

HW-4 Vera Li.

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IT Operations - Automation and Orchestration

<https://www.youtube.com/watch?v=JTv1QWjTWS8&index=1&list=PLLO4AVszo1SOkNPAv4E824AFScdduO9NF>

http://cloudmesh.github.io/introduction_to_cloud_computing/class/lesson/devops/ansible.html#ref-class-lesson-devops-ansible

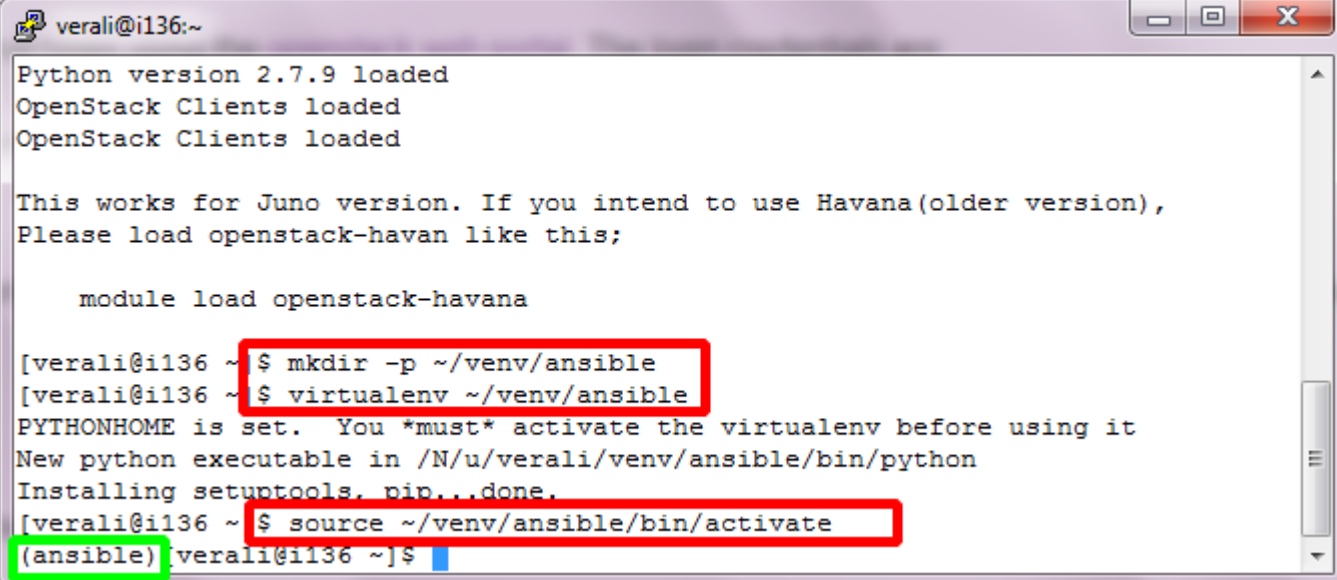
Ansible

Tutorial: Ansible Basic commands

Keep in mind that `ansible` is a main program and `playbook` is a template that you would like to use. Ansible has two types of servers: a control machine and a managed node. Typically, a single control machine executes tasks over the one or more nodes.

Control machine

create a separate virtualenv and install Ansible

A terminal window titled 'verali@i136:~' showing the process of setting up a virtual environment for Ansible. The terminal output includes: 'Python version 2.7.9 loaded', 'OpenStack Clients loaded', and a note about Juno vs Havana versions. The user runs 'mkdir -p ~/venv/ansible' and 'virtualenv ~/venv/ansible', both highlighted with red boxes. The output shows 'PYTHONHOME is set' and the location of the new python executable. Then, the user runs 'source ~/venv/ansible/bin/activate', also highlighted with a red box. The prompt changes to '(ansible) verali@i136 ~]\$', which is highlighted with a green box.

```
verali@i136:~  
Python version 2.7.9 loaded  
OpenStack Clients loaded  
OpenStack Clients loaded  
  
This works for Juno version. If you intend to use Havana(older version),  
Please load openstack-havana like this;  
  
module load openstack-havana  
  
[verali@i136 ~]$ mkdir -p ~/venv/ansible  
[verali@i136 ~]$ virtualenv ~/venv/ansible  
PYTHONHOME is set. You *must* activate the virtualenv before using it  
New python executable in /N/u/verali/venv/ansible/bin/python  
Installing setuptools, pip...done.  
[verali@i136 ~]$ source ~/venv/ansible/bin/activate  
(ansible) verali@i136 ~]$_
```

```
verali@i136:~  
(ansible)[verali@i136 ~]$ pip install --trusted-host pypi.python.org ansible  
You are using pip version 6.1.1, however version 7.0.3 is available.  
You should consider upgrading via the 'pip install --upgrade pip' command.  
Collecting ansible  
  Downloading ansible-1.9.1.tar.gz (917kB)  
    100% |████████████████████████████████████████| 917kB 13.6MB/s  
Collecting paramiko (from ansible)  
  Downloading paramiko-1.15.2-py2.py3-none-any.whl (165kB)  
    100% |████████████████████████████████████████| 167kB 1.5MB/s  
Collecting jinja2 (from ansible)  
  Downloading Jinja2-2.7.3.tar.gz (378kB)  
    100% |████████████████████████████████████████| 380kB 13.2MB/s  
Collecting PyYAML (from ansible)  
  Downloading PyYAML-3.11.tar.gz (248kB)  
    100% |████████████████████████████████████████| 249kB 13.2MB/s  
Requirement already satisfied (use --upgrade to upgrade): setuptools in ./venv/a
```

```
verali@i136:~  
    100% |████████████████████████████████████████| 446kB 12.9MB/s  
Collecting ecdsa>=0.11 (from paramiko->ansible)  
  Downloading ecdsa-0.13-py2.py3-none-any.whl (86kB)  
    100% |████████████████████████████████████████| 90kB 15.7MB/s  
Collecting markupsafe (from jinja2->ansible)  
  Downloading MarkupSafe-0.23.tar.gz  
Installing collected packages: ecdsa, pycrypto, paramiko, markupsafe, jinja2, PyYAML, ansible  
  Running setup.py install for pycrypto  
  Running setup.py install for markupsafe  
  Running setup.py install for jinja2  
  Running setup.py install for PyYAML  
  Running setup.py install for ansible  
Successfully installed PyYAML-3.11 ansible-1.9.1 ecdsa-0.13 jinja2-2.7.3 markupsafe-0.23 paramiko-1.15.2 pycrypto-2.6.1  
(ansible)[verali@i136 ~]$
```

Managed machines

Launch 3 vms on openstack – with IP address as below:

10.23.1.184

10.23.1.185

10.23.1.183

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Time since created
<input type="checkbox"/>	vera-ansible-test-c9cd993b-63cd-44e2-9d69-30ed22582e5b	futuresystems/ubuntu-14.04	10.23.1.184	m1.small	vera_xuanying_li	Active	nova	None	Running	1 minute
<input type="checkbox"/>	vera-ansible-test-b8c18ff9-d1e9-4e41-92de-28bfbe1e204f	futuresystems/ubuntu-14.04	10.23.1.185	m1.small	vera_xuanying_li	Active	nova	None	Running	1 minute
<input type="checkbox"/>	vera-ansible-test-af20360c-43f0-4400-a433-e04cb29ff0c8	futuresystems/ubuntu-14.04	10.23.1.183	m1.small	vera_xuanying_li	Active	nova	None	Running	1 minute

