

Using ironic

How ironic can be used to automate bare metal server hardware

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About me

Julia Kreger

OpenStack

- Contributing for the past 4 years
- ironic PTL (Project Technical Leader)
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What is ironic?

The Bare Metal as a Service component of OpenStack

Enables a cloud user to request an instance on a physical machine instead of a Virtual Machine

Enables TripleO to Install on servers

Also consists of additional tools built by the community to solve related problems.



IRONIC

an OpenStack Community Project

So what are the problems that ironic seeks to solve?

Deploying physical hardware takes time!

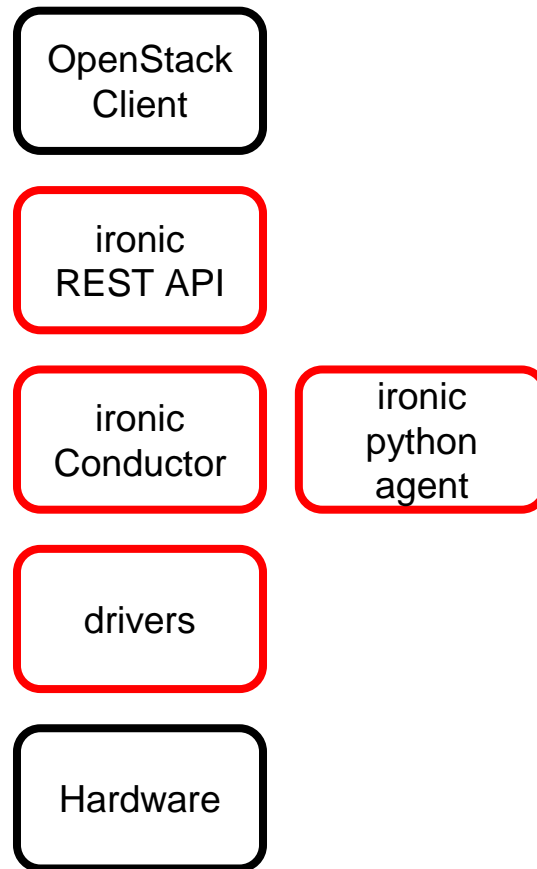
The physical domain is rarely consistent!

