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DEVICE HEALTH SEAMLESS CHECK BY PCM

HP INC

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Abstract:

During notebook user daily working, user requires to execute specific check utilities to examine their system or device health. Usually, user always was the last one to aware their system or device got something wrong while they encountered “can’t power on” or “can’t recognize SSD” showing up.

System or Device decay is unavoidable while user operates notebook, so it is very important to have alert before system or device really crash, so that user it capable to do some actions (ex. data backup) before notebook can’t work normally. It is annoying thing to do Data Recovery when notebook can’t power on.

Here we would like to offer a solution to remind system or device health readiness by monitor system/device real voltage and current in daily working.

Problem Solved:

To prevent user notebook can’t power on or device crash cases really happen. Offering alert# solution to remind user doing something when notebook(device) still alive. No matter exchange commodity or repair system, even doing Data Recovery.

Prior Solutions:

Required to execute specific check utilities to examine their system or device health from SW perspective, and we offer HW perspective solution to examine system or device.

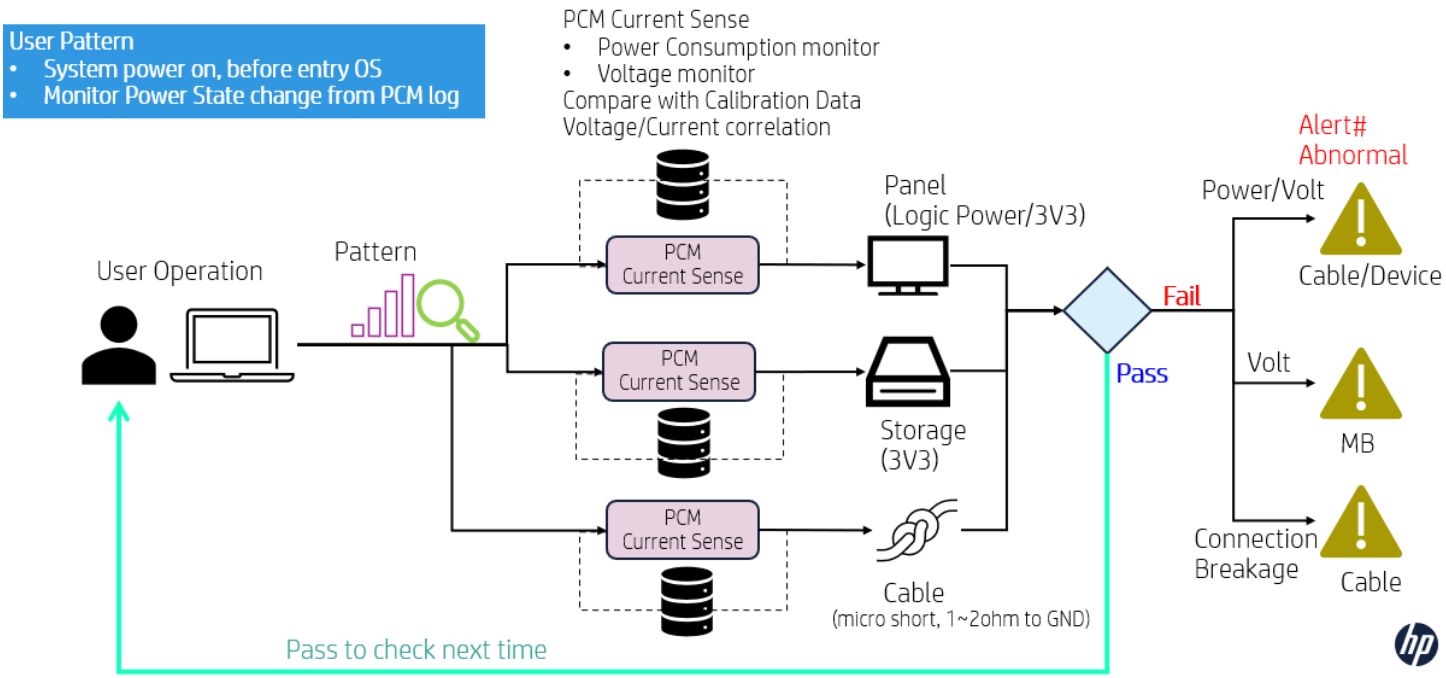
Descriptions:

Here is block diagram for the overall architecture. PCM solution is adding between power source and end device to monitor voltage and current variations. Every abnormal voltage or current to indicate different failure cases.

