bmclib
A Baseboard Management Controller library

One library to rule them all?

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Booking.com
A BMC is a **system on chip** that integrates various computer components in a single die/package, roughly similar to the Broadcom SoC found on a Raspberry PI, except, the BMC runs within a server/chassis/switch/JBOD/JBOF with its own OS/Firmware.
Various flavours, single function

- Out of Band access to servers/switches/JBODs, etc
- Last resort to power cycle, reboot, hard reset
- IPMI/VNC/iKVM/Serial console access
- Inventory information
- Hardware logs
- Root of trust

Asset lifecycle management

BMCs
Specs

Common SoC BMC – AST2400/AST2500

- 400MHz/800MHz ARM CPU
- 512 MB DDR3/DDR2 SDRAM
- PCIe VGA
- 10/100/1000 Mbps NIC (Dedicated/Shared)
- Web, IPMI, SSH (SMASH)
Standards

What are those?

- IPMI - common across all vendors, although shitty and insecure
- SSH - there's no standards (vendor specific implementations)
- Web interfaces - slow and buggy
- API - none or inconsistent implementations of Redfish[0]
  - Redfish is an odata based API, which is overkill[1] for a BMC device
  - Unreliable/buggy implementations across vendors
  - Every vendor seems to be heading in their own direction
  - Promising, maybe in the future this will be better

0. https://www.dmtf.org/standards/redfish
1. http://docs.servicestack.net/why-not-odata
50K and growing set of bare metal servers and storage hardware.

Hardware from multiple vendors, generations.
The challenges

- Four engineers, 50K servers ~ 12500 servers/engineer.
- Treat servers as light bulbs - plug and play.
- Reliably provision.
- Accurately inventorize.
- Manage BMC configuration.
- Diagnose hardware problems.
- All this done using the BMC, without manual intervention, at scale.
bmclib
One library to abstract BMC interaction

Data collection support

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Supported</th>
<th>Partially Supported</th>
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<tr>
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Configuration support

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<th>User accounts</th>
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<th>NTP</th>
<th>Ldap</th>
<th>Ldap groups</th>
<th>BIOS</th>
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https://github.com/bmc-toolbox/bmclib
bmcbutler

A BMC configuration management tool

go get github.com/bmc-toolbox/bmcbutler
Dora
Asset inventory and explorer

go get github.com/bmc-toolbox/dora
Actor
Consistent Web API interface to BMCs

go get github.com/bmc-toolbox/actor
bmclib in action

bare metal state identification

Hey Actor,
Get me the state of server-foobar?

Lazy sysadmin

Hey Actor,
Get me the state of server-foobar?
bmclib abstracts various vendor BMCs into a single API - so we can focus on building tools to manage them

If you are looking to inventorize, configure, update server BMCs, check out the bmc-toolbox

Asking what you need and get what you expect for orchestration is a must

BMCs are a fundamental part of a servers lifecycle, it's time they got more attention

You can help! create an issue/PR - If you work with bare-metal servers and would like support for your BMC

Avoid vendor lock-in and have defined requirements to require

https://github.com/bmc-toolbox