Statement of Volatility – Dell PowerEdge R730 and R730XD

Dell PowerEdge R730 and R730XD contains both volatile and non-volatile (NV) components. Volatile components lose their data immediately upon 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 NV components are present in the PowerEdge R730 and R730XD servers.

Item	Non-Volatile or Volatile	Quantity	Reference Designator	Size
Planar				
PCH Internal CMOS RAM	Non-Volatile	1	U_PCH	256 Bytes
BIOS Password	Non-Volatile	1	U_PCH	16 bytes
BIOS SPI Flash	Non-Volatile	1	U_SPI_BIOS	16 MB
iDRAC SPI Flash	Non-Volatile	1	U_IDRAC_SPI	4 MB
BMC EMMC	Non-Volatile	1	U_EMMC	4 GB
CPU Vcore Regulators	Non-Volatile	2	U8003, U8043	512 Bytes
Vmem Regulators	Non-Volatile	2	U8011, U8051	512 Bytes
System CPLD RAM	Volatile	1	U_CPLD	1 KB
System Memory	Volatile	Up to 12 per CPU	CPU<2:1>_CH<3:0>_ D<2:0>	Up to 64GB per DIMM
Internal USB Key	Non-Volatile	Up to 1	N/A	Varies (not factory installed)
CPU	Volatile	1 or 2	CPU1 / CPU2	Various
iDRAC DDR	Volatile	1	U_IDRAC_MEM	256MByte
iDRAC	Volatile	1	U_IDRAC	64 kbyte + registers
2x2.5" Backplane				
SEP internal flash	Non-Volatile	1	U_SEP	Flash:32KB+4KB EEPROM: 2KB
Backplane External FRU	Non-Volatile	1	U_BP_EEPROM	256 Bytes
4x3.5" Backplane				

SEP internal flash	Non-Volatile	1	U_SEP	Flash:32KB+4KB EEPROM: 2KB
Backplane External FRU	Non-Volatile	1	U_BP_EEPROM	256 Bytes
24x2.5" EXP/Backplane				
NVSRAM memory	Non-Volatile	1	U_NVSRAM	1 Mb
Flash memory	Non-Volatile	1	U_FLASH	128 Mb
Expander FRU image	Non-Volatile	1	U_EXP_EEPROM	512 Bytes
BP FRU image	Non-Volatile	1	U_BP_EEPROM	256 Bytes
16x2.5" EXP/Backplane				
NVSRAM memory	Non-Volatile	1	U_NVSRAM	1 Mb
Flash memory	Non-Volatile	1	U_FLASH	128 Mb
Expander FRU image	Non-Volatile	1	U_EXP_EEPROM	512 Bytes
BP FRU image	Non-Volatile	1	U_BP_EEPROM	256 Bytes
8x2.5" Backplane				
SEP internal flash	Non-Volatile	1	U_SEP	Flash:32KB+4KB EEPROM: 2KB
8x3.5" Backplane				
SEP internal flash	Non-Volatile	1	U_SEP	Flash:32KB+4KB EEPROM: 2KB
Backplane External FRU	Non-Volatile	1	U_BP_EEPROM	256 Bytes
12x3.5" EXP/Backplane				
NVSRAM memory	Non-Volatile	1	U_NVSRAM	1 Mb
Flash memory	Non-Volatile	1	U_FLASH	128 Mb
BP FRU image	Non-Volatile	1	U_BP_FRU	256 Bytes
Expander FRU image	Non-Volatile	1	U_EXP_FRU	512 Bytes
18x1.8" Exp/Backplane				
NVSRAM memory	Non-Volatile	1	U_NVSRAM	1 Mb
Flash memory	Non-Volatile	1	U_FLASH	128 Mb
BP FRU image	Non-Volatile	1	U_BP_EEPROM	256 Bytes
Expander FRU image	Non-Volatile	1	U_EXP_EEPROM1	512 Bytes
H730, H830 PERCs				

