



Open. Together.



OCP
SUMMIT

Open System Firmware

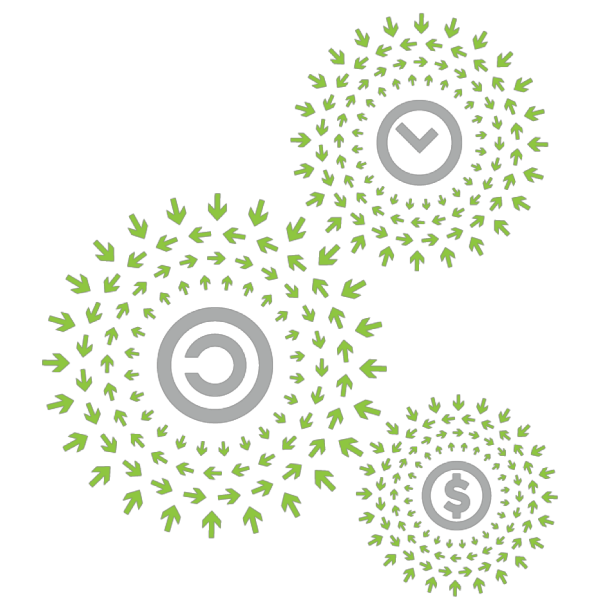
Introduction

Gundrala Goud, Microsoft

Ron Minnich, Google

David Hendricks, Facebook

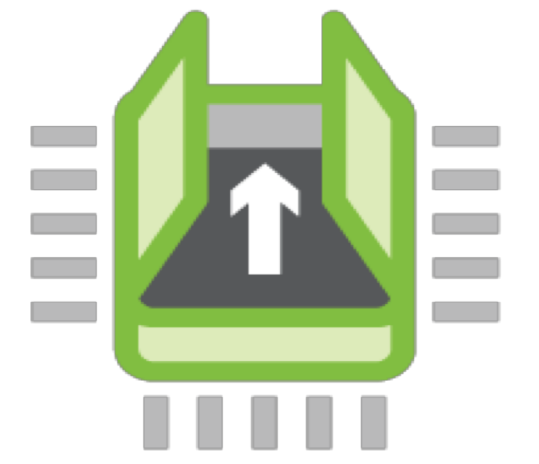
Anjaneye "Reddy" Chagam, Intel



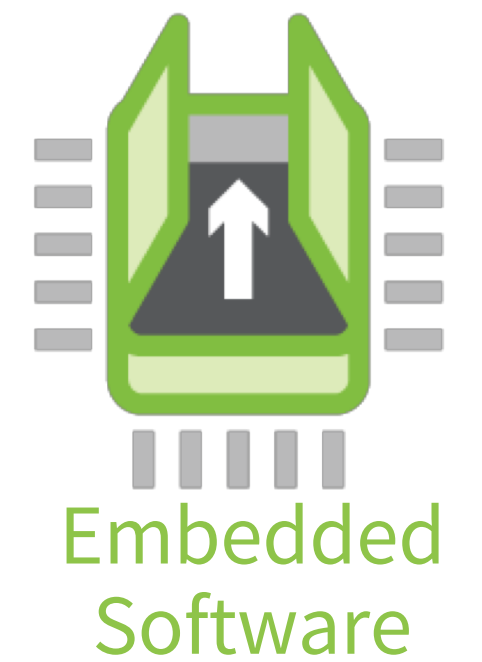
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Agenda

- Background (David)
- Intro to OpenEDK2 (Devender)
- Intro to LinuxBoot (Ron)
- Intel and Open Source Firmware (Reddy)

