Statement of Volatility – Observer Products
GigaStor, GigaFlow, APEX, ObserverONE, Metadata probe

VIAVI
VIAVI Solutions

Observer hardware products contain both non-volatile and volatile components. Non-volatile components continue to retain their data even after power has been removed from the component. Volatile components lose their data immediately upon removal of power from the component. Whether a given volatile component is powered at a moment in time is dependent on the power state of the Observer product and on which supply-voltage that component derives power from.

Industry Acronyms

The following list provides industry acronyms that are used in this document:

AC	Alternating Current
BIOS	Basic Input / Output System
BMC	Board Management Controller
CPLD	Complex Programmable Logic Device
DIMM	Dual In-line Memory Module
DMI	Desktop Management Interface
EEPROM	Electrically Erasable Programmable Read-Only Memory
Flash	Flash Memory
Gb	Gigabit
GbE	Gigabit Ethernet
GB	Gigabyte
HDD	Hard Disk Drive
HW	Hardware
IPMI	Intelligent Platform Management Interface
JBOD	Just a Bunch Of Disks
LoV	Letter of Volatility
MB	Megabyte
NOR Flash	A non-volatile flash memory device with NOR logic-gate memory cell arrangement.
NVRAM	Non-Volatile Random Access Memory
PCH	Platform Controller Hub
PCIe	Peripheral Component Interconnect Express
PHY	Physical Layer
RTC	Real Time Clock
SDRAM	Synchronous Dynamic Random Access Memory
SoV	Statement of Volatility
SSD	Solid-state Disk Drive
TB	Terabyte
VGA	Video Graphics Array
VRM	Voltage Regulation Module
USB	Universal Serial Bus

Components produced by VIAVI contract manufacturers

Volatile Components

Observer products contain volatile components socketed and soldered onto the Motherboard and the installed PCIe cards. Volatile components are also present on the HDDs and SSDs. All disk data is processed through volatile cache memory contained on the disk drive circuit board. The data contained within the volatile components will be cleared when power is removed from the component. The GigaStor power state determines whether a given volatile component will be powered at any moment in time and subsequently whether the volatile component may contain data.

VIAVI Observer products contain the following volatile components:

Volatile Component	User Data	Removable	Procedure to Clear
Capture Card (1Gb/10Gb/40Gb): On-board SDRAM Buffer Memory	Yes	No	Power off product for 5 seconds

Non-Volatile Components

Observer products contain non-volatile components soldered onto the Motherboard and installed PCIe cards. The procedure to clear these non- volatile components require, use of a specific programmer device to erase. The products also contain one or more HDDs with zero or more SSDs that store non-volatile system boot image and user data. The procedure to clear the HDD and SSD components require either removal or use of an appropriate software application to securely erase the disk drives themselves. Any NVRAM contained on the disk drive circuit board is factory programmed by the disk drive manufacturer, does not contain any user data, and is not accessible by the user. Finally, the dual redundant power supply units contain non-volatile components that require a specific programmer device to erase.

VIAVI Observer products contain the following non-volatile components:

Non-Volatile Component	User Data	Removable	Procedure to Clear
Capture Card (1Gb/10Gb/40Gb): On-board SDRAM Buffer Memory	Yes	No	Power off product for 5 seconds

Viavi Solutions, Inc. reserves the right to change the specific amounts of memory and disk size configurations for its different models.

Components sourced from qualified 3rd party suppliers

This section contains detailed Statements and Letters of Volatility from VIAVI's qualified 3rd party suppliers for Observer products.

1. Supermicro
2. Broadcom
3. Alpha Data
4. Western Digital
5. Micron
   a. Note: VIAVI uses the Micron 5300 Self-Encrypting drive (MTFDDAK960TDS-1AW16ABYY) for the Operating System drives. There is not a Statement of Volatility available from Micron for this drive.

Further information regarding these products is available upon request.

Sincerely,

Rusty Rosenberger
Product Line Manager
VIAVI Solution Inc

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SUPER MICRO COMPUTER Inc.
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STATEMENT OF VOLATILITY (SOV)

CUSTOMER	MBX	ISSUE DATE	2/1/2021

PRODUCTS COVERED IN THIS DOCUMENT

SMC PRODUCT NUMBER	CSE-946SE1C-R1K66JBOD / CSE-946SE2C-R1K66JBOD	CUSTOMER PRODUCT NUMBER	N/A

THE FOLLOWING INFORMATION COVERS THE SOV INFORMATION FOR PARTS OF THE ABOVE PRODUCT.

PLEASE REFERENCE THE APPROPRIATE PART NUMBER SECTIONS AS NEEDED.