NVSRAM	Non-volatile	1	U1033	128KB
FRU	Non-volatile	1	U1019	256B
1-Wire EEPROM	Non-volatile	1	U1004	128B
SPD	Non-volatile	1	U22	256B
SBR	Non-volatile	1	U1020	8KB
Flash	Non-volatile	1	U1031	16MB
ONFI Backup Flash	Non-volatile	1	U1059	4GB
SDRAM	Volatile	5	U1043-U1047	512MB/1GB
H330, H330M PERC				
NVSRAM	Non-volatile	1	U1033	128KB
FRU	Non-volatile	1	U1019	256B
1-Wire EEPROM	Non-volatile	1	U1004	128B
SBR	Non-volatile	1	U1020	8KB
Flash	Non-volatile	1	U3	16MB
PCIe SSD Extension Card				
Switch Configuration EEPROM	Non-Volatile	1	U2	256B
IDSDM				
SPI Flash	Non-Volatile	1	U2	8Mb
MCU	Non-Volatile	1	U6	512KB
Left Ear - R730xd				
SPI Flash	Non-Volatile	1	U_SPI_EEPROM	32Mb
Main Control Panel -R730				
SPI Flash	Non-Volatile	1	U_SPI_FLASH	32Mb
TPM				
Trusted Platform Module (TPM)	Non-Volatile	1	U_TPM	128 Bytes
iDRAC Quick Sync				
MCU MSP430	Non-Volatile	1	U_MSP430	128KB

Item	Type (e.g. Flash PROM, EEPROM)	Can user programs or operating system write data to it during normal operation?	Purpose? (e.g. boot code)
Planar			
PCH Internal CMOS RAM	Battery-backed CMOS RAM	No	Real-time clock and BIOS configuration settings
BIOS Password	Battery-backed CMOS RAM	Yes	Password to change BIOS settings
BIOS SPI Flash	SPI Flash	No	Boot code, system configuration information, UEFI environment, Flash descriptor, ME
iDRAC SPI Flash	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,
BMC EMMC	eMMC NAND Flash	No	Operational iDRAC FW, Lifecycle Controller (LC) USC partition, LC service diags, LC OS drivers, USC firmware
CPU Vcore Regulators	ROM	No	Operational parameters
Vmem Regulators	ROM	No	Operational parameters
System CPLD RAM	RAM	No	Not utilized
System Memory	DRAM	Yes	System OS RAM
Internal USB Key	Flash	Yes	General purpose USB key drive
CPU	Cache + registers	Yes	Processor cache + registers
iDRAC DDR	DRAM	No	iDRAC local memory
iDRAC	Cache + registers	No	Processor cache + registers
2x2.5" Backplane			

SEP internal flash	Integrated Flash+EEPROM	No	Firmware + FRU
Backplane External FRU	I2C EEPROM	No	FRU
4x3.5" Backplane			
SEP internal flash	Integrated Flash+EEPROM	No	Firmware + FRU
Backplane External FRU	I2C EEPROM	No	FRU
24x2.5" EXP/Backplane			
NVSRAM memory	Flash	No	FW config data
Flash memory	Flash	No	Firmware
Expander FRU image	I2C EEPROM	No	FRU
BP FRU image	I2C EEPROM	No	FRU
16x2.5" EXP/Backplane			
NVSRAM memory	Flash	No	FW config data
Flash memory	Flash	No	Firmware
Expander FRU image	I2C EEPROM	No	FRU
BP FRU image	I2C EEPROM	No	FRU
8x2.5" Backplane			
SEP internal flash	Integrated Flash+EEPROM	No	Firmware + FRU
8x3.5" Backplane			
SEP internal flash	Integrated Flash+EEPROM	No	Firmware + FRU
Backplane External FRU	I2C EEPROM	No	FRU
12x3.5" EXP/Backplane			
NVSRAM memory	Flash	No	FW config data
Flash memory	Flash	No	Firmware
BP FRU image	I2C EEPROM	No	FRU
Expander FRU image	I2C EEPROM	No	FRU