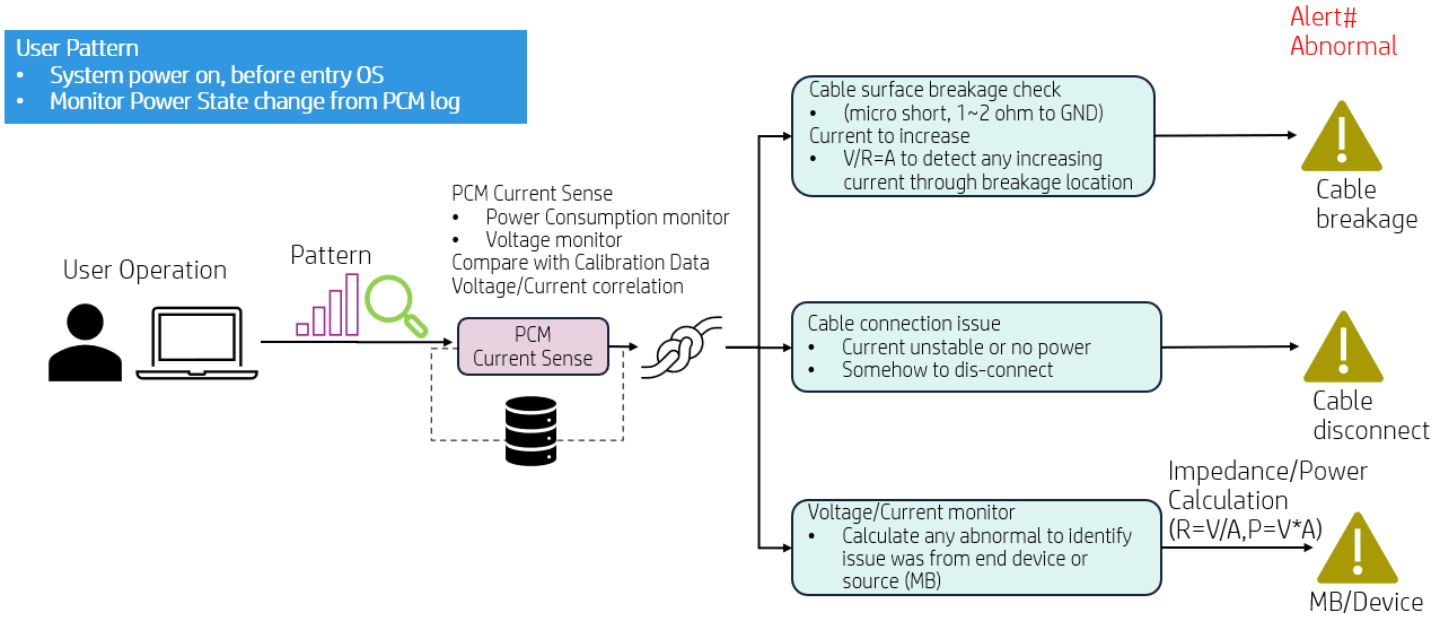
There is also one user pattern to be our check point, the constrain user pattern provides good reference for voltage and current, based on these references, we can compare any variation during user daily work.

In addition, it also can examine cable failures, like as surface breakage, disconnect etc.

