



# OCP SUMMIT

March 20-21  
2018  
San Jose, CA

**OPEN. FOR BUSINESS.**



# OpenBMC: End User Features and Function

Andrew Geissler  
Senior Software Engineer  
IBM

OPEN. FOR BUSINESS.



# Product Ready



```
[witherspoon]# obmcutil state
CurrentBMCState      : xyz.openbmc_project.State.BMC.BMCState.Ready
CurrentPowerState    : xyz.openbmc_project.State.Chassis.PowerState.On
CurrentHostState     : xyz.openbmc_project.State.Host.HostState.Running
```

```
[andrewg@gfwa123 ~]$ openbmc-sensors --server w54 view /xyz/openbmc_project/sensors/temperature/ambient
{u'WarningAlarmLow': 0, u'WarningLow': 0, u'Scale': -3, u'WarningAlarmHigh': 1, u'CriticalHigh': 35000,
: 0, u'Value': 28000, u'WarningHigh': 25000, u'CriticalLow': 0, u'Unit': u'xyz.openbmc_project.Sensor.V
{
  "WarningAlarmLow": 0,
  "WarningLow": 0,
  "Scale": -3,
  "WarningAlarmHigh": 1,
  "CriticalHigh": 35000,
  "CriticalAlarmHigh": 0,
  "CriticalAlarmLow": 0,
  "Value": 28000,
  "WarningHigh": 25000,
  "CriticalLow": 0,
  "Unit": "xyz.openbmc_project.Sensor.Value.Unit.DegreesC"
}
```



- Ready for Prime Time
- In production by multiple companies
  - Deployed within multiple datacenters throughout the world
- Passed an outrageous amount of manual and automated tests
  - Manufacturing, Functional Test, System Test
- Yocto/Bitbake based so continuous kernel and security updates available



```
[andrewg@gfwa123 ~]$ ipmitool -I lanplus -H 9.3.86.161 -P 0penBmc sdr elist full
host0      | 03h | ok   | 0.0 |
host0      | 05h | ok   | 0.0 | boot completed - device not specified
host0      | 07h | ok   | 0.0 |
occ0       | 08h | ok   | 0.0 | Device Enabled
occ1       | 09h | ok   | 0.0 | Device Enabled
core0      | 12h | ok   | 0.0 | Presence detected
```


```
[andrewg@gfwa123 ~]$ openbmc-events --server w54 list
/xyz/openbmc_project/logging/entry/2
[andrewg@gfwa123 ~]$ openbmc-events --server w54 view /xyz/openbmc_project/logging/entry/2
{
  "Resolved": 0,
  "AdditionalData": [
    "_PID=1328"
  ],
  "Severity": "xyz.openbmc_project.Logging.Entry.Level.Error",
  "Timestamp": 1517600791699,
  "associations": [],
  "Message": "org.open_power.Witherspoon.Fault.Error.PowerSupplyInputFault",
  "Id": 2
}
```

# System Management

- IPMI
  - IPMI 2.0 Compliance
  - Full DCMI support
- REST
  - All D-Bus interfaces defined in [phosphor-dbus-interfaces](#) repo in GitHub
  - All REST api's have a direct mapping to all defined D-Bus interfaces
- Web Interface
  - Chassis control, Event and Sensor views, Firmware Updates, Server configuration
- Event Notification
  - Create dynamic web sockets to get call backs on critical events
- Coming Soon
  - Redfish

Branch: master [phosphor-dbus-interfaces](#) / [xyz](#) / [openbmc\\_project](#) / [State](#) / [Host.interface.yaml](#)

 geissonator Update reboot request to match with agreed design


2 contributors 

48 lines (43 sloc) | 1.35 KB Raw

```
1 description: >
2   Implement to provide host state management
3
4 properties:
5   - name: RequestedHostTransition
6     type: enum[self.Transition]
7     default: 'Off'
8     description: >
9       The desired host transition. This will be preserved across AC
10      power cycles of the BMC.
11
12  - name: CurrentHostState
13    type: enum[self.HostState]
14    description: >
15      A read-only property describing the current state of the host
16      firmware. A user can determine if a system is in transition by
17      comparing the CurrentHostState and the RequestedHostTransition
18      properties.
19
```



OpenBMC V.0.0.1 Log out

 **witherspoon**  
BMC IP address 54.aus.stglabs.ibm

Server health Warning | Server power Running | Data last refreshed 12:54:20 Feb 02 2018 Refresh

