT during production.	no write protect	Not user clearable
SPD	Non-volatile	1	U22	256B	SPD	No	Memory configuration data	Pre-programmed before assembly	no write protect. Not visible to Host Processor	Not user clearable
Flash	Non-volatile	1	U1086	16MB	Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/Broadcom tools	no write protect. Not visible to Host Processor	Not user clearable

Backup Flash	Non-volatile	1	U1100	8GB	Backup Flash	No	Holds cache data during power loss	ROC backs up DDR data to this device in case of a power failure	no write protect. Not visible to Host Processor	Flash can be cleared by powering up the card and allowing the controller to flush the contents to VDs. If the VDs are no longer available, cache can be cleared by going into controller bios and selecting Discard Preserved Cache.
SDRAM	Volatile	9	U1077-U1085	8GB	SDRAM	No	Cache for HDD I/O	ROC writes to this memory - using it as cache for data IO to HDDs	no write protect. Not visible to Host Processor	Cache can be cleared by powering off the card

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H730p MX										
NVSRAM	Non-volatile	1	U1033	128KB	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	no write protect. Not visible to Host Processor	Not user clearable
FRU	Non-volatile	1	U1019	256B	FRU	No	Card manufacturing information	Programmed at ICT during production	no write protect	Not user clearable
1-Wire EEPROM	Non-volatile	1	U1004	128B	1-Wire EEPROM	No	Holds default controller properties/settings	ROC writes data to this memory	no write protect. Not visible to Host Processor	Not user clearable
Serial Boot ROM	Non-volatile	1	U1020	8KB	Serial Boot ROM	No	Bootloader	Pre-programmed before assembly	no write protect. Not visible to Host Processor	Not user clearable

Flash	Non-volatile	1	U1049	16MB	Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/Broadcom tools	no write protect. Not visible to Host Processor	Not user clearable
Backup Flash	Non-volatile	1	U1059	4GB	Backup Flash	No	Holds cache data during power loss	ROC backs up DDR data to this device in case of a power failure	no write protect. Not visible to Host Processor	Flash can be cleared by powering up the card and allowing the controller to flush the contents to VDs. If the VDs are no longer available, cache can be cleared by going into controller bios and selecting Discard Preserved Cache.
SDRAM	Volatile	5	U1043-U1047	2GB	SDRAM	No	Cache for HDD I/O	ROC writes to this memory - using it as cache for data IO to HDDs	no write protect. Not visible to Host Processor	Cache can be cleared by powering off the card

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HBA330 MX										
FRU	Non-volatile	1	U1019	256B	FRU	No	Card manufacturing information	Programmed at ICT during production	no write protect	Not user clearable
Serial Boot ROM	Non-volatile	1	U1020	8KB	Serial Boot ROM	No	Bootloader	Pre-programmed before assembly	no write protect. Not visible to Host Processor	Not user clearable
Flash	Non-volatile	1	U1031	16MB	Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/Broadcom tools	no write protect. Not visible to Host Processor	Not user clearable

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HBA330 MMZ										
FRU	Non-volatile	1	U1019	8KB	FRU	No	Card manufacturing information	Programmed at ICT during production	no write protect	Not user clearable
Serial Boot ROM	Non-volatile	1	U1020	8KB	Serial Boot ROM	No	Bootloader	Pre-programmed before assembly	no write protect. Not visible to Host Processor	Not user clearable

Flash	Non-volatile	1	U1031	16MB	Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/Broadcom tools	no write protect. Not visible to Host Processor	Not user clearable
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TPM										
Trusted Platform Module (TPM)	Non-Volatile	1	U_TPM	128 Bytes	EEPROM	Yes	Storage of encryption keys	Using TPM Enabled operating systems	SW write protected	F2 Setup option


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BOSS_IDSDM										

iDSDM (uSD1, uSD2)	non-volatile	2	J_IDSDM_SD 1, J_IDSDM_SD 2	16GB, 32GB, 64GB	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 may clear it manually
SPI Flash	Non-Volatile	1	U_SPI	1MB	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, but doing this will leave the IDSDM non-functional.

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BOSS_M.2 SATA/PCI-E riser card

SPI FLASH	Non-Volatile	1	U17	1024KB	FLASH EEPROM	No	Boot code, FW	By programming the image via firmware update process	N/A	Use Flash tool, type "go.nsh w y"
TFRU	Non-Volatile	1	UDFN	64KB	FLASH EEPROM	Yes	Thermal monitoring	During Manufacturing, by programming the image via firmware update process.	N/A	By writing to Flash

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