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Subject: Statement of Volatility—Dell™ PowerVault ME5084, ME5024, ME5012

Dear Reader:

The Dell™ PowerVault ME5084, ME5024, and ME5012 enclosures contain non-volatile (NV) components. Non-volatile components continue to retain their data even after the power has been removed from the component.

All definitions are per controller, 1 or 2 controllers can be used in each chassis.

The following NV components are present in the Dell PowerVault ME5084, ME5024, ME5012:

SOC With Battery Backup	
Size	256b
Type (e.g. Flash PROM, EEPROM)	Battery-backed SRAM
Can user programs or operating system write data to it during normal operation?	No
Purpose	Used to save Intel processor data.
How is data input to this memory?	When necessary, portions of the FRU SRAM data may be updated by the processor.
How is this memory write protected?	Not write-protected

TPM Device	
Size	Various registers
Type (e.g. Flash PROM, EEPROM)	NVEEPROM
Can user programs or operating system write data to it during normal operation?	No
Purpose	Contains private platform encryption keys that may be created by OEM/client software.
How is data input to this memory?	When necessary, portions of the TPM data may be updated by the processor.
How is this memory write protected?	Not write-protected

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Mid-Plane FRU EEPROMs (2)	
Size	64 Kb (each)
Type (e.g. Flash PROM, EEPROM)	EEPROM
Can user programs or operating system write data to it during normal operation?	No
Purpose	Service Tag and FRU Data Storage.
How is data input to this memory?	When necessary, portions of the FRU EEPROM data may be updated by the expander FW. Service tag information may be updated after mid-plane replacements.
How is this memory write protected?	Not write-protected

RBOD Controllers and Recovery Flash	
Size	128 Mb Storage Controller and Management Controller recovery
Type (e.g. Flash PROM, EEPROM)	SPI flash
Can user programs or operating system write data to it during normal operation?	No
Purpose	Recover controller in case of firmware corruption
How is data input to this memory?	May be updated by a firmware update.
How is this memory write protected?	Not write-protected

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eMMC Flash Storage	
Size	2 x 32 GB
Type (e.g. Flash PROM, EEPROM)	eMMC
Can user programs or operating system write data to it during normal operation?	No
Purpose	Data Storage, cached data.
How is data input to this memory?	<p>The eMMC is contained within the controller unit for the storage of the firmware and backing up the data caches.</p> <p>When a power failure occurs, the cache memory is written into the eMMC. The eMMC holds this information until the power is restored and the system is rebooted, this ensures no data is lost.</p>
How is this memory write protected?	Not write-protected

Power Supply FRU EEPROM	
Size	2 Kb
Type (e.g. Flash PROM, EEPROM)	EEPROM
Can user programs or operating system write data to it during normal operation?	No
Purpose	FRU data storage.
How is data input to this memory?	When necessary, portions of the FRU EEPROM may be updated by the expander FW.
How is this memory write protected?	Not write-protected

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RAID ASIC	
Size	Hard wired
Type (e.g. Flash PROM, EEPROM)	ASIC
Can user programs or operating system write data to it during normal operation?	No
Purpose	Custom RAID acceleration
How is data input to this memory?	None
How is this memory write protected?	Not write-protected

VPD EEPROM	
Size	64 Kb
Type (e.g. Flash PROM, EEPROM)	EEPROM
Can user programs or operating system write data to it during normal operation?	No
Purpose	Contains vital product data, including customer part numbers.
How is data input to this memory?	When necessary, portions of the VPD EEPROM data may be updated by the RAID FW.
How is this memory write protected?	Not write-protected

SAS Expander RAM	
Size	1 Mx16
Type (e.g. Flash PROM, EEPROM)	RAM
Can user programs or operating system write data to it during normal operation?	No
Purpose	Contains scratch data and operating parameters for SAS expander.
How is data input to this memory?	The contents of the RAM are managed by the expander FW.
How is this memory write protected?	Not write-protected

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SC RAM	
Size	1 Gbx8
Type (e.g. Flash PROM, EEPROM)	RAM
Can user programs or operating system write data to it during normal operation?	No
Purpose	Contains scratch data and operating parameters for SC.
How is data input to this memory?	The contents of the RAM are managed by the SC FW.
How is this memory write protected?	Not write-protected