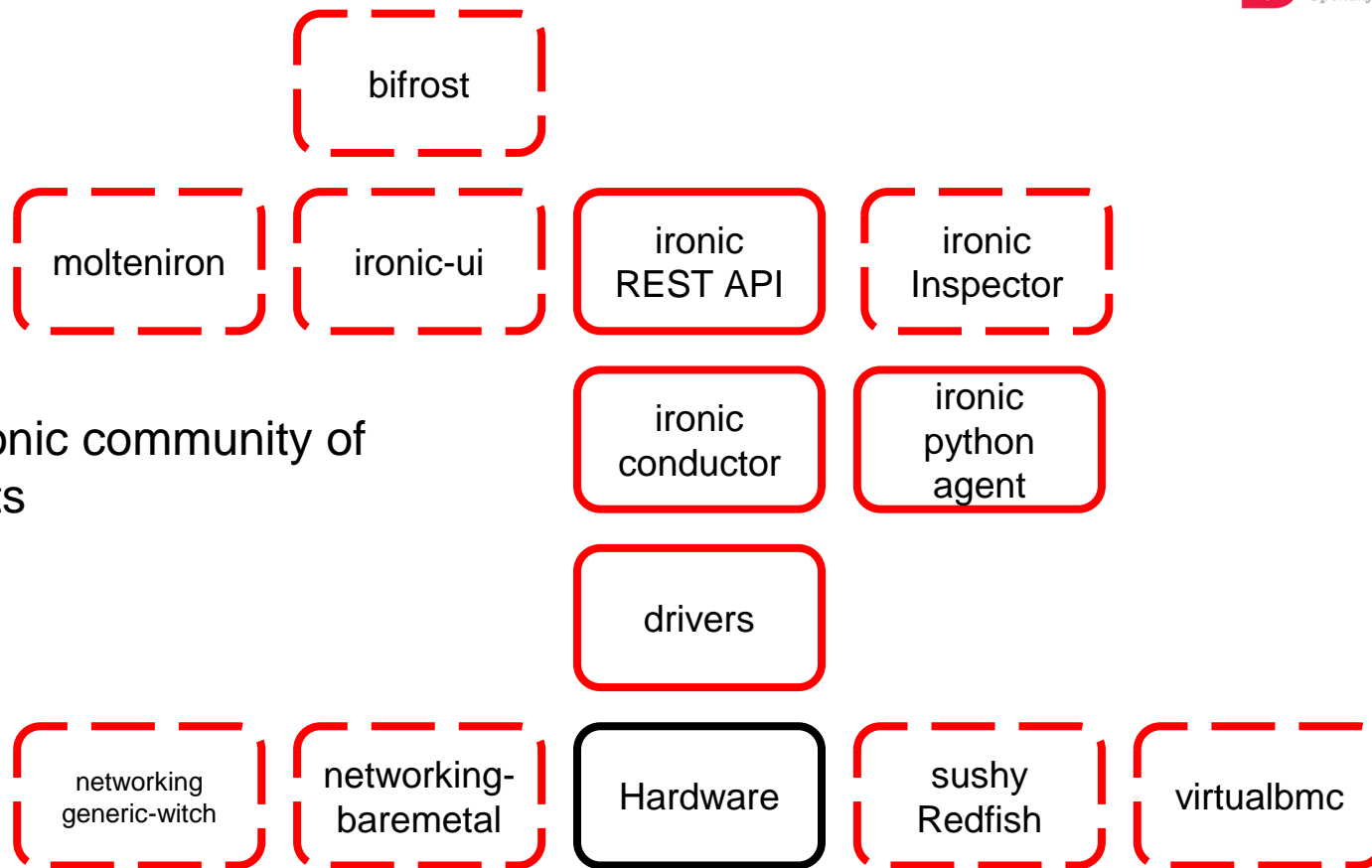
Deploying manually is error prone!

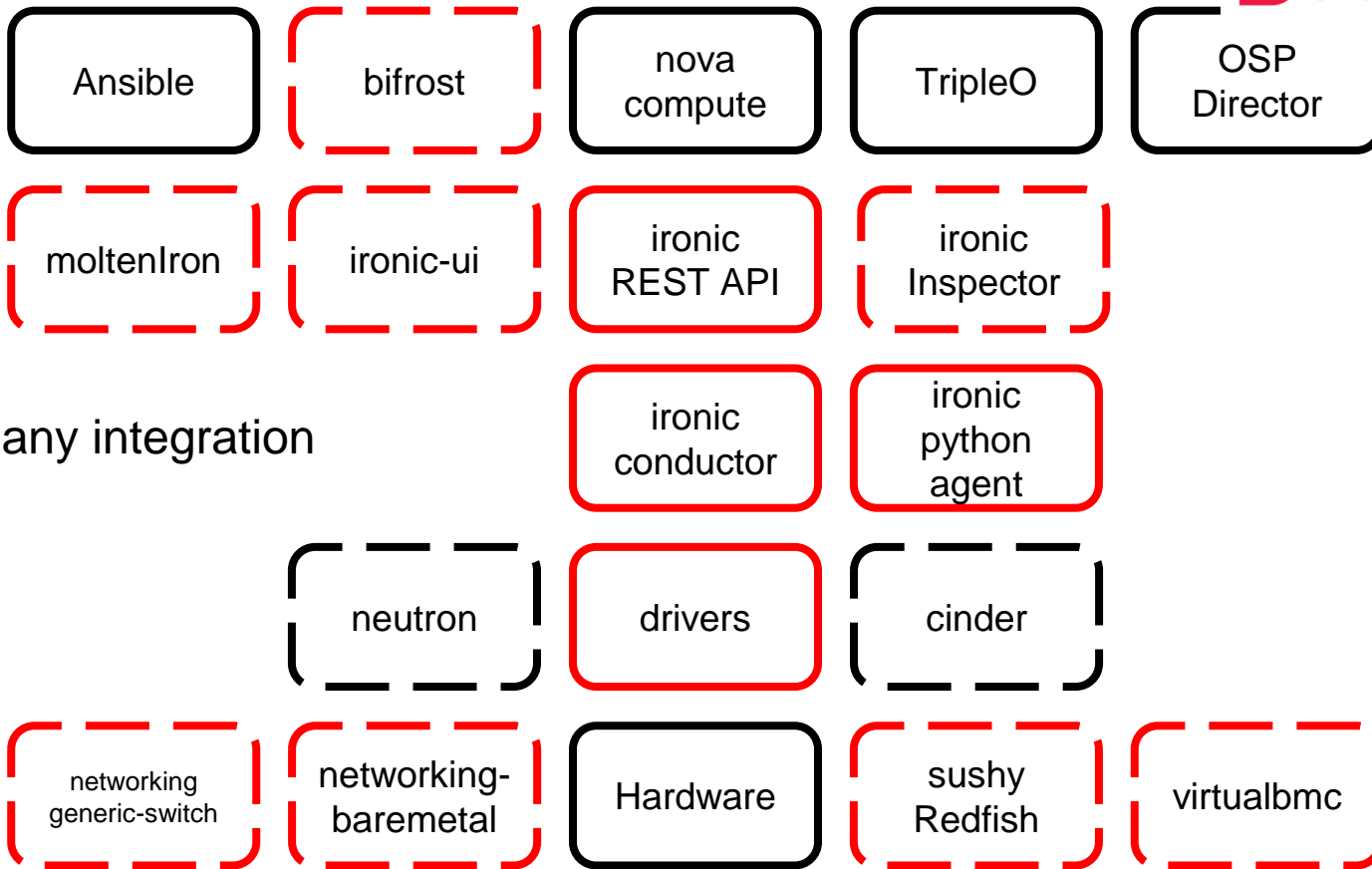
Many of the steps to deploying hardware are similar
across vendors!

