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July 2020

DYNAMIC OPTIMIZATION OF BOOT CONNECT SEQUENCE

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Recommended Citation

INC, HP, "DYNAMIC OPTIMIZATION OF BOOT CONNECT SEQUENCE", Technical Disclosure Commons, (July 14, 2020)

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Dynamic Optimization of Boot Connect Sequence

Abstract: The boot control sequence of a BIOS that supports multiple hardware platforms selects a sub-boot control sequence associated with that platform at run-time to boot the system more rapidly.

This disclosure relates to the field of computer boot processing.

A technique is disclosed that dynamically optimizes the BIOS boot control sequence by boot-time selection of a sub-predefined device connect sequence table that is associated with the particular hardware configuration being booted.

The BIOS in a UEFI system has a predefined device connect sequence table that defines how many devices need to connect and initiate before the system boots to the OS. In many cases, the same BIOS is intended to support different types of PCA boards. However, these different PCA boards can have different hardware configurations and can request different device connection and initiation routines. As a result, the conventional predefined device connect sequence table becomes overly complex due to the need to support the different PCA board. The UEFI BIOS will connect a device and initiate the device in the boot device selection (BDS) phase based on the predefined device connect sequence table. This adversely affects boot time as the BIOS attempts to connect and initiate unnecessary devices.

According to the present disclosure, a two-level predefined device connect sequence table is utilized. Different major predefined device connect sequence tables are defined based on the different PCA boards to be supported. Each table includes a different sub-predefined device connect sequence table that is associated with the different hardware configuration, hardware status and boot behavior policy.

A new UEFI BIOS DXE driver identifies the latest boot policy, hardware configuration, hardware status, and board ID, and uses this information to load different predefined device connect sequence tables.

In operation, after the BIOS is powered on, the BDS phase starts to connect and initial the devices. Based on the board (or platform) ID, the corresponding device connect table is selected. Then the hardware configuration and status, and/or the boot policy, associated with that device connect table are utilized to boot the system in accordance with the proper sub-connect table. In this manner, the boot connection sequence is dynamically optimized based on the associated system hardware.

A new OS Application can then set the system to trigger a system boot using that specific predefined device connect sequence table in the next boot.

The disclosed technique advantageously allows a single BIOS that supports booting multiple hardware platforms to boot more rapidly.

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