PART	SMC PART NUMBER	BPN-SAS3-946SEL1/EL2		RESPONSIBLE ENGINEER	THOMPSON TANG
	CUSTOMER PART NUMBER	N/A		SIGNATURE	THOMPSON TANG

TOPICS	Device	Reference	Volatility	User Data	Procedure to Clear
	FLASH MEMORY 32MB	U702	NON-VOLATILE	YES	THROUGH SPECIAL FLASH UTILITY OR USER INTERFACE TO CLEAR
	MCU WITH FLASH MEM 192KB	U3	NON-VOLATILE	No	N/A (NO USER DATA TO CLEAR)
	SERIAL EEPROM 64K BIT	U601	NON-VOLATILE	No	N/A (NO USER DATA TO CLEAR)
	NVSRAM 1M BIT	U701	NON-VOLATILE	No	N/A (NO USER DATA TO CLEAR)

PART	SMC PART NUMBER	CSE-PTJBOD-CB3		RESPONSIBLE ENGINEER	THOMPSON TANG
	CUSTOMER PART NUMBER	N/A		SIGNATURE	THOMPSON TANG

TOPICS	Device	Reference	Volatility	User Data	Procedure to Clear
	FLASH MEMORY 256M BIT IPMI OS AND USER CONFIG DATA	U8	NON-VOLATILE	YES	LOGIN IPMI CONFIGURATION SCREEN, RESTORE CONFIGURATION TO FACTORY DEFAULT BY CLICK TAB "MAINTENANCE -> FACTORY DEFAULT"

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PART	SMC PART NUMBER	PWS-1K66P-1R		RESPONSIBLE ENGINEER	CHUN FUNG
	CUSTOMER PART NUMBER	N/A		SIGNATURE	CHUN FUNG

	Device	Reference	Volatility	User Data	Procedure to Clear
TOPICS	PIC18F46K20T-I	IC741	NON-VOLATILE	NO	USE PROGRAMMER TO ERASE
	M24C02-315E	IC780	NON-VOLATILE	NO	USE PROGRAMMER TO ERASE
	DSPIC33FJ16GS504T-E/PT	IC802	NON-VOLATILE	NO	USE PROGRAMMER TO ERASE

PART	SMC PART NUMBER			RESPONSIBLE ENGINEER	
	CUSTOMER PART NUMBER			SIGNATURE	

	Device	Reference	Volatility	User Data	Procedure to Clear
TOPICS					

SUPER MICRO COMPUTER Inc.
980 Rock Ave, San Jose, CA 95131

STATEMENT OF VOLATILITY (SOV)

CUSTOMER	MBX Systems		ISSUE DATE	01/29/2021

PRODUCTS COVERED IN THIS DOCUMENT

SMC PRODUCT NUMBER	SSG-6049P-E1CR24L	CUSTOMER PRODUCT NUMBER	N/A

THE FOLLOWING INFORMATION COVERS THE SOV INFORMATION FOR PARTS OF THE ABOVE PRODUCT.

PLEASE REFERENCE THE APPROPRIATE PART NUMBER SECTIONS AS NEEDED.

PART	SMC PART NUMBER	MBD-X11DPH-T	RESPONSIBLE ENGINEER	RICK YANG
	CUSTOMER PART NUMBER	N/A	SIGNATURE	N/A

	Device	Reference	Volatility	User Data	Procedure to Clear
TOPICS	PCH	U45	Non-Volatile	YES	Remove AC and Battery for 5 Minutes
	PCH EEPROM	U108	Non-Volatile	NO	Use software and utility to erase
	CPU VRM CONTROLLER	UP1,UO1,UO5,UV 30,UV 3	Non-Volatile	NO	Use software and utility to erase
	MEMORY VRM CONTROLLER	UV2,UV5,U V10,UV14	Non-Volatile	NO	Use software and utility to erase
	BIOS CHIP	UM13	Non-Volatile	NO	Use software and utility to erase
	CPLD CHIP	U62	Non-Volatile	NO	Use Program to erase
	10G LAN EEPROM	UL3	Non-Volatile	NO	Use software and utility to erase
	BMC FIRMWARE	UM7	Non-Volatile	NO	Use software and utility to erase
	BMC RMA	UM6	Volatile	YES	Remove AC power for 2 sec

PART	SMC PART NUMBER	BPN-SAS3-846EL1	RESPONSIBLE ENGINEER	ALAN HO
	CUSTOMER PART NUMBER	N/A	SIGNATURE	N/A
	Device	Reference	Volatility	User Data	Procedure to Clear

TOPICS	CPLD	U4 U51,U52	Flash EEPROM	NO	Through special flash utility or user interface

