

# Dell Vostro 3681

## Statement of Volatility



## Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

# Statement of Volatility

## Vostro 3681 Small Form Factor

The Dell Vostro 3681 Small Form Factor 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. The following volatile and NV components are present on the Dell Vostro 3681 Small Form Factor motherboard:

**Table 1. List of Non-Volatile components on system board**

Description	Reference Designator	Volatility Description	User Accessible for external data	Remedial Action (action necessary to lose data)
Embedded Flash memory in embedded controller Microchip DEC1515H-D0-I/Z2	EC1	256K Bytes Code/Data SRAM(224 KB optimized for code performance, 32 KB optimized for code performance), 64 Bytes Battery Powered Storage SRAM	No	N/A
System BIOS	U2502	Non-volatile memory, 256M bits (32 MB), System BIOS and Video BIOS for basic boot operation, ePSA (on board diagnostics.)	No	N/A
TPM Nuvoton NPCT750JABYX	U9101	16K Bytes non-volatile memory located in the TPM module.	No	N/A
System Memory - DDR4 DIMM memory	Connectors: DIMM1, DIMM2	Volatile memory in OFF state (see state definitions later in text). One or two modules are populated. System memory size depends on DIMM modules and will be between 4 GB to 64 GB.	Yes	Power off system.
System memory SPD EEPROM	On memory DIMMs	Non-volatile EEPROM memory (256 Bytes). One Device present on each DIMM. Stores memory manufacturer data and timing information for correct operation of system memory.	No	N/A
RTC CMOS	RTC	Volatile battery back-backed CMOS memory 256 bytes. Stores CMOS information.	No	Removing the on board Coin Cell battery.

**Table 1. List of Non-Volatile components on system board(continued)**

Description	Reference Designator	Volatility Description	User Accessible for external data	Remedial Action (action necessary to lose data)
Video memory - type - see next column	UMA architecture uses system memory.	Volatile memory in off state. UMA uses main system memory size that is allocated out of main memory.	No	Enter S3-S5 state below.
SD Memory Card	User replaceable	Non-volatile magnetic media, various sizes in GB.	Yes	Low-level format.
M.2 Solid-State Disk	User replaceable	Non-volatile magnetic media, various sizes in GB.	Yes	Low-level format.
Hard drive	User replaceable	Non-volatile magnetic media, various sizes in GB.	Yes	Low-level format.
CD- ROM/RW/ DVD/ DVD+RW/ Diskette Drives	User replaceable	Non-volatile optical/ magnetic media.	Yes	Low level format/erase.

All other components on the motherboard lose data once power is removed from the system. Primary power loss (Unplug the power cable and remove the battery) will destroy all user data on the memory (DDR4, 2666/2933 MHz). Secondary power loss (removing the on board coin cell battery) will destroy system data on the system configuration and time-of-day information.

In addition, to clarify memory volatility and data retention in situations where the system is put in different ACPI power states the following is provided (those ACPI power states are S0, S1, S3, S4, and S5):

- **S0** state is the working state where the dynamic RAM is maintained and is read/write by the processor.
- **S1** state is a low wake-up latency sleeping state. In this state, no system context is lost (CPU or chip set) and hardware maintains all system contexts.
- **S3** is called "suspend to RAM" state or stand-by mode. In this state, the dynamic RAM is maintained. Dell systems can go to S3 if the operating system and the peripherals that are used in the system supports S3 state. Linux and Windows 10 support S3 state.
- **S4** is called "suspend to disk" state or "hibernate" mode. There is no power. In this state, the dynamic RAM is not maintained. If the system has been commanded to enter S4, the operating system writes the system context to a non-volatile storage file and leave appropriate context markers. When the system is coming back to the working state, a restore file from the non-volatile storage can occur. The restore file has to be valid. Dell systems can go to S4 if the operating system and the peripherals support S4 state. Windows 10 support S4 state.
- **S5** is the "soft" off state. There is no power. The operating system does not save any context to wake up the system. No data remains in any component on the system board, that is cache or memory. The system requires a complete boot when awakened. Since S5 is the shut off state, coming out of S5 requires power-on which clears all registers.

The following table shows all the states that are supported by Dell Vostro 3681 Small Form Factor:

**Table 2. List of states supported by Vostro 3681**

Model Number	S0	S1	S3	S4	S5
Dell Vostro 3681 Small Form Factor					