UEFI Community Resources

UEFI Spring Plugfest – May 8-10, 2012
Presented by Brian Richardson,
Intel Corporation
Agenda

• Exploring the UEFI Resources
• Documentation Resources
• Development Resources
• The Intel UEFI Community Resource Center
• Summary / Q&A
Exploring UEFI Resources

- UEFI Has a Robust Developer Community
  - Documentation Resources
  - Development Tools
  - Based on Open Source Projects & Member Company Contributions

- Developers need to check several locations to see all of these resources
Documentation Resources

- uefi.org
  - UEFI Learning Center
  - UEFI & PI Specifications

- tianocore.org
  - Driver Writer’s Guide for UEFI 2.3.1
  - Signing Apps & Drivers for UEFI Secure Boot

- intel.com
  - UEFI Driver Development Guides
Recently added to tinocore.org

Describes UEFI Secure Boot & Driver Signing procedures using open source tools (EDK II)
Development Resources

- uefi.org
  - UEFI Self Certification Test (SCT)

- tianocore.org
  - EDK II & UDK2010
  - UEFI Driver Wizard
  - UEFI Shell 2.0

- intel.com
  - Intel® UDK Debugger Tool
  - UEFI 2.3.1 Developer Platforms
  - UEFI Driver Development Guides
UEFI 2.3.1 Developer Platforms

- Use to debug OS and add-in hardware against the latest UEFI functionality
  - UEFI 2.3.1
  - UDK2010.SR1+
  - UEFI Secure Boot
- Based on Intel production quality hardware with UEFI BIOS images
  - Release, debug & source-level debug versions

Intel DQ57TM

Intel DQ67SW
UEFI Driver Wizard

• Menu-based GUI designed to simplify UEFI Driver Development
  – Uses “IHV” subset of UDK2010
  – Wizard-based template generation

• Open source project contributed to tianocore.org by Intel SSG
  – Python interface, designed for extensibility
  – Intel encourages contribution by developers
UEFI Driver Wizard

Demo
Problem: Finding Resources

- UEFI resources are spread across multiple sites, making it harder for developers to find what they need
- BIOS vendors & software developers need a place to connect outside of the open source communities
The Intel UEFI Community Resource Center

Welcome to Intel UEFI Community Resource Center

Welcome to Intel UEFI Community Resource Center

Technical resources, center of expertise, and gateway to the UEFI ecosystem— for engineers developing firmware with the Intel® Unified Extensible Firmware Interface (UEFI) Development Kit II (Intel® UDK II).

Learn more about UEFI >

Learn.  Training courses and Intel® Developer Forum presentation library »
Communicate.  Forum for discussions with Intel engineers and other developers »
Share.  Upload and download files for sharing with the community »
Develop.  Intel® UDK II technology, software and tools, specs and docs »
Find Solutions.  Get conforming devices, BIOS, and drivers from participating vendors »

Under development for Q2 2012 launch
The Intel UEFI Community Resource Center

Consolidate UEFI resources into a central community
Summary / Q&A

• UEFI Has a Robust Developer Community
  – Documentation Resources
  – Development Resources
  – Based on Open Source Projects & Member Company Contributions

• Intel adds the Intel UEFI Community Resource Center to aid UEFI development
Get More Information

• UEFI Forum Learning Center
  – http://www.uefi.org/learning_center/
• UEFI IHV Resources @ intel.com
  – http://intel.com/go/uefi-ihv
• Use the TianoCore **edk2-devel mailing list** for support from other UEFI developers
• Stay tuned for the launch of the Intel UEFI Community (Q2 2012)
Thanks for attending the UEFI Spring Plugfest 2012

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

Backup Slides
EDK II versus UDK2010

• EDK II is the open source “TianoCore” project
  – Available under BSD license at tianocore.org
• Intel SSG uses this project as the base for a common UEFI implementation within Intel
  – Intel® UEFI Development Kit 2010 (UDK2010)
  – UDK2010 is a stable snapshot of EDK II that has been validated against Intel silicon components
  – Most recent open-source release is UDK2010.SR1
• EDK II rev 12898 is the base for UDK2010.SR1
UEFI Learning Center

- [http://www.uefi.org/learning_center/](http://www.uefi.org/learning_center/)
  - Related journals & whitepapers
  - Presentations from UEFI Plugfests
UEFI Driver Writer’s Guide

• Updated by Intel in Feb 2012
• Expanded to cover UEFI 2.3+ topics
• Designed as a developer reference
  – Organized & indexed by driver function
  – Not a “cover to cover read”
• http://intel.com/go/uefi-ihv

A comprehensive resource for UEFI Driver Developers ...
Driver Development Guides

- Published by Intel in Nov 2011
- Supplements for specific driver classes

Short resources to help developers get started with UEFI drivers ...

