

Case study: Coreboot Development

Feature implementation

- Coreboot BIOS Development for AMD Gen4 CPU

Development/Porting of different firmware

- Review Board schematics to create coreboot mainboard change requirements – customer board
- Deliver FSP(firmware support package – silicon binary) binary for PHX2 using AMD BIOS reference code
- Platform porting, ex. GPIO,IRQ, Board support etc.
- Board power-on issue debug and Workarounds.
- Booted to Ubuntu 22.4 using EDKII Payload

Debugging & Triaging of issues on

- Debug and root cause issues reported by validation team

Challenges faced

- NVME not detected
- Support for secondary payload and boot Windows/Linux

Tools Experience

- Git, Source Level Debugger, Lauterbach

Case Study: Ubuntu Automotive on AMD Raven Platform



The Program Summary

• Program	• Ubuntu Automotive Stack
• SKUs	• APU – V2000 (Celadon/ Majolica / Crater boards) • dGPU – Navi23
• OS	• Ubuntu
• Customers	• ECARX
• Markets Launched	• Gaming console powered by Navi23 and total cockpit solution driven by Ubuntu on APU



Key Value Adds Delivered

- Customer requirement understanding and help In phase wise release of the deliverables
- Key features like Virtualization using xen hypervisor on APU that drives the complete system.
- Display, Multimedia,OpenGL and Vulkan features both on APU and dGPU ,on baremetal as well as Virtualized environment.
- Boot time optimization of the system
- Debug, analysis and fixing the priority issues



TechM Contribution

- Involved in customer requirement analysis ,enablement and release
- System bring up with APU(v2000) + dGPU(Navi23) on Ubuntu and enabled all the required display, multi media, openGL and Vulkan features
- Enabled Type 1 hypervisor – Xen, which drives the complete system
- Creation of guest VMs both in Fully Virtual mode and Para virtualized mode
- Enabled VirGL for openGL and Venus for Vulkan on Virtio GPU
- Integrated wayland based compositor for 1 VM on 1 Physical display
- Worked on Power saving features like BOCO
- Platform and tools used:
 - OS - Ubuntu
 - Programming languages – C
 - Version control system – git
 - Requirements capture - Jama
 - Defects tracking - JIRA
 - Debug tools – HDT

Case Study: GRAPHICS & I/O's DRIVERS on WINDOWS



The Program Summary

• Program	• End to End Driver Validation for Windows Platform
• Chipset	• Platforms – V2000 & R2000 • Boards : V 2000 : V2718,V2748,V2516,V2546 • Boards : V R2000 : R 2312 & R2314
• Target platforms	• Thinclient, HP, Beckoff, Digital signage for storage & Networking
• OS	• Windows
• Features	• Flash & Boot • Peripherals – I/O devices, storage • Security • Power Management • Stress Tests



Key Value Adds Delivered

- ODC set up establishment and complete end-to-end testing and Quality Control.
- Complete Test Execution for Manual & Automation Testing for Integration Testing, System Testing (Functional & Non-Functional Test cases).
- Program Management Team for ODC & client interface.



TechM Contribution

- Graphics Feature Validation & I/O –Features Validation with Win-OS
- Networking Feature (10G, 2.5 G and 1G Ethernet Validations and I/O devices, storage and Servers).
- Feature Validation:
- Power Management
- MSB -Modern standby
- S3 – Sleep, S5 – Reboot
- Display Validation
- Display Orientation/Rotation
- HDCP 2.2 & 2.3
- AMD Eyefinity
- Hotplug/Hotunplug with Different HDMI/DP/TypeC connectors
- EDP – Embedded Display panel
- EDID – Extended Display identification data
- MST – Multi Stream transport
- 4K@120(3840x2160)
- Multimedia Validation
- Audio playback Validation w.r.t different channels
- Video playback validation w.r.t different video codecs
- Decoding and Encoding of video and audio
- Transcoding the video formats
- Graphics Validation
- DirectX Graphics API validation
- Benchmarks execution
- OpenGL and Vulkan API validation
- IO's validation
- UART/I2C/SPI .. etc
- Stress tests for 24/60/72 hrs in Power management/ Multimedia/ Graphics