

# Setting up Virtual Machines

CompSci 316

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# Outline

- VirtualBox & Vagrant
- Google Cloud
- Readyng VM for the course
- Database related

# Notice

- For this session:
  - Will answer questions after going through the slides.
  - I am happy to take questions, but you don't have to stay if you don't have anything to ask. You may leave as soon as I finish the slides.
- For VirtualBox & Vagrant:
  - I cover Windows questions ONLY; can't take Mac questions.
  - Mac questions:
    - Tianyi's office hour: 4-6pm Thursday at Link
    - Jia's office hour: 11am-1pm Friday at Link

# VirtualBox/Vagrant (Under Windows)

- Step 1:
  - Download & Install them.
  - VirtualBox: <https://www.virtualbox.org/>
    - Don't forget the **extension pack!**
    - Recommend you to install in default folders. Otherwise may encounter problems when installing the extension pack.
    - Close your anti-virus software/firewall temporarily when installing extension pack.
  - Vagrant: <https://www.vagrantup.com/>
    - After installation: type "vagrant plugin install vagrant-vbguest" in a cmd window.

# VirtualBox/Vagrant (Under Windows)

```
Microsoft Windows [版本 6.3.9600]  
(c) 2013 Microsoft Corporation。保留所有权利。  
  
C:\Windows\system32>vagrant  
  
C:\Windows\system32>vagrant plugin install vagrant-vbguest  
Installing the 'vagrant-vbguest' plugin. This can take a few minutes...
```

# VirtualBox/Vagrant (Under Windows)

- Step 2:
  - Download Vagrantfile
    - Don't download with .txt extension!
  - `vagrant up`
  - `vagrant ssh`
    - Sometimes not working under Windows. You can either directly use Desktop given by VirtualBox, or download 'Putty' or 'XShell' to connect to your virtual machine.
    - User: `vagrant`
    - Password: `vagrant`
  - `vagrant halt`

# VirtualBox/Vagrant (Under Windows)

```
vagrant-ubuntu-trusty-64 login: vagrant
Password:
Last login: Wed Sep  7 21:41:34 UTC 2016 on tty1
Welcome to Ubuntu 14.04.3 LTS (GNU/Linux 3.13.0-63-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

System information as of Wed Sep  7 22:54:17 UTC 2016

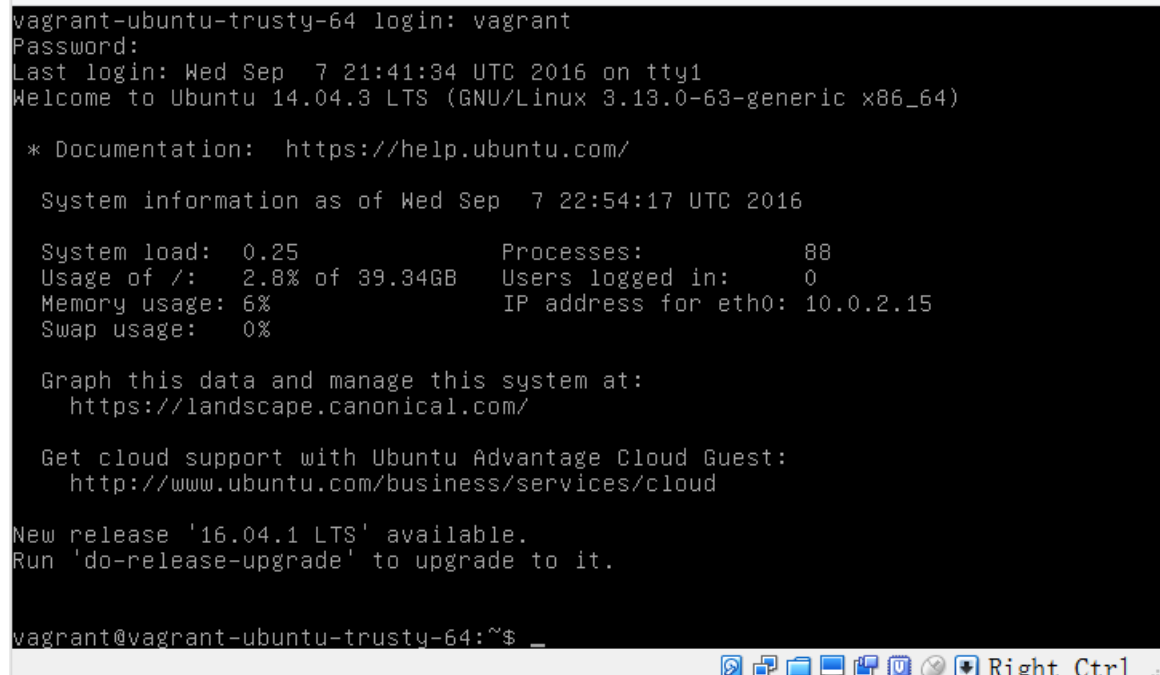
System load:  0.25          Processes:      88
Usage of /:   2.8% of 39.34GB    Users logged in:  0
Memory usage: 6%           IP address for eth0: 10.0.2.15
Swap usage:   0%

Graph this data and manage this system at:
  https://landscape.canonical.com/

Get cloud support with Ubuntu Advantage Cloud Guest:
  http://www.ubuntu.com/business/services/cloud

New release '16.04.1 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

vagrant@vagrant-ubuntu-trusty-64:~$ _
```

