Power of Open(Source)BMC
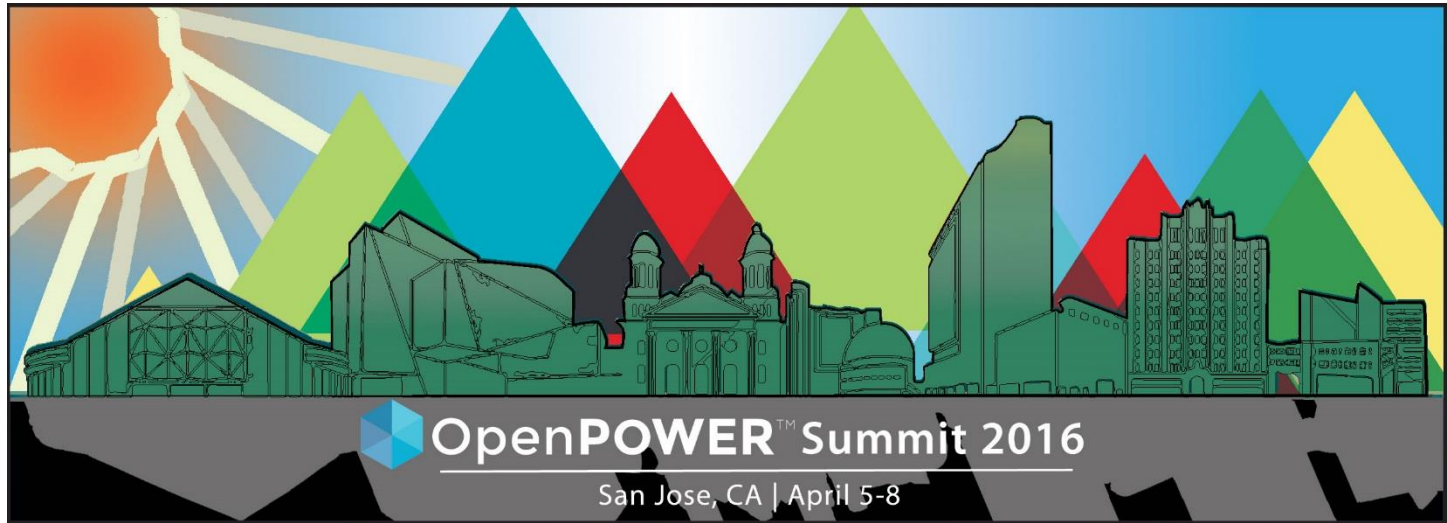
Adithya Gangidi, Systems Engineer
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Rackspace

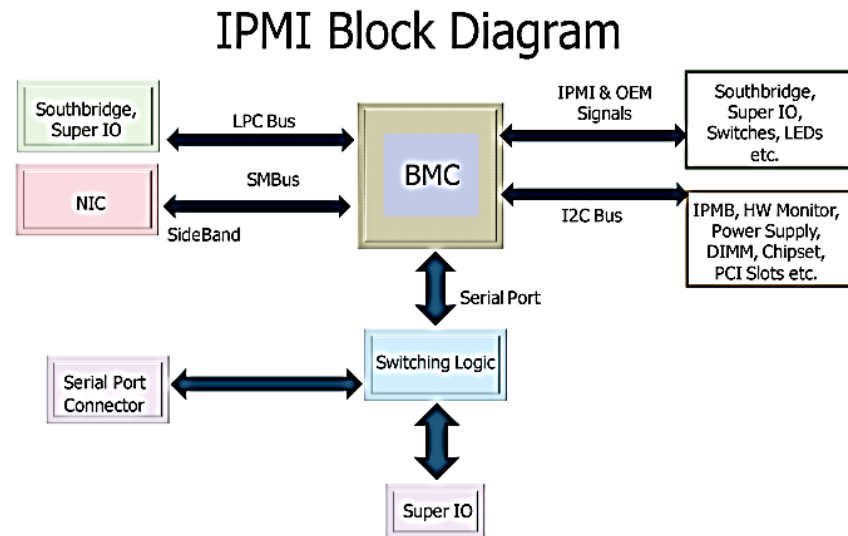## Revolutionizing the Datacenter

What is a BMC?

- Baseboard Management Controller
  - Sometimes called a Service Processor
- Monitors physical server conditions
  - Temperature
  - Humidity
  - Fan speeds
  - Voltage levels
  - Inventory - RAM, PCI devices, storage devices
- Log server events

What do you do with a BMC?