18x1.8" Exp/Backplane			
NVSRAM memory	Flash	No	FW config data
Flash memory	Flash	No	Firmware
BP FRU image	I2C EEPROM	No	FRU
Expander FRU image	I2C EEPROM	No	FRU
H730, H830 PERCs			
NVSRAM	NVSRAM	No	Configuration data
FRU	FRU	No	Card manufacturing information
1-Wire EEPROM	1-Wire EEPROM	No	Holds default controller properties/settings
SPD	SPD	No	Memory configuration data
SBR	SBR	No	Bootloader
Flash	Flash	No	Card firmware
ONFI Backup Flash	ONFI Backup Flash	No	Holds cache data during power loss
SDRAM	SDRAM	No	Cache for HDD I/O
H330, H330M PERC			
NVSRAM	NVSRAM	No	Configuration data
FRU	FRU	No	Card manufacturing information
1-Wire EEPROM	1-Wire EEPROM	No	Holds default controller properties/settings
SBR	SBR	No	Bootloader
Flash	Flash	No	Card firmware
PCIe SSD Extension Card			
Switch Configuration EEPROM	SPI Flash EEPROM	No (requires specialized SW)	Configuration for PLX PCIe switch, setting registers
IDSDM			
SPI Flash	SPI Flash	No	Exclusively used by the controller

MCU	Embedded Flash	Yes	Firmware
Left Ear - R730xd			
SPI Flash	SPI Flash	No	For field maintenance. Have License, Service Tag and system information.
Main Control Panel - R730			
SPI Flash	SPI Flash	No	For field maintenance. Have License, Service Tag and system information.
TPM			
Trusted Platform Module (TPM)	EEPROM	Yes	Storage of encryption keys
iDRAC Quick Sync			
MCU MSP430	Flash	No	iDRAC Quick Sync Communicate Protocol

Item	How is data input to this memory?	How is this memory write protected?	How is the memory cleared?
Planar			
PCH Internal CMOS RAM	BIOS	N/A – BIOS only control	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	Keyboard	N/A	Place shunt on J_PSWD_NVRAM jumper pins 2 and 4.
BIOS SPI Flash	SPI interface via iDRAC	Software write protected	Not possible with any utilities or applications and system is not functional if corrupted/removed.
iDRAC SPI Flash	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	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
CPU Vcore Regulators		NA	Not user clearable
Vmem Regulators		NA	Not user clearable
System CPLD RAM	Not utilized	Not accessible	Not accessible
System Memory	System OS	OS Control	Reboot or power down system
Internal USB Key	USB interface via PCH. Accessed via system OS	No write protect	Can be cleared in system OS
CPU	Various	Various	Power off
iDRAC DDR	iDRAC Firmware	NA	Power off
iDRAC	iDRAC Firmware	NA	Power off

2x2.5" Backplane			
SEP internal flash	I2C interface via iDRAC	Program write protect bit	Not user clearable
Backplane External FRU	Programmed at ICT during production.	Not WP	Cannot be cleared with existing tools available to the customer
4x3.5" Backplane			
SEP internal flash	I2C interface via iDRAC	Program write protect bit	Not user clearable
Backplane External FRU	Programmed at ICT during production.	Not WP	Cannot be cleared with existing tools available to the customer
24x2.5" EXP/Backplane			
NVSRAM memory	Common Flash memory Interface (CFI)	Hardware strapping	Not user clearable
Flash memory	Common Flash memory Interface (CFI)	Hardware strapping	Not user clearable
Expander FRU image	I2C interface via expander	Hardware strapping	Not user clearable
BP FRU image	I2C interface via iDRAC	Hardware strapping	Not user clearable
16x2.5" EXP/Backplane			
NVSRAM memory	Common Flash memory Interface (CFI)	Hardware strapping	Not user clearable
Flash memory	Common Flash memory Interface (CFI)	Hardware strapping	Not user clearable
Expander FRU image	I2C interface via Expander	Hardware strapping	Not user clearable
BP FRU image	I2C interface via iDRAC	Hardware strapping	Not user clearable
8x2.5" Backplane			
SEP internal flash	I2C interface via iDRAC	Program write protect bit	Not user clearable
8x3.5" Backplane			
SEP internal flash	I2C interface via iDRAC	Program write protect bit	Not user clearable
Backplane External FRU	Programmed at ICT during production.	Not WP	Cannot be cleared with existing tools available to the customer

