OpenBMC and HPE ProLiant - Overview and Demo

HPE Developer Community Meetup #48

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Ian Woloschin – OpenBMC expert
Vincent Berger– Technical consultant

October 28, 2026

Welcome to this HPE Developer Community Meetup #48

https://developer.hpe.com/skillup

- Meetup:
  - https://developer.hpe.com/campaign/meetups
  - Monthly series, in depth on a technology
  - Open source, dev, and more…
    - November 26th, 2026: Slingshot
- Munch & Learn:
  - https://developer.hpe.com/campaign/munch-and-learn
  - Bi Monthly series, thought leadership, vendor / product agnostic
    - TBD
- Keeping it Real with AI Jam series:
  - https://developer.hpe.com/campaign/get-real-with-ai-jam-series
  - Monthly Series, panel Discussions on AI
    - TBD

Welcome to HPE Developer Community Meetup

More skill up opportunities

- Workshops-on-demand:
  - https://developer.hpe.com/hackshack/workshops
  - 10 Workshops
  - Give it a try, provide feedback
- This is a community, and we need you to amplify and contribute!
  - Join and invite others to join our talks
  - Join and invite others to join our monthly Newsletter: https://developer.hpe.com/newsletter-signup
  - Join and invite others to join our discussions on Slack: https://developer.hpe.com/slack-signup
  - Follow us on X: https://twitter.com/HPE_Developer
- SME ?
  - Write a Blog https://developer.hpe.com/contribute
  - Reach out to us to deliver a Meetup or participate to events
  - Create a new Workshop-on-Demand with us.



HPE Developer Community Program

Build | COMMUNICATE | COLLABORATE

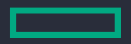
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- Monthly Newsletter
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- HPE_Developer
- Workshops-on-Demand


Let’s get started...
HPE Developer

OpenBMC on HPE ProLiant – Overview and demo

- Introduction
- What is OpenBMC
- OpenBMC at HPE
- Canopy
- OSF-CI demo
- Thank you



For training purposes only

Definition: Baseboard Management Controller (BMC)

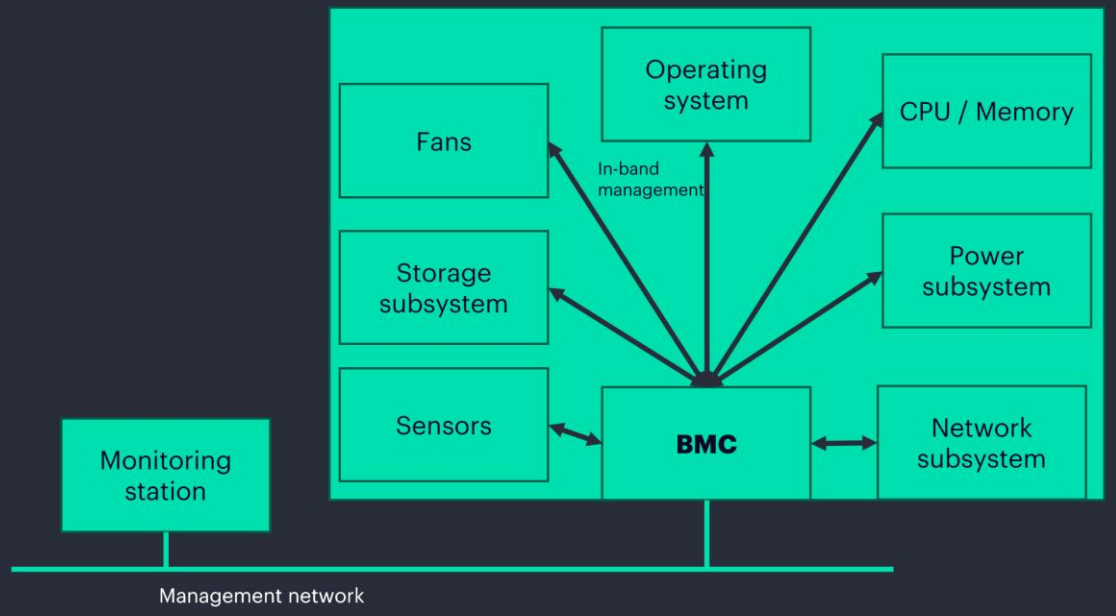
ASIC/SOC + firmware

DMTF definition: *An independent microprocessor or system-on-chip with associated firmware in a computer system that completes out-of-band systems monitoring and management-related tasks.*

