

EPAM Systems, RD Dep., RD Dep.

# MTN.\*NIX Automated Environment Configuration Management

## Ansible. 3

REVISION HISTORY					
Ver.	Description of Change	Author	Date	Approved	
				Name	Effective Date
<1.0>	Initial revision	Siarhei Beliakou	17-Mar-2017		

## Lab Work Task. Web Server Provisioning

### Review

Developing custom modules and filters. Learning by doing.

### Task

On Host Node (Control Machine):

1. Create folder ~/cm/ansible/day-3. All working files are supposed to be placed right there.
2. Develop custom filter to select an url to download mongodb depends on OS name and S/W version from <https://www.mongodb.org/dl/linux/>

Requirements:

- Write a playbook (name: **mongodb.yml**) to prove that this module works
  - At least 9 versions of MongoDB for 3 different Linux distributives (list with links)
  - Filter should process a list of urls and takes 3 options: os\_family (discovered by ansible, variable, produced by setup module), os release number and mongodb\_version (set in play vars)
- See example in Appendix A

```
TASK [debug] *****
task path: /home/student/cm/ansible/day-3/mongodb.yml:20
ok: [localhost] => {
  "msg": "mongodb-linux-x86_64-rhel70-3.2.17"
}

TASK [debug] *****
task path: /home/student/cm/ansible/day-3/mongodb.yml
ok: [localhost] => {
  "msg": "mongodb-linux-x86_64-rhel64-3.0.14"
}

TASK [debug] *****
task path: /home/student/cm/ansible/day-3/mongodb.yml
ok: [localhost] => {
  "msg": ""
}

TASK [debug] *****
task path: /home/student/cm/ansible/day-3/mongodb.yml
ok: [localhost] => {
  "msg": "mongodb-linux-x86_64-suse12-3.2.16"
}

TASK [debug] *****
task path: /home/student/cm/ansible/day-3/mongodb.yml
ok: [localhost] => {
  "msg": "mongodb-linux-x86_64-ubuntu1404-3.2.16"
}

TASK [debug] *****
task path: /home/student/cm/ansible/day-3/mongodb.yml
ok: [localhost] => {
  "msg": ""
}
```

```
~/cm/ansible/day-3/mongodb.yml - Sublime T
File Edit Selection Find View Goto Tools Project Preferences Help

stack.yml x filter_plugins.py x mongodb.yml x vagrant
1 - hosts: localhost
2   connection: local
3
4   vars:
5     mongo_src:
6       - mongodb-linux-x86_64-rhel62-3.4.1
7       - mongodb-linux-x86_64-rhel70-3.4.1
8       - mongodb-linux-x86_64-rhel55-3.2.11
9       - mongodb-linux-x86_64-rhel64-3.2.11
10      - mongodb-linux-x86_64-rhel70-3.2.17
11      - mongodb-linux-x86_64-rhel55-3.0.14
12      - mongodb-linux-x86_64-rhel64-3.0.14
13      - mongodb-linux-x86_64-rhel70-3.0.14
14      - mongodb-linux-x86_64-suse12-3.2.16
15      - mongodb-linux-x86_64-ubuntu1404-3.2.16
16      - mongodb-linux-x86_64-debian71-3.2.16
17
18
19
20   tasks:
21     - debug: msg={{ mongo_src | get_mongo_src("rhel", "7", "3.2" ) }}
22     - debug: msg={{ mongo_src | get_mongo_src("rhel", "6", "3.0" ) }}
23     - debug: msg={{ mongo_src | get_mongo_src("rhel", "7", "3.1" ) }}
24     - debug: msg={{ mongo_src | get_mongo_src("suse", "12", "3.2" ) }}
25     - debug: msg={{ mongo_src | get_mongo_src("ubuntu", "14", "3.2" ) }}
26     - debug: msg={{ mongo_src | get_mongo_src("debian", "71", "4" ) }}
```

```
1 from __future__ import (absolute_import, division, print_function)
2
3 __metaclass__ = type
4
5 from ansible import errors
6
7
8 def get_mongo_src(arg, os_family, os_release, mongodb_version):
9     for lin in arg:
10         if os_family in lin:
11             ver_index = lin.index(os_family) + len(os_family)
12             ver_slice = lin[ver_index:]
13             if ver_slice.startswith(os_release):
14                 ver_mongo_slice = lin[ver_index + len(os_release):]
15                 if mongodb_version in ver_mongo_slice:
16                     return lin
17
18
19 class FilterModule(object):
20     def filters(self):
21         return {
22             'get_mongo_src': get_mongo_src
23         }
24
```

