



From Zero to Hero: HPC Edition

Jason C. Nucciarone [~nuccitheboss]





Who am I?

What do I do for fun and work?



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HPC Engineer @ Canonical

One of the “Not so Ancient
Elders” of Ubuntu HPC



And folks -
I have a problem...



[URGENT]: Please read External Inbox x



Billy Olsen <olsen@ubuntu.com>

to me ▾



Hi Jason,

I know you have your workshop today, but I really need you to analyze this dataset. I need the results handed in to me by November 3rd @ 6:00 PM EET so I can present at an upcoming vendor meeting.

Hope the workshop goes well!

Best,

Your boss

↩ Reply

➦ Forward





But it's okay!

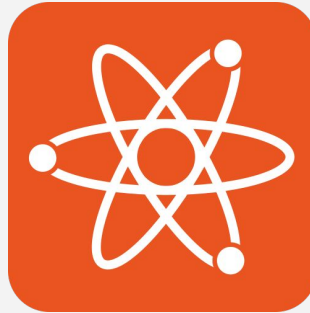
You heard about this up and coming open source HPC project...

Charmed HPC



Canonical
LXD

+



+



Canonical
Juju



So how do we use a
Charmed HPC cluster
to solve our problem?



Step #1

Set up your LXD backing cloud

```
$ sudo snap install lxd
```

```
$ sudo lxd init --auto
```

```
$ lxc profile set default security.privileged true
```

```
$ lxc profile set default raw.apparmor 'mount fstype=nfs*, mount fstype=rpc_pipefs,'
```

```
$ sudo snap install juju
```

```
$ juju bootstrap localhost
```




Step #2

Deploy your minified HPC cluster

```
$ sudo snap install pluto --edge
```

```
$ sudo snap connect pluto:juju-bin juju:juju-bin
```