What makes up an ironic installation?

ironic in “stand-alone” mode.







With many integration points!

How does ironic help?

There are many ways to use ironic

Use heat with nova

```
1. bash
$ cat heat-example.yaml
heat_template_version: 2013-05-23

parameters:
  image:
    type: string
  flavor:
    type: string
    default: baremetal

resources:
  server:
    type: OS::Nova::Server
    properties:
      image: { get_param: image }
      flavor: { get_param: flavor }

$
```

Use Ansible directly with ironic

```
1. bash
$cat ansible-add-to-ironic.yaml
# Enroll a node with some basic properties and driver info
- os_ironic:
  cloud: "devstack"
  driver: "ipmi"
  name: "BaremetalServer"
  properties:
    cpus: 6
    cpu_arch: "x86_64"
    ram: 8192
    disk_size: 64
  nics:
    - mac: "aa:bb:cc:aa:bb:cc"
    - mac: "dd:ee:ff:dd:ee:ff"
  driver_info:
    power:
      ipmi_address: "10.20.30.40"
      ipmi_username: "admin"
      ipmi_password: "adminpass"
$
```

Use Ansible directly with ironic

```
1. bash
$cat ansible-deploy-from-ironic.yaml
- os_ironic_node:
  cloud: "devstack"
  name: "BaremetalServer"
  state: present
  power: present
  deploy: True
  maintenance: False
  config_drive: "http://192.168.1.1/host-configdrive.iso"
  instance_info:
    image_source: "http://192.168.1.1/deploy_image.img"
    image_checksum: "356a6b55ecc511a20c33c946c4e678af"
    image_disk_format: "qcow"
  delegate_to: localhost
$
```

Using the command line - nova

```
# Deploy a server with Nova
openstack server create --flavor baremetal --image cirros \
  --key-name yourkey demo-instance

# Undeploy a the nova instance
openstack server delete demo-instance

# Deploy a specific server with ironic
openstack baremetal node deploy \
  --config-drive /path/to/config-drive.iso.gz \
  specificserver0001

# Undeploy a server, which sends it to cleaning
openstack baremetal node undeploy specificserver0001
```