Sanity check using SSH:

```
ubuntu@vera-ansible-test-b8c18ff9-d1e9-4e41-92de-28bfbe1e204f: ~
(ansible) [verali@i136 ~]$ ssh ubuntu@10.23.1.185
Warning: Permanently added '10.23.1.185' (RSA) to the list of known hosts.
Enter passphrase for key '/N/u/verali/.ssh/id_rsa':
Welcome to Ubuntu 14.04.2 LTS (GNU/Linux 3.13.0-53-generic x86_64)

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

System information as of Sun Jun  7 14:55:26 UTC 2015

System load: 0.0           Memory usage: 2%    Processes:      52
Usage of /:  56.6% of 1.32GB 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

0 packages can be updated.
0 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

ubuntu@vera-ansible-test-b8c18ff9-d1e9-4e41-92de-28bfbe1e204f:~$
```

```
ubuntu@vera-ansible-test-c9cd993b-63cd-44e2-9d69-30ed22582e5b: ~  
(ansible)[verali@i136 ~]$ ssh ubuntu@10.23.1.184  
Warning: Permanently added '10.23.1.184' (RSA) to the list of known hosts.  
Enter passphrase for key '/N/u/verali/.ssh/id_rsa':  
Welcome to Ubuntu 14.04.2 LTS (GNU/Linux 3.13.0-53-generic x86_64)  
  
* Documentation:  https://help.ubuntu.com/  
  
System information as of Sun Jun  7 14:55:24 UTC 2015  
  
System load: 0.0           Memory usage: 2%   Processes:      52  
Usage of /:  56.6% of 1.32GB 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  
  
0 packages can be updated.  
0 updates are security updates.  
  
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.  
ubuntu@vera-ansible-test-c9cd993b-63cd-44e2-9d69-30ed22582e5b:~$
```

```
ubuntu@vera-ansible-test-af20360c-43f0-4400-a433-e04cb29ff0c8: ~
(ansible) [verali@i136 ~]$ ssh ubuntu@10.23.1.183
Warning: Permanently added '10.23.1.183' (RSA) to the list of known hosts.
Enter passphrase for key '/N/u/verali/.ssh/id_rsa':
Welcome to Ubuntu 14.04.2 LTS (GNU/Linux 3.13.0-53-generic x86_64)

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

System information as of Sun Jun  7 14:55:24 UTC 2015

System load: 0.0           Memory usage: 2%   Processes:      52
Usage of /:  56.6% of 1.32GB 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

0 packages can be updated.
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the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

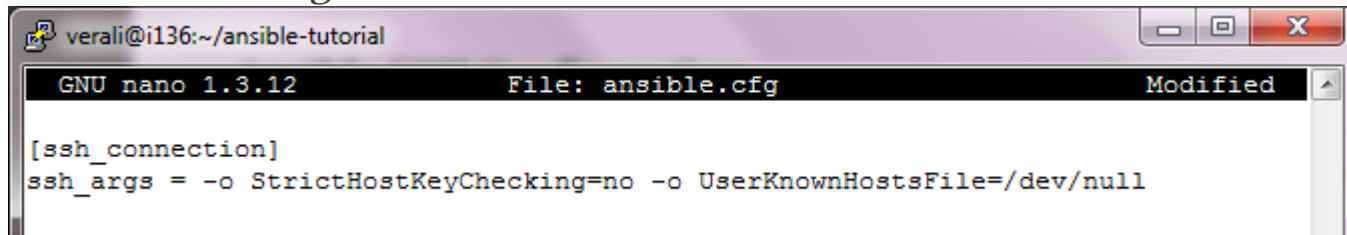
ubuntu@vera-ansible-test-af20360c-43f0-4400-a433-e04cb29ff0c8:~$
```

Create inventory file:

```
(ansible) [verali@i136 ~]$ mkdir ansible-tutorial
(ansible) [verali@i136 ~]$ cd ansible-tutorial/
(ansible) [verali@i136 ansible-tutorial]$ emacs inventory.txt

GNU nano 1.3.12      File: inventory.txt
[ansible-test]
10.23.1.184
10.23.1.185
10.23.1.183
```

Ansible SSH Configuration

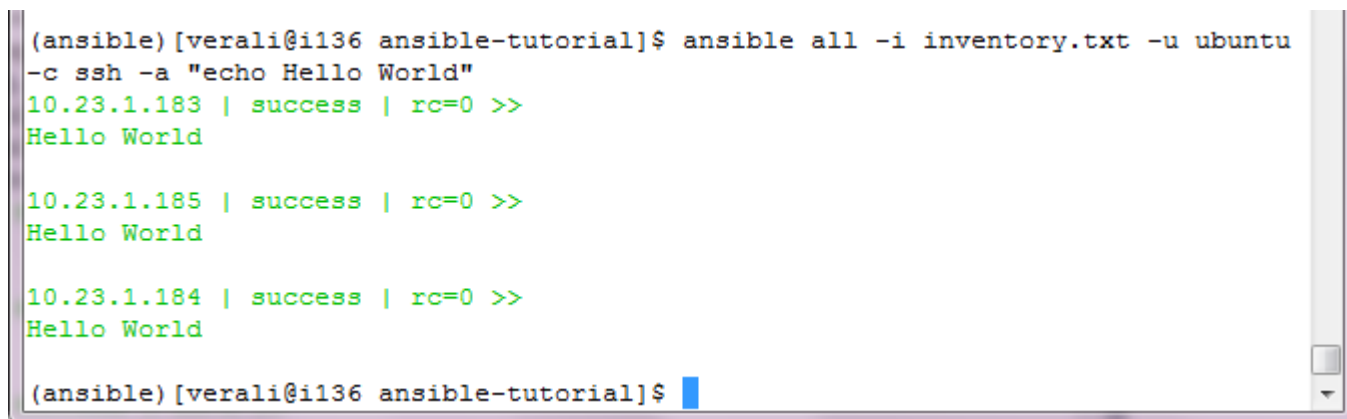


```
verali@i136:~/ansible-tutorial
GNU nano 1.3.12      File: ansible.cfg      Modified

[ssh_connection]
ssh_args = -o StrictHostKeyChecking=no -o UserKnownHostsFile=/dev/null
```

