DELL Technologies

Statement of Volatility – Dell PowerEdge R670/R770

Revision change list:

Revision	Change items	Notes
0613	Initial release includes: HPM, DCSCM, 1U RCP, 2U RCP, LCP KVM, LCP Quick Sync board, 1U/2U Ridge Riser, Cable Riser, 1U FAN, 2U FAN, DB9, RJ45, PUCK, M.2 interposer, FLOP1.8, SDPM 1U BBU, SDPM 2U BBU, SDPM 1U/2U VOSS, 2U 8xE3 Gen5x4 BP, 2U 8x2.5" Uni BP, 2U rear 4xE3.s BP, 2U 24x2.5" SAS4/SATA BP, 2U Expender DC, 1U 8xE3 BP, 1U 8x2.5" uni. BP, 1U 10x2.5" uni. BP, 1U 20xE3 BP	
1011	Add: H965i Front PERC, H965i PERC Adapter, H365i Front PERC, H365i PERC Adapter, H975i Front PERC	

Dell PowerEdge R770 - R670 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 R670/R770 server.

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?
HPM (DPN: 4V5FW)										
CPU Internal CMOS RAM	Volatile	1	U_CPU0/1	128 byte	PIROM	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.
FRU EEPROM	Non-Volatile	1	U5	32 KB	EEPROM	YES	Boot code, system configuration information	I2C	Software writes protected	Not possible with any utilities or applications and system is not functional if corrupted or removed.
RTC IC	Non-Volatile	1	U4	128 Bytes RAM for host CPU and BMC. 16 Bytes	Battery Backup SRAM	No	Remember real-time clock, calendar	Not utilized	Not accessible	RTC_CLR# active Low Input to clear batter backed RAM.

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?
				RAM for BMC only.						
System CPLD RAM	Volatile	1	U76	64 KB	RAM	Yes	Not utilized	Not utilized	Not accessible	Not accessible
System CPLD RAM	Volatile	1	U75	512 KB	RAM	Yes	Not utilized	Not utilized	Not accessible	Not accessible
System Memory: RDIMM	Volatile	16	CPU0: A1 ~ A16	Up to 256GB per DIMM	RAM	Yes	System OS RAM	System OS	OS Control	Reboot or power down system
System Memory: RDIMM	Volatile	16	CPU1: B1 ~ B16	Up to 256GB per DIMM	RAM	Yes	System OS RAM	System OS	OS Control	Reboot or power down system
CPU _VR	Non-Volatile	6	U29,U94, U90,U103 ,U41,U10 6		NVM	Yes	Boot code, system configuration information	I2C	Software writes protected	Not possible with any utilities or applications and system is not functional if corrupted or removed.
CPU_VCCF A	Non-Volatile	2	U109,U91		NVM	Yes	Boot code, system configuration information	I2C	Software writes protected	Not possible with any utilities or applications and system is not

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?
										functional if corrupted or removed.

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?
DC-SCM (DPN: 32K6V)										
BIOS SPI Flash	Non-Volatile	1	U11	64 MB	SPI Flash	No	Boot code, system configuration information, UEFI environment	SPI interface via CPU	Software writes protected	Not possible with any utilities or applications and system is not functional if corrupted or removed.

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?
BIOS Data SPI Flash	Non-Volatile	1	U14	32 MB	SPI Flash	No	32MB Data SPI ROM storage BIOS setting.	SPI interface via CPU	Software writes protected	Not possible with any utilities or applications and the system is not functional if BIOS SPI is corrupted or removed.
iDRAC SPI Flash	Non-Volatile	1	U57	8 MB	SPI Flash	No	iDRAC/OSM Uboot (boot loader), server management persistent store (i.e. iDRAC/OSM boot variables), and virtual planar FRU	SPI interface via iDRAC/OSM	Embedded iDRAC/OSM 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 firmware 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	U3	16 GB	eMMC NAND Flash	No	Operational iDRAC/OSM FW, Lifecycle Controller (LC) USC partition, LC service diags, LC OS drivers, USC	NAND Flash interface via iDRAC/OSM	Embedded FW write protected	The user cannot clear memory completely. However, user data, lifecycle log and archive, SEL, and firmware image repository can be cleared using Delete

