DELLEMC

Statement of Volatility – Dell EMC PowerEdge C6400 and C6420

The Dell EMC PowerEdge C6400 and C6420 contain both volatile and non-volatile (NV) components. Volatile components lose their data after removal of power from the component. Non-volatile components continue to retain their data even after the power has been removed from the component. Components chosen as user-definable configuration options (those not soldered to the motherboard) are not included in the Statement of Volatility. Configuration option information (pertinent to options such as microprocessors, remote access controllers, and storage controllers) is available by component separately. The following components are present in the PowerEdge C6400 and C6420 servers.

Item	Non-Volatile or Volatile	Quantity	Reference Designator	Size	Type (e.g. Flash PROM, EEPROM)	Can user programs or operating system write data to it during normal operation?	Purpose? (e.g. boot code)	How is data input to this memory?	How is this memory write protected?	How is the memory cleared?
Planar										
PCH Internal CMOS RAM	Non-Volatile	1	U_LBG	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.
BIOS Password (part	Non-Volatile	1	U_LBG	16 Bytes (out of 256 bytes	Battery-backed CMOS RAM	Yes	Password to change BIOS settings	Keyboard	N/A – BIOS only control	1) Place shunt on J_PSWD_NVRAM jumper pins 2 and 4.

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of PCH internal CMOS RAM)				used for PCH Internal CMOS RAM)						2) AC power off is required after placing the shunt. 3) AC power on with the shunt in place and then can be removed
Primary BIOS SPI Flash	Non-Volatile	1	U_SPI_BIOS	32 MB	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.
iDRAC SPI Flash	Non-Volatile	1	U_BMC_SPI	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 completely. 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_EMMC	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 completely. However, user data, lifecycle log and archive, SEL, fw image repository can be cleared via Delete Configuration and Retire System,

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										accessible in Lifecycle Controller interface
CPU Vcore and Memory regulator	Non-Volatile	2	PU2, PU9	16 KB	ROM	No	Operational parameters	Programmed at factory via I2C	No write protect	User cannot clear.
Vmem Regulators	Non-Volatile	2	PU15, PU21	16 KB	ROM	No	Operational parameters	Programmed at factory via I2C	no write protect	User cannot clear.
System CPLD RAM	Volatile	1	U_CPLD	92 KB	Flash	No	Not utilized	Not utilized	Not accessible	Not accessible
System CPLD FLASH	Non-Volatile	1	U_CPLD	256 KB	RAM	No	Power on System Firmware	Firmware update	BIOS Security Protocols	User cannot clear.
System Memory: RDIMM and LRDIMM	Volatile	Up to 16 per CPU	CPU1<2:1>_CH<5:0>_D<1:0>	Up to 64 GB per DIMM	DRAM	Yes	System OS RAM	System OS	OS Control	Reboot or power down system
System Memory: NVDIMMM-N	Non-Volatile	Up to 4 per CPUs 1 and 2 (12 total in system)	CPU1<2:1>_CH<5:0>_D1	128 GB per NVDIMM-N	Flash – NVDIMM	No	Data integrity	When system initiates a Save (AC loss, shutdown, etc.), NVDIMM-N controller will transfer data from	Neither system nor OS can access the flash, only a system initiated Save will trigger the NVDIMM-N controller to transfer data	Using BIOS menu option, select NVDIMM factory reset

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								DRAM to Flash	from DRAM to flash	
Internal USB Key	Non-Volatile	Up to 1	INTERNAL _USB1	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	1 or 2	CPU1 / CPU2	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	No write protect	Remove A/C
iDRAC	Volatile	1	U_IDRAC	For CPU: 128 KB + Registers Co-proc: 64 Kb + Registers	Cache + registers	No	Processor cache + registers	iDRAC Firmware	No write protect	Remove A/C
PIROM	Non-Volatile	1 or 2	CPU1 / CPU2	256 Bytes	EEPROM	No	Processor info + scratchpad	SMBus interface to iDRAC	128 bytes protected by Intel/128 bytes not protected	User cannot clear.

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Recovery BIOS SPI	Non-Volatile	1	U_REC_SPI_BIOS	16 MB	SPI Flash	No	Recovery image	SPI interface via iDRAC	No write protect	User cannot clear.
24x2.5" Without NVME support Backplane										
SEP internal flash	Non-Volatile	4	U5_SEP, U6_SEP, U7_SEP, U8_SEP	Flash: 32 KB+4 KB EEPROM: 2 KB	Integrated Flash+EEPROM	No	Firmware + FRU	I2C interface via iDRAC	Program write protect bit	User cannot clear.
24x2.5" With NVME support Backplane										
SEP internal flash	Non-Volatile	4	U5_SEP, U6_SEP, U7_SEP, U8_SEP	Flash: 64 KB+4 KB EEPROM: 2 KB	Integrated Flash+EEPROM	No	Firmware + FRU	I2C interface via iDRAC	Program write protect bit	User cannot clear.
24x2.5" EXP/Backplane										
NVSRAM Memory	Non-Volatile	1	U_3	1 MB	Flash	No	FW config data	Common Flash memory Interface (CFI)	Hardware strapping	User cannot clear.
Flash Memory	Non-Volatile	1	U_2	128 MB	Flash	No	Firmware	Common Flash memory Interface (CFI)	Hardware strapping	User cannot clear.