Shell module: Hello World

ansible all -i inventory.txt -u ubuntu -c ssh -a "echo Hello World"



```
(ansible)[verali@i136 ansible-tutorial]$ ansible all -i inventory.txt -u ubuntu
-c ssh -a "echo Hello World"
10.23.1.183 | success | rc=0 >>
Hello World

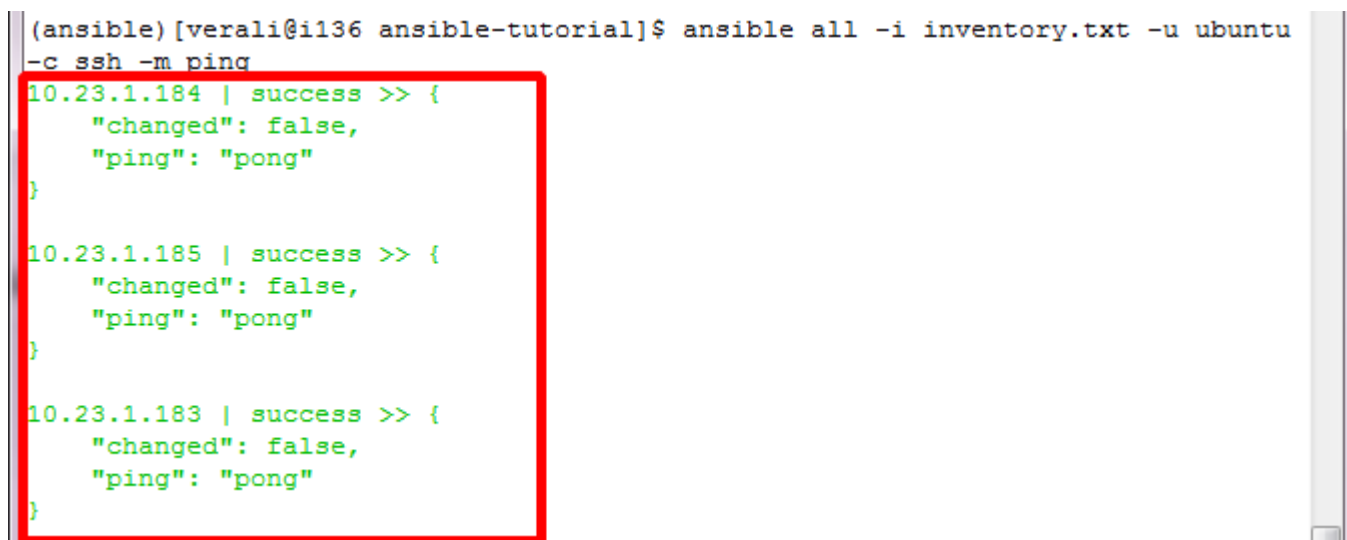
10.23.1.185 | success | rc=0 >>
Hello World

10.23.1.184 | success | rc=0 >>
Hello World

(ansible)[verali@i136 ansible-tutorial]$
```

Ping module

ansible all -i inventory.txt -u ubuntu -c ssh -m ping



```
(ansible)[verali@i136 ansible-tutorial]$ ansible all -i inventory.txt -u ubuntu
-c ssh -m ping
10.23.1.184 | success >> {
  "changed": false,
  "ping": "pong"
}
10.23.1.185 | success >> {
  "changed": false,
  "ping": "pong"
}
10.23.1.183 | success >> {
  "changed": false,
  "ping": "pong"
}
```

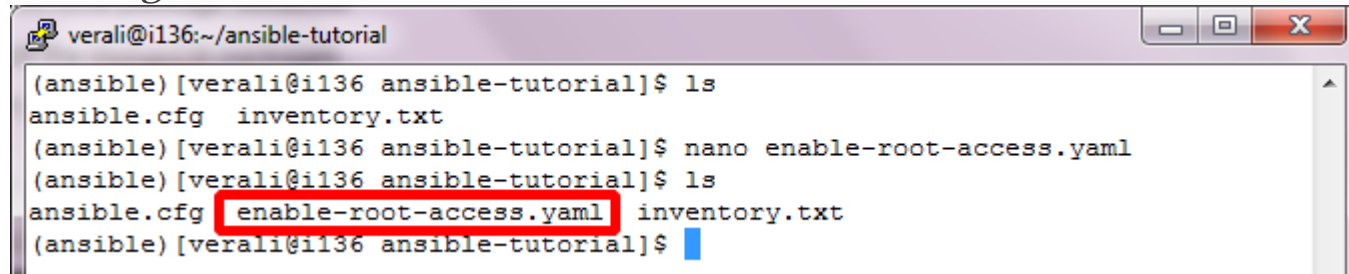
Ansible Playbooks

First playbook for MongoDB Installation

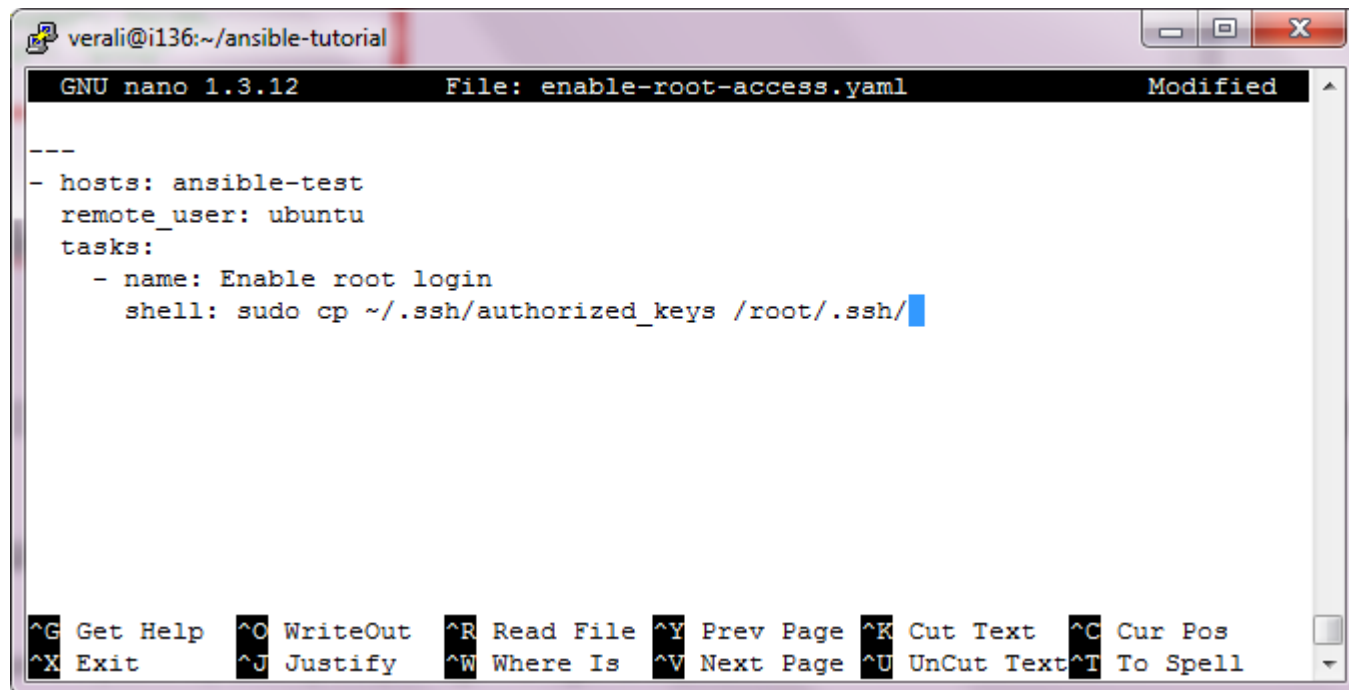
Task list

- Import the public key used by the package management system
- Create a list file for MongoDB
- Reload local package database
- Install the MongoDB packages
- Start MongoDB

