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Intel’s Journey with OpenBMC

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Quick Introduction

• Management Interface to Server Hardware
• Host Power and Reset Control
• Sensor Monitoring, Event Logging, and Alerting
• Satellite Controller Updates and Monitoring
• Remote Server Management
## Intel BMC History

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995-98</td>
<td>PCAT &amp; PCI LanDesk Add-In Cards</td>
</tr>
<tr>
<td>1997-99</td>
<td>80652, Dallas 80CH10/11</td>
</tr>
<tr>
<td>1999-04</td>
<td>Intel Sahalee BMC</td>
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<tr>
<td>2004-06</td>
<td>Intel Enhanced South Bridge 2 (ESB2)</td>
</tr>
<tr>
<td></td>
<td>&lt; Switch to 3\text{rd} Party BMC HW &gt;</td>
</tr>
<tr>
<td>2006-15</td>
<td>Server Engines/Emulex Pilot BMC</td>
</tr>
<tr>
<td>2015-18</td>
<td>Aspeed AST2500 BMC w/Prop FW Stack</td>
</tr>
<tr>
<td>2017-...</td>
<td>Aspeed AST2500 BMC w/OpenBMC Stack</td>
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</tbody>
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Why Intel with OpenBMC?

Market Direction
- Customer Desire
- Security, Easy Access to Source Code

Collaboration
- Shared Efforts
- Enabling ODMs and 3rd Party Vendors

Management Interoperability
Traditional vs. OpenBMC

3rd Party BMC
HW Vendor
(AIC/PS/NVMe)

3rd Party BMC
HW Vendor
(Aspeed/Nuvoton)

3rd Party BMC FW Vendors

Intel
BMC FW Source Code

ODMs

3rd Party BMC HW Vendor
(AIC/PS/NVMe)

3rd Party BMC HW Vendor
(Aspeed/Nuvoton)

OpenBMC
Project

Intel
BMC FW Source Code

ODM
Server Vendor

3rd Party BMC FW Vendor

3rd Party BMC HW Vendor
(Aspeed/Nuvoton)
Goals with OpenBMC

Product Development Cycle

- Faster Response
- Reuse (ODMs, Customers)
- Flexibility (Compute, Storage, Network)
- Hardware Vendor Participation
- Manageability Commoditization
- Common Interfaces
  - Discovery, Updates, Sensor and FRU Configuration
OpenBMC Benefits

- Tool Kit for Manageability
- Transparency
- Use of Best Known Practices
- Broader Range of Viewpoints
- Freedom and Choice
- Customizable
OpenBMC Shopping List

Host Interfaces
- KCS
- BT
- mbox
- IPMB
- USB
- VGA

Network Interfaces
- Redfish
- https
- ssh
- rmcp+

Applications
- EWS
- KVM
- IPMI
- FSC
- SEL
- SOL
- Chassis Control
- ASD
- Firmware Update
- Configuration Manager
- Sensor Monitor
OpenBMC Vendor Opportunities

- New Technology Development and Deployment
- Accelerate Management of New Products Across Multiple Server Vendors
- Hardened BMC Security
- Focus On Higher Value Add Features
OpenBMC Challenges

Product Development vs. Open Sourcing

- New Development Space for BMC FW Team
- Meeting Product Schedules

Process Synchronization

- Code Reviews, Repository Maintainers
- Unit Testing (Test Driven Development)

Aligning Product Level Requirements

- Competing goals
OpenBMC Challenges (continued)

Security

- Evolve Away From Insecure Protocols
- Threat Model and Analysis
- Process Isolation
- Use Access Control Lists, SELinux, AppArmor
- Tripwire, rsyslog
- Penetration Testing and Sharing Results
Get Involved

Check out the OpenBMC repository
https://github.com/openbmc

Check out the OpenBMC Website
www.openbmc.org

Check out OCP’s HW Management & Security Project Groups
http://www.opencompute.org/projects/hardware-management/
http://www.opencompute.org/projects/security/

Watch For Future Hackathon Events Hosted By Intel

Visit the Intel Booth A12
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