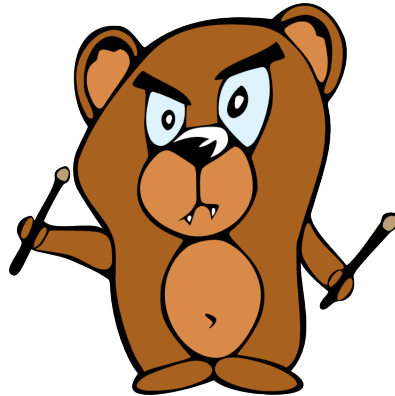


Bare Metal In The Cloud: Isn't it Ironic?

by Dmitry Tantsur and Ilya Etingof, Red Hat



In this talk

- What's bare metal provisioning
- Ironic introduction and work flows
- The future of ironic

Why bare metal allocation

- Raw computing power
- Hard-to-virtualize hardware e.g. GPU, FPGA
- Perfect isolation e.g. tenant security
- Cloud software deployment

Why ironic

- Fully API driven, CLI and GUI available
- Mature and battle-tested
- Good vendor support
 - HPE, Dell EMC, Fujitsu, Cisco, Lenovo, Huawei
 - 3rdparty CI mandatory
- Support for UEFI

Two faces of ironic

- Stand-alone bare metal provisioning service
 - RESTful API
 - Ironic Conductor
 - Deployment Agent
- OpenStack bare metal provisioning service

- OpenStack Nova driver

Hardware management harness

- Baseboard Management Controller (BMC)
- Hardware management protocols (IPMI, Redfish etc)

What BMC can do

- System power management
- Boot device configuration
- System BIOS management
- Hardware RAID configuration
- Virtual media boot
- ... and many others

Machine deployment workflow

- Hardware introspection
- Node cleaning (BIOS, RAID etc)
- Network configuration
- Boot configuration
- Image deployment
- Custom OS configuration

Deployment: Inspection

Out-of-band:

- Hardware capabilities
- Inventory information
- ...

In-band:

- All the above
- Benchmarks
- Allocated ports at the switch
- ...

Deployment: Cleaning

Out-of-band:

- Apply BIOS settings
- Reassemble hardware RAID
- Update firmware

- ...

In-band:

- Wipe out local drives
- Reassemble RAID
- ...

Deployment: Networking

Two kinds of networks:

- Service (cleaning, provisioning, rescue)
- Tenant (for end users)

Three network management models:

- Using existing network infrastructure
- Using OpenStack Networking with shared network
- Using OpenStack Networking with switch management

Deployment: Boot configuration

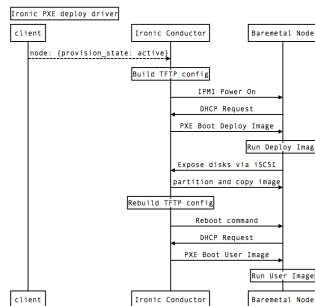
- Boot from network (PXE, iPXE, Virtual Media)
- Boot IPA for deploy

Deployment: Deploy user image

Many ways to write user image

- Over iSCSI
- Over HTTP
- Potential: BitTorrent

Deployment: sequence diagram



Upcoming features

- Deploy Templates
- Federation Capabilities
- Graphical Console Support

Future use-cases

- Hyper-converged, containers
- Edge cloud