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?
							firmware, IDRAC/OSM MAC Address, and EPPID, rac log, System Event Log, lifecycle log cache			Configuration and Retire System, which can be accessed through the Lifecycle Controller interface.
iDRAC/OSM DDR4	Volatile	1	U2	16Gb	RAM	Yes	iDRAC/OSM RAM	iDRAC/OSM firmware	Not write-protected	Remove AC

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?
1U RCP (DPN: J6K77)										

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?
MCU	Non-Volatile	1	U8 (Renesas) U9 (Cypress)	32KB	FLASH	No	Feature Control Firmware	I2C Interface via iDRAC/OSM	HW write protection for boot. No HW WP for APP FW	Not user clearable
EEPROM	Non-Volatile	1	U3	32Mb	SPI Flash	No	SPI flash device to store information about the system Service Tag, system configuration, or iDRAC license	SPI interface via iDRAC/OSM	No, HW disable WP	SPI interface via iDRAC/OSM
2U RCP (DPN: 10WRX)										
MCU	Non-Volatile	1	U8 (Renesas) U9 (Cypress)	32KB	FLASH	No	Feature Control Firmware	I2C Interface via iDRAC/OSM	HW write protection for boot. No HW WP for APP FW	Not user clearable
EEPROM	Non-Volatile	1	U3	32Mb	SPI Flash	No	SPI flash device to store information about the	SPI interface via iDRAC/OSM	No, HW disable WP	SPI interface via iDRAC/OSM

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?
							system Service Tag, system configuration, or iDRAC license			
LCP KVM (DPN: KPCCT)										
MCU	Non-Volatile	1	U10	32KB	FLASH	No	Feature Control Firmware	I2C Interface via iDRAC/OSM	HW write protection for boot. No HW WP for APP FW	Not user clearable
LCP Quick Sync Board (DPN: HN7RG)										
MCU	Non-Volatile	1	U1	2048KB	FLASH	No	Feature Control Firmware	I2C Interface via iDRAC/OSM	HW write protection for boot. No HW WP for APP FW	Not user clearable

Item	Non-Volatile or Volatile	Quantity	Reference Designator	Size	Type (e.g. Flash PROM, EEPROM)	Can user programs or operating	Purpose? (e.g. boot code)	How is data input to this memory?	How is this memory write protected?	How is the memory cleared?

						system write data to it during normal operation?				
1U/ 2U Rigid Riser Gen5 (DPN: 6D40Y)										
EEPROM	Non-Volatile	1	U13	1kb/2kb	I2C Flash	No	FRU ROM	Program via I2C	Software writes protected	Not user clearable
Cable Riser (DPN: 8M8XX)										
EEPROM	Non-Volatile	1	U13	1kb/2kb	I2C Flash	No	FRU ROM	Program via I2C	Software writes protected	Not user clearable

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?
1U Fan (DPN: 124N0)										
MCU	Non-Volatile	1	U1	64KB	FLASH	No	Feature Control Firmware	I2C Interface via iDRAC/OSM	HW write protection for boot.	Not user clearable

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?
									No HW WP for APP FW	
2U Fan (DPN: D3CF1)										
MCU	Non-Volatile	1	U1	64KB	FLASH	No	Feature Control Firmware	I2C Interface via iDRAC/OSM	HW write protection for boot. No HW WP for APP FW	Not user clearable

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?
DB9 (DPN: 27JV8)										
EEPROM	Non-Volatile	1	U3	64Kb	EEPROM	No	FW storage	I2C interface via iDRAC/OSM	Yes, HW enable WP	Not user clearable
RJ45 (DPN: 304C6)										
n/a										
PUCK (DPN: 437MD)										
EEPROM	Non-Volatile	1	U7	2kb	I2C Flash	No	FRU ROM	Program via I2C	Software writes protected	Not user clearable
M.2 Interposer (DPN: FK95R)										
EEPROM	Non-Volatile	1	U2	2kb	I2C Flash	No	FRU ROM	Program via I2C	Software writes protected	Not user clearable
FLOP1.8 (DPN: FK95R)										
fPLD	Non-Volatile	1	U30	64KB	FLASH	No	Feature Control Firmware	I2C Interface via iDRAC/OSM	Software writes protected	Not user clearable
EEPROM	Non-Volatile	1	U41	2kb	I2C Flash	No	FRU ROM	Program via I2C	Yes, HW enable WP	Not user clearable

