PreBoot Provisioning Solutions with UEFI

UEFI Spring Plugfest – May 18-22, 2015
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Agenda

• Introduction
• Building on Top of the UEFI Specification
• Expanding Further
• Call to Action
PreBoot Provisioning Solutions with UEFI

Introduction
Current Challenges for Provisioning

• UEFI systems need to be configured to meet datacenter and corporate policies
• Systems crash in the field and current recovery mechanisms don’t always fit
• As OS and firmware updates come out, they need to be quickly and effectively deployed globally
• Provisioning utilities on a disk are susceptible to corruption and malicious software
Why can't a feature rich provisioning be developed for use in firmware?
Firmware Based Provisioning

• Firmware based provisioning is already included in the flash part
  – External media provisioning still needs factory provisioning
• Firmware has access to information and interfaces that is not available to external applications
• As the root of trust, the firmware is the most secure part of a platform
UEFI 2.5 Makes it Easier

• FMP has been expanded to include support for updating the firmware of any device on a system in a common manner.

• System configuration data has been expanded so configuration data layout can be known outside of the firmware itself.

• HTTP support has been expanded to an entire client stack to allow full network access and even access to the internet.
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Building on Top of the UEFI Specification
Firmware Management Protocol (FMP)

• Capsules can now be code and data!
  – Saving space and boot time for the firmware
• FMP allows external devices to manage the security of their own firmware
• Updating via a capsule is the most secure method available today
FMP Update in Action

FMP Starts Update

Firmware Capsule

Discover and Verify

Capsule Gains Control

Updating Complete!
System Configuration Data

• X-UEFI language has allowed a common mapping of configuration options to a master list

• New mappings allows:
  – Migration of current configuration during firmware updates
  – Current configuration can be migrated to other systems more easily
  – Common look and feel for different systems
  – External agents can modify specific settings through OEM proprietary methods

• OpRom vendors should provide similar mappings
System Configuration Data Migration

Export Configuration

Import Configuration

Verify Configuration

Verified
HTTP Support

- UEFI 2.5 has added a complete client side HTTP stack allowing network access to:
  - Do system firmware updates
  - Check for any needed system configuration changes
  - Download any OS images or updates
- Server for providing images can be located in a datacenter, corporation or by the ODM
  - Throw away the recovery CD and recovery partition!

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HTTP Update BIOS/Configuration/OS

Check for Updates from Server or Web

Server Provides Update
Advanced Networking Support

• For the security conscious, UEFI’s HTTP support can be expanded
• VPNs can be setup through IPSec
• Services like KMS implemented on top of advanced UEFI network interfaces such as HTTP and TLS will provide an implementation that is free from packet snooping
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Building Further
System Diagnostics

- UEFI provides many interfaces to create diagnostics tools

IHVs should be providing the EFI_DRIVER_DIAGNOSTICS2_PROTOCOL to automatically extend platform diagnostics support
System Auto-Recovery

- OS can inform firmware of crash to auto-initiate recovery though EFI_OS_INDICATIONS_START_PLATFORM_RECOVERY bit
System Auto-Provision

- As systems arrive from factory they can auto-provision at the customer site
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Call to Action
Call to Action

• Add-on card vendors and third party HW vendors should provide FMP and diagnostics capabilities

• All firmware that uses system configuration methods should produce x-UEFI mappings

• OEMs should build industry ready solutions for configuration, provisioning, recovery and diagnostics
  – OEMs need to be solution providers!
Thanks for attending the UEFI Spring Plugfest 2015

For more information on the Unified EFI Forum and UEFI Specifications, visit http://www.uefi.org

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