Using the command line - ironic

```
# Set parameters about the server
openstack baremetal node set specificserver0001 \
  --instance-info image_source=http://10.20.30.1/disk-image.qcow2 \
  --instance-info image_checksum=0d599f0ec05c3bda8c3b8a68c32a1b47 \
  --instance-info capabilities="{\"boot_option\": \"local\"}"

# Deploy a specific server with ironic
openstack baremetal node deploy \
  --config-drive /path/to/config-drive.iso.gz \
  specificserver0001

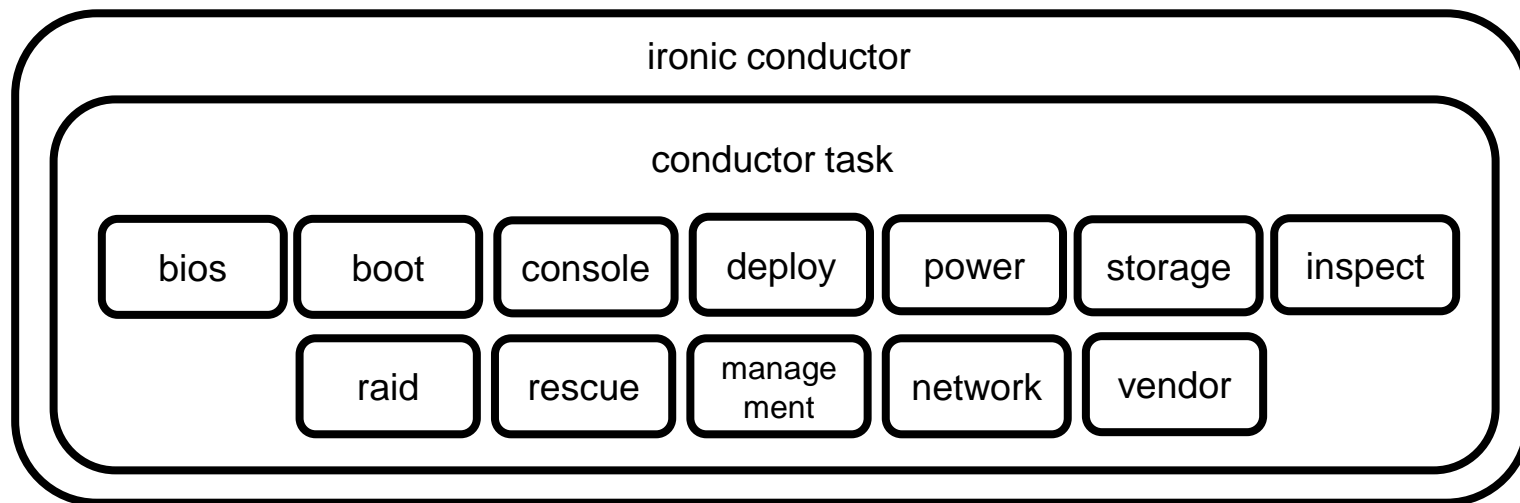
# Undeploy a server, which sends it to cleaning
openstack baremetal node undeploy specificserver0001
```

What hardware does ironic support?

- IPMI compliant
- DMTF Redfish compliant
- Cisco UCS
- Dell iDRAC
- Fujitsu IRMC
- HPE iLO
- Lenovo xClarity

How do drivers work?

How do drivers work?



What does each part do?

Bios	Get/set BIOS settings
Boot	Supplies mechanisms to boot (pxe/ipxe, vmedia)
Console	Serial console access
Deploy	Controls deployment and cleaning of baremetal nodes
Power	Gets/set power state
Storage	Controls interactions with storage systems
Inspect	Performs hardware configuration collection/inspection
Raid	Manages raid interface configuration
Rescue	Provides rescue-mode functionality
Management	Get/set boot mode and device
Network	Controls interactions with the networking service
Vendor	Facility for additional vendor specific features.

Questions?

<https://docs.openstack.org/ironic/latest/>