**witherspoon** [edit](#)

Server information	MODEL	MANUFACTURER	3 High priority events <span>→</span>
	IBM-witherspoon-sequoia-ibm-0P9_v1.18_1.54	IBM	
	SERIAL NUMBER	000000000000	
BMC information	HOSTNAME	witherspoon	BMC time 3:20:12 5/22/2017 UTC
	BMC IP ADDRESS	54.aus.stglabs.ibm.com	Turn on server indicator <input type="checkbox"/>
	FIRMWARE VERSION	v2.1-55-g35bc913	Serial Over Lan <input type="checkbox"/>
	MAC ADDRESS	70:e2:84:14:23:e1	Edit network settings <span>→</span>

# Firmware Update

- Two Implementations to choose from
  - Direct write JFFS2 implementation
  - UBI Based Firmware Update
    - Dynamic partitioning
    - Wear leveling
    - Host NOR presented as directories and files
- Multiple interface options
  - TFTP, SCP, PUT
  - Multi image support (UBI only)
- Brick Protection (UBI only)
  - U-Boot
  - Side switch
- Signed Image
  - Signed during build
  - Verified before writing to the flash



```
[andrewg@gfwa123 ~]$ openbmc-sfw --server w54 list
/xyz/openbmc_project/software/9a57e68f
{
  "associations": [
    [
      "inventory",
      "activation",
      "/xyz/openbmc_project/inventory/system/chassis/motherboard/boxelder/bmc"
    ]
  ],
  "Activation": "xyz.openbmc_project.Software.Activation.Activations.Active",
  "Priority": 1,
  "Version": "v2.1-57-g6a2fbc",
  "Purpose": "xyz.openbmc_project.Software.Version.VersionPurpose.BMC",
  "Path": "",
  "RequestedActivation": "xyz.openbmc_project.Software.Activation.RequestedActivations.None"
}
/xyz/openbmc_project/software/8764baa3
{
  "associations": [
    [
      "inventory",
      "activation",
      "/xyz/openbmc_project/inventory/system/chassis"
    ]
  ],
  "Activation": "xyz.openbmc_project.Software.Activation.Activations.Active",
  "Priority": 0,
  "Version": "IBM-witherspoon-sequoia-ibm-OP9_v1.18_1.54",
  "Purpose": "xyz.openbmc_project.Software.Version.VersionPurpose.Host",
  "ExtendedVersion": "op-build-v1.7-1321-g6eef393-dirty,buildroot-2017.05-163-g8035745,skiboot-
wer1-p919e663,petitboot-v1.5.1-p848cad7,machine-xml-c1e49a6-pbb9f626,occ-854999a,hostboot-binari
  "Path": "",
  "RequestedActivation": "xyz.openbmc_project.Software.Activation.RequestedActivations.None"
}
```

# Configuration & Control



- Network Configuration

  - VLAN

- Time

  - NTP

  - Host/BMC Control management (Split/Both/Host/BMC)

- Remote Host Console

- Zeroconf / Avahi

- QEMU

- Event Logs

- Power and Cooling Management

```
[andrewg@gfwa123 ~]$ curl -c cjar -b cjar -k -H "Content-Type:
on/json" -X GET https://{BMC_IP}/xyz/openbmc_project/sensors/f
numerate
{
  "data": {
    "/xyz/openbmc_project/sensors/fan_tach/fan0_0": {
      "Scale": 0,
      "Target": 0,
      "Unit": "xyz.openbmc_project.Sensor.Value.Unit.RPMS",
      "Value": 5914
    },
    "/xyz/openbmc_project/sensors/fan_tach/fan0_1": {
      "Scale": 0,
      "Unit": "xyz.openbmc_project.Sensor.Value.Unit.RPMS",
      "Value": 0
    },
    "/xyz/openbmc_project/sensors/fan_tach/fan1_0": {
      "Scale": 0,
      "Target": 0,
      "Unit": "xyz.openbmc_project.Sensor.Value.Unit.RPMS",
      "Value": 5924
    },
    "/xyz/openbmc_project/sensors/fan_tach/fan1_1": {
```

```
Petitboot (v1.5.1-p848cad7) 000000000000000000
[Disk: sda2 / 728d2189-0c67-4551-8857-40e2845ba17b]
Ubuntu, with Linux 4.10.0-26-generic (recovery mode)
Ubuntu, with Linux 4.10.0-26-generic
Ubuntu

System information
System configuration
System status log
Language
Rescan devices
Retrieve config from URL
*Exit to shell

Enter=accept, e=edit, n=new, x=exit, l=language, g=log, h=help
Default boot cancelled
```

# Coming Soon



- VGA Mirroring
- Redfish
- Advanced User Management and Authentication
- KVM over IP
- Remote Media
- SNMP / Telemetry
- In-band Firmware Update





# OCP SUMMIT