UEFI Development in HP

Dong Wei
HP UEFI Support Status

- Integrity Business Critical Servers
  - Lead in the use of EDK II/UDK2010
- Printers/Scanners/Copiers/Laserjets
- Notebooks and Tablet PCs
  - HP innovating based on the UEFI technology: e.g., Diag, DayStarter
  - Commercial systems support UEFI boot
- Desktops and Workstations
  - Adopt a common UEFI codebase
  - Collaborate with Commercial Notebooks on HP features that provide enhanced manageability, security and ease of use
- Embedded: e.g., Storage, Network
  - Using UEFI to deliver next generation storage arrays
- UEFI/PI framework has enabled code sharing opportunities among business entities and with partners/vendors.
- HP supports UEFI in x64, ARM and Itanium architectures
  - UEFI provides opportunities of code sharing among systems based on different processor architectures
Mission-Critical Customer Challenges

Financial Services
Every minute of downtime = a minute of lost revenue!

Healthcare
Patient outcomes depend on 24x7 access to data

Manufacturing and Distribution
Production comes to grinding halt

Public Sector, and Communications, Media & Entertainment
Customer retention and fraud detection at risk

No tolerance for downtime
Increasing Service Level Agreements with decreasing budgets
Islands of legacy apps and monolithic systems

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The First Mission-Critical Converged Infrastructure

New Integrity systems optimized for the converged infrastructure

A common, modular architecture that simplifies, consolidates, and automates everything

A mission-critical infrastructure delivering the highest levels of reliability and flexibility
What HP looks for in Firmware

HP Firmware Requirements

• Advanced Features support
  • Path to support network boot over IPv6, etc.
• HP Platform Innovations
  • Platform value-add modules
  • Protect intellectual property
• Improve Execution Excellence
  • Limited engineering resources
  • Faster time to market
• Separate the hardware basic execution away from HP innovations
• Reduced Integration & Validation Time
• Used packaging supplied by Silicon driver modules from Silicon supplier
• Maximize proper code reuse
• Build-once, use by multiple platforms
Integrity† Leads HP EDK II Transition

EDK II Enables HP Platform Innovation and Execution Excellence

<table>
<thead>
<tr>
<th>Single Source Tree</th>
<th>Superior Packages</th>
<th>ECP Works Well</th>
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<tr>
<td>For Superdome 2, Blades and Rack Servers</td>
<td>Ability to reuse Single module/solution owner Global visibility for bug fix</td>
<td>Reuse existing silicon modules, applications</td>
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</table>

Superdome 2
The ultimate mission-critical consolidation platform

Integrity Server Blades

c3000
c7000

BladeSystem Matrix with HP-UX
First Converged Infrastructure platform for shared services, now mission-critical

Integrity 2s Rack Server
8-core scalability in 3x less compute density—without sacrificing RAS

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HP Contributions to EDK II

An Early Adopter

- Provided review/guidance that helped to refine EDK II to the present form
- Provided multiple feedback on simplification
- Recommended the use industry-standard tools instead of proprietary tools
- Provided fixes of build tool bugs
- Identified EDK II issues that arose when enabling compiler optimization with the Intel C compiler.
- Discovered multiple EDK II bugs
  - For example, a subtle design issue with the UEFI network stack that leads to severe performance degradation on large systems

HP Contributions benefited the entire open-source community
UEFI Transition Recommendations

Development Challenge

- Code development required large-scale source tree updates
  - Updates needed on average every 2-3 months
  - Expected in early adoption phase

UDK2010 addresses this challenge through code base maturity, packaging technology, and catching up with the latest specs

Developers Recommendation

- Pay close attention to the specifications/errata
- Parallel versions for different spec versions
- Maintain the infrastructure support and compatibility
  - Keep “deprecated” version of lib/include/PCD
  - Avoid changing build tools/lib/include/PCD
- Proactively communicate when a bug is fixed

OEMs/IBVs Recommendation

- Take advantage of parallel versions if available
  - Get small-scale source updates needed
- Pull in the latest code at least every 2 months
- Use EDK II package solution
  - Create vendor-specific modules
Innovation Example

Subtitle Placeholder
**HP DayStarter: Our Approach to Instant-On User Experience**

Dong Wei, Distinguished Technologist

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**A Better User Experience**

- Customizable information
- Calendar
- To-do List

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**Boot Sequence Improvements**

- A Typical Boot Sequence to Windows†
- The New HP Innovative Boot with DayStarter

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**Extensible Architecture**

- Slot 0
- Slot 1
- Slot 2
- Slot N

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**Innovative Technology**

The main technology behind the HP DayStarter is for UEFI BIOS to locate the proper JPEG image and use the System Management Mode (SMM) to update the frame buffer content until Windows† is ready for system login.

At runtime, the HP DayStarter implements an Microsoft Outlook plug-in to capture the calendar information.

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An HP Platform Innovation enabled by UEFI