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DYNAMIC DISPLAY RESOLUTION IN PRE-OS ENVIRONMENT

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Dynamic Display Resolution In Pre-OS Environment

Problem:

New techniques have advanced the output quality of monitor displays, which continue to improve day by day. Therefore, recent displays have a higher resolution than ever before. It is not only TV or desktop monitors that have a larger and higher-resolution display, but even notebook monitors also support high resolution. In the operating system (OS) environment, there exists an interface for users to change their resolution. It can be fine-tuned to a user's preference. But in a pre-OS environment like a command shell, such an interface does not exist. Therefore, a user will see very small text with a high resolution display which can be difficult to read and provide a bad user experience. With bigger displays, e.g., over 20," having a 4K UHD resolution (3840 x 2160) should be fine, but when the monitor is smaller than, e.g., 15" but still has a 4K UHD output display, the text becomes very small and hard to read.

Objectives:

- Appropriate text size
- Dynamic resolution change
- Comfortable to read

Solution:

Extended Display Identification Data (EDID) is the common standard for all display vendors to provide information related to a specific display. It includes each mode (resolution) that can be supported by that display and also can provide a conversion for the panel size from a column/raw size to other modes in the EDID. Normally, without a specific mode set, the display will switch to a native setting by default. However, native settings are usually the highest resolution the display can support, which can lead to the above problems. Therefore, based on the EDID data and the size of the display, we can fine-tune the display to the best configuration for the user to see before booting into the OS environment.

Below is a table showing example desirable resolutions based on the display size. This table is for reference and can be changed for specific devices or situations.

Resolution	Recommend Panel Size
800x600	$x < 10''$
1024x768	$10'' < x < 12''$
1280x800	$12'' < x < 15''$
1600x900	$15'' < x < 17''$
1920x1200	$17'' < x < 20''$
3840x2160	$20'' < x$

Table 1

Flow Chart – Algorithm

Below is a flow chart for an example algorithm for setting a desirable resolution for a display during a pre-OS environment based on a size of the display.

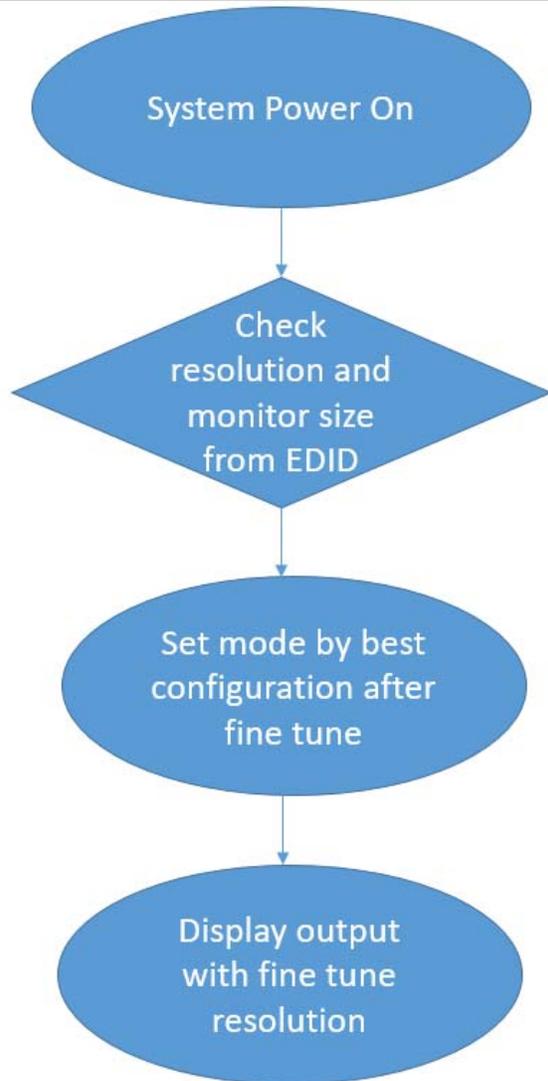


Figure 1

Disclosed by Chia-Cheng Lin, Harry Chang, Matt Lin and Sharon Wei, HP Inc.