Enabling Root SSH Access



```
verali@i136:~/ansible-tutorial
(ansible) [verali@i136 ansible-tutorial]$ ls
ansible.cfg  inventory.txt
(ansible) [verali@i136 ansible-tutorial]$ nano enable-root-access.yaml
(ansible) [verali@i136 ansible-tutorial]$ ls
ansible.cfg  enable-root-access.yaml  inventory.txt
(ansible) [verali@i136 ansible-tutorial]$
```



```
GNU nano 1.3.12      File: enable-root-access.yaml      Modified
---
- hosts: ansible-test
  remote_user: ubuntu
  tasks:
    - name: Enable root login
      shell: sudo cp ~/.ssh/authorized_keys /root/.ssh/
```

Run the playbook:


```
verali@i136:~/ansible-tutorial
(ansible) [verali@i136 ansible-tutorial]$ ansible-playbook -i inventory.txt -c ssh enable-root-access.yaml

PLAY [ansible-test] *****

GATHERING FACTS *****
ok: [10.23.1.185]
ok: [10.23.1.183]
ok: [10.23.1.184]

TASK: [Enable root login] *****
changed: [10.23.1.184]
changed: [10.23.1.183]
changed: [10.23.1.185]

PLAY RECAP *****
10.23.1.183      : ok=2    changed=1    unreachable=0    failed=0
10.23.1.184      : ok=2    changed=1    unreachable=0    failed=0
10.23.1.185      : ok=2    changed=1    unreachable=0    failed=0

(ansible) [verali@i136 ansible-tutorial]$
```

Hosts and Users

Playbook for mongodb:

```
---
- hosts: ansible-test
  remote_user: root
  tasks:
    - name: Import the public key used by the package management system
      apt_key: keyserver=hkp://keyserver.ubuntu.com:80 id=7FOCEB10 state=present
    - name: Add MongoDB repository
      apt_repository: repo='deb http://downloads-distro.mongodb.org/repo/ubuntu-upstart dist 10g$
    - name: install mongodb
      apt: pkg=mongodb-org state=latest update_cache=yes
      notify:
        - start mongodb
  handlers:
    - name: start mongodb
      service: name=mongod state=started
```



```
verali@i136:~/ansible-tutorial
GNU nano 1.3.12 File: mongodb.yaml
--
- hosts: ansible-test
  remote_user: root
  tasks:
    - name: Import the public key used by the package management system
      apt_key: keyserver=hkp://keyserver.ubuntu.com:80 id=7F0CEB10 state=present
    - name: Add MongoDB repository
      apt_repository: repo='deb http://downloads-distro.mongodb.org/repo/ubuntu-upstart dist 10g$
    - name: install mongodb
      apt: pkg=mongodb-org state=latest update_cache=yes
      notify:
        - start mongodb
  handlers:
    - name: start mongodb
      service: name=mongod state=started
```

ansible-playbook -i inventory.txt -c ssh mongodb.yaml

```
verali@i136:~/ansible-tutorial
(ansible) [verali@i136 ansible-tutorial]$ nano mongodb.yaml
(ansible) [verali@i136 ansible-tutorial]$ ansible-playbook -i inventory.txt -c ssh mongodb.yaml

PLAY [ansible-test] *****

GATHERING FACTS *****
ok: [10.23.1.183]
ok: [10.23.1.184]
ok: [10.23.1.185]

TASK: [Import the public key used by the package management system] *****
ok: [10.23.1.184]
ok: [10.23.1.183]
ok: [10.23.1.185]

TASK: [Add MongoDB repository] *****
ok: [10.23.1.184]
ok: [10.23.1.183]
ok: [10.23.1.185]

TASK: [install mongodb] *****
ok: [10.23.1.185]
ok: [10.23.1.184]
ok: [10.23.1.183]

PLAY RECAP *****
10.23.1.183      : ok=4    changed=0    unreachable=0    failed=0
10.23.1.184      : ok=4    changed=0    unreachable=0    failed=0
10.23.1.185      : ok=4    changed=0    unreachable=0    failed=0

(ansible) [verali@i136 ansible-tutorial]$
```

Sanity Check: Test MongoDB

```
ubuntu@vera-ansible-test-c9cd993b-63cd-44e2-9d69-30ed22582e5b: ~
(ansible)[verali@i136 ansible-tutorial]$ ssh ubuntu@10.23.1.184
Welcome to Ubuntu 14.04.2 LTS (GNU/Linux 3.13.0-53-generic x86_64)

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

System information as of Sun Jun  7 16:07:02 UTC 2015

System load:  0.16           Processes:            70
Usage of /:   21.6% of 19.65GB Users logged in:          0
Memory usage: 7%            IP address for eth0: 10.23.1.184
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

Last login: Sun Jun  7 15:54:26 2015 from 149.165.159.252
ubuntu@vera-ansible-test-c9cd993b-63cd-44e2-9d69-30ed22582e5b:~$ mongo
MongoDB shell version: 2.6.10
connecting to: test
Welcome to the MongoDB shell.
For interactive help, type "help".
For more comprehensive documentation, see
http://docs.mongodb.org/
Questions? Try the support group
http://groups.google.com/group/mongodb-user
>
```

Lab session

```
verali@i136:~/ansible-apache
(ansible) [verali@i136 ansible-apache]$ ansible apache -m ping -u ubuntu
10.23.1.183 | success >> {
  "changed": false,
  "ping": "pong"
}
10.23.1.184 | success >> {
  "changed": false,
  "ping": "pong"
}
10.23.1.185 | success >> {
  "changed": false,
  "ping": "pong"
}
(ansible) [verali@i136 ansible-apache]$
```

```
(ansible) [verali@i136 ansible-apache]$ ansible apache -m command -a "/bin/echo hello
apache2 lab session" -u ubuntu
10.23.1.183 | success | rc=0 >>
hello apache2 lab session
10.23.1.185 | success | rc=0 >>
hello apache2 lab session
10.23.1.184 | success | rc=0 >>
hello apache2 lab session
(ansible) [verali@i136 ansible-apache]$
```

```
verali@i136:~/ansible-apache

(ansible) [verali@i136 ansible-apache]$ ansible-playbook apache.yml -u ubuntu

PLAY [apache] *****

GATHERING FACTS *****
ok: [10.23.1.185]
ok: [10.23.1.183]
ok: [10.23.1.184]

TASK: [run echo command] *****
changed: [10.23.1.185]
changed: [10.23.1.184]
changed: [10.23.1.183]

PLAY RECAP *****
10.23.1.183      : ok=2    changed=1    unreachable=0    failed=0
10.23.1.184      : ok=2    changed=1    unreachable=0    failed=0
10.23.1.185      : ok=2    changed=1    unreachable=0    failed=0

(ansible) [verali@i136 ansible-apache]$
```

```
---
- hosts: apache
  remote_user: root
  tasks:
    - name: install apache2
      apt: name=apache2 update_cache=yes state=latest
```

```
(ansible) [verali@i136 ansible-tutorial]$ ansible-playbook -i inventory.txt apache.yml

PLAY [ansible-test] *****

GATHERING FACTS *****
ok: [10.23.1.184]
ok: [10.23.1.185]
ok: [10.23.1.183]

TASK: [install apache2] *****
```