Cache RAM	
Size	1 Gbx16
Type (e.g. Flash PROM, EEPROM)	RAM
Can user programs or operating system write data to it during normal operation?	No
Purpose	Cache memory (user data).
How is data input to this memory?	The contents of the RAM are managed by the RAID FW.
How is this memory write protected?	Not write-protected

SAS Expander NOR Flash	
Size	128 Mb
Type (e.g. Flash PROM, EEPROM)	NOR Flash
Can user programs or operating system write data to it during normal operation?	No
Purpose	Contains SAS expander FW.
How is data input to this memory?	A Firmware Update Package may be run to update the expander FW contained in the flash.
How is this memory write protected?	Not write-protected

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Yak AC SPI Flash	
Size	512 Mb
Type (e.g. Flash PROM, EEPROM)	SPI Flash
Can user programs or operating system write data to it during normal operation?	No
Purpose	Contains Yak AC FW.
How is data input to this memory?	A Firmware Update Package may be run to update the Yak AC FW contained in the flash.
How is this memory write protected?	Not write-protected

Yak MC SPI Flash	
Size	512 Mb
Type (e.g. Flash PROM, EEPROM)	SPI Flash
Can user programs or operating system write data to it during normal operation?	No
Purpose	Contains Yak MC FW.
How is data input to this memory?	A Firmware Update Package may be run to update the Yak MC FW contained in the flash.
How is this memory write protected?	Not write-protected

SAS IOC SPI Flash	
Size	128 Mb
Type (e.g. Flash PROM, EEPROM)	SPI Flash
Can user programs or operating system write data to it during normal operation?	No
Purpose	Contains SAS controller FW.
How is data input to this memory?	A Firmware Update Package may be run to update the SAS controller firmware contained in the flash.
How is this memory write protected?	Not write-protected

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SC Controller logs SPI Flash	
Size	128 Mb
Type (e.g. Flash PROM, EEPROM)	SPI Flash
Can user programs or operating system write data to it during normal operation?	No
Purpose	Contains SC controller logs.
How is data input to this memory?	A Firmware Update Package may be run to update the SAS controller FW contained in the flash.
How is this memory write protected?	Not write-protected

SC Controller Boot Flash	
Size	128 Mb
Type (e.g. Flash PROM, EEPROM)	SPI Flash
Can user programs or operating system write data to it during normal operation?	No
Purpose	Contains SC controller FW.
How is data input to this memory?	A Firmware Update Package may be run to update the SAS controller FW contained in the flash.
How is this memory write protected?	Not write-protected

FTDI SEEPROM	
Size	1 Kb
Type (e.g. Flash PROM, EEPROM)	SEEPROM
Can user programs or operating system write data to it during normal operation?	No
Purpose	EEPROM for the FTDI USB controller.
How is data input to this memory?	Blank on install. FTDI uses for operations.
How is this memory write protected?	Not write-protected

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CPLD	
Size	1 Kb
Type (e.g. Flash PROM, EEPROM)	CPLD
Can user programs or operating system write data to it during normal operation?	No
Purpose	Performs various hardware functions.
How is data input to this memory?	Programmed on install.
How is this memory write protected?	Not write-protected

IO Controller VPD EEPROM	
Size	64 Kb
Type (e.g. Flash PROM, EEPROM)	EEPROM
Can user programs or operating system write data to it during normal operation?	No
Purpose	Holds vital product data, including customer part numbers.
How is data input to this memory?	Programmed on install.
How is this memory write protected?	Not write-protected

IO Controller SPI Flash	
Size	128/256 Mb
Type (e.g. Flash PROM, EEPROM)	SPI Flash
Can user programs or operating system write data to it during normal operation?	No
Purpose	IOC boot flash.
How is data input to this memory?	Programmed on install.
How is this memory write protected?	Not write-protected

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IO Phy Controller Boot Flash	
Size	4 Mb
Type (e.g. Flash PROM, EEPROM)	SPI Flash
Can user programs or operating system write data to it during normal operation?	No
Purpose	IOC phy boot flash.
How is data input to this memory?	Programmed on install.
How is this memory write protected?	Not write-protected

Please direct any questions to your Dell Marketing contact.

Sincerely,

Dell Enterprise Storage Marketing