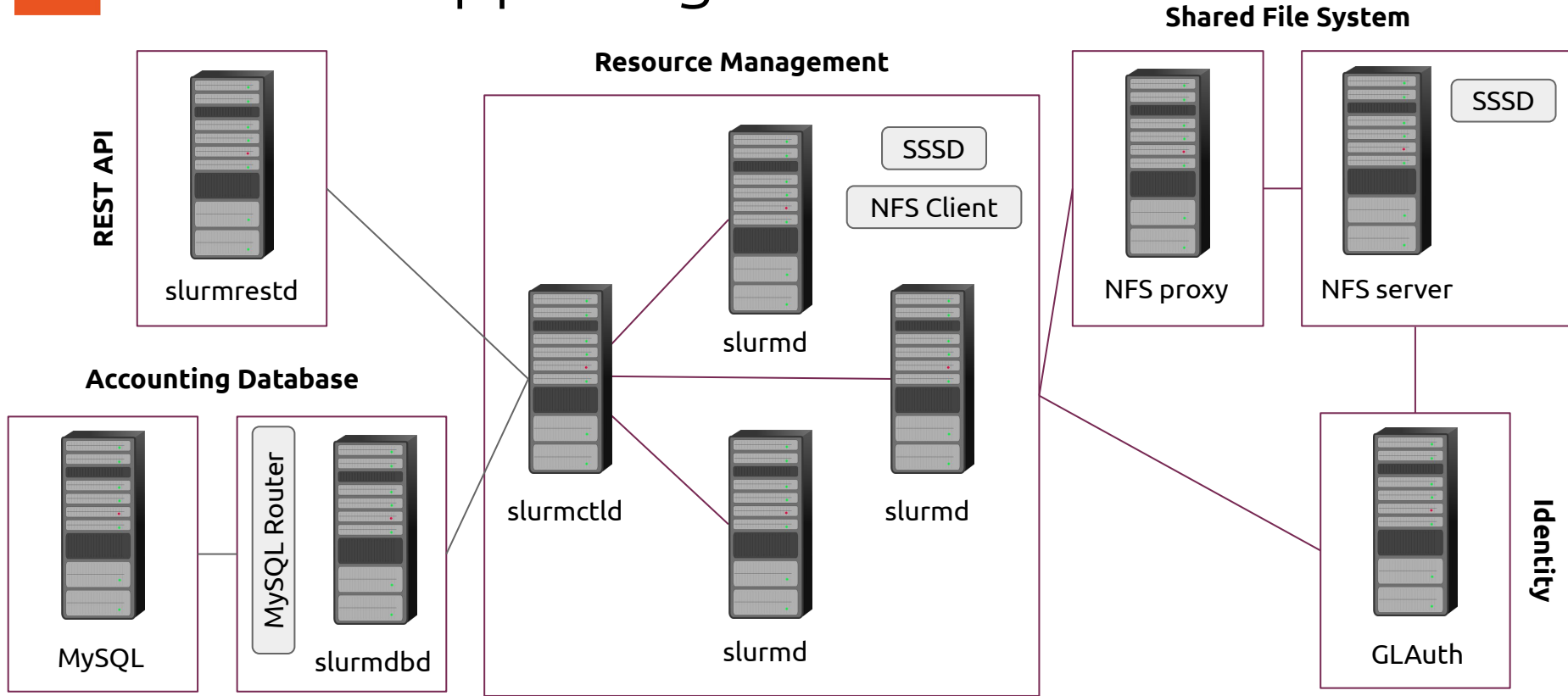
```
$ pluto bootstrap charmed-hpc
```

...

And now we wait!



What's happening here?





**A FEW
MOMENTS LATER**



Step #3

Run your workload on the cluster

```
$ juju exec -a slurm-controller,compute -- apt-get -y install build-essential \  
python3-dev python3-venv
```

```
$ juju ssh slurm-controller/leader
```

```
$ sudo -i -u researcher
```

```
$ git clone https://github.com/NucciTheBoss/last-minute-analysis.git
```

```
$ cd last-minute-analysis
```

```
$ python3 -m venv venv/ && . venv/bin/activate
```

```
$ python3 -m pip install -r requirements.txt
```



Step #3 (Continued)

Run your workload on the cluster

```
$ sbatch analysis.batch
```

...

A few seconds later

```
$ cp analysis_output.tgz /tmp && exit
```

```
$ juju scp slurm-controller/leader:/tmp/analysis_output.tgz .
```

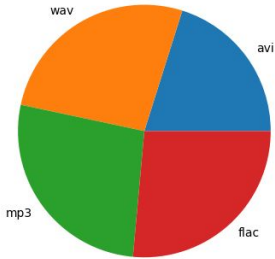
```
$ tar -xzf analysis_output.tgz
```

Time to review the results!

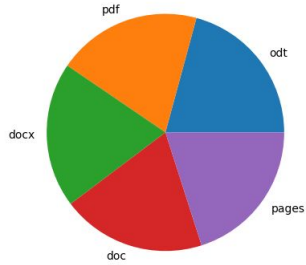


Tada!

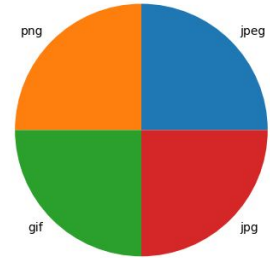
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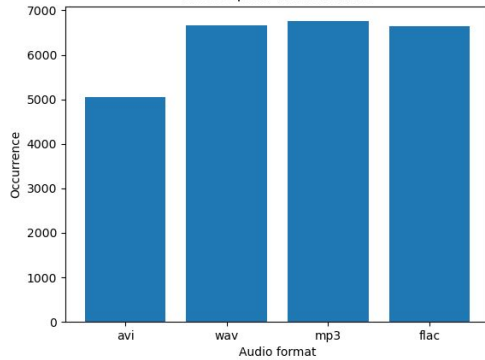
Most Popular Document Format



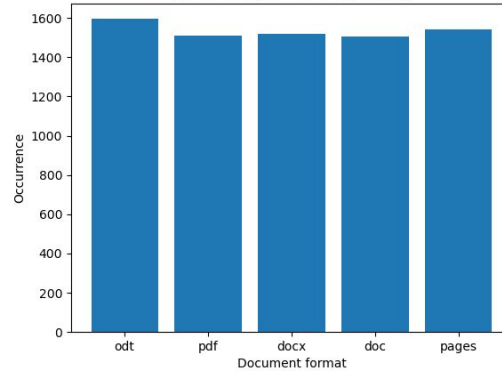
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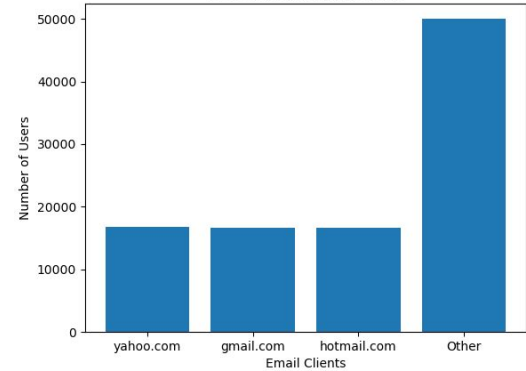
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Charmed HPC is open for contributions!



Or go to: <https://ubuntu.com/community/governance/teams/hpc>