Learnings from scaling Ironic at Yahoo

Arun S A G

saga@yahoo-inc.com

zer0c00l on freenode
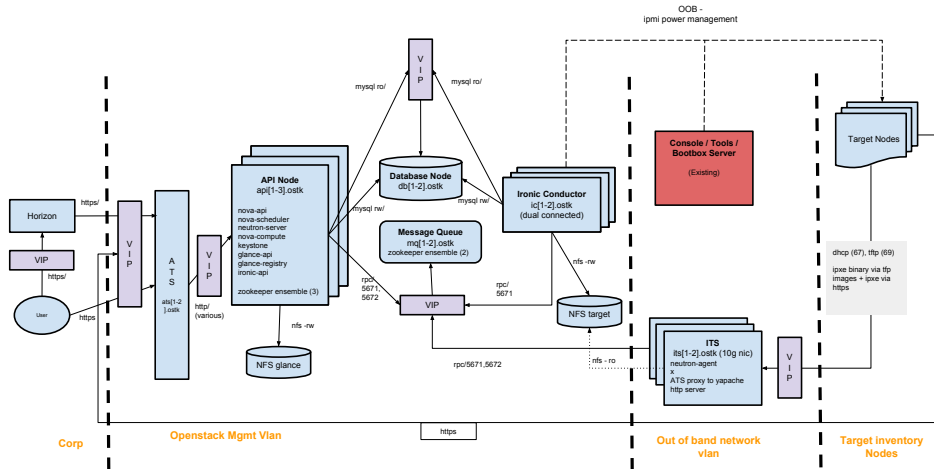
Yahoo Inc

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https://github.com/saga/presentations/

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Background and Architecture

Cluster Architecture

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Migrating to Ironic

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- Create neutron port for the node
- If the node is already active in the old system, 'fake' boot it with fake_pxe driver
- Once everything is successful, switch to pxe_ipmitool driver

Ironic

Ironic Setup

- Ironic API runs behind Apache Server

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- Ironic Conductors(2)

What could possibly go wrong?

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- Ironic API calls took too long

Solutions

- Sync_Power_State periodic task

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- Sync_Power_State periodic task
- Increase the number of Ironic Conductors
- Run multiple conductors on the same host

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Neutron

Neutron setup

- All 3 API servers run neutron-server

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Neutron setup

- All 3 API servers run neutron-server
- 24 API/RPC workers
- 4 neutron dhcp agents
- All networks/subnets are managed by all 4 agents (HA)
- ISC DHCPD driver instead of dnsmasq

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What is sync state?

A tale of two drivers

- OMShell driver

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- OMShell driver
- Pypureomapi driver

OMShell

```
-bash-4.1$ omshell
> server 127.0.0.1
> port 7911
> key keyname secret
> connect
obj: <null>
> new host
obj: host
> set hardware-address = 00:1c:1a:1d:10:54
obj: host
hardware-address = 00:1c:1a:1d:10:54
> open
obj: host
hardware-address = 00:1c:1a:1d:10:54
ip-address = 0a:d7:a6:b1
name = "hostname.yahoo.com-0"
hardware-type = 00:00:00:01
>remove
```
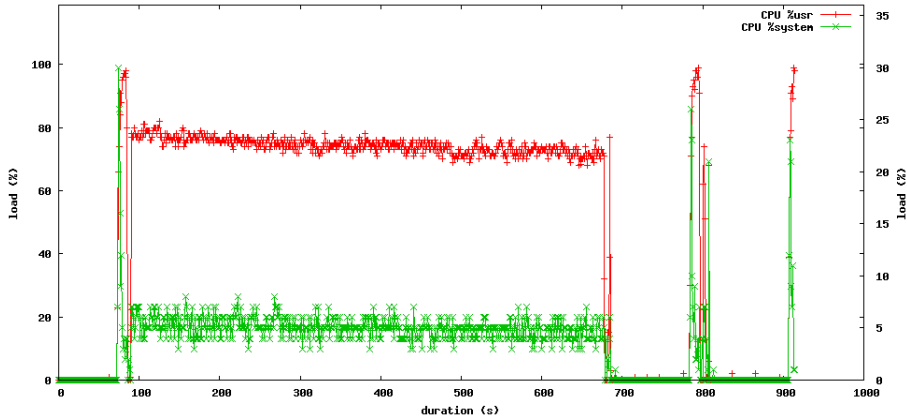
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Sync State with OMShell

