# 3 – Tier