



Dell PowerVault Statement of Volatility

Sept 2023

Abstract

This document describes characteristics of the volatile and non-volatile memory components of Dell PowerVault. The information contained within this document is pertinent to system owners that may need to qualify the risk associated with ensuring that all memory within a product has been cleared in compliance with regulatory requirements.

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Executive Summary

To facilitate the most effective and efficient functionality, most information technology systems utilize various forms of data storage. These may include Random Access Memory (RAM), ReadOnly Memory (ROM), flash memory, virtual memory, and magnetic storage devices. Each form of storage maintains unique characteristics that may affect how organizations protect information stored by the system. In particular, storage devices may retain data for a period of time after power ceases to be provided. In order to adequately protect information and make appropriate decisions that support regulatory requirements, it is critical to understand all of the storage components and their memory volatility characteristics. This paper will provide the necessary information for organizations on which to base their decisions about the response to security incidents and regulatory compliance.

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Introduction

The Bonham MD2U12, 2U24 and 4U60s contain 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. The NV components for each system are detailed in the tables below.

Purpose

The purpose of this document is to provide organizations with knowledge about memory volatility within the PowerVault appliance on which security decisions can be made and, where appropriate, remediation steps that can be incorporated into organizational processes.

Scope

This document provides a description of short-term memory storage components and their characteristics including, where appropriate, the method by which memory can be cleared. It is intended to provide product-specific memory volatility and may supplement organization-specific policy, standards, or guidance.

Product Description

The following table displays the model, part numbers, manufacturer and the Corporate Headquarters address for the manufacturer.

PowerVault

Table 1 – Statement of Volatility

Statement of Volatility		
Model	Manufacturer	Address
PowerVault	Dell EMC	Dell Computer Corporation One Dell Way Round Rock, Texas 78682

System Information Memory

Table 3 – System Information Memory

Type (BBRAM, Flash, EEPROM, etc.)	Part Number	Size	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?
EEPROM (U59 of ESM, ESM VPD) Descr: IC, 24C32, I2C EEPROM, 32Kbit, 1.7-5.5V, SO8 2U12/24	G221-10090-01 Vendor: MICROCHIP TECHNOLOGY INC. Vendor P/N: AT24C32D-SSHM-T	32Kbit	Yes	1. Board Info: MFG Date/Time, Board Product Name, Board Serial/Part Number, Board Info Checksum, Eternal Serial Number, etc. 2. Multi Record: Manufacturer/Family/FRU ID, Version/STLA Part Number.	Programmed during factory assembly or possible field update.	Default Not write protected; Cannot be controlled by software
EEPROM (U65 of ESM, ESM VPD) Descr: IC, 24C32, I2C EEPROM, 32Kbit, 1.7-5.5V, SO8 4U60	G221-10090-01 Vendor: MICROCHIP TECHNOLOGY INC. Vendor P/N: AT24C32D-SSHM-T	32Kbit	Yes	1. Board Info: MFG Date/Time, Board Product Name, Board Serial/Part Number, Board Info Checksum, Eternal Serial Number, etc. 2. Multi Record: Manufacturer/Family/FRU ID, Version/STLA Part Number.	Programmed during factory assembly or possible field update.	Default Not write protected; Cannot be controlled by software

Expander Boot Memory

Table 4 – Expander Boot Memory

Type (BBRAM, Flash, EEPROM, etc.)	Part Number	Size	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?
EEPROM (U58 of ESM, ESM VPD) Descr: IC,I2C,EEPROM,6 4K,2.7V,SOIC8 2U12/24	G221-00003-01 Vendor: MICROCHIP TECHNOLOGY INC Vendor P/N: AT24C64BN-10SU-2.7-T	64Kbit	Yes	FFID and SAS seed.	Programmed during factory assembly.	Default Not write protected; Cannot be controlled by software
EEPROM (U66, U67, U68 of ESM) Descr: IC,I2C,EEPROM,6 4K,2.7V,SOIC8 4U60	G221-00003-01 Vendor: MICROCHIP TECHNOLOGY INC Vendor P/N: AT24C64BN-10SU-2.7-T	64Kbit	Yes	FFID and SAS seed.	Programmed during factory assembly.	Default Not write protected; Cannot be controlled by software