PART	SMC PART NUMBER		PWS-1K23A-1R	RESPONSIBLE ENGINEER	RICHARD JIANG
	CUSTOMER PART NUMBER		N/A	SIGNATURE	N/A

TOPICS	Device	Reference	Volatility	User Data	Procedure to Clear
	M95080-W	U801	NON-VOLATILE	NO	use programmer to clear
	UCD3020RGZR	U231	NON-VOLATILE	NO	use programmer to clear
	STM32F103R8T6	U802	NON-VOLATILE	NO	use programmer to clear

STATEMENT OF VOLATILITY (SOV)

CUSTOMER		ISSUE DATE	3/10/2019

PRODUCTS COVERED IN THIS DOCUMENT

SMC PRODUCT NUMBER		CUSTOMER PRODUCT NUMBER	

THE FOLLOWING INFORMATION COVERS THE SOV INFORMATION FOR PARTS OF THE ABOVE PRODUCT.

PLEASE REFFERNCE THE APPROPRIATE PART NUMBER SECTIONS AS NEEDED.

PART	SMC PART NUMBER	PWS-1K23A-1R	RESPONSIBLE ENGINEER	Richard Jiang
	CUSTOMER PART NUMBER		SIGNATURE	

	Device	Reference	Volatility	User Data	Procedure to Clear for User Data
TOPICS	UCD3138064RGCR	U601	NON-VOLATILE	NO	USE PROGRAMMER TO CLEAR
	UCD3138RHAR	U10	NON-VOLATILE	NO	USE PROGRAMMER TO CLEAR

PART	SMC PART NUMBER		RESPONSIBLE ENGINEER	
	CUSTOMER PART NUMBER		SIGNATURE	

	Device	Reference	Volatility	User Data	Procedure to Clear for User Data
TOPICS					

PART	SMC PART NUMBER		RESPONSIBLE ENGINEER	

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CUSTOMER		ISSUED DATE	APR 25, 2018	FROM	PAUL CHIANG
PRODUCTS APPLIED TO	X11DDW-NT				

DISTRIBUTION LIST	X	Design Team				
	X	TECHNICAL SERVICE				
	X	DOCUMENT CONTROL				
	X	SOFTWARE DEPARTMENT				

TOPICS

Statement of Volatility

Device	Reference	Volatility	User Data	Procedure to Clear
PCH	U45	Non-Volatile	Yes	Remove AC and Battery for 5 Minutes
PCH EEPROM	U108	Non-Volatile	No	Use software and utility to erase
CPU VRM Controller	UV17,UV18, UV30,UV31	Non-Volatile	No	Use software and utility to erase
Memory VRM Controller	UV2,UV5,UV 10,UV14	Non-Volatile	No	Use software and utility to erase
BIOS Chip	U48	Non-Volatile	No	Use software and utility to erase
CPLD Chip	U62	Non-Volatile	No	Use programmer to erase
10G LAN EEPROM	UL3	Non-Volatile	No	Use software and utility to erase
BMC Firmware	UM7	Non-Volatile	No	Use software and utility to erase
BMC RAM	UM6	Volatile	Yes	Remove AC power for 2 sec

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STATEMENT OF VOLATILITY (SOV)				
CUSTOMER		**ISSUE DATE**		**1/27/2021**
PRODUCTS COVERED IN THIS DOCUMENT				
SMC PRODUCT NUMBER		**CUSTOMER PRODUCT NUMBER**		

THE FOLLOWING INFORMATION COVERS THE SOV INFORMATION FOR PARTS OF THE ABOVE PRODUCT.

PLEASE REFERENCE THE APPROPRIATE PART NUMBER SECTIONS AS NEEDED.

PART	**SMC PART NUMBER**	BPN-SAS3-826A-N4		**RESPONSIBLE ENGINEER**	Andrew Leung
	CUSTOMER PART NUMBER			**SIGNATURE**	

TOPICS	Device	Reference	Volatility	User Data	Procedure to Clear
	LCMXO2-1200HC	U35	NON-VOLATILE	NO	USE PROGRAMMER TO CLEAR

2 Feburary 2021

To Whom It May Concern:

Thank you for requesting a letter of volatility for the Broadcom MegaRAID class of products. We take security very seriously and are glad to share the volatility information of our products.

iMR Product table

Memory Type	Memory Size	Volatile	User Data	Write Protected / Method of Clearing
NVSRAM	256Kb-1Mb	No	No	Write-protected / Firmware Command
FLASH	64Mb-256Mb	No	No	Write-protected / Flash Utility
EEPROM	1Kb -128Kb	No	No	Write-protected / Firmware Command

