



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? |
|-----------------------|--------------------------|----------|----------------------|-----------|-------------------------|---|---|----------------------------------|------------------------------------|---|
| 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 | 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. |

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|-------------------------|--------------|---|----------------|-------|-----------|----|--|-------------------------|--|---|
| 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. |

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|---|--------------|-----------------|--|--------------------------------|-----------------|-----|--|---|-----------------------------|---|
| 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 |

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|-------------------------------|--------------|--------|-----------------|----------------------|-------------------|-----|-----------------------------|---|---------------------------------------|---|
| 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 |
| M640 2x2.5" Backplane | | | | | | | | | | |
| 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. |
| FC640 2x2.5" Backplane | | | | | | | | | | |
| 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. |
| H730 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 |


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|-------------------|--------------|---|-------------|-----------|-------------------|----|--|---|---------------------------------------|--|
| 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

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|---------------------------|--------------|---|-------|-------|---------------|----|--|---|---------------------------------------|---|
| 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 |
| IDSDM | | | | | | | | | | |
| 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. |
| USB MicroAB + rSPI | | | | | | | | | | |
| 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

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|--------|--------------|---|----|------|--------|----|--|--------------------------------|--------|-------------------------------|
| 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.