Statement of Volatility – Precision 3581

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

The Precision 3581 contains both volatile and non-volatile components. Volatile components erase their data immediately after power is removed from the component. Non-volatile components continue to retain their data even after power is removed from the component. The following non-volatile components are present on the Precision 3581 system board.

Table 1. List of non-volatile components on the system board

Description	Reference designator	Volatility description	User accessible for external data	Remedial action (action necessary to erase data)
SSD drive(s)	M.2 2280/2230	Non-volatile memory of various sizes on SSD.	Yes	Low-level format
Embedded flash in embedded controller MEC5200	U2401	384 KB code/data SRAM	No	N/A
System BIOS/EC	**vPro:** • U2501 (32 MB) • U2502 (16 MB) • U7901 (up-sell GPU config)	Non-volatile memory, system BIOS, embedded controller and video BIOS for basic boot operation, PSA onboard diagnostics, PXE diagnostics.	No	N/A
Thunderbolt EEPROM	U7103 (1 MB)	Non-volatile memory	No	N/A
System memory SPD EEPROM	On-system memory SODIMM(s) DM1, DM2 present	Non-volatile memory, 1024 bytes for DDR5. Stores memory manufacturer data and timing information for correct operation of system memory.	No	N/A
RTC CMOS	CPU1 (PCH)	Non-volatile memory 256 bytes, stores CMOS information.	No	Remove the onboard coin cell battery
Security controller serial flash memory	U401 (up-sell USH-daughter board)	Non-volatile memory, 128 Mbit (16 MB)	No	N/A
TPM controller	U9101	Non-volatile memory, 43K bits	No	N/A
LCD panel EEDID EEPROM	Part of panel assembly	Non-volatile memory, stores panel manufacturing information, display configuration data	No	N/A
Touch screen embedded flash	N/A	Non-volatile memory	No	N/A

Description	Reference designator	Volatility description	User accessible for external data	Remedial action (action necessary to erase data)
Digital IMVP9.1 controller	PU4601	Non-volatile memory, 13,344 bits (full config size), digital IMVP9.1 controller (OTP space supports up to 4 full configs)	No	N/A
Camera ISP Flash ROM	On-camera module	Non-volatile memory, 4 Mbit	No	N/A

CAUTION: All other components on the system board lose data if power is removed from the system. Primary power loss (unplugging the power cord and removing the battery) destroys all user data on the memory. Secondary power loss (removing the on-board coin-cell battery) destroys system data on the system configuration and time-of-day information.

In addition, these are the different ACPI power states that affect memory volatility and data retention:

- S0 state is the working state where the dynamic RAM is maintained and is read/write by the processor.
- Modern Standby is a standby mode where dynamic RAM is maintained.
- S4 is a “suspend to disk” state or “hibernate” mode, where there is no power. In this state, the dynamic RAM is not maintained. If the system is commanded to enter S4, the OS will write 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 must be valid. Dell computers can go to S4 if the OS and the peripherals support S4 state.
- S5 is a “soft-off” state, where there is no power. The OS does not save any context to wake up the system. No data will remain in any component on the system board, for example, the cache or memory. The system will require a complete boot when awakened. Since S5 is the shut off state, coming out of S5 requires power, which clears all registers.

Table 2. ACPI power states supported by Precision 3581:

Model number	S0	Modern Standby	S4	S5
Precision 3581	Yes	Yes	Yes	Yes