LOAD for cmd: /home/y/share/venv/openstack_yahoo_neutron/bin/python2 /home/y/share/venv/openstack_yahoo_neutron/bin/neutron-dhcp-agent --conf
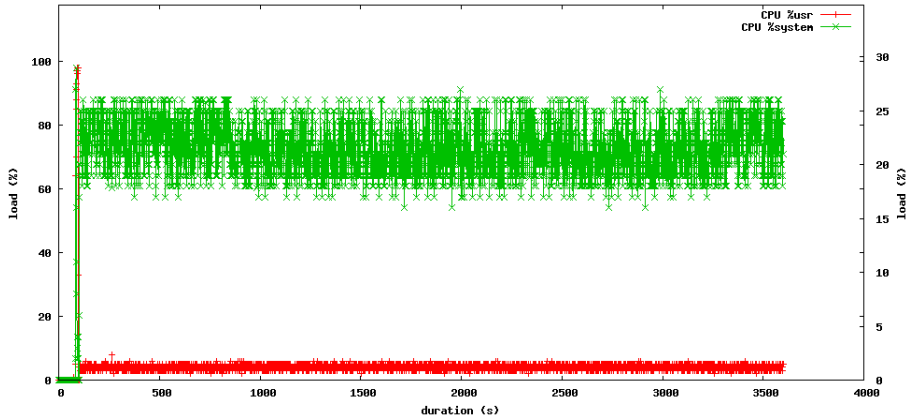
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Sync State with PypureOMAPI

LOAD for cmd: /home/y/share/venv/openstack_yahoo_neutron/bin/python2 /home/y/share/venv/openstack_yahoo_neutron/bin/neutron-dhcp-agent --conf

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- ▶ VIP thinks dhcpd is down whenever it restarts
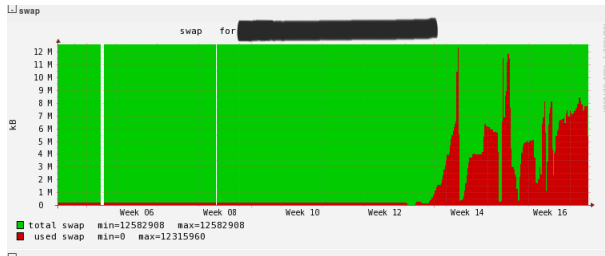
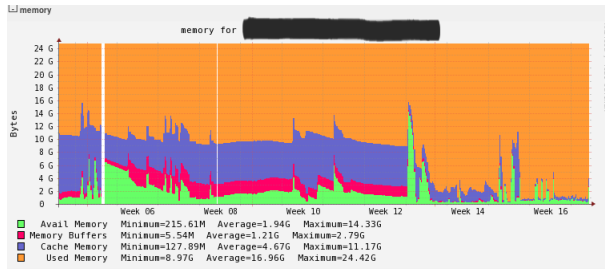openstack.

Where do we go from here?

- ▶ ISC DHCPD restarts are not ideal
- ▶ VIP thinks dhcpd is down whenever it restarts
- ▶ Move to Kea DHCP Server if possible

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Density Test

When did things started to break?

- At 24500 nodes, API servers started swapping

Swap and memory usage on API nodes

Memory usage

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- Easy fix: Reduce number of api_workers and rpc_workers
- Long Term Fix: Investigate memory usage, isolate neutron

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- Avoid spawning processes, try and use native python libraries whenever possible
- Pay attention to periodic tasks
- Be prepared to scale horizontally
- Pay attention to number of workers,conductors,rpc_workers
- Don't forget to have fun :)

Questions