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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.<br><br>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