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Expander FRU	Non-Volatile	1	U_EXP_FRU1	512 Bytes	I2C EEPROM	No	FRU	I2C interface via expander	Hardware strapping	User cannot clear.
Backplane FRU	Non-Volatile	4	U_BP_FRU1, U_BP_FRU2, U_BP_FRU3, U_BP_FRU14	256 Bytes	I2C EEPROM	No	FRU	I2C interface via iDRAC	Hardware strapping	User cannot clear.
12x3.5" Backplane										
SEP internal flash	Non-Volatile	4	U5_SEP, U6_SEP, U7_SEP, U8_SEP	Flash: 32 KB+4 KB EEPROM: 2 KB	Integrated Flash+EEPROM	No	Firmware + FRU	I2C interface via iDRAC	Program write protect bit	User cannot clear.
Chassis Manage Board										
Controller internal flash	Non-Volatile	1	U_MCU1	Flash:256 KB+256KB SRAM: 136KB	Integrated Flash+SRAM	No	Firmware	I2C interface via iDRAC	No write protect	User cannot clear.

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FPGA	Volatile	1	U_FPGA1	Flash:256 KB+256KB SRAM: 136KB	Integrated Flash+SRAM	No	Firmware	JTAG interface via CM	No write protect	User cannot clear.
FPGA SPI Flash	Non-Volatile	1	U18	2 MB	Flash	No	FPGA configuration image	SPI interface via CM	No write protect	User cannot clear.
CM FRU	Non-Volatile	1	U_EEPROM1	32 KB	Flash	No	FRU	I2C interface via iDRAC	No write protect	User cannot clear.
H740, H740P, H830 PERC										
NVSRAM	Non-Volatile	1	U1087	128 KB	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	No write protect. Not visible to Host Processor	User cannot clear.
FRU	Non-Volatile	1	U1019	256 B	FRU	No	Card manufacturing information	Programmed at ICT during production.	no write protect	User cannot clear.
Flash	Non-Volatile	1	U1086	16 MB	Flash	No	Card firmware	Pre-programmed before assembly	No write protect. Not visible to Host Processor	User cannot clear.

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SPD	Non-Volatile	1	U22	256 B	SPD	No	Memory configuration data	Pre-programmed before assembly	No write protect. Not visible to Host Processor	User cannot clear.
Backup Flash	Non-Volatile	1	U1100	8 GB	Backup Flash	No	Holds cache data during power loss	FPGA 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	8 GB	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
H330 PERC										
NVSRAM	Non-Volatile	1	U1033	128 KB	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	No write protect. Not visible to Host Processor	User cannot clear.

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FRU	Non-Volatile	1	U1019	256 B	FRU	No	Card manufacturing information	Programmed at ICT during production	No write protect	User cannot clear.
1-Wire EEPROM	Non-Volatile	1	U1004	128 B	1-Wire EEPROM	No	Holds default controller properties/settings	ROC writes data to this memory	No write protect. Not visible to Host Processor	User cannot clear.
SBR	Non-Volatile	1	U1020	8 KB	Serial Boot ROM	No	Bootloader	Pre-programmed before assembly	No write protect. Not visible to Host Processor	User cannot clear.
Flash	Non-Volatile	1	U3	16 MB	Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/LSI tools	No write protect. Not visible to Host Processor	User cannot clear.
HBA330 PERC										
NVSRAM	Non-Volatile	1	U1033	128 KB	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	No write protect. Not visible to Host Processor	User cannot clear.

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FRU	Non-Volatile	1	U1019	256 B	FRU	No	Card manufacturing information	Programmed at ICT during production	No write protect	User cannot clear.
SBR	Non-Volatile	1	U1020	8 KB	Serial Boot ROM	No	Bootloader	Pre-programmed before assembly	No write protect. Not visible to Host Processor	User cannot clear.
Flash	Non-Volatile	1	U3	16 MB	Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/LSI tools	No write protect. Not visible to Host Processor	User cannot clear.
TPM										
Trusted Platform Module (TPM)	Non-Volatile	1	TPM	128 Bytes	EEPROM	Yes	Storage of encryption keys	Using TPM Enabled operating systems	SW write protected	F2 Setup option
Main Riser										
RSPI	Non-Volatile	1	U3	4 MB	SPI Flash	SPI flash is only indirectly connected to iDRAC. iDRAC can	Boot firmware storage	SPI interface via iDRAC	No write protect	Not user clearable

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						read any address in the SPI flash, but may only write the primary firmware storage area as a part of a firmware update procedure.				
uSD Card	Non-Volatile	1	J3	8GB / 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 uSD	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
Flash memory	Non-Volatile	1	U1	64 KB	Flash	No	Micro-SD card reader Firmware	SPI interface via Micro-	No write protect	Not user clearable

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								SD controller		
Omni-Path Cable Carrier										
Carrier FRU	Non-Volatile	1	U2	2 Kb	I2C EEPROM	No	FRU	I2C interface via PCH	no write protect	Not user clearable
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 protect memory write	Before firmware update, the memory will be cleared.

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