



## Statement of Volatility – Dell EMC PowerEdge FC640 and M640

The Dell EMC PowerEdge FC640 and M640 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. 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 R640 servers.

Item	Non-Volatile or Volatile	Quantity	Reference Designator	Size	Type	Can user programs or operating system write data during normal operation?	Purpose	How is data added to the memory?	How is the memory write protected?	How is the memory cleared?
<b>Planar</b>										
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	1) Set NVRAM_CLR jumper to clear BIOS configuration settings at boot and reboot system. 2) Power off the system, remove coin cell battery for 30 seconds, replace battery and then power back on. 3) Restore default configuration in F2 system setup menu.
BIOS Password	Non-Volatile	1	U_LBG	16 bytes	Battery-backed CMOS RAM	Yes	Password to change BIOS settings	Keyboard	N/A	Place the shunt on J_EN_PASSWD jumper pins 1 and 2.

BIOS SPI Flash	Non-Volatile	1	U_SPI_BIOS1	32 MB	SPI Flash	No	Boot code, system configuration information, UEFI environment, Flash descriptor, ME	SPI interface via PCH	Software write protected	Not possible with any utilities or applications and system is not functional if corrupted or removed.
BIOS Recovery SPI Flash	Non-Volatile	1	U_REC_SPI_BIOS	16 MB	SPI Flash	No	Boot code, system configuration information, UEFI environment, Flash descriptor, ME	SPI interface via PCH	Software write protected	Not possible with any utilities or applications and system is not functional if corrupted or removed.
iDRAC SPI Flash	Non-Volatile	1	U_UBOOT	4 MB	SPI Flash	No	iDRAC Uboot (bootloader), server management persistent store (i.e. iDRAC MAC Address, iDRAC boot variables), lifecycle log cache, virtual planar FRU and EPPID, rac log, system event log, JobStore, iDRAC Secure boot code.	SPI interface via iDRAC	Embedded iDRAC subsystem firmware actively controls sub area based write protection as needed.	The user cannot clear memory completely. However, user data, lifecycle log and archive, SEL, and fw image repository can be cleared using Delete Configuration and Retire System, which can be accessed through the Lifecycle Controller interface.

BMC EMMC	Non-Volatile	1	U_EMMC1	8 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	The user cannot clear memory completely. However, user data, lifecycle log and archive, SEL, and fw image repository can be cleared using Delete Configuration and Retire System, which can be accessed through the Lifecycle Controller interface.
System CPLD RAM	Non-Volatile	1	U_CPLD1	1 KB	RAM	No	Not utilized	Not utilized	Not accessible	Not accessible
System Memory	Volatile	Up to 8 per CPU	CPU1: DIMMA0/A1 /B0/C0/D0/ D1/E0/F0 CPU2: DIMMG0/G 1/H0/I0/J0/J 1/K0/L0	Up to 32GB per DIMM	DRAM	Yes	System OS RAM	System OS	OS Control	Reboot or power down system
Internal USB Key	Non-Volatile	Up to 1	J_INTER_UB3	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
Trusted Platform Module (TPM, TPM 2.0 only)	Non-Volatile	1	CN6	128 Bytes	EEPROM	Yes	Storage of encryption keys	Using TPM Enabled operating systems	SW write protected	F2 Setup option

CPU	Volatile	1 or 2	J_CPU1 / J_CPU2	Various	Cache + registers	Yes	Processor cache + registers	Various	Various	Power off the system
iDRAC DDR	Volatile	1	U3120	256M Byte	DRAM	No	iDRAC local memory	iDRAC Firmware	NA	Power off the system
iDRAC	Volatile	1	U_IDRAC	64 kbyte + registers	Cache + registers	No	Processor cache + registers	iDRAC Firmware	NA	Power off the system
iDRAC DDC EEPROM	Non-Volatile	1	U68	2kbit	EEPROM	Yes	Display Data Channel	iDRAC Firmware	NA	Power off the system
<b>M640 2x2.5" Backplane</b>										
SEP internal flash	Non-Volatile	1	U1	64K Bytes	Flash	No	FW config data	Pre-programmed before assembly	Not WP	The user cannot clear memory.
SEP internal EEPROM	Non-Volatile	1	U1	2K Bytes	EEPROM	No	FRU	Programmed at ICT during production.	Not WP	The user cannot clear memory.
<b>FC640 2x2.5" Backplane</b>										
SEP internal flash	Non-Volatile	1	U1	64K Bytes	Flash	No	FW config data	Pre-programmed before assembly	Not WP	The user cannot clear memory.
SEP internal EEPROM	Non-Volatile	1	U1	2K Bytes	EEPROM	No	FRU	Programmed at ICT during production.	Not WP	The user cannot clear memory.
<b>H730 PERC</b>										
NVSRAM	Non-volatile	1	U1033	128KB	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer


FRU	Non-volatile	1	U1019	256B	FRU	No	Card manufacturing information	Programmed at ICT during production.	Not WP	Cannot be cleared with existing tools available to the customer
1-Wire EEPROM	Non-volatile	1	U1004	128B	1-Wire EEPROM	No	Holds default controller properties/settings	ROC writes data to this memory	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
SPD	Non-volatile	1	U22	256B	SPD	No	Memory configuration data	Pre-programmed before assembly	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
SBR	Non-volatile	1	U1020	8KB	SBR	No	Bootloader	Pre-programmed before assembly	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
Flash	Non-volatile	1	U1031	16MB	Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/LSI tools	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
ONFI Backup Flash	Non-volatile	1	U1059	4GB	ONFI Backup Flash	No	Holds cache data during power loss	FPGA backs up DDR data to this device in case of a power failure	Not WP. 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	512MB/1GB	SDRAM	No	Cache for HDD I/O	ROC writes to this memory - using it as cache for data IO to HDDs	Not WP. Not visible to Host Processor	Cache can be cleared by powering off the card

**H330 PERC**

NVSRAM	Non-volatile	1	U1033	128KB	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
FRU	Non-volatile	1	U1019	256B	FRU	No	Card manufacturing information	Programmed at ICT during production	Not WP	Cannot be cleared with existing tools available to the customer
1-Wire EEPROM	Non-volatile	1	U1004	128B	1-Wire EEPROM	No	Holds default controller properties/settings	ROC writes data to this memory	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
SBR	Non-volatile	1	U1020	8KB	SBR	No	Bootloader	Pre-programmed before assembly	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
Flash	Non-volatile	1	U3	16MB	Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/LSI tools	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
<b>IDSDM</b>										
SPI Flash	Non-Volatile	1	U_SPI	8Mb	SPI Flash	No	Source code for IDSDM controller	SPI interface via CYUSB3035	Hardware strapping	The user cannot clear memory.
<b>USB MicroAB + rSPI</b>										
SPI Flash	Non-Volatile	1	U1	32Mb	SPI Flash	No	For field maintenance. Have License, Service Tag and system information.	SPI interface via iDRAC	Hardware strapping	The user cannot clear memory.

**Retimer mezzanine card for FC640**

EEPROM	Non-Volatile	1	U2	32Kb	EEPROM	No	Source code for Retimer mezzanine card	Pre-programmed before assembly	Not WP	The user cannot clear memory.
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 **NOTE:** For any information that you may need, direct your questions to your Dell Marketing contact.