- Out-of-band management

  - Power cycle / reboot system

  - Mount virtual media

  - Remote console access

  - Manage firmware

  - Track physical conditions

  - Check Server Event Log

Common BMC Architecture

- Runs on an embedded or add-in SoC

- Often running Linux®

- Direct access to system memory and I/O

- Dedicated or shared NIC for network access

- IPMI-oriented design

IPMI Block Diagram

Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.

Traditional closed source BMC

- Built by vendors for each product

- Hopefully secure

- IPMI based tooling

- No easy means of adding custom tools

OpenBMC – You can build it!

- OpenBMC source is on Github

- Well Maintained

- Easy to Build

```
$ git clone https://github.com/openbmc/openbmc/
$ TEMPLATECONF=meta-openbmc-machines/meta-openpower/meta-rackspace/meta-
barreleye/conf . oe-init-build-env
$ bitbake obmc-phosphor-image
```

OpenBMC – You can see it!

- Code is publicly available for security audits
- You flash the binary you build

OpenBMC – It has modern tooling!

- IPMI was developed in 1998 with 8-bit microcontrollers in mind
  - Lacks complexity and scalability for the modern data center
- OpenBMC is built on modern design choices:
  - Provides a REST-like API to ease automation tasks
  - Can SSH into BMC to access host console
  - Runs Latest Stable Linux Kernel:
    - Security fixes
    - Updated Drivers
    - New Kernel Functions
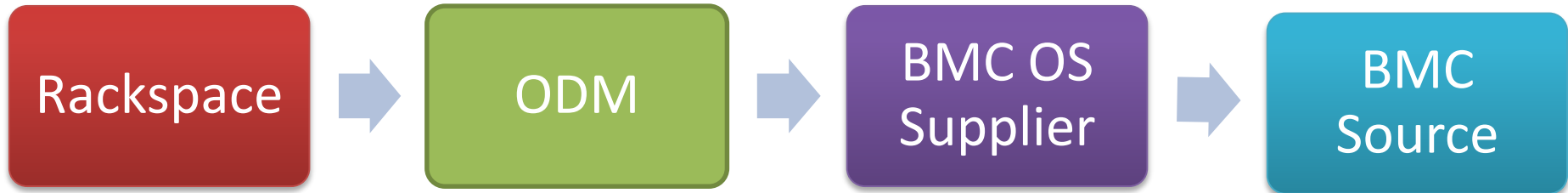
OpenBMC – You can customize it!

- Can modify or remove services and components
  - Authentication Model
  - REST API
  - App Integration
- Significance
  - Ironic / OpenStack Integration
- SDK available to build Linux applications
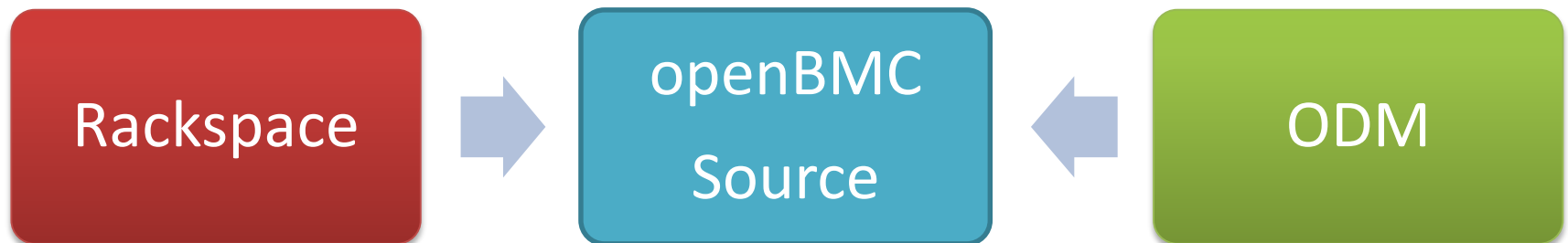
OpenBMC – You can contribute!

- Active community of developers and engineers

- More transparency
  - Public bug reports and bug-fix activity
  - Open conversations on long term planning and feature goals

- Community support
  - Github, IRC and mailing lists to engage with the community on desired features, development, troubleshooting and bug reporting

OpenBMC and New Model!

Traditional BMC Model

Rackspace → ODM → BMC OS Supplier → BMC Source

OpenBMC MODEL

Rackspace → openBMC Source ← ODM

Thank you!