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TRACKING AND ANALYZING SLEEP PATTERNS FOR IMPROVING PC IDLE AND SLEEP QUALITY

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Tracking and Analyzing Sleep Patterns for Improving PC Idle and Sleep Quality

Abstract: Modern standby sessions of a PC system are automatically tracked and analyzed, and sleep quality issues and solutions are presented to the end user of the system in an easy-to-understand graphical formal

This disclosure relates to the field of computers.

A technique is disclosed that systematically and automatically tracks the historical modern standby (PC idle/sleep) sessions and identifies potential compatibility (sleep quality) problems on the computer system from unexpected patterns that occur during each modern standby session.

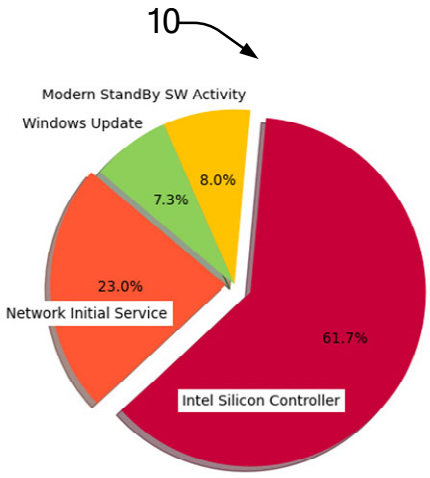
Generally, when a system enters modern standby - that is, when the screen turns off - its software and applications must be made ready to enter the long term, low power sleep state. Typically the power consumption in this state is around 250 mW. However, in some situations the deepest run-time idle platform state ("DRIPS") that occurs when the system is consuming the lowest amount of power possible does not operate correctly. Even worse, several bad sleeping scenarios - such as, for example, random wake - often occur unexpectedly. Other unexpected patterns in system operation can include excess battery drain, overheating in a bag while commuting, sleeping problems at the end of the day, and waking up in the middle of the night, and the like.

Up to now, the analysis of system power reports has been performed on a case-by-case basis by manually analyzing a sleep study (system power) report. However, this report provides only first-level information about each modern standby state session. This information includes the active time, the idle time, and the power consumed. A session starts when the system enters the modern standby state, and ends when it exits this state. In additional, the log size of a sleep study report typically increases with the recording duration.

According to the present disclosure, and as understood with reference to the Figure, historical PC idle/sleep results in the system power report are systematically and automatically tracked and analyzed by a tool in order to identify potential compatibility (sleep quality) problem on the system. The analysis quickly sorts the row-high time period and corresponding problems that are identified in the system power report. The results of the analysis are presented to the end user in an easy-to-understand graphic user interface 10 which uses sleep quality indicators to provide the end user with a sleep quality score for their system, along with recommendations for steps to be taken to resolve or avoid problems such as overheating damage and/or extreme system throttling. For example, if the tool determines that the end user’s system had 3 consecutive sleep quality scores under 80%, it will present a warning and recommendation with the diagnostic report.

The disclosed technique advantageously brings sleep study information to the next level by providing sleep quality indicators in a convenient graphical user interface that informs end users of their system’s sleep quality score and recommended activities to resolve and avoid sleep-related problems.

Disclosed by Klaus Guo and Jerry Chen, HP Inc.

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The Percentage of row-high Data in total:
Total time:  417.55 hr
Row-higher time:  149.85 hr
Percentage:  35.89 %
Sleeping Quality:  64.11 %

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The Percentage of Top Offenders in row-high data:
 6.13 % ------> Maintenance Phase
24.52 % ------> Intel(R) PCIe Controller (x16) - 1901 (\_SB.PCI0.PEG0)
22.22 % ------> BITS Service
 24.9 % ------> Intel(R) PCI Express Root Port #5 - 06BC (\_SB.PCI0.RP05)
 1.53 % ------> DHCP
 5.75 % ------> Image Download Manager
 1.92 % ------> No CS Phase
 2.68 % ------> Intel(R) UHD Graphics (\_SB.PCI0.GFX0)
 0.77 % ------> BI
 2.68 % ------> Standard NVM Express Controller (\_SB.PCI0.RP09.PXSX)
  6.9 % ------> Intel(R) Wi-Fi 6 AX201 160MHz (\_SB.PCI0.CNVW)
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