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?
SDPM 1U BBU Interposer Board (DPN: 763GH)										
EEPROM	Non-Volatile	1	U1	2kb	I2C Flash	No	FRU ROM	Program via I2C	Software writes protected	Not user clearable
SDPM 2U BBU Interposer Board (DPN: 8GW0X)										
EEPROM	Non-Volatile	1	U1	2kb	I2C Flash	No	FRU ROM	Program via I2C	Software writes protected	Not user clearable
SDPM 1U/2U VOSS Board (DPN: FM4HG)										
EEPROM	Non-Volatile	1	U10	2kb	I2C Flash	No	FRU ROM	Program via I2C	Software writes protected	Not user clearable

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?
2U 8x E3 G5x4 (DPN: 345H3)										
EEPROM	Non-Volatile	1	U10	2kb	I2C Flash	No	FRU ROM	Program via I2C	Software writes protected	Not user clearable
SEP internal flash	Non-Volatile	1	U_SEP	Flash: 512KB Code/data SRAM : 416KB (352KB for code; 64KB for data) Battery Powered Storage SRAM : 128B	Integrated Flash + Data SRAM + Battery Powered Storage SRAM	No	Firmware + FRU	I2C interface via OSM	Program write protect bit	The user cannot clear memory.
MCU	Non-volatile	2	U_MCU1, U_MCU2	Flash: 64KB	Integrated Flash + Data SRAM	No	Firmware	I2C interface via ESEP	Program write protect bit	User cannot clear the memory.

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?
				Data SRAM : 4096bytes						
Backplane Internal FRU	Non-Volatile	1	U_SEP	512 Bytes	Integrated Flash + Data SRAM + Battery Powered Storage SRAM	No	FRU	Programmed at ICT during production.	No write protected	The user cannot clear memory.
2U 8x 2.5" Uni (DPN: VV2CW)										
EEPROM	Non-Volatile	1	U10	2kb	I2C Flash	No	FRU ROM	Program via I2C	Software writes protected	Not user clearable
SEP internal flash	Non-Volatile	1	U_SEP	Flash: 512KB Code/data SRAM : 416KB (352KB for code;	Integrated Flash + Data SRAM + Battery Powered Storage SRAM	No	Firmware + FRU	I2C interface via iDRAC	Program write protect bit	The user cannot clear memory.

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?
				64KB for data) Battery Powered Storage SRAM : 128B						
MCU	Non-volatile	2	U_MCU1, U_MCU2	Flash: 64KB Data SRAM: 4096bytes	Integrated Flash + Data SRAM	No	Firmware	I2C interface via ESEP	Program write protect bit	User cannot clear the memory.
Backplane Internal FRU	Non-Volatile	1	U_SEP	512 Bytes	Integrated Flash + Data SRAM + Battery Powered Storage SRAM	No	FRU	Programmed at ICT during production.	No write protected	The user cannot clear memory.
2U rear 4xE3.s (G5x4 NVMe Direct Connect) (DPN: Y527Y)										

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?
Backplane Internal FRU	Non-Volatile	1	U_SEP	512 Bytes	Integrated Flash + Data SRAM + Battery Powered Storage SRAM	No	FRU	Programmed at ICT during production.	No write protected	The user cannot clear memory.
SEP internal flash	Non-Volatile	1	U_SEP	Flash: 512KB Code/data SRAM : 416KB (352KB for code; 64KB for data) Battery Powered Storage SRAM : 128B	Integrated Flash + Data SRAM + Battery Powered Storage SRAM	No	Firmware + FRU	I2C interface via OSM	Program write protect bit	The user cannot clear memory.

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?
MCU	Non-volatile	1	U_MCU1	Flash: 64KB Data SRAM : 4096bytes	Integrated Flash + Data SRAM	No	Firmware	I2C interface via ESEP	Program write protect bit	User cannot clear the memory.
Backplane Internal FRU	Non-Volatile	1	U_SEP	512 Bytes	I2C EEPROM	No	FRU	Programmed at ICT during production.	No write protected	The user cannot clear memory.
FAN MCU	Non-volatile	1	U100	Flash: 64KB Data SRAM : 8KB	Integrated Flash	No	Firmware	I2C interface via ESEP	Program write protect bit	User cannot clear the memory.
Fan MCU FRU	Non-Volatile	1	U100	64 Bytes	Integrated Flash	No	FRU	I2C interface via ESEP	Program write protect bit	User cannot clear the memory.
2U 24x2.5" SAS4/SATA BP (DPN: VRYMM)										
SEP internal flash	Non-Volatile	1	U8_SEP	Flash: 512KB Code/data SRAM :	Integrated Flash + Data SRAM + Battery	No	Firmware + FRU	I2C interface via OSM	Program write protect bit	The user cannot clear memory.

