OpenBMC: End User Features and Function

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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': 28080, 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": 28080,
    "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

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-g6a2fbcd",
    "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-binarie
    "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)                    0000000000000000

 [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