### 3. Develop custom module to manage VirtualBox:

Arguments:

- path to vagrantfile
- state: started, stopped, destroyed

Return values:

- state: running, stopped, not created
- ip address, port
- path to ssh key file
- username to connect to VM
- os\_name
- RAM size

Errors:

- file doesn't exists
- failed on creation
- etc

```
PLAYBOOK: stack.yml *****
2 plays in stack.yml

PLAY [Provision VM] *****

TASK [Gathering Facts] *****
ok: [localhost]

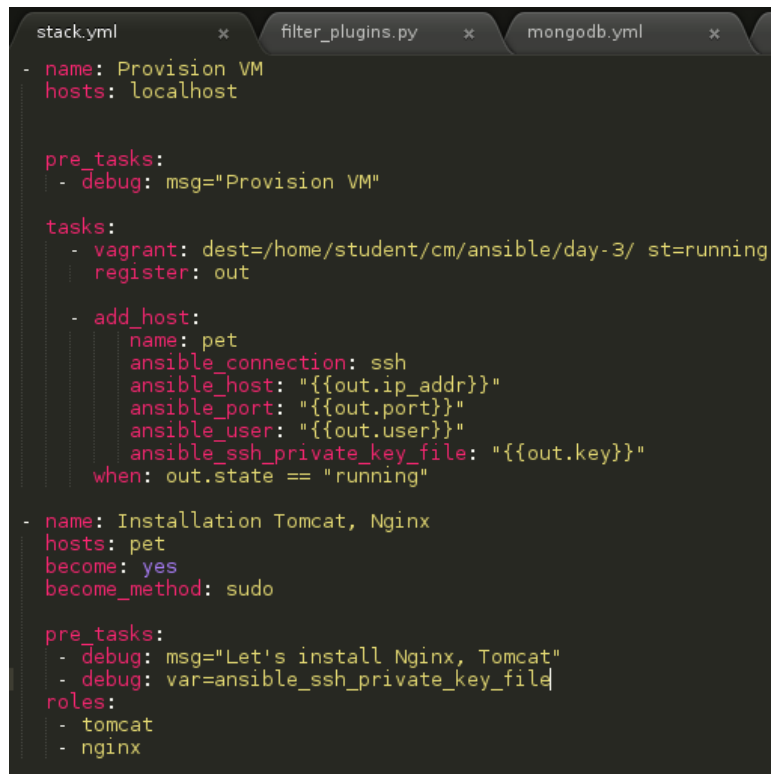
TASK [debug] *****
task path: /home/student/cm/ansible/day-3/stack.yml:6
ok: [localhost] => {
  "msg": "Provision VM"
}
META: ran handlers

TASK [vagrant] *****
task path: /home/student/cm/ansible/day-3/stack.yml:9
ok: [localhost] => {"OS_name": "OS_name", "RAM": "1839", "changed": false, "failed": false, "ip_addr": "127.0.0.1", "key": "/home/student/cm/ansible/day-3/.vagrant/machines/default/virtualbox/private_key", "msg": "VM's state wasn't changed", "port": "2222", "state": "running", "user": "vagrant"}

TASK [add_host] *****
task path: /home/student/cm/ansible/day-3/stack.yml:12
creating host via 'add_host': hostname=pet
changed: [localhost] => {"add_host": {"groups": [], "host_name": "pet", "host_vars": {"ansible_connection": "ssh", "ansible_host": "127.0.0.1", "ansible_port": "2222", "ansible_ssh_private_key_file": "/home/student/cm/ansible/day-3/.vagrant/machines/default/virtualbox/private_key", "ansible_user": "vagrant"}}, "changed": true, "failed": false}
META: ran handlers
META: ran handlers

PLAY [Installation Tomcat, Nginx] *****

TASK [Gathering Facts] *****
ok: [pet]
```



```
stack.yml
filter_plugins.py
mongodb.yml

- name: Provision VM
  hosts: localhost

  pre_tasks:
    - debug: msg="Provision VM"

  tasks:
    - vagrant: dest=/home/student/cm/ansible/day-3/ st=running
      register: out

    - add_host:
        name: pet
        ansible_connection: ssh
        ansible_host: "{{out.ip_addr}}"
        ansible_port: "{{out.port}}"
        ansible_user: "{{out.user}}"
        ansible_ssh_private_key_file: "{{out.key}}"
      when: out.state == "running"

- name: Installation Tomcat, Nginx
  hosts: pet
  become: yes
  become_method: sudo

  pre_tasks:
    - debug: msg="Let's install Nginx, Tomcat"
    - debug: var=ansible_ssh_private_key_file
  roles:
    - tomcat
    - nginx
```