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?
				416KB (352KB for code; 64KB for data) Battery Powered Storage SRAM : 128B	Powered Storage SRAM					
MCU	Non-volatile	3	U_MCU1, U_MCU2, U_MCU3	Flash: 64KB Data SRAM : 4096bytes	Integrated Flash + Data SRAM	No	Firmware	I2C interface via ESEP	Program write protect bit	User cannot clear the memory.
Backplane Internal FRU	Non-Volatile	1	U_SEP	512 Bytes	Integrated Flash + Data SRAM + Battery Powered	No	FRU	Programmed at ICT during production.	No write protected	The user cannot clear memory.

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?
					Storage SRAM					
2U Expander DC (DPN:)										
Expander Fru	Non-Volatile	1	U3	256Kb	EEPROM	No	Expander FRU	Programmed at ICT during production.	No write protected	The user cannot clear memory.
Expander Flash	Non-Volatile	1	U_FLASH1	128Mb	SPI Flash	No	Card firmware	I2C interface via iDRAC	Program write protect bit	The user cannot clear memory.
Expander NVSRAM	Non-Volatile	1	U_NVSRAM 1	128KBX8	NVSRAM	No	Configuration data	I2C interface via iDRAC	Program write protect bit	The user cannot clear memory.

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?
1U 8x E3 G5x4 BP (DPN: M7FPV)										
SEP internal flash	Non-Volatile	1	U_SEP	Flash: 512KB Code/data SRAM:416KB (352KB for code; 64KB for data) Battery Powered Storage SRAM:128B	Integrated Flash +Data SRAM + Battery Powered Storage SRAM	No	Firmware + FRU	I2C interface via OSM	Program write protect bit	The user cannot clear memory.
MCU	Non-volatile	2	U_MCU1, U_MCU2	Flash: 64KB Data SRAM :4096bytes	Integrated Flash + Data SRAM	No	Firmware	I2C interface via ESEP	Program write protect bit	User cannot clear the memory.
Backplane Internal FRU	Non-Volatile	1	U_SEP	512 Bytes	Integrated Flash +Data SRAM +Battery Powered	No	FRU	Programmed at ICT during production.	No write protected	The user cannot clear memory.

					Storage SRAM					
1U 8x Uni BP (DPN: NKPKX)										
SEP internal flash	Non-Volatile	1	U_SEP	Flash: 512KB Code/data SRAM:416KB (352KB for code; 64KB for data) Battery Powered Storage SRAM:128B	Integrated Flash +Data SRAM + Battery Powered Storage SRAM	No	Firmware + FRU	I2C interface via OSM	Program write protect bit	The user cannot clear memory.
MCU	Non-volatile	2	U_MCU1, U_MCU2	Flash: 64KB Data SRAM :4096bytes	Integrated Flash + Data SRAM	No	Firmware	I2C interface via ESEP	Program write protect bit	User cannot clear the memory.
Backplane Internal FRU	Non-Volatile	1	U_SEP	512 Bytes	Integrated Flash +Data SRAM +Battery Powered	No	FRU	Programmed at ICT during production.	No write protected	The user cannot clear memory.

					Storage SRAM					
1U 10x Uni BP (DPN: 3HY1H)										
SEP internal flash	Non-Volatile	1	U_SEP	Flash: 512KB Code/data SRAM:416KB (352KB for code; 64KB for data) Battery Powered Storage SRAM:128B	Integrated Flash +Data SRAM + Battery Powered Storage SRAM	No	Firmware + FRU	I2C interface via iDRAC	Program write protect bit	The user cannot clear memory.
MCU	Non-volatile	3	U_MCU1, U_MCU2, U_MCU3	Flash: 64KB Data SRAM :4096bytes	Integrated Flash + Data SRAM	No	Firmware	I2C interface via ESEP	Program write protect bit	User cannot clear the memory.
Backplane Internal FRU	Non-Volatile	1	U_SEP	512 Bytes	Integrated Flash +Data SRAM +Battery Powered Storage SRAM	No	FRU	Programmed at ICT during production.	No write protected	The user cannot clear memory.
1U 20x E3 BP (DPN: RDDCP)										