Block Diagram - Overall

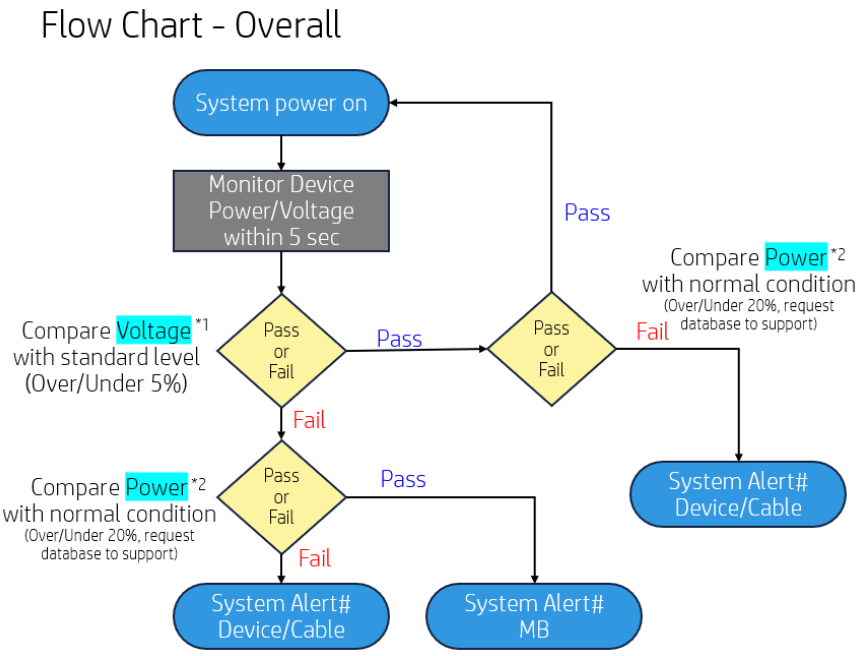


Block Diagram - Cable Decay Detection



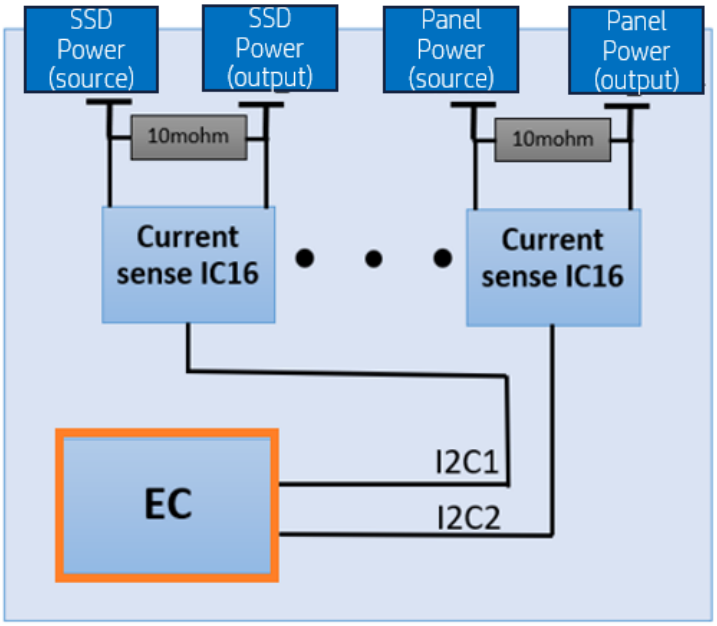
Implementation

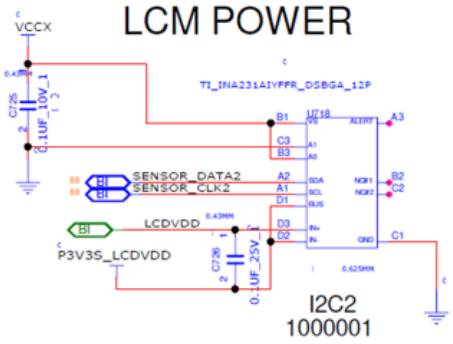
- Flow chart to monitor voltage/current(power) during system power on.
- PCM solution to report voltage/current/power

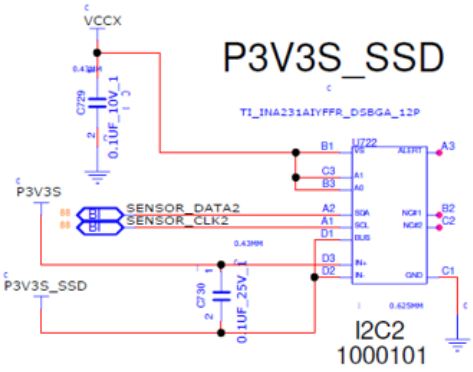


- Every time user power on system can check health automatically and seamless
- The feature was additional value for PCM implemented system
- Calculate Volt/Current to identify any risk for Cable decay or broken.
- *1 Voltage - Every time boot should keep voltage level within system spec
- *2 Power - Every time boot should have similar result due to similar setting

	Voltage Pass	Voltage Fail
Power Pass	Pass to check next time	MB alert#
Power Fail	Device/Cable alert#	Device/Cable alert#







Advantages:

This idea is to prevent user encounter worse case that system can't boot and requires to seek Data Recovery. User is capable to find any way to back up their critical data or exchange new notebook before system crash.

Disclosed by Rick Chen, Justin Wu, Evan Lu and Angus Liao, HP Inc.