OpenStack Heat

<https://mix.office.com/watch/1ry7jrkuvkfwh>

http://cloudmesh.github.io/introduction_to_cloud_computing/class/lesson/devops/openstack_heat.html#ref-class-lesson-devops-openstack-heat

Heat Client Tool & Stack List

```
verali@i136:~$ module load openstack
Python version 2.7.9 loaded
OpenStack Clients loaded
[verali@i136 ~]$ source $HOME/.cloudmesh/clouds/india/juno/openrc.sh
[verali@i136 ~]$ heat stack-list
```

id	creation_time	stack_name	stack_status
f51aca2a-0c3c-405c-a0c2-1b7d810c11d0	2015-05-07T14:23:59Z	heat-tutorial-naomi	COMPLETE
f640cc23-1832-4d2e-bafd-907f6e0a1193	2015-05-07T14:45:01Z	heat-wordpress-ex2-naomi	COMPLETE
b67aa569-42dc-4198-99bf-67e7db3b7c5e	2015-05-09T06:38:02Z	heat-lab-lguenther	FAILED
23bb4c11-f57f-4913-839e-3b67e01965e7	2015-05-09T17:15:22Z	wordpresslab	COMPLETE

Create a template in yaml

```
GNU nano 1.3.12 File: openstack_heat_ex1.yaml Modified
heat_template_version: 2013-05-23

description: Simple template to deploy a single compute instance on
FutureSystems

resources:
  my_instance:
    type: OS::Nova::Server
    properties:
      key_name: vera_xuanying_li
      image: futuresystems/ubuntu-14.04
      flavor: m1.small

^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell
```

```
in "<unicode string>", line 6, column 1
[verali@i136 ~]$ nano openstack_heat_ex1.yaml
[verali@i136 ~]$ heat stack-create --template-file openstack_heat_ex1.yaml vera-hw4-heat-tutorial
```

id	stack_name	stack_status	creation_time
f51aca2a-0c3c-405c-a0c2-1b7d810c11d0	heat-tutorial-naomi	CREATE_COMPLETE	2015-05-07T14:23:59Z
f640cc23-1832-4d2e-bafd-907f6e0a1193	heat-wordpress-ex2-naomi	CREATE_COMPLETE	2015-05-07T14:45:01Z
b67aa569-42dc-4198-99bf-67e7db3b7c5e	heat-lab-lguenther	CREATE_FAILED	2015-05-09T06:38:02Z
23bb4c11-f57f-4913-839e-3b67e01965e7	wordpresslab	CREATE_COMPLETE	2015-05-09T17:15:22Z
13b41aec-032e-4765-9f31-4d0b600ebfc6	heat-lab-wordpress-lguenther	CREATE_COMPLETE	2015-05-09T17:31:59Z
e977b497-1002-46fb-b87c-4894b088020f	heat-lab-lguenther2	CREATE_FAILED	2015-05-09T17:45:31Z
3ed15ffb-7bee-423d-af45-c9169e544e0f	exercicise1-branko	CREATE_COMPLETE	2015-05-09T17:57:36Z
6c52bb1e-99b7-4386-bb4d-51e4891023cb	exercicise1-branko2	CREATE_COMPLETE	2015-05-09T18:00:09Z
6fbe4f1d-c0e6-4ea0-8260-1960b9094da8	heat-lab-lguentherfinal	CREATE_COMPLETE	2015-05-09T18:02:09Z
cc03b7b9-27cc-4e7c-a9af-6333d30e3a29	heat-tutorial-leodeana	CREATE_COMPLETE	2015-05-13T21:53:26Z
b1e29abe-7e4c-470c-8df7-720b5bcba036	heat-tutorial11-liangwen	CREATE_FAILED	2015-05-25T19:32:31Z
f1ddfe5e-603b-49ea-93cb-b8b4ab56f853	heat-tutorial12-liangwen	CREATE_FAILED	2015-05-25T19:34:19Z
bb78b559-82c8-4411-ac43-9e957c22236d	heat-tutorial13-liangwen	CREATE_FAILED	2015-05-25T19:57:16Z
679839c8-74f1-4888-a6ef-bb6f9993ebdb	heat-tutorial14-liangwen	CREATE_FAILED	2015-05-25T19:57:26Z
d6c703e3-6545-4aaa-9eef-fb5b8f782300	wordpress-liangwen	CREATE_COMPLETE	2015-05-25T20:11:24Z
8e819f25-2eb9-4ad4-9b7d-8608719ea573	heat-tutorial-tomglazed	CREATE_COMPLETE	2015-05-26T16:49:52Z
7c9356cc-6d52-4c35-bc37-9c84c9bb4188	heat-exercise2-desouzar	CREATE_COMPLETE	2015-05-31T16:45:54Z
75785e88-2858-4796-b554-81093779a671	wordpress-appelbaum	CREATE_COMPLETE	2015-06-01T22:34:02Z
332d1858-d00d-459d-956f-c38b841fc362	heat-exercise1-sjagdale	CREATE_COMPLETE	2015-06-03T15:33:25Z
ec0c5588-2d9e-4d5e-8cd1-ca75b1d0e172	heat-exercise2-sjagdale	CREATE_COMPLETE	2015-06-03T16:13:56Z
36f4a507-a98d-42c3-b4b6-e3696a879905	heat-exercise2-	CREATE_COMPLETE	2015-06-03T16:15:15Z
ad0e0487-fefa-4d27-9607-cd57332c50aa	heat-tutorial-jdelforg	CREATE_COMPLETE	2015-06-05T04:03:14Z
847ffd61-c3f2-41b4-82c7-f8aef22714a4	heat-ex1-jdelforg	CREATE_COMPLETE	2015-06-05T04:28:07Z
c42086c2-c0b2-41e7-b615-5d8f6b187d1c	heat-wordpress-jdelforg	CREATE_COMPLETE	2015-06-05T04:44:19Z
6e5a414a-53b5-4452-b424-c24fdc3712c1	heat-wordpress2-jdelforg	CREATE_COMPLETE	2015-06-05T19:13:36Z
37055100-b554-4e90-82da-5b997eeca014	heat_ex1-2-jdelforg	CREATE_COMPLETE	2015-06-05T19:41:40Z
12be6be0-d0d0-474f-b466-d4915ab6508d	heat_ex1-3-jdelforg	CREATE_COMPLETE	2015-06-05T20:01:16Z
b9fef18b-2e91-4067-8308-3dcb06f4290f	vera-hw4-heat-tutorial	CREATE_IN_PROGRESS	2015-06-07T17:45:22Z

```
[verali@i136 ~]$
```