Developer Guides and Documentation

- UEFI Driver Development Guide for All Hardware Device Classes >
- UEFI Driver Development Guide for Graphics Controller Device Classes >
- UEFI Driver Development Guide for Network Boot Devices >
- UEFI Driver Development Guide for USB Devices >
- UEFI Driver Development Guide for USB Host Controllers >
Open Source Resources

• Community for core UEFI components in open-source - http://tianocore.org
  – Develop firmware, drivers & applications

• Main TianoCore Projects
  – EDK Development Kit (EDK II)
  – UEFI Development Kit (UDK2010)
  – UEFI Shell
Intel® UDK Debugger Tool

• Software debugger for UEFI & EDK II
  – Connect via COM or USB Debug Port
  – Supports Microsoft Windows (WinDBG) and Linux (gdb) OS environments
  – Target side agent available in the EDK II SourceLevelDebugPkg component

Intel® UDK Debugger Tool

WinDBG

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kernel Debugger connection established.
Debugger data list address is NULL.
Connected to eXDI Device 0 x06 compatible.
Symbol search path is: $symbolPath=http://winpdb.org
Executable search path is:
eXDI Device Kernel Version 0 UF Free x64 c
Machine Name:
Primary Image base - 0x00000000 Loaded mod
System Uptime: not available
Break instruction exception - code 80000000
ffeedab cc int 3
0: kd: .sympth V:\BUILD\OMNFIA32\DEBUG\NY
Symbol search path is: V:\BUILD\OMNFIA32\D
Expanded Symbol search path is: V:\BUILD\OMNFIA32\D
0: kd: .reload /f SCCHAIN=0x0 FFF0E64
0: kd: .g SCCHAIN=PeCoffLoaderRelocateImageExtraAct
ffeede7 0f20f8 mov eax,di7
0: kd: .sympth V:\BUILD\OMNFIA32\DEBUG\NY
Symbol search path is: V:\BUILD\OMNFIA32\D
Expanded Symbol search path is: V:\BUILD\OMNFIA32\D
0: kd: .reload /f SCCHAIN=0x0 FFF0E64
Screenshots from the UEFI Driver Wizard
Screenshots from the UEFI Driver Wizard
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UEFI Driver Model Optional Features

- Component Name 2 Protocol
- Component Name Protocol
- Driver Family Override Protocol
- Driver Diagnostics 2 Protocol
- Driver Diagnostics Protocol
- HII Packages for forms and HII based configuration
- Driver Configuration 2 Protocol
- Driver Configuration Protocol
- Driver Health Protocol
- Bus Specific Driver Override Protocol

RFC 4646 Language Codes
- en

ISO 639-2 Language Codes
- eng

UEFI Driver Consumed Protocol

- PCI Driver that consumes the PCI I/O Protocol
- USB Driver that consumes the USB I/O Protocol
- SCSI Driver that consumes the SCSI I/O Protocol
- ATA Driver that consumes the ATA Pass Thru Protocol

UEFI Driver Produced Protocols

- Keyboard producing Simple Text In Protocol
- Keyboard producing Simple Text In Ex Protocol
- Mouse producing Simple Pointer Protocol
- Tablet producing Absolute Pointer Protocol
- Text Console producing the Simple Text Output Protocol
- Byte stream device (i.e. UART) producing Serial I/O Protocol
- Graphics Console producing the Graphics Output Protocol
- Mass Storage Device producing block I/O Protocol
- Mass Storage Device producing block I/O 2 Protocol
- Mass Storage Device producing Storage Security Command Protocol
- Network Interface Card producing NII/UNCI
- Network Interface Card producing Simple Network Protocol
- USB Host Controller producing the USB Host Controller 2 Protocol
- ATA Host Controller producing the ATA Pass Thru Protocol
- SCSI Host Controller producing the SCSI Pass Thru Protocol
- SCSI Host Controller or ATA Host Controller producing the Extended SCSI Pass Thru Protocol
- User identification device producing the User Credential Protocol
- Non standard boot device producing Load File Protocol
- Platform driver producing the EDID Override Protocol
Screenshots from the UEFI Driver Wizard