SEP internal flash	Non-Volatile	1	U_SEP	Flash: 512KB Code/data SRAM:416KB (352KB for code; 64KB for data) Battery Powered Storage SRAM:128B	Integrated Flash +Data SRAM + Battery Powered Storage SRAM	No	Firmware + FRU	I2C interface via iDRAC	Program write protect bit	The user cannot clear memory.
MCU	Non-volatile	5	U_MCU1, U_MCU2, U_MCU3, U_MCU4, U_MCU5	Flash: 64KB Data SRAM :4096bytes	Integrated Flash + Data SRAM	No	Firmware	I2C interface via ESEP	Program write protect bit	User cannot clear the memory.
Backplane Internal FRU	Non-Volatile	1	U_SEP	512 Bytes	Integrated Flash +Data SRAM +Battery Powered Storage SRAM	No	FRU	Programmed at ICT during production.	No write protected	The user cannot clear memory.

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?
H965i Front DC-MHS PERC (Internal Controller)										
SPI Flash	Non-Volatile	1	U2	256Mb	SPI Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/Broadcom tools	Not write protected. Not visible to Host Processor	User cannot clear the memory.
FRU	Non-volatile	1	U1020	2Kb	EEPROM	No	Card manufacturing information	Programmed at ICT during production.	Not write protected	User cannot clear the memory.
CPLD	Non-volatile	1	U1088	64kb	Flash	No	Power sequencing and Cache Offload	Controller may program data during FW update	Not write protected Not visible to host CPU	User cannot clear this memory
NVSRAM	Non-volatile	1	U1087	1Mb	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	Not write protected Not visible to host CPU	User cannot clear this memory

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?
BMU	Non-Volatile	1	U1126	180KB	Integrated Flash	No	Battery Management control	ROC may program data during FW and during boot	Not write protected	User cannot clear this memory
Battery FRU	Non-Volatile	1	U2	256byte	EEPROM	No	Battery FRU	Battery vendor program MFG data before ship out to ODM.	Not write protected	User cannot clear this memory
SPD	Non-volatile	1	U22	2Kb	temp sensor with integrated SPD EEPROM	No	Memory configuration data	Pre-programmed before assembly	No write protected. Not visible to Host Processor	User cannot clear the memory.
NAND Flash	Non-volatile	1	U1100	512Gb	NAND Flash	No	Cache offload during unexpected power loss	Programmed by ROC during cache offload	No write protected. Not visible to Host Processor	User cannot clear the memory.
SDRAM	Volatile	10	U1077 U1078 U1079 U1080 U1081 U1082 U1083	512Mb x16	SDRAM	No	Cache for HDD I/O	ROC writes to this memory - using it as cache for data IO to HDDs	No write protected. Not visible to Host Processor	Cache can be cleared by powering off the card

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?
			U1084 U1085 U1086							
H965i PERC Adapter										
SPI Flash	Non-Volatile	1	U2	256Mb	SPI Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/LSI tools	Not write protected. Not visible to Host Processor	User cannot clear the memory.
FRU	Non-volatile	1	U1019	2Kb	EEPROM	No	Card manufacturing information	Programmed at ICT during production.	Not write protected	User cannot clear the memory.
CPLD	Non-volatile	1	U1088	64kb	Flash	No	Power sequencing and Cache Offload	Controller may program data during FW update	Not write protected Not visible to host CPU	User cannot clear this memory
BMU	Non-Volatile	1	U1126	180KB	Integrated Flash	No	Battery Management control	ROC may program data during FW and during boot	Not write protected	User cannot clear this memory

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?
Battery FRU	Non-Volatile	1	U2	256byte	EEPROM	No	Battery FRU	Battery vendor program MFG data before ship out to ODM.	Not write protected	User cannot clear this memory
NVSRAM	Non-volatile	1	U1087	1Mb	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	Not write protected Not visible to host CPU	User cannot clear this memory
SPD	Non-volatile	1	U22	2Kb	EEPROM	No	Memory configuration data	Pre-programmed before assembly	No write protected. Not visible to Host Processor	User cannot clear the memory.
NAND Flash	Non-volatile	1	U1100	512Gb	NAND Flash	No	Cache offload during unexpected power loss	Programmed by ROC during cache offload	No write protected. Not visible to Host Processor	User cannot clear the memory.
SDRAM	Volatile	10	U1077 U1078 U1079 U1080 U1081 U1082	512Mb x16	SDRAM	No	Cache for HDD I/O	ROC writes to this memory - using it as cache for data IO to HDDs	No write protected. Not visible to Host Processor	Cache can be cleared by powering off the card