Check my stack details:


```
verali@i136:~  
[verali@i136 ~]$ heat stack-show vera-hw4-heat-tutorial  
+-----+  
| Property      | Value  
+-----+  
| capabilities   | []  
| creation_time  | 2015-06-07T17:45:22Z  
| description    | Simple template to deploy a single compute instance on  
|                | FutureSystems  
| disable_rollback | True  
| id             | b9fef18b-2e91-4067-8308-3dcb06f4290f  
| links          | http://i5r.idp.iu.futuregrid.org:8004/v1/2f841c236fc04e14a24d2655d9726eb5/stacks/  
vera-hw4-heat-tutorial/b9fef18b-2e91-4067-8308-3dcb06f4290f (self)  
| notification_topics | []  
| outputs        | []
```

```
verali@i136:~  
|                | }  
| parent         | None  
| stack_name     | vera-hw4-heat-tutorial  
| stack_owner    | verali  
| stack_status   | CREATE_COMPLETE  
| stack_status_reason | Stack CREATE completed successfully  
| template_description | Simple template to deploy a single compute instance on  
|                | FutureSystems  
| timeout_mins   | None  
| updated_time   | None  
+-----+  
[verali@i136 ~]$
```

Nova list to check instance:


```
verali@i136:~  
- | Running | int-net=10.23.3.23 |  
| 2297f707-037e-4a8f-baff-bd6ba6ab6d09 | tomglazed-2297f707-037e-4a8f-baff-bd6ba6ab6d09 | ACTIVE |  
- | Running | int-net=10.23.3.229 |  
| d54484f5-db6d-4942-a686-ee1ea9716bf2 | tomglazed-d54484f5-db6d-4942-a686-ee1ea9716bf2 | ACTIVE |  
- | Running | int-net=10.23.3.230 |  
| aac67f52-f0eb-4787-a72e-2bee319c0ace | ubuntu14.04-paul | ACTIVE |  
- | Running | int-net=10.23.2.125 |  
| c695d7d0-4fd5-44ad-b8b1-07d3b3a1e4c8 | vera-hw4-heat-tutorial-my_instance-twehc5dcoaok | ACTIVE |  
- | Running | int-net=10.23.1.198 |  
| 60df8f6a-4a3c-4813-a523-ef5991c57524 | verali-tutorial-6-1 | ACTIVE |  
- | Running | int-net=10.23.2.183, 149.165.159.26 |  
| dcfc29f7-cca1-4dc1-b97d-f4f378a099fe | verali_1 | ACTIVE |  
- | Running | int-net=10.23.1.155, 149.165.159.73 |  
| a4cf73ae-6621-415a-a331-5140aa7a0f2c | verali_2 | ACTIVE |  
- | Running | int-net=10.23.1.157, 149.165.159.72 |  
| a8b50672-0054-4e2b-893a-9c031879d02c | verali_3 | ACTIVE |  
- | Running | int-net=10.23.1.160, 149.165.159.71 |  
| aef7dfd5-1855-4261-8020-a5dd1d1ace68 | wordpress-liangwen-wordpress_instance-utmui4ctnju3 | ACTIVE |  
- | Running | int-net=10.23.2.161, 149.165.159.19 |  
| 2086cd41-c4b4-4d70-a55b-64f9fa59fbee | wordpresslab-wordpress_instance-jvlfk4fw7xhy | ACTIVE |  
- | Running | int-net=10.23.2.103, 149.165.159.53 |  
+-----+  
[verali@i136 ~]$
```

Delete a stack:

```
verali@i136:~  
w', 'resource-signal', 'resource-template', 'resource-type-list', 'resource-type-show',  
'resource-type-template', 'service-list', 'snapshot-delete', 'snapshot-list', 'snapshot-  
show', 'stack-abandon', 'stack-adopt', 'stack-cancel-update', 'stack-create', 'stack-del  
ete', 'stack-list', 'stack-preview', 'stack-restore', 'stack-show', 'stack-snapshot', 's  
tack-update', 'template-show', 'template-validate', 'update', 'validate', 'bash-completi  
on', 'help', 'bash completion')  
[verali@i136 ~]$ heat stack-delete vera-hw4-heat-tutorial  
+-----+  
| id | stack_name | stack_status |  
| creation_time |  
+-----+  
| 12be6be0-d0d0-474f-b466-d4915ab6508d | heat_ex1-3-jdelforg | CREATE_COMPLETE |  
| b9fef18b-2e91-4067-8308-3dcb06f4290f | vera-hw4-heat-tutorial | DELETE_IN_PROGRE |  
SS | 2015-06-07T17:45:22Z |  
+-----+  
[verali@i136 ~]$
```

Exercises 1:

heat_template_version: 2013-05-23

description: Heat Exercise 1

parameters:

key_name:

type: string

label: key name

default: vera_xuanying_li

image_id:

type: string

label: Image name

default: futuresystems/ubuntu-14.04

instance_type:

type: string

label: Instance flavor

default: m1.small

resources:

secgroup:

type: OS::Neutron::SecurityGroup

properties:

rules:

- protocol: tcp

remote_ip_prefix: 0.0.0.0/0

port_range_min: 22

port_range_max: 22

instance_port:

type: OS::Neutron::Port

properties:

network: int-net

security_groups:

- default

- { get_resource: secgroup }

instance:

type: OS::Nova::Server

properties:

key_name: { get_param: key_name }

image: { get_param: image_id }

flavor: { get_param: instance_type }

networks:

- port: { get_resource: instance_port }

```
verali@i136:~  
1T22:34:02Z |  
| 332d1858-d00d-459d-956f-c38b841fc362 | heat-exercise1-sjagdale | CREATE_COMPLETE | 2015-06-0  
3T15:33:25Z |  
| ec0c5588-2d9e-4d5e-8cd1-ca75b1d0e172 | heat-exercise2-sjagdale | CREATE_COMPLETE | 2015-06-0  
3T16:13:56Z |  
| 36f4a507-a98d-42c3-b4b6-e3696a879905 | heat-exercise2- | CREATE_COMPLETE | 2015-06-0  
3T16:15:15Z |  
| ad0e0487-fefaf4d27-9607-cd57332c50aa | heat-tutorial-jdelforg | CREATE_COMPLETE | 2015-06-0  
5T04:03:14Z |  
| 847ffd61-c3f2-41b4-82c7-f8aef22714a4 | heat-ex1-jdelforg | CREATE_COMPLETE | 2015-06-0  
5T04:28:07Z |  
| c42086c2-c0b2-41e7-b615-5d8f6b187d1c | heat-wordpress-jdelforg | CREATE_COMPLETE | 2015-06-0  
5T04:44:19Z |  
| 6e5a414a-53b5-4452-b424-c24fdc3712c1 | heat-wordpress2-jdelforg | CREATE_COMPLETE | 2015-06-0  
5T19:13:36Z |  
| 37055100-b554-4e90-82da-5b997eeca014 | heat_ex1-2-jdelforg | CREATE_COMPLETE | 2015-06-0  
5T19:41:40Z |  
| 12be6be0-d0d0-474f-b466-d4915ab6508d | heat_ex1-3-jdelforg | CREATE_COMPLETE | 2015-06-0  
5T20:01:16Z |  
| 186ce009-dd7e-482b-ae1e-2cd9b4b81a33 | vera-heat-exercise-1 | CREATE_IN_PROGRESS | 2015-06-0  
7T18:25:12Z |  
+-----+  
-----+  
[verali@i136 ~]$
```

Exercise 2

heat_template_version: 2013-05-23

description: >

Heat WordPress template on Fedora 21, using only Heat OpenStack-native resource types (adapted from HOT examples), and without the requirement for heat-cfnutils in the image. WordPress is web software you can use to create a beautiful website or blog.