The above table applies to the following Broadcom MegaRAID Models:

MegaRAID SAS9340-8i   MegaRAID SAS9341-4i   MegaRAID SAS9341-8i
MegaRAID SAS9440-8i   MegaRAID SAS9441-8i   MegaRAID SAS9440-16i

12G MR Product Table

Memory Type	Memory Size	Volatile	User Data	Write Protected / Method of Clearing
DRAM	1GB-8GB	Yes	Yes	Not Write-protected / Power Cycle
NVSRAM	256Kb-1Mb	No	No	Write-protected / Firmware Command
FLASH	64Mb-256Mb	No	No	Write-protected / Flash Utility
Cache Storage FLASH*	4GB-16GB	No	Yes	Write-protected / Firmware Command
EEPROM	1Kb -128Kb	No	No	Write-protected / Firmware Command

Note: MegaRAID CacheVault (CV) Products

The above table applies to the following Broadcom MegaRAID Models:

MegaRAID SAS9361-4i   MegaRAID SAS9361-16i   MegaRAID SAS9380-8e
MegaRAID SAS9361-8i   MegaRAID SAS9361-24i   MegaRAID SAS9380-8i8e
MegaRAID SAS9380-4i4e

Tri-Mode Product Table

Memory Type	Memory Size	Volatile	User Data	Write Protected / Method of Clearing
DRAM	1GB-8GB	Yes	Yes	Not Write-protected / Power Cycle
NVSRAM	256Kb-1Mb	No	No	Write-protected / Firmware Command
FLASH	64Mb-256Mb	No	No	Write-protected / Flash Utility
Cache Storage FLASH*	4GB-16GB	No	Yes	Write-protected / Flash Utility

Note: MegaRAID CacheVault (CV) Products

The above table applies to the following Broadcom MegaRAID Models:

MegaRAID 9365-28i	MegaRAID 9460-16i	MegaRAID 9480-8i8e
MegaRAID 9460-8i	MegaRAID 9560-16i	MegaRAID 9580-8e
MegaRAID 9560-8i	MegaRAID 9465W-16i	MegaRAID 9580-8i8e

Further information in regard to these products is available upon request.

Sincerely,

Richard Laudano
Staff Commodity Engineer
Broadcom Limited
richard.laudano@broadcom.com

Western Digital.

**Letter of Volatility
(Under Normal Use Conditions)**

Ultrastar DC HC310/320

Date: January 28, 2021

Manufacturer: Western Digital

Drive Summary

Memory Type	Volatility	Size	User Accessible	Battery Backup	Purpose	User Data
Flash	Non-volatile	2 X 2MB	No	No	Boot Device	Yes upon EPO (Temporary Only)
RAM	Volatile	256MB	No	No	Hard drive buffer location	Yes (Temporary Only)

All memory is system accessible by the drive FW.

Terms and Definitions

User Accessible
User accessible memory allows users to directly write or modify the contents of the memory during normal operation. It is logically addressable by the user.

System Accessible
System accessible memory does not allow the user to access or modify the memory during normal device operation, however, the memory may be accessed or modified by the device background processes. This is not a deliberate action by the user, but rather is often as a background process, such as improving device operation and de-fragmentation.

Volatile Memory
Volatile memory requires power to maintain the stored information. When power is removed from the memory, its contents are lost.

Non-volatile memory
Non-volatile memory retains its contents when power is removed. This type of memory contains boot code, calibration or configuration information such as power up sequencing and customer data that is to be saved at EPO time.

ALPHA DATA

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Letter Of Volatility

Company	Model Number	Item Description
Alpha-Data	ADM-PCIE-9V3	PCIe Xilinx UltraScale+ FPGA board

Memory

16GB DDR4 SDRAM	Volatile	Short Term Data Storage, User Accessible
256Mb SPI NOR FLASH	Non-Volatile	FPGA configuration, Vital Product Data
2Kb I2C EERPOM	Non-Volatile	MAC ID, user data
XC2C64A CPLD	Non-Volatile	Glue Logic (factory accessible only)
ATXMEGA128A1U uP	Non-Volatile	System monitor, board info (factory accessible only)

Media
No media storage capability

Clearing Procedure
1. Clear user data from accessible flashes (if used)
    a. User bitfiles (FPGA configuration data) can be cleared using the "flash" utility in the Alpha Data SDK, or by using the Xilinx Hardware Manager JTAG tool.
    b. I2C EEPROM requires custom user designed f/w and s/w to access it. If used, the custom s/w will be used for clearing.
2. Remove Power

Vendor Representative Information

Kevin Roth   9V3 Lead Engineer   303-954-8768 x13   kevin.roth@alpha-data.com