4. Create a playbook (name: **stack.yml**) to provision Tomcat stack (nginx + tomcat) on VirtualBox VM  
Requirements:
  - 2 Plays: provision VM, roll out Tomcat stack (using roles from previous lab work)
  - 2<sup>nd</sup> play should work with dynamically composed Inventory (connection settings to VM),  
[http://docs.ansible.com/ansible/add\\_host\\_module.html](http://docs.ansible.com/ansible/add_host_module.html)
5. Verification Procedure: playbook will be checked by instructor's CI system as follows:
  - 5.1 Connect to student's host by ssh (username "student") with own ssh key.
  - 5.2 Go into the folder mentioned in point 1
  - 5.3 Destroy: vagrant destroy
  - 5.4 Execute VM provisioning: ansible-playbook stack.yml -i localhost, -c local -vv
  - 5.5 If previous steps are done successfully, instructor will check report (pdf-file)
6. Feedback: report issues/problems you had during the development of playbook and time spent for development.

## APPENDIX A.

Playbook:

```
- hosts: localhost
  connection: local
```

vars:

```
  mongo_src:
    - mongodb-linux-x86_64-rhel62-3.4.1
    - mongodb-linux-x86_64-rhel70-3.4.1
    - mongodb-linux-x86_64-rhel55-3.2.11
    - mongodb-linux-x86_64-rhel64-3.2.11
    - mongodb-linux-x86_64-rhel70-3.2.17
    - mongodb-linux-x86_64-rhel55-3.0.14
    - mongodb-linux-x86_64-rhel64-3.0.14
    - mongodb-linux-x86_64-rhel70-3.0.14
```

tasks:

```
- debug: msg={{ mongo_src | get_mongo_src("rhel", "7", "3.2" ) }}
- debug: msg={{ mongo_src | get_mongo_src("rhel", "6", "3.0" ) }}
- debug: msg={{ mongo_src | get_mongo_src("rhel", "7", "3.4" ) }}
```

Run:

```
$ ansible-playbook test1.yml -vv
```

Using /Users/sbeliakou/.ansible.cfg as config file

[WARNING]: Host file not found: /etc/ansible/hosts

[WARNING]: provided hosts list is empty, only localhost is available

PLAYBOOK: test1.yml

\*\*\*\*\*

1 plays in test1.yml

PLAY [localhost]

\*\*\*\*\*

TASK [setup]

\*\*\*\*\*

ok: [localhost]

```
TASK [debug]
*****

task path: /private/tmp/test1.yml:19
ok: [localhost] => {
    "msg": "mongodb-linux-x86_64-rhel70-3.2.17"
}
```

```
TASK [debug]
*****

task path: /private/tmp/test1.yml:20
ok: [localhost] => {
    "msg": "mongodb-linux-x86_64-rhel64-3.0.14"
}
```

```
TASK [debug]
*****

task path: /private/tmp/test1.yml:21
ok: [localhost] => {
    "msg": "mongodb-linux-x86_64-rhel70-3.4.1"
}
```

```
PLAY RECAP
*****

localhost                : ok=4    changed=0    unreachable=0
failed=0
```