12x3.5" EXP/Backplane			
NVSRAM memory	Common Flash memory Interface (CFI)	Hardware strapping	Not user clearable
Flash memory	Common Flash memory Interface (CFI)	Hardware strapping	Not user clearable
BP FRU image	I2C interface via expander	Hardware strapping	Not user clearable
Expander FRU image	I2C interface via iDRAC	Hardware strapping	Not user clearable
18x1.8" Exp/Backplane			
NVSRAM memory	Common Flash memory Interface (CFI)	Hardware strapping	Not user clearable
Flash memory	Common Flash memory Interface (CFI)	Hardware strapping	Not user clearable
BP FRU image	I2C interface via expander	Hardware strapping	Not user clearable
Expander FRU image	I2C interface via iDRAC	Hardware strapping	Not user clearable
H730, H830 PERCs			
NVSRAM	ROC writes configuration data to NVSRAM	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
FRU	Programmed at ICT during production.	Not WP	Cannot be cleared with existing tools available to the customer
1-Wire EEPROM	ROC writes data to this memory	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
SPD	Pre-programmed before assembly	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
SBR	Pre-programmed before assembly	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
Flash	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	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	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, H330M PERC			
NVSRAM	ROC writes configuration data to NVSRAM	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
FRU	Programmed at ICT during production	Not WP	Cannot be cleared with existing tools available to the customer
1-Wire EEPROM	ROC writes data to this memory	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
SBR	Pre-programmed before assembly	Not WP. Not visible to Host Processor	Cannot be cleared with existing tools available to the customer
Flash	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
PCIe SSD Extension Card			
Switch Configuration EEPROM	The EEPROM image is pre-loaded at factory before assembly. Once assembled on the card, data can be entered via PLX Device Editor or PLX EEP DOS based tool.	Device can be write protected via hardware pin. Alternatively, device contents can be write protected via WPEN bit in status register.	System is not functional as intended if corrupted/removed.
IDSDM			
SPI Flash	SPI interface via iDRAC	Hardware strapping	Not user clearable
MCU	USB3.0 interface via PCH, FW can be updated via iDRAC which runs on Linux	N/A	Not user clearable
Left Ear - R730xd			
SPI Flash	SPI interface via iDRAC	Hardware strapping	Not user clearable
Main Control Panel - R730			
SPI Flash	SPI interface via iDRAC	Hardware strapping	Not user clearable
TPM			
Trusted Platform Module (TPM)	Using TPM Enabled operating systems	SW write protected	F2 Setup option

iDRAC Quick Sync			
MCU MSP430	I2C interface via iDRAC	Hardware strapping	Not user clearable - It also auto-clears when power is applied.

Power Supplies	
Item	PSU FW
Non-Volatile or Volatile	Non-Volatile
Quantity	1 per PSU
Reference Designator	Varies by PSU Part Number
Size	Up to 2MB which varies by part number
Type (e.g. Flash PROM, EEPROM)	Embedded microcontroller flash
Can user programs or operating system write data to it during normal operation?	No
Purpose? (e.g. boot code)	Power Supply operation, power management data and fault behaviors
How is data input to this memory?	Different vendors have different utilities and tools to load the data to memory. It can also be loaded by Dell Update Package from LC or OS (Windows and Linux)
How is this memory write protected?	Protected by the embedded microcontroller. Special keys are used by special vendor provided utilities to unlock the ROM with various CRC checks during load.
How is the memory cleared?	Not user clearable

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