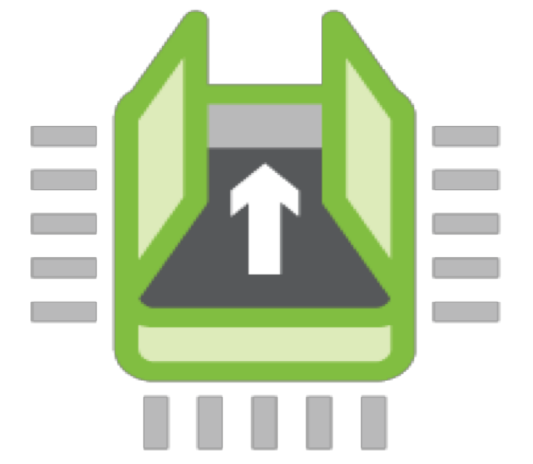


**OPEN SYSTEMS
FIRMWARE**

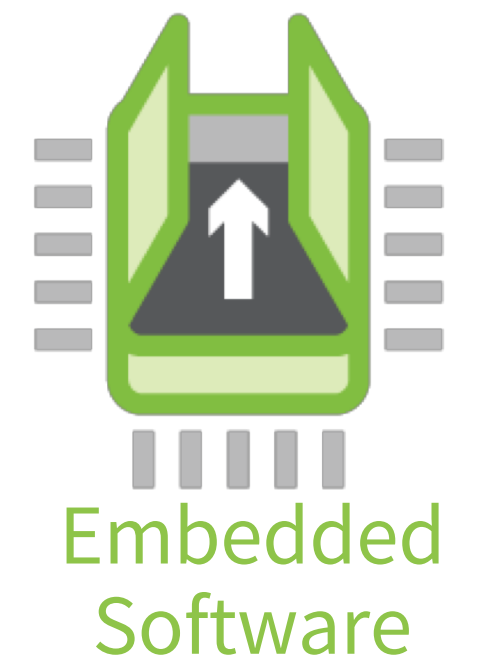


Background

- System firmware aka BIOS
 - Gives life to your silicon
- - Goal is to get to the OS – Simple, right?
- Basic steps:
 - 1) Silicon initialization - CPU, DRAM controller, "uncore" logic
 - 2) Probe/init peripherals
 - 3) Load target OS
 - 4) Runtime service availability (e.g. RAS handlers)
- Increasing complexity over the years
 - Drivers, networking, crypto, apps
 - Millions of lines of code
 - **System firmware has basically become an OS**



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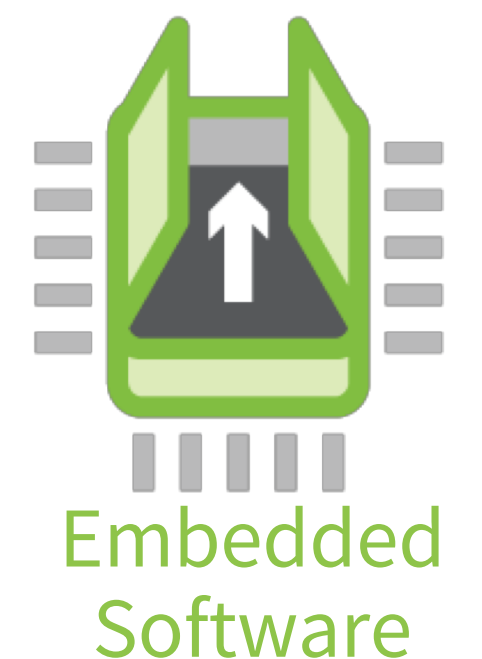


This has created a few problems...

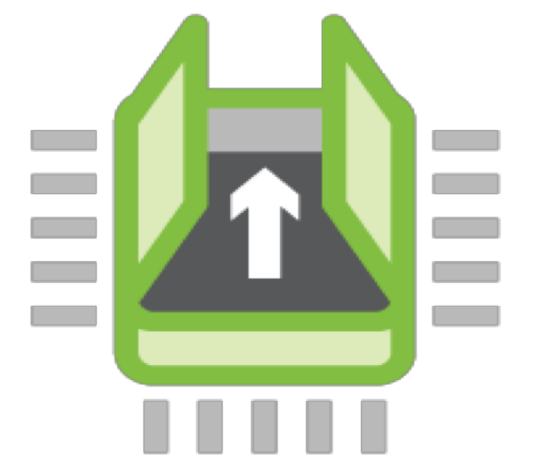


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- **Complex and important part of the software stack**
 - Also runs at highest level of privilege
- **Must integrate into company's SW architecture**
 - Tools, telemetry, security, error handling, repairs, etc.
- **But who's looking at it?**
 - Much of it has remained stubbornly closed
- **Not many people work on this code**
 - This is a real problem for large companies with datacenters full of hardware
 - Must support multiple generations of servers, networking gear, etc. from many vendors
- **Nothing magic about system firmware, but somehow it's remained obscure**

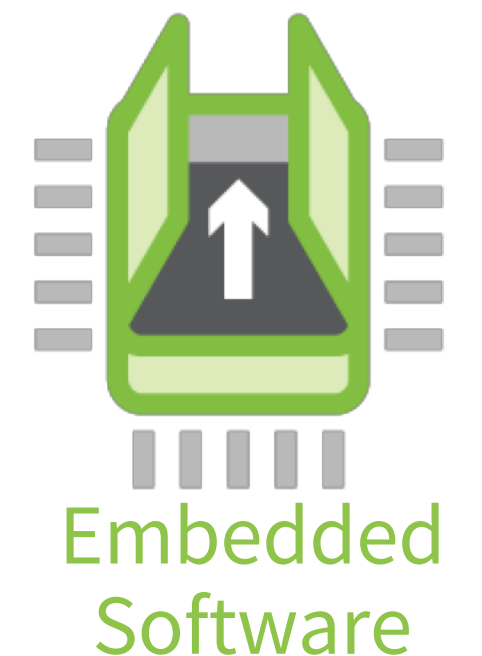


Open System Firmware

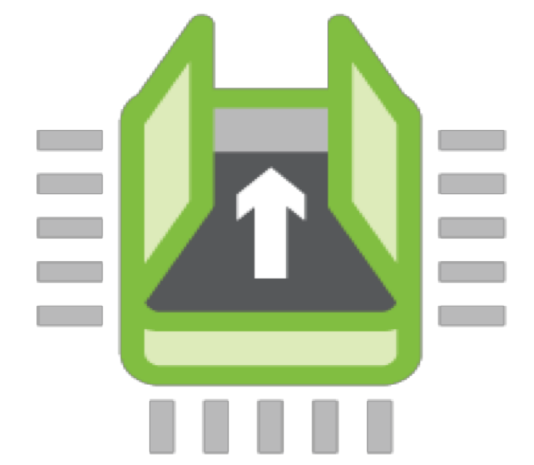


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- Late 2016: Talks began for an open source firmware effort within OCP
- Goals were laid out to enable:
 - **Innovations and customizations** in the system firmware stack
 - Closer **collaboration** with suppliers/vendors
 - **Better** error handling, diagnostics, remediations
 - Continuous **integration and testing**
 - Readily **auditable and traceable** code, integration with authentication devices.
 - Better coordination with firmware for ASICs, BMCs, rack management, etc.
 - **Open tooling**
 - **Faster deployment**
- Two main work streams lead by Devender Goud (Microsoft) and Ron Minnich (Google)



Open System Firmware



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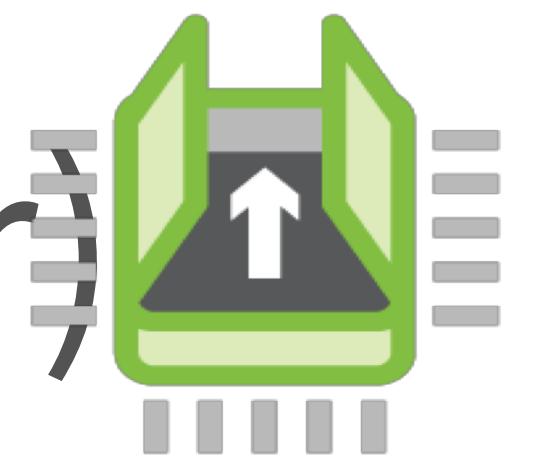
- Many advantages, some of which we're still discovering
- We have OSF implementations booting various systems already
- We're deploying it now
- Working toward having all new OCP servers capable of running OSF at launch
 - Should happen within 1-2 generations
- We'd love to get more of the community engaged!
 - Hardware vendors, IBVs/ISVs, OCP hardware users big and small

Next: OpenEDK2 intro with Devender



Embedded
Software

OpenEDK2 (placeholder for Devender)



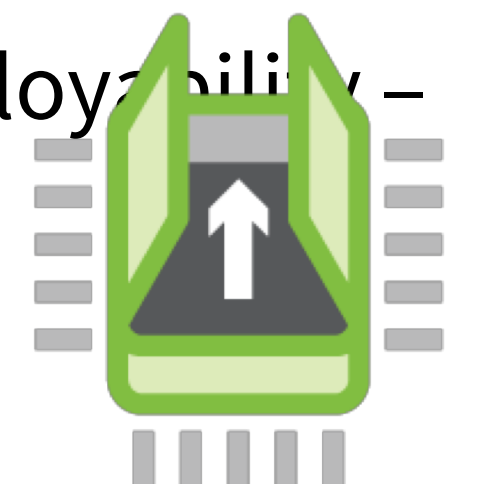
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Key Goals:

- Make complete OSF tree open with Silicon vendor's binary modules.
- Support multi-silicon architectures (Intel, AMD, ARM) and multi-OS (Windows and Linux).

Development Progress:

- MSFT/Intel delivered initial open EDKII based tree to support Mt.Olympus HW
- Open EDK II based tree boot optimizations on Mt. Olympus
- [**https://github.com/tianocore/edk2-platforms/tree/develop/MinPlatform/Platform/Intel/PurleyOpenBoardPkg/BoardMtOlympus](https://github.com/tianocore/edk2-platforms/tree/develop/MinPlatform/Platform/Intel/PurleyOpenBoardPkg/BoardMtOlympus)
- Porting of standard features like FW update tool interfaces, **setup options, Security features and IPMI interfaces – WIP**
- Optimize solution for Cloud use models Performance, Reliability, Serviceability, Scalability and Deployability – **WIP : look for ASD collaboration later on**
- Link to OpenEDK2 build instructions:



Embedded
Software

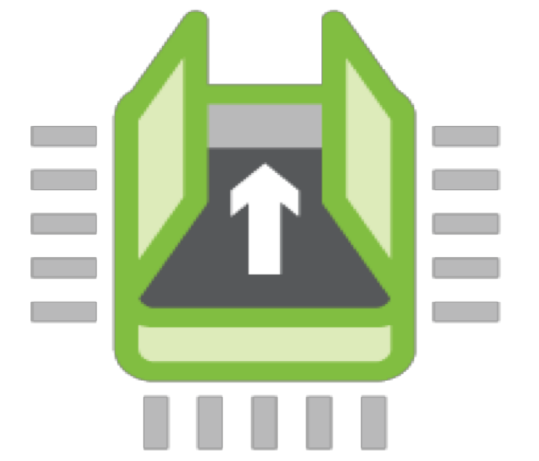
Next Steps:

- Roadmap of OpenEDK2 workstream support ...



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LinuxBoot (placeholder for Ron)



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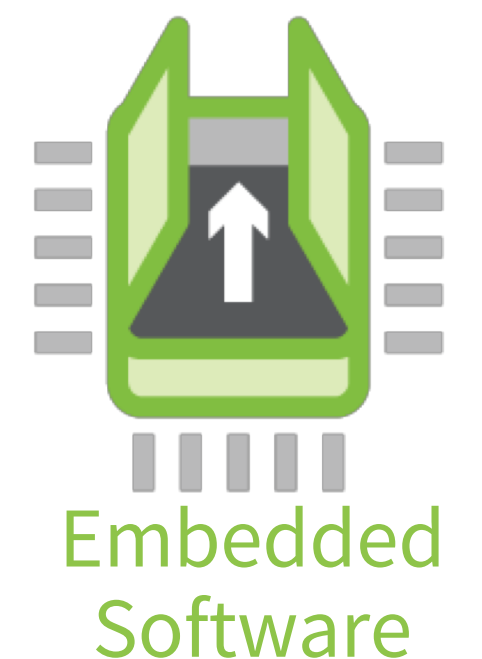
Technical content is desired

Open, collaborative in nature, Material must be relevant to an open source community

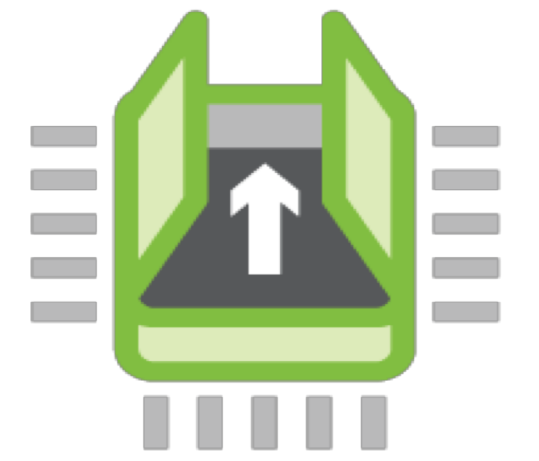
Must not be a product advertisement or too 'commercial' in the messaging

Products, Specs, and any contributions that have NOT been previously discussed in a monthly call, workshop, or previously approved by the foundation should NOT be disclosed in a summit workshop.

When discussing a Contribution, please use the appropriate logo from Slide 12.



Intel (placeholder for Reddy)



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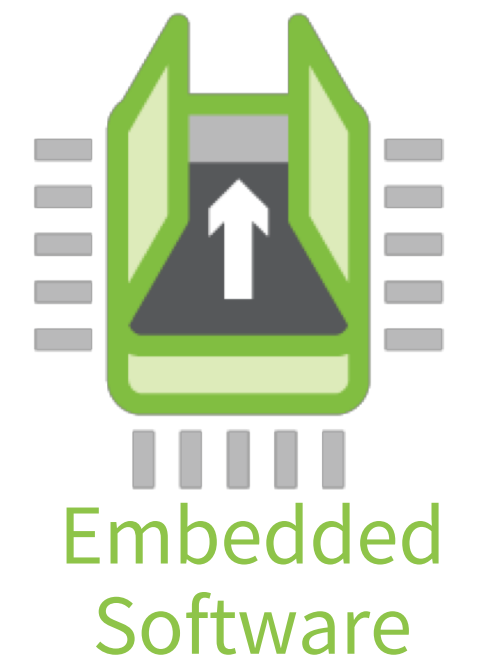
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Call to Action

- Check out the OCP Experience Lab!
- Get in touch with your silicon vendors!
- Join OCP OSF conference calls
 - Details: <https://www.opencompute.org/projects/open-system-firmware>



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OCP Global Summit | March 14–15, 2019