SES Boot Memory

Table 5 – SES Boot Memory

Type (BBRAM, Flash, EEPROM, etc.)	Part Number	Size	Can user programs or operating system write data to it during normal operation?	Purpose	How is data input to this memory?	How is this memory write protected?
SPI Flash Memory (U_SES of ESM, SES code in it) Descr: IC,SPI,FLASH,128MBIT,1.8V, SOIC16 2U12/24	G221-10380-01 Vendor: ISSI Vendor P/N: IS25WP128F-RMLE-TR	128Mbit	Yes	Boot Code	Programmed during factory assembly or possible field update	Software Control
SPI Flash Memory (U62, U79, U82 of ESM, SES code in it) Descr: IC,SPI,FLASH,128MBIT,1.8V, SOIC16 4U60	G221-10380-01 Vendor: ISSI Vendor P/N: IS25WP128F-RMLE-TR	128Mbit	Yes	Ses Code	Programmed during factory assembly or possible field update	Software Control

Mid-Plane Information Memory (Only 2U12 and 2U24)

Table 6 – Mid-Plane Information Memory

Type (BBRAM, Flash, EEPROM, etc.)	Part Number	Size	Can user programs or operating system write data to it during normal operation?	Purpose	How is data input to this memory?	How is this memory write protected?
EEPROM (U1 and U2 of MP, MID-PLANE VPD) Descr: IC, 24C32, I2C EEPROM, 32Kbit, 1.7-5.5V, SO8 2U12/24	G221-10090-01 Vendor: MICROCHIP TECHNOLOGY INC Vendor P/N: AT24C32D-SSHM-T	32Kbit	Yes	1. Board Info: MFG Date/Time, Board Product Name, Board Serial/Part Number, Board Info Checksum, Eternal Serial Number, etc. 2. Product Info: Product Manufacturer Name, Product Name, Board Revision, System Service Tag, Asset Tag, Product Info Checksum 3. Multi Record: Manufacturer/Family/FRU ID, Version/STLA Part Number, etc.	Programmed during factory assembly or possible field update	Default Not write protected; Cannot be controlled by software

Drive Board Information Memory (Only 4U60)

Table 7 – Drive Board Information Memory

Type (BBRAM, Flash, EEPROM, etc.)	Part Number	Size	Can user programs or operating system write data to it during normal operation?	Purpose	How is data input to this memory?	How is this memory write protected?
EEPROM (U1, U2 of Drive Board, Drive board VPD) DESCR: IC,I2C,EEPROM,64K,2.7V, SOIC8 4U60	G221-00003-01 Vendor: MICROCHIP TECHNOLOGY INC Vendor P/N: AT24C64BN-10SU-2.7-T	64Kbit	Yes	1. Board Info: MFG Date/Time, Board Product Name, Board Serial/Part Number, Board Info Checksum, Eternal Serial Number, etc. 2. Product Info: Product Manufacturer Name, Product Name, Board Revision, System Service Tag, Asset Tag, Product Info Checksum 3. Multi Record: Manufacturer/Family/FRU ID, Version/STLA Part Number, etc.	Programmed during factory assembly or possible field update.	Default Not write protected; Cannot be controlled by software

Power Supply FRU**Table 8 – Power Supply FRU**

Type [e.g., Flash PROM, EEPROM]:	Part Number	Size	Can user programs or operating system write data to it during normal operation?	Purpose	How is data input to this memory?
EEPROM 2U12	DESCR: IC MEM SMD SO-82K-BIT EEPROM 2.5-5.5V 8P Vendor: STMICROELECTRONICS Vendor P/N: M24C02-WMN6TP	256Byte	Yes	FRU Information	Programmed during factory Assembly
EEPROM (PSU VPD) 2U24	DESCR: IC MEM SMD SO-82K-BIT EEPROM 2.5-5.5V 8P Vendor: STMICROELECTRONICS Vendor P/N: M24C02-WMN6TP	256Byte	Yes	FRU Information	Programmed during factory Assembly
EEPROM 4U60	<u>Main Source</u> DESCR: IC EEPROM 256*8 5mS SOIC-8P SMD, 256 Byte, 2.5V-5.5V. Vendor: STMicroelectronics Vendor P/N: M24C02-WMN6TP <u>2nd Source</u> DESCR: IC EEPROM 256*8 5mS SOIC-8P SMD, 256 Byte, 1.7V-3.6V Vendor: Atmel VENDOR P/N: AT24C02D-SSHM-T	256Byte	Yes	FRU Information	Programmed during factory Assembly

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