Virtual Private Servers

alex chojnacki

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1. Began with dumb terminals attached to smart mainframes

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3. Back to dumb devices connected to supercomputers.

   - *What can you even do on a phone with no internet connection?*

What is a VPS?

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Okay, yeah, it's a "virtual private server" ...

What does Wikipedia say about it?

"A VPS runs its own copy of an operating system, and customers have superuser-level access to that operating system instance, so they can install almost any software that runs on that OS. For many purposes they are functionally equivalent to a dedicated physical server, and being software-defined, are able to be much more easily created and configured." -- Wikipedia

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Advantages

- They are easily configurable ...
- We can make as many as we want ...
- We can make them as powerful as we need ...
- We can create and destroy them instantly ...
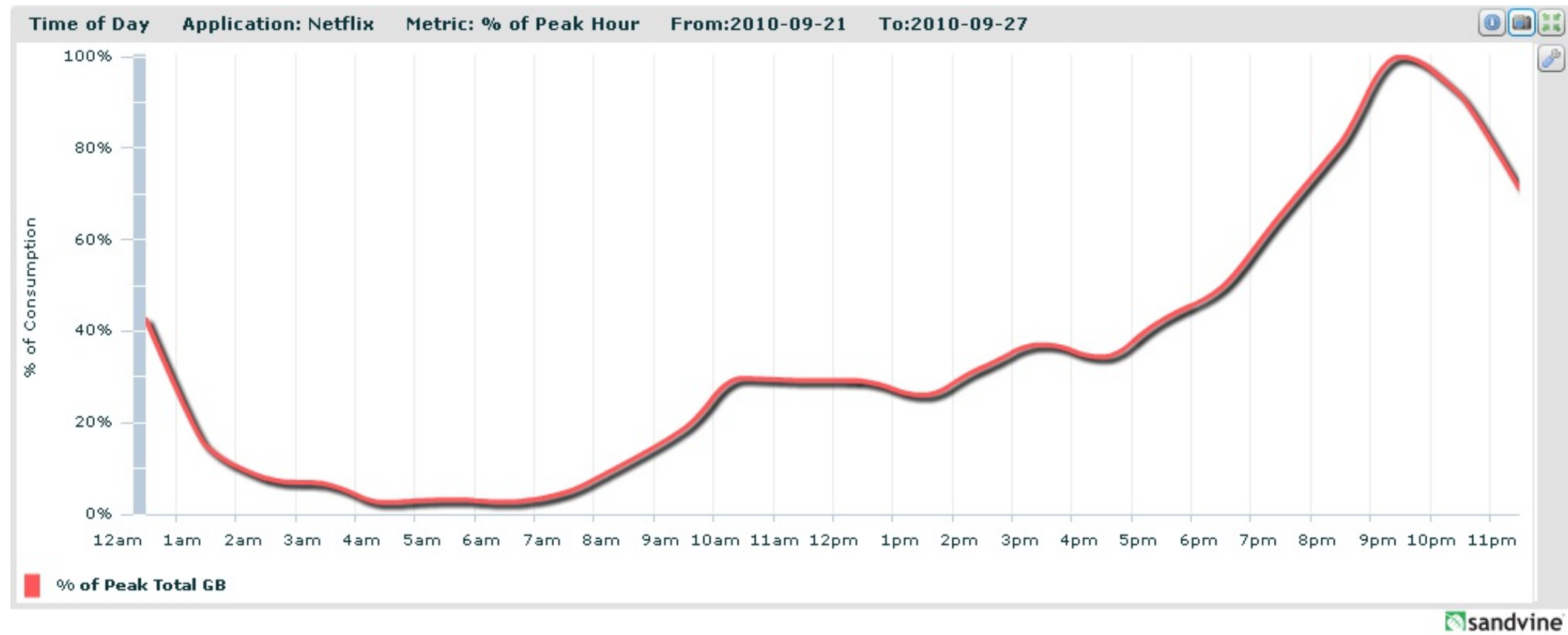
How do I make one?

Vagrant

- A "headless" VM
- Provisioning support built-in
- Often times more convenient without the GUI
- Provisioning mechanism

```
thealex :: $ vagrant init hashicorp/precise64
...
thealex :: $ vagrant up
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Why is provisioning cool? **::** What if I want to make 50 VMs at once and they all need the same config?

Docker

- A "lightweight" VM
- Quicker than vagrant, but much less contained
  - Where vagrant/virtualbox virtualise the hardware, docker utilizes a clever namespace trick in order to run processes in 'isolated' environments while avoiding any hardware virtualisation.
- Rich ecosystem of third-party images and environments

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docker run -it ubuntu bash
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AWS, Linode, DigitalOcean, etc.

- Disposable servers in the cloud!

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Use your imagination!

Why would I ever use AWS for compute power?

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I hear neural networks are all the rage …

http://arxiv.org/pdf/1508.06576v2.pdf

https://github.com/jcjohnson/neural-style

Installing dependencies

```
luarocks install sys
luarocks install image
luarocks install loadcaffe
luarocks install torch
export LD_LIBRARY_PATH=/home/ubuntu/torch-distro/install/lib:/home/ubuntu/torc
h-distro/install/lib:/home/ubuntu/cudnn-6.5-linux-x64-v2-rc2

# clone the project and install
git clone https://github.com/jcjohnson/neural-style
cd neural-style
sh models/download_models.sh
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- What is `luarocks`?
- What is `export LD_LIBRARY_PATH` doing?
- What about the sh command?

How do we get my image onto the server?

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- `scp` !

```
scp -i ~/Downloads/c4cs-neural-style.pem ubuntu@ec2-52-70-134-147.compute-
1.amazonaws.com:neural-style/output.png .
```

- maybe even a python webserver ... `http://52.70.134.147`

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- Wanted a flash card app on my phone

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From the first slide of the course ...

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## What this class is about
- This is not "Tools for Computer Scientists"

- Though, we will cover a lot of cool tools

- The goal is to give you the ability to pick up, learn, and use tools effective
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- ... you've followed a guide and needed to improvise.

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... the second time ...