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SMART MODERN STANDBY ANALYZATION AND RECOVERY

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Smart Modern Standby Analyzation and Recovery

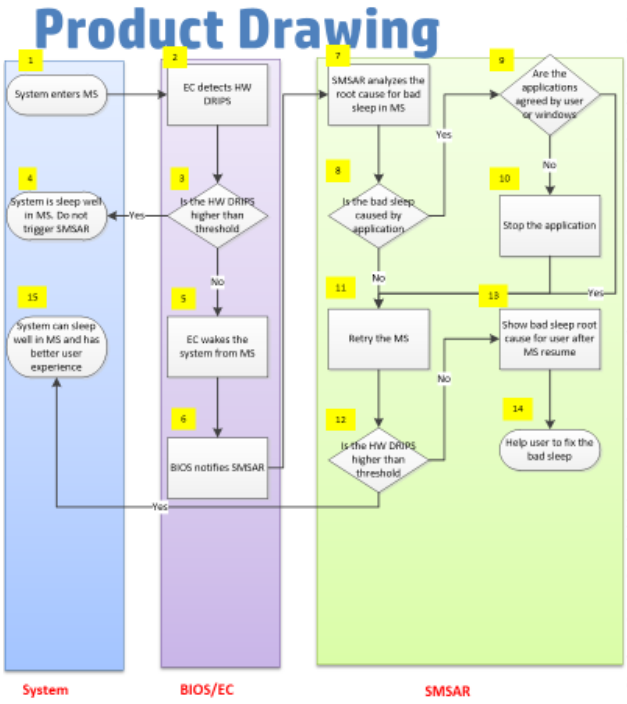
Abstract:

The Modern Standby (MS) is a new standby method from Microsoft. The fan is off in MS. The notebook may not sleep well in MS. The system power is high when the bad sleep happens. User may put the notebook in MS in backpack. The system temperature and power consumption are high when the bad sleep happens in backpack. It is a bad user experience. We provide a method “Smart Modern Standby Analyzation and Recovery” (SMSAR) to analyze the root cause when the bad sleep status happens in MS. It can try to recover the bad sleep in MS by retry after analyzation. It can prevent the high system temperature and consumption in MS if the recovery is success. It can improve user experience.

Design Construction:

- HW: Standard EC controller and SLP_S0 pin from PCH is connected to EC.
- SW: Application for MS analyzation and recovery in OS.
- BIOS/EC: EC can detect the HW DRIPS status by SLP_S0 pin. EC will wake the system from modern standby when HW DRIPS is lower than threshold. BIOS will notify the application for MS analyzation and recovery.

< Flow Chart and Block Flow Diagram >



Step1: System : System enters MS and fan is off in MS.
Step2: BIOS/EC : EC detects HW DRIPS. The SLP_S0 pin from PCH is connected to EC. EC can detect the HW DRIPS status by SLP_S0 pin.
Step3: BIOS/EC : Is the HW DRIPS higher than threshold.
Yes, goto Step4. No, goto step5
Step4: System : System is sleep well in MS. Do not trigger SMSAR.
Step5: BIOS/EC : EC wakes the system from MS.
Step6: BIOS/EC : BIOS notifies SMSAR. SMSAR is an application for MS analyzation and recovery.
Step7: SMSAR : SMSAR analyzes the root cause for bad sleep in MS. For example, SMSAR can use the command "powercfg /sleepstudy" to create the sleep study report and find the root cause for bad sleep from the report. You can see examples in P.7.
Step8: SMSAR : Is the bad sleep caused by application
Yes, goto Step9. No, goto step11
Step9: SMSAR : Are the applications agreed by user or windows. SMSAR will stop/kill the application or task if the application or task is not agreed by user or Windows. You can see examples in P.7.
Yes, goto Step11. No, goto step10
Step10: SMSAR : Stop the application if the application is not agreed by user or Windows.
Step11: SMSAR : Retry the MS. The system can retry MS by ACPI method _CR3.
Step12: SMSAR : Is the HW DRIPS higher than threshold
Yes, goto Step15. No, goto step13
Step13: SMSAR : Show bad sleep root cause for user after MS resume. Let user know the root cause if it can't be recovery by SMSAR.
Step14: SMSAR : Help user to fix the bad sleep. Suggest user to download new driver or hotfix, remove hardware or agree this application in MS if users want this application active in MS. You can see examples in P.7.
Step15: System : System can sleep well in MS and has better user experience

Product Drawing

	Root cause after analyzation by SMSAR	Application (SW) causes this bad sleep	Application is agreed by user or Windows	Recovery action from SMSAR
Bad sleep status 1 in MS	Microsoft Zune Music active	Yes	Yes, user agrees SW to play music in MS	Do nothing due to it is caused by user agree SW
Bad sleep status 2 in MS	Microsoft Windows update active	Yes	Yes, Microsoft agrees SW for windows update in MS	Do nothing due to it is caused by user agree SW
Bad sleep status 3 in MS	Zoom active	Yes	No, user and Microsoft doesn't agree zoom active	1. Stop/kill the task Zoom and do MS retry. 2. Show the root cause for user if the bad sleep can't be recovery after retry and help user to fix this problem. **For example, download new version Zoom or uninstall it.**
Bad sleep status 4 in MS	Nvidia graphic active	No	N/A, it is not caused by SW	1. Do MS retry 2. Show the root cause for user if the bad sleep can't be recovery after retry and help user to fix this problem. **For example, download new driver.**
Bad sleep status 5 in MS	Thunderbolt device active	No	N/A, it is not caused by SW	1. Do MS retry 2. Show the root cause for user if the bad sleep can't be recovery after retry and help user to fix this problem. **For example, remove Thunderbolt device in MS because Thunderbolt device can't support MS well is a known issue and limitation.**

Business Strategy/Advantages

1. The bad sleep may cause by the software or hardware. It is difficult to prevent the bad sleep. The bad sleep will cause the high system temperature in MS. "Smart Modern Standby Analyzer and Recovery" (SMSAR) will analyze the root cause when the bad sleep status happens in MS. It can try to recover the bad sleep in MS by retry after analyzation. It can prevent the high system temperature and consumption in MS if the recovery is success. It can improve user experience.
2. SMSAR also can help user to fix the bad sleep if it is can't be recovery by SMSAR. For example, SMSAR can suggest user to download the new graphic driver if the bad sleep is caused by graphic card. SMSAR can suggest user to download the hotfix from Microsoft if it is Microsoft known issue.
3. No addition hardware design. Just need SLP_S0 from PCH is connected to EC. Only software and firmware efforts. Easy to implement in current system.

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