A screenshot of a terminal window running on a Windows host. The terminal displays the login process for a vagrant user on a virtual machine named 'vagrant-ubuntu-trusty-64'. After a successful login, the system shows the Ubuntu 14.04.3 LTS welcome message and provides documentation links. It then displays system information as of Wednesday, September 7, 2016, at 22:54:17 UTC. The system load is 0.25, with 88 processes running. The root filesystem usage is 2.8% of 39.34GB, memory usage is 6%, and swap usage is 0%. No users are logged in. The IP address for the eth0 interface is 10.0.2.15. The terminal also provides links for system monitoring (landscape.canonical.com) and cloud support (www.ubuntu.com/business/services/cloud). A notification for a new Ubuntu release (16.04.1 LTS) is shown, suggesting a 'do-release-upgrade'. The prompt at the bottom shows the user is in the home directory (~) and the cursor is on a new line.

# Google Cloud

- Steps:
  - Access to Google cloud console <https://console.cloud.google.com/project>
  - Create a project (if you've never created one before)
  - Create an instance
    - Disk: Ubuntu 14.04 LTS
    - Disk room: **at least 20GB**
    - ALLOW HTTP/HTTPS traffic
  - SSH into your virtual machine
  - No more steps!
  - **Don't forget to turn it off when you are not using it!**



Compute Engine

VM instances

- Instance groups
- Instance templates
- Disks
- Snapshots
- Images
- Metadata
- Health checks
- Zones
- Operations
- Quotas
- Settings

VM instances

CREATE INSTANCE CREATE INSTANCE GROUP REFRESH START STOP RESET DELETE

```
ywen1995@testinstance: ~ - Google Chrome
https://ssh.cloud.google.com/projects/composed-sun-142621/zones/us-central1-b/instances/testinstance?authus
Connected. host fingerprint: #GN-ESA 2018 AD:18:82:2C:135:7C:65:9C:F0:03:82:87:68:30:14:AA
Welcome to Ubuntu 14.04.5 LTS (GNU/Linux 4.4.0-34-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

System information as of Wed Sep  7 23:12:54 UTC 2016

System load: 0.08      Memory usage: 3%    Processes:   76
Usage of /:  18.3% of 9.81GB   Swap usage:  0%    Users logged in: 0

Graph this data and manage this system at:
  https://landscape.canonical.com/

Get cloud support with Ubuntu Advantage Cloud Guest:
  http://www.ubuntu.com/business/services/cloud

Your Hardware Enablement Stack (HWE) is supported until April 2019.

Last login: Tue Sep  6 21:58:13 2016 from 74.125.42.164
ywen1995@testinstance:~$
```

1 hour 6 hours 12 hours 1 day 2 days 4 days 7 days 14 days 30 days

# Getting your VM ready!

- Follow instructions on course website under Help -> Readyng VM for the course
- Open up a browser (on your laptop) and sign into Duke gitlab
  - “Profile Settings” -> “SSH Keys”; get ready to add key
- Get a shell on your VM and run
  - `wget -N http://www.cs.duke.edu/courses/fall16/compsci316/init.sh`
  - `bash init.sh`
  - Copy and paste the key into the browser
  - Once, confirmed, continue on VM
- In the VM shell, run `/opt/dbcourse/sync.sh`
- Reboot VM

# Getting your VM ready!

- A key should look something like this: (no line break!)

ssh-rsa

```
AAAAB3NzaC1yc2EAAAADAQABAAQBACTBCBRIFcQsQk  
eBQZuNUq5FDVcyiTI4bQVHrGcJnJCSrxInIBsptvKVHIGp  
OkWFC2w+n9GN4rLKNmObvOfn/HItLywrC32G7ypUbYSV  
ZyB9a1baskmQy+LgsFJU8Gvn0FXEqG8eCNqVUhhUvmw  
UJmWqhe0SxgTrzXz0Ar2nRq2YQEvNzNVnLh1yH9Ua7o  
wj2aP5ukDco+ye86v4mmIEpqTgNFIFBSip+0Ix1uWKSWdC  
OcYMy1L9TJWqwHI6xM4AhdjL6mt2TyudegvubjbFnESG  
OhyG4eqbl+sbsVAB1dNr9nRGfTTqe4/N8qOhowKdlqnFcsC  
o/Cy1KkJv1Rbk3UTY yw166@duke.edu
```

# Database/Homework #1 related

- Play with RA
  - Follow the instructions for Homework #1, Problem 2
  - Run `/opt/dbcourse/examples/db-beers/setup.sh` in virtual machine
  - Then you can run `ra beers`
  - Have fun 😊