This template installs a single-instance WordPress deployment using a local MySQL database to store the data.

parameters:

key_name:

type: string

description: Name of a KeyPair to enable SSH access to the instance

instance_type:

type: string

description: Instance type for WordPress server

default: m1.small

constraints:

- allowed_values: [m1.small, m1.medium, m1.large]

description: instance_type must be one of m1.small, m1.medium or m1.large

image_id:

type: string

description: >

Name or ID of the image to use for the WordPress server.

Recommended values are fedora-20.i386 or fedora-20.x86_64;

get them from <http://cloud.fedoraproject.org/fedora-20.i386.qcow2>

or http://cloud.fedoraproject.org/fedora-20.x86_64.qcow2.

Futuresystems has fedora-21.
default: futuresystems/fedora-21

db_name:

type: string

description: WordPress database name

default: wordpress

constraints:

- length: { min: 1, max: 64 }

description: db_name must be between 1 and 64 characters

- allowed_pattern: '[a-zA-Z][a-zA-Z0-9]'*

description: >

db_name must begin with a letter and contain only alphanumeric characters

db_username:

type: string

description: The WordPress database admin account username

default: admin

hidden: true

constraints:

- length: { min: 1, max: 16 }

description: db_username must be between 1 and 16 characters

- allowed_pattern: '[a-zA-Z][a-zA-Z0-9]'*

description: >

db_username must begin with a letter and contain only alphanumeric characters

db_password:

type: string

description: The WordPress database admin account password

default: admin

hidden: true

constraints:

- length: { min: 1, max: 41 }

description: db_password must be between 1 and 41 characters

- allowed_pattern: '[a-zA-Z0-9]'*

description: db_password must contain only alphanumeric characters

db_root_password:

type: string

description: Root password for MySQL

default: admin

hidden: true

constraints:

- length: { min: 1, max: 41 }

description: db_root_password must be between 1 and 41 characters

- allowed_pattern: '[a-zA-Z0-9]'*

description: db_root_password must contain only alphanumeric characters

resources:

security_group:

type: AWS::EC2::SecurityGroup

properties:

GroupDescription: "SSH (22), HTTP (80)"

SecurityGroupIngress:

- IpProtocol: "tcp"

FromPort: "22"

```
ToPort : "22"
Cidrlp : "0.0.0.0/0"
- IpProtocol: "tcp"
FromPort: "80"
ToPort: "80"
Cidrlp: "0.0.0.0/0"
floatingip:
  type: OS::Nova::FloatingIP
  properties:
    pool: ext-net
wordpress_instance:
  type: OS::Nova::Server
  properties:
    image: { get_param: image_id }
    flavor: { get_param: instance_type }
    key_name: { get_param: key_name }
    security_groups:
      - "default"
      - { get_resource: security_group }
  user_data:
    str_replace:
      template: |
        #!/bin/bash -v

        yum -y install mariadb mariadb-server httpd wordpress
        touch /var/log/mariadb/mariadb.log
        chown mysql.mysql /var/log/mariadb/mariadb.log
        systemctl start mariadb.service

        # Setup MySQL root password and create a user
        mysqladmin -u root password db_rootpassword
        cat << EOF | mysql -u root --password=db_rootpassword
        CREATE DATABASE db_name;
        GRANT ALL PRIVILEGES ON db_name.* TO "db_user"@"localhost"
        IDENTIFIED BY "db_password";
        FLUSH PRIVILEGES;
        EXIT
        EOF

        sed -i "/Deny from All/d" /etc/httpd/conf.d/wordpress.conf
        sed -i "s/Require local/Require all granted/" /etc/httpd/conf.d/wordpress.conf
        sed -i s/database_name_here/db_name/ /etc/wordpress/wp-config.php
        sed -i s/username_here/db_user/ /etc/wordpress/wp-config.php
        sed -i s/password_here/db_password/ /etc/wordpress/wp-config.php

        systemctl stop httpd.service
        systemctl start httpd.service
  params:
    db_rootpassword: { get_param: db_root_password }
    db_name: { get_param: db_name }
    db_user: { get_param: db_username }
    db_password: { get_param: db_password }
association:
  type: OS::Nova::FloatingIPAssociation
  properties:
```

```
floating_ip: { get_resource: floatingip }
server_id: { get_resource: 'wordpress_instance' }
```

outputs:

WebsiteURL:

description: URL for Wordpress wiki

value:

str_replace:

template: http://host/wordpress

params:

host: { get_attr: [floatingip, ip] }

```
verali@i136:~
3T15:33:25Z |
| ec0c5588-2d9e-4d5e-8cd1-ca75b1d0e172 | heat-exercise2-sjagdale | CREATE_COMPLETE | 2015-06-0
3T16:13:56Z |
| 36f4a507-a98d-42c3-b4b6-e3696a879905 | heat-exercise2- | CREATE_COMPLETE | 2015-06-0
3T16:15:15Z |
| ad0e0487-fefa-4d27-9607-cd57332c50aa | heat-tutorial-jdelforg | CREATE_COMPLETE | 2015-06-0
5T04:03:14Z |
| 847ffd61-c3f2-41b4-82c7-f8aef22714a4 | heat-ex1-jdelforg | CREATE_COMPLETE | 2015-06-0
5T04:28:07Z |
| c42086c2-c0b2-41e7-b615-5d8f6b187d1c | heat-wordpress-jdelforg | CREATE_COMPLETE | 2015-06-0
5T04:44:19Z |
| 6e5a414a-53b5-4452-b424-c24fdc3712c1 | heat-wordpress2-jdelforg | CREATE_COMPLETE | 2015-06-0
5T19:13:36Z |
| 37055100-b554-4e90-82da-5b997eeca014 | heat_ex1-2-jdelforg | CREATE_COMPLETE | 2015-06-0
5T19:41:40Z |
| 12be6be0-d0d0-474f-b466-d4915ab6508d | heat_ex1-3-jdelforg | CREATE_COMPLETE | 2015-06-0
5T20:01:16Z |
| 186ce009-dd7e-482b-ae1e-2cd9b4b81a33 | vera-heat-exercise-1 | CREATE_COMPLETE | 2015-06-0
7T18:25:12Z |
| 9d498de9-c1c9-4146-a872-00728de9cd15 | vera-heat-wp-ex2 | CREATE_IN_PROGRESS | 2015-06-0
7T18:31:19Z |
+-----+-----+-----+-----+
-----+
[verali@i136 ~]$
```