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?
			U1083 U1084 U1085 U1086							
H365i Front DC-MHS (Internal Controller)										
SPI Flash	Non-Volatile	1	U2	256Mb	SPI Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/Broadcom tools	Not write protected. Not visible to Host Processor	User cannot clear the memory.
FRU	Non-volatile	1	U1020	2Kb	EEPROM	No	Card manufacturing information	Programmed at ICT during production.	Not write protected	User cannot clear the memory.
CPLD	Non-volatile	1	U1088	64kb	Flash	No	Power sequencing	Controller may program data during FW update	Not write protected Not visible to host CPU	User cannot clear this memory

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?
NVSRAM	Non-volatile	1	U1087	1Mb	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	Not write protected Not visible to host CPU	User cannot clear this memory
H365i PERC Adapter										
SPI Flash	Non-Volatile	1	U2	256Mb	SPI Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/Broadcom tools	Not write protected. Not visible to Host Processor	User cannot clear the memory.
FRU	Non-volatile	1	U1019	2Kb	EEPROM	No	Card manufacturing information	Programmed at ICT during production.	Not write protected	User cannot clear the memory.
CPLD	Non-volatile	1	U1088	64kb	Flash	No	Power sequencing	Controller may program data during FW update	Not write protected Not visible to host CPU	User cannot clear this memory

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?
NVSRAM	Non-volatile	1	U1087	1Mb	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	Not write protected Not visible to host CPU	User cannot clear this memory
H975i Front DC-SCM PERC (Internal Controller)										
NVSRAM	Non-volatile	1	U1087	1Mb	NVSRAM	No	Configuration data	ROC writes configuration data to NVSRAM	No write protected. Not visible to Host Processor	User cannot clear the memory.
FRU	Non-volatile	1	U1020	2Kb	EEPROM	No	Card manufacturing information	Programmed at ICT during production.	No write protected	User cannot clear the memory.
SPD	Non-volatile	1	U22	2Kb	SPD EEPROM	No	Memory configuration data	Pre-programmed before assembly	No write protected. Not visible to Host Processor	User cannot clear the memory.
SPI Flash	Non-volatile	1	U2	256Mb	SPI Flash	No	Card firmware	Pre-programmed before assembly. Can be updated using Dell/LSI tools	No write protected. Not visible to Host Processor	User cannot clear the memory.

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?
CPLD	Non-volatile	1	U1088	64kb	Flash	No	Power sequencing and Cache Offload	NA	NA	NA
NAND Flash	Non-volatile	1	U1100	512Gb	NAND Flash	No	Holds cache data during power loss	FPGA backs up DDR data to this device in case of a power failure	No write protected. 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	1	U_DRAM1	512Mb x16	SDRAM	No	Cache for HDD I/O	ROC writes to this memory - using it as cache for data IO to HDDs	No write protected. Not visible to Host Processor	Cache can be cleared by powering off the card

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?
MCU	Non-volatile	1	U1142	64KB	flash memory	No	Super Cap management unit.	Offline program before build and ROC can write data into this MCU if there is FW update.	No write protected. Not visible to Host Processor	NA
SCAP FRU	Non-volatile	1	U2	2Kb	EEPROM	No	Super Cap FRU on SCAP module	Programmed at ICT during production.	No write protected. Not visible to Host Processor	NA

BOSS-N1 DC-MHS (Internal Controller)										
SPI Flash	Non-Volatile	1	U7	16MB	SPI Flash	No	BOSS controller (Nevox) FW	Offline programmed by copy machine.	NA	User cannot clear the memory.

FRU	Non-volatile	1	U13	2Kbit	EEPROM	No	BOSS Card information including Power/Thermal/ manufacturing information	Static: offline programmed by copy machine Dynamic: online programmed by ICT	NA	User cannot clear the memory.
S-MCU	Non-volatile	1	U15	32KB	EEPROM	No	FW Security purpose	Offline programmed by copy machine.	NA	User cannot clear the memory.

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

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