Works even when system is OFF and/or OS down

Key functions:

- Power control
- Monitoring
- Remote console
- Firmware updates



Examples of BMCs and associated firmware

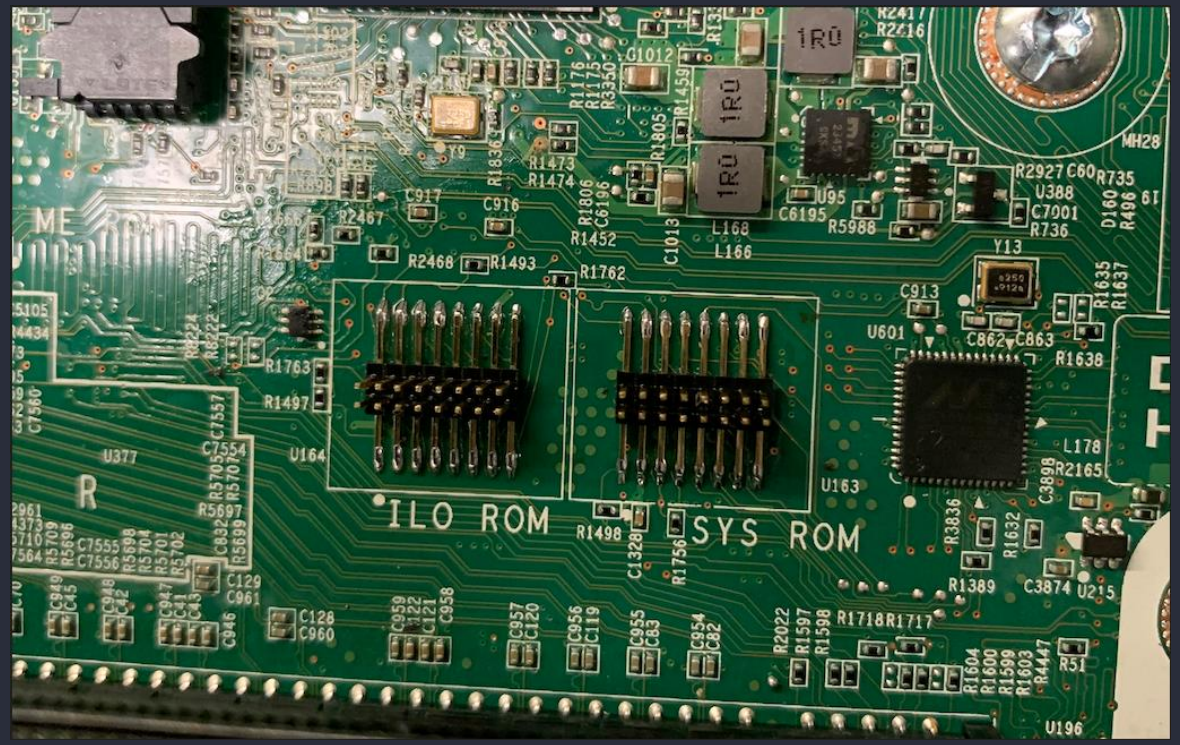
ASPEED BMC from ASPEED Technology

- AMI® MegaRAC SP-X

HPE iLO – HPE proprietary design

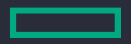
- HPE iLO firmware
- OpenBMC on selected HPE ProLiant servers

NOTE: “iLO” refers to both SoC and firmware leading sometimes to ambiguities.



OpenBMC: What, who and why?

Open-source project part of the Linux Foundation organization



What is OpenBMC?

- Open-source project part of the Linux Foundation organization

- Main Repo
  - https://github.com/openbmc/openbmc

- Open source and community maintained
  - https://discord.gg/69Km47zH98

- Reviews
  - https://gerrit.openbmc.org/

- Mailing List
  - https://lists.ozlabs.org/listinfo/openbmc



Logo source: openbmc.org

OpenBMC is Code

- OpenBMC is code (mostly C++) & Yocto metadata
- **There are no OpenBMC pre-built binaries or ROM Files**
- You cannot “just run” OpenBMC on any hardware
- Most OpenBMC builds are targeted at a specific SKU, no common image paradigm
- Porting OpenBMC to new hardware is a significant effort that requires skills across the hardware, software and system administration domains
- **OpenBMC does not have formal releases**
- There is no guarantee of stability or support for any given OpenBMC commit



Yocto – Enables custom Linux distros for embedded systems

The Yocto Project (YP) is an open-source collaboration project that helps developers create **custom Linux-based** systems regardless of the hardware architecture.

The project provides a flexible set of tools and a space where embedded developers worldwide can share technologies, software stacks, configurations, and best practices that can be used to create tailored Linux images for **embedded and IOT devices**, or anywhere a customized Linux OS is needed.



Source: yoctoproject.org

What enables the use of OpenBMC?

- Customers using OpenBMC
  - Have deep hardware knowledge and work closely with white box Original Design Manufacturers (ODMs) like Foxconn, Inventec, Wiwynn…
  - Maintain their own firmware teams
  - Can fix firmware defects themselves to keep moving quickly
  - Modernized their firmware deployment lifecycle for continuous deployments
  - Are willing to tradeoff feature completeness for shipping exactly what they need
  - Want the ability to easily add and remove features as the firmware evolves
  - Know what they are doing and are eager to use open-source firmware

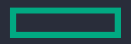
Customers interested in deploying OpenBMC must cover every enabler (and more!) to drive a successful OpenBMC deployment

Customers wanting OpenBMC to do something new need to add the functionality themselves



Show Me The Release!

- There are no formal releases for OpenBMC
- Users pull from master on a regular basis
- Upstream does do some limited testing but there is no OpenBMC QA Team
- Downstream users must create their own internal test suites
- Users are responsible for everything!
  - Picking what commit to release
  - Watching for security vulnerabilities
  - Testing new potential releases
  - Porting OpenBMC to new platforms
  - ...and everything else!



Who and why are they using OpenBMC?

If you want OpenBMC to do something new you need to add the functionality yourself

- Hyperscalers often buy Whitebox systems
  - Unbranded server built with off the shelf parts, typically optimized for a single workload and purchased in significant quantities
  - BMC solutions from companies like AMI & Insyde
  - Closed source lacked transparency and control
  - Increasing licensing costs
- Standardized interfaces across multiple hardware vendors
- Hyper-optimization of power consumption
- Customizations for datacenter control planes

Google

AMD

IBM

NVIDIA

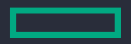
Meta

Cloudflare

CoreWeave

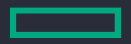
Scaleway

Akamai



OpenBMC at HPE

OpenBMC enablement on selected HPE ProLiant servers



OpenBMC enablement on selected HPE ProLiant servers

HPE provides an enablement path for customers to place and run their OpenBMC firmware on selected HPE ProLiant servers.

- HPE's OpenBMC enablement path is referenced as "iLO Transfer of Ownership (ToO)"

iLO ToO provides the capability to securely transfer from HPE iLO firmware to OpenBMC firmware.

- HPE Silicon Root of Trust (SRoT) remains after ToO

Provide capability to securely transfer back from OpenBMC to HPE iLO firmware.

What HPE OpenBMC Enablement is not?
HPE is not developing, publishing or maintaining the customer's OpenBMC firmware image.



The Transfer of Ownership process

Technical overview

Creation of various security objects to guarantee SRoT (User certificate, signing keys…)





iLO Administrator certificate

Preparation of the first image to be flashed by iLO firmware

First image must respect the SRoT (signed boot loader) and must be identified by iLO

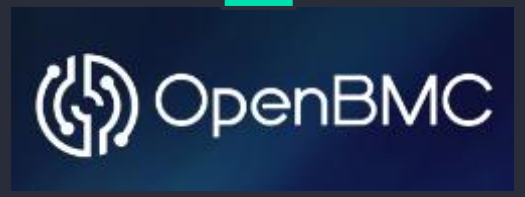
Generation of customer's first image:

- From
  - Customer's own sources
  - HPE sources
    - OSFCI (Gen11)
      - https://osfci.tech/ci
    - openbmc Gen12 public repository
      - github.com/HewlettPackard/openbmc-staging
  - Partner sources
    - Canopy project
      - github.com/canopybmc/canopybmc
- Must contain
  - Customer's public signing key (aka owner key)
    - Signed U-boot bootloader during image build
  - HPE proprietary header
    - To be identified by iLO before flash





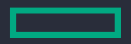
OpenBMC image with signed bootloader and HPE header



Warranty and support

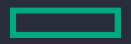
Once the customer transfers from HPE iLO to their own BMC implementation, HPE loses the standard ability to support and diagnose these servers.

There is a dedicated support path for customers who are running OpenBMC on HPE ProLiant, that will be able to assist customers with hardware break/fix issues.



Canopy

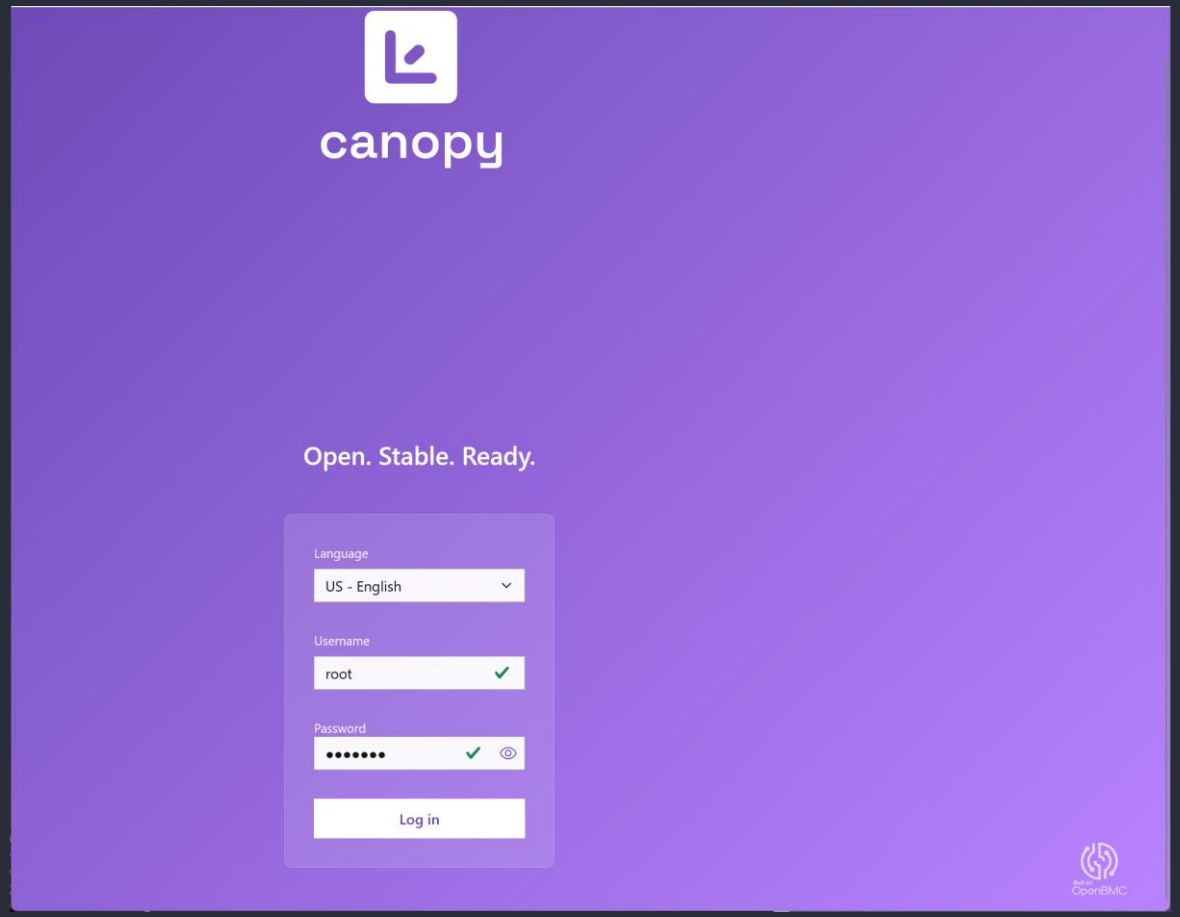
Customized OpenBMC build environment for supported server platforms



Canopy

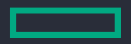
Open-source project initiated by 9elements.com

- 9elements is an HPE partner
  - Provides services to customers not having OpenBMC knowledge or the resources.
- GitHub repo: https://github.com/canopybmc/canopybmc
  - Includes a discussion tabulation
- Supported boards:
  - hpe-proliant-g11
  - Tests performed on OSFCI and physical hardware and QEMU.
- Blog
  - https://canopybmc.org/blog/



OSF-CI demo

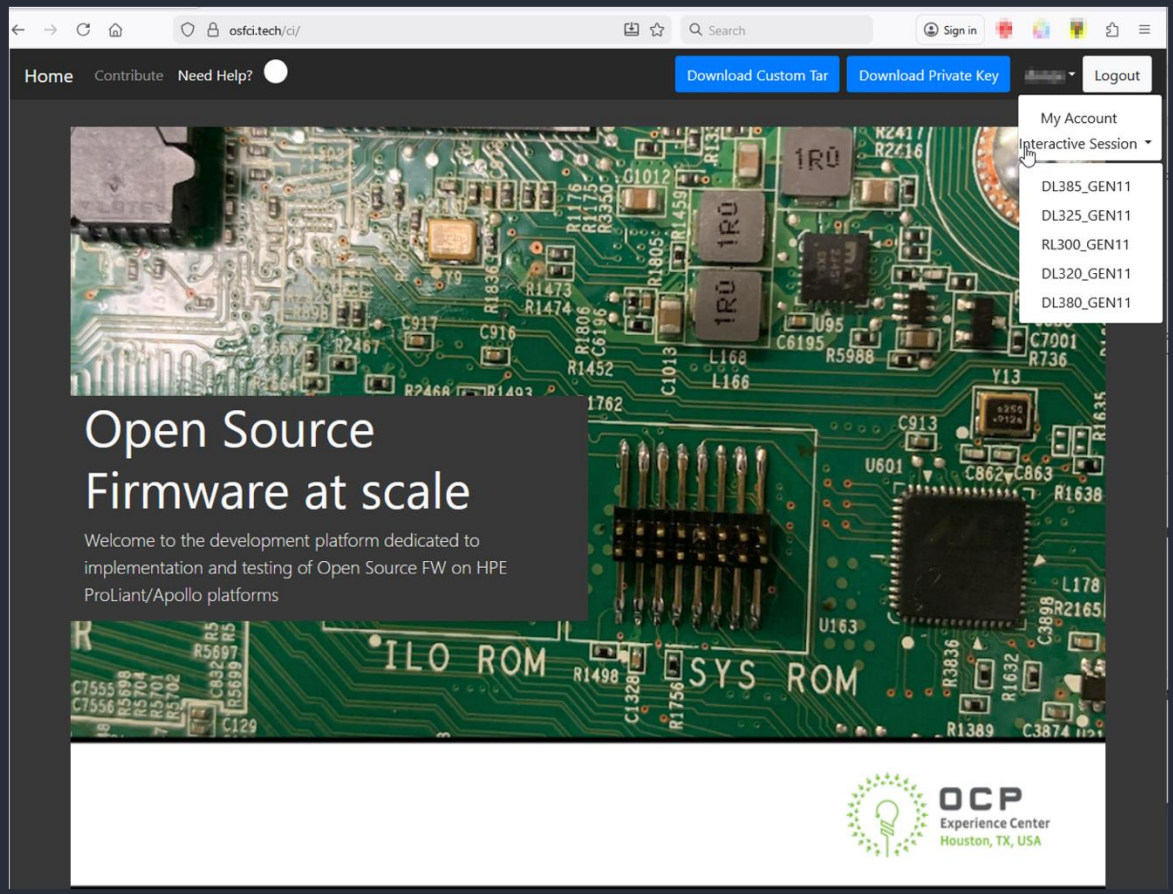
Public infra to test OpenBMC images on HPE boards



Public OSF-CI infra: https://osfci.tech/ci

osfci.tech/ci:

- public infrastructure
- Created by HPE
- Tests of OpenBMC images on various HPE boards
- “Replaces” a physical sand box



OpenBMC Enablement on HPE ProLiant servers

Summary

Available on selected HPE ProLiant servers

No special SKUs required

- No need to purchase specific iLO license

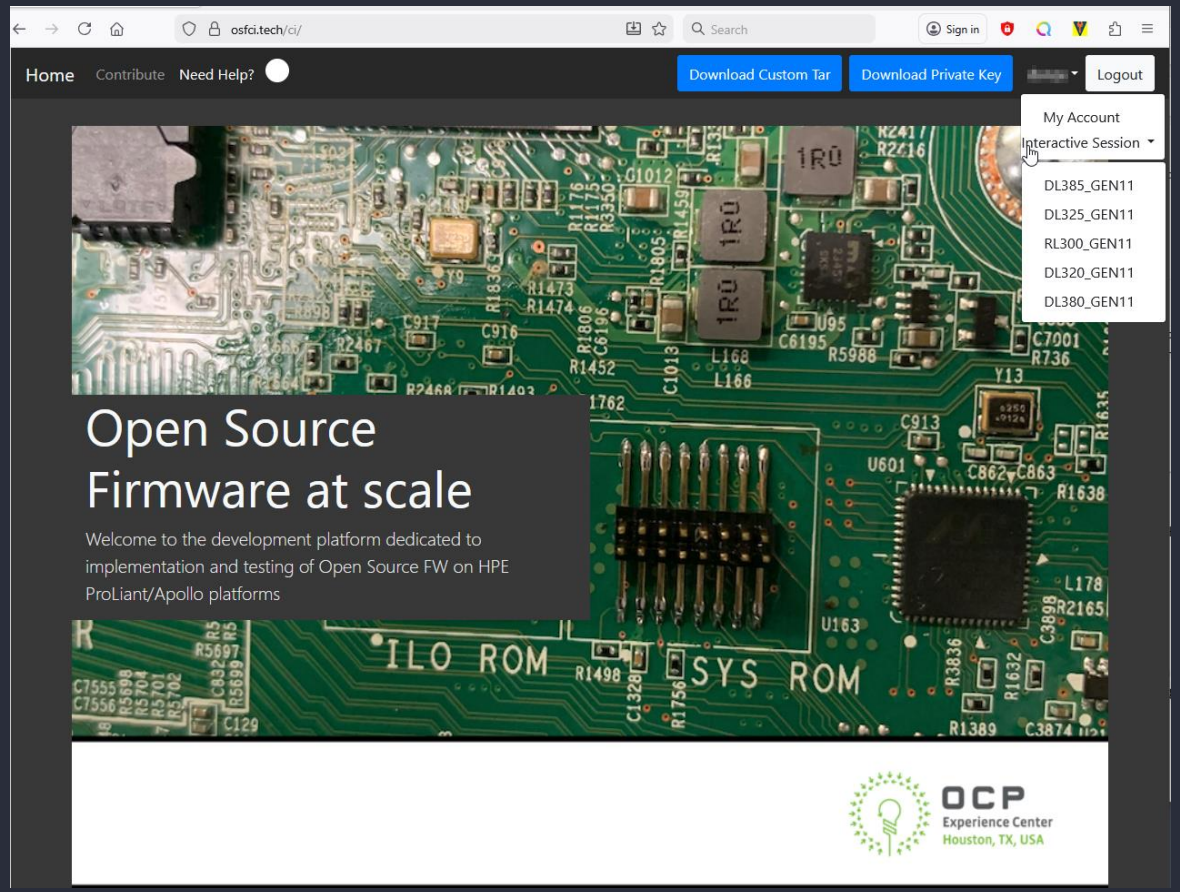
Process of transferring ownership from iLO firmware to OpenBMC and from OpenBMC back to iLO firmware.

Continuous Integration (CI) and test tool

- Customers' OpenBMC builds can be tested on HPE ProLiant servers from remote
- https://osfci.tech/ci/

Total autonomy for OpenBMC development and maintenance

"Break-fix" support model after ToO



Q/A



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Thank You



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