Nova list

```
verali@i136:~  
E | - | Running | int-net=10.23.3.229 |  
| d54484f5-db6d-4942-a686-ee1ea9716bf2 | tomglazed-d54484f5-db6d-4942-a686-ee1ea9716bf2 | ACTIV  
E | - | Running | int-net=10.23.3.230 |  
| aac67f52-f0eb-4787-a72e-2bee319c0ace | ubuntu14.04-paul | ACTIV  
E | - | Running | int-net=10.23.2.125 |  
| ff9caec8-7365-4ee5-8beb-90d71bf7805f | vera-heat-exercise-1-instance-yukf3rkekxu7 | ACTIV  
E | - | Running | int-net=10.23.1.20 |  
| 8499db3c-508e-4e9a-a7bb-0c0f0970072f | vera-heat-wp-ex2-wordpress_instance-lr5ierel72ab | ACTIV  
E | - | Running | int-net=10.23.1.204, 149.165.159.74 |  
| 60df8f6a-4a3c-4813-a523-ef5991c57524 | verali-tutorial-6-1 | ACTIV  
E | - | Running | int-net=10.23.2.183, 149.165.159.26 |  
| dcf7c29f7-cca1-4dc1-b97d-f4f378a099fe | verali_1 | ACTIV  
E | - | Running | int-net=10.23.1.155, 149.165.159.73 |  
| a4cf73ae-6621-415a-a331-5140aa7a0f2c | verali_2 | ACTIV  
E | - | Running | int-net=10.23.1.157, 149.165.159.72 |  
| a8b50672-0054-4e2b-893a-9c031879d02c | verali_3 | ACTIV  
E | - | Running | int-net=10.23.1.160, 149.165.159.71 |  
| aef7dfd5-1855-4261-8020-a5dd1dlace68 | wordpress-liangwen-wordpress_instance-utmui4ctnju3 | ACTIV  
E | - | Running | int-net=10.23.2.161, 149.165.159.19 |  
| 2086cd41-c4b4-4d70-a55b-64f9fa59fbee | wordpresslab-wordpress_instance-jvlfk4fw7xhy | ACTIV  
E | - | Running | int-net=10.23.2.103, 149.165.159.53 |  
+-----+  
+-----+  
[verali@i136 ~]$
```

Generate WordPress page on: IP: 10.23.1.204

```
verali@i136:~  
+-----+  
+-----+  
[verali@i136 ~]$ curl -L http://10.23.1.204/wordpress  
<!DOCTYPE html>  
<html xmlns="http://www.w3.org/1999/xhtml" lang="en-US" xml:lang="en-US">  
<head>  
  <meta name="viewport" content="width=device-width" />  
  <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />  
  <title>WordPress Installation</title>  
  <link rel='stylesheet' id='buttons-css' href='http://10.23.1.204/wordpress/wp-includes/css/bu  
ttons.min.css?ver=4.2.2' type='text/css' media='all' />  
  <link rel='stylesheet' id='open-sans-css' href='//fonts.googleapis.com/css?family=Open+Sans%3A300ital  
ic%2C400italic%2C600italic%2C300%2C400%2C600&#038;subset=latin%2Clatin-ext&#038;ver=4.2.2' type='text/  
css' media='all' />  
  <link rel='stylesheet' id='install-css' href='http://10.23.1.204/wordpress/wp-admin/css/install.min.c  
ss?ver=4.2.2' type='text/css' media='all' />  
</head>  
<body class="wp-core-ui">  
<h1 id="logo"><a href="https://wordpress.org/" tabindex="-1">WordPress</a></h1>  
  
<h1>Welcome</h1>  
<p>Welcome to the famous five-minute WordPress installation process! Just fill in the information belo  
w and you'll be on your way to using the most extendable and powerful personal publishing platfo  
rm in the world.</p>
```



```
/*  */
var _wpUtilSettings = {"ajax":{"url":"/wp-admin/admin-ajax.php"}};
/* ]&gt; */
&lt;/script&gt;
&lt;script type='text/javascript' src='http://10.23.1.204/wordpress/wp-includes/js/wp-util.min.js?ver=4.2.2'&gt;&lt;/script&gt;
&lt;script type='text/javascript' src='http://10.23.1.204/wordpress/wp-admin/js/user-profile.min.js?ver=4.2.2'&gt;&lt;/script&gt;
&lt;script type='text/javascript' src='http://10.23.1.204/wordpress/wp-admin/js/language-chooser.min.js?ver=4.2.2'&gt;&lt;/script&gt;
&lt;/body&gt;
&lt;/html&gt;
[verali@i136 ~]$</pre></div><div data-bbox="46 264 821 308" data-label="Text"><p>Check out web page: <a href="http://149.165.159.74/wordpress">http://149.165.159.74/wordpress</a> -&gt; <a href="http://149.165.159.74/wordpress/wp-admin/install.php">http://149.165.159.74/wordpress/wp-admin/install.php</a></p></div><div data-bbox="46 323 832 900" data-label="Form"><img alt="Screenshot of the WordPress installation process. The browser window shows the URL '149.165.159.74/wordpress/wp-admin/install.php'. The page displays the WordPress logo and a 'Welcome' message. Below, the 'Information needed' section contains form fields for 'Site Title' (filled with 'verali') and 'Username' (filled with 'vera'). A note states: 'Usernames can have only alphanumeric characters, spaces, underscores, hyphens, periods, and the @ symbol.' The 'Password, twice' section has two masked password fields and a 'Medium' strength indicator. A hint says: 'Hint: The password should be at least seven characters long. To make it stronger, use upper and lower case letters, numbers, and symbols like ! " ? $ % ^ &amp; ;.' The 'Your E-mail' field is filled with 'lix0709@126.com' and has a note: 'Double-check your email address before continuing.' The 'Privacy' section has a checked checkbox for 'Allow search engines to index this site.' At the bottom is an 'Install WordPress' button."/><p>Instances - OpenStack Di x OfficeMix : OpenStack He x OpenStack Heat -- my Cl x WordPress : Installation x 第1位用户</p><p>← → C 149.165.159.74/wordpress/wp-admin/install.php</p><p><img alt="WordPress logo" data-bbox="415 380 465 425"/></p><h2>Welcome</h2><p>Welcome to the famous five-minute WordPress installation process! Just fill in the information below and you'll be on your way to using the most extendable and powerful personal publishing platform in the world.</p><h2>Information needed</h2><p>Please provide the following information. Don't worry, you can always change these settings later.</p><p>Site Title <input type="text" value="verali"/></p><p>Username <input type="text" value="vera"/></p><p><small>Usernames can have only alphanumeric characters, spaces, underscores, hyphens, periods, and the @ symbol.</small></p><p>Password, twice</p><p><small>A password will be automatically generated for you if you leave this blank.</small></p><p><input type="password" value="....."/><br/><input type="password" value="....."/></p><p>Medium</p><p><small>Hint: The password should be at least seven characters long. To make it stronger, use upper and lower case letters, numbers, and symbols like ! " ? $ % ^ &amp; ;.</small></p><p>Your E-mail <input type="text" value="lix0709@126.com"/></p><p><small>Double-check your email address before continuing.</small></p><p>Privacy <input checked="" type="checkbox"/> Allow search engines to index this site.</p><p><input type="button" value="Install WordPress"/></p></div>
```