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January 2022

## INTERACTIVE VISUAL OPERATION VIA TCON FOR UEFI NV VARIABLE STORE RECOVERY MANUALLY

HP INC

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### Recommended Citation

INC, HP, "INTERACTIVE VISUAL OPERATION VIA TCON FOR UEFI NV VARIABLE STORE RECOVERY MANUALLY", Technical Disclosure Commons, (January 11, 2022)  
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## ***Interactive Visual Operation via TCON for UEFI NV Variable Store Recovery Manually***

### **Abstract:**

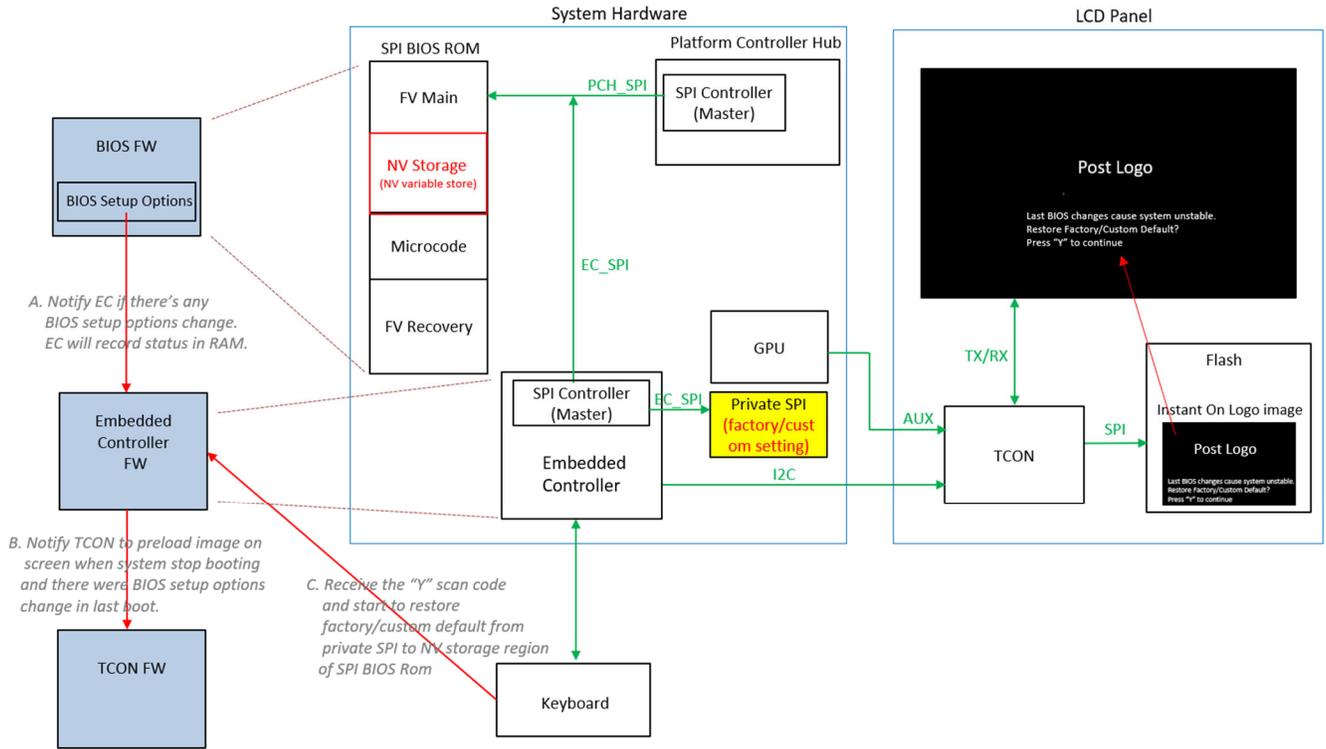
- Each of BIOS setup change is stored in UEFI NV storage via UEFI variable type. Once UEFI NV storage is corrupted, each OEM design its solution to recovery UEFI NV storage from a backup storage.
- In general, if UEFI NV storage is healthy, but encountering code logic or UEFI boot resource conflict problem due to BIOS setup changes, this type of problem should be discovered and fixed during developing cycle.
- However, once there's a complicated combination setup option changes at the same time, it is hard to figure out during development phase.
- Before GPU ready, it is hard to understand what's happening if system stop booting without display.
- The first part of this invention is to display message on screen instead of black screen to help user to realize what's in progress when system stop booting that is caused by BIOS setup changes.
- The second part is to allow user to press "Y" key to restore factory/custom BIOS default from private BIOS Rom to shared BIOS Rom to ensure a normal boot in next restart.
- Through TCON capability on eDP panel, we could provide an interactive visual operation to allow user to restore a healthy UEFI variables in UEFI NV storage manually.

### **Design Construction:**

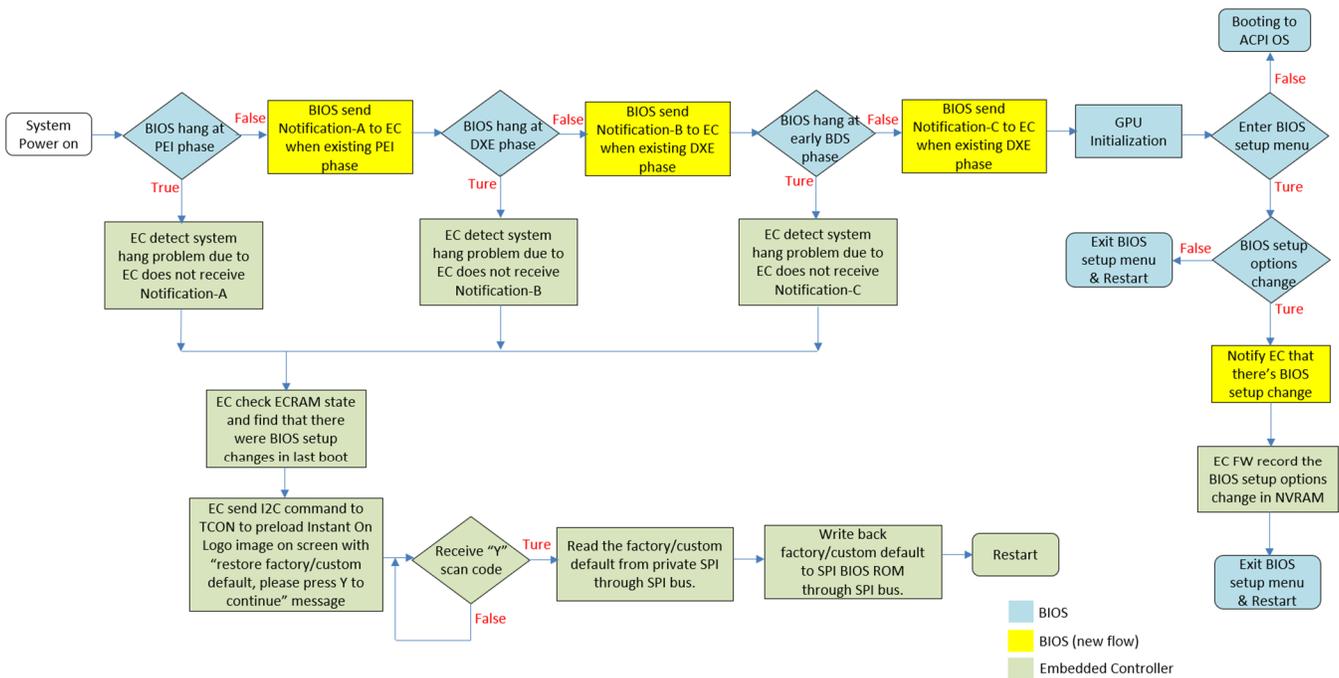
- HW: No HW need.
- SW: No SW need.

- BIOS: Any BIOS setup changes in BIOS setup menu will be recorded by trust End Point Security Controller (EC). Before GPU ready in UEFI boot process, if BIOS stop running at either PEI, DXE or the early of BDS phase, EC will not receive notify ack from BIOS. Due to EC is still running, EC will issue I2C command to TCON FW to preload image on screen if there was a BIOS setup changes. User can press “Y” key to continue restoring factory/custom BIOS default setting to have a normal boot after system restart.

< Block Flow Diagram >



< Flow Chart >



- **Business Strategy/Advantages**

1. No matter UEFI NV variables are healthy or not, if BIOS setup changes cause system boot issues, BIOS/EC can still restore factory/custom BIOS default setting to allow normal boot in next reset.
2. BIOS/EC can notify TCON FW of eDP panel to show message on screen instead of black screen when ready to restore factory/custom BIOS default setting.
3. Through TCON to preload image on screen once system stop booting and has no display output from GPU.
4. Provide a trust BIOS setup environment to ensure a normal boot when there's any BIOS setup changes.
5. User can see information on screen to know what's in progress if system must restore factory/custom BIOS default setting.

*Disclosed by Chia-Cheng Lin, Emily Chen, Jenny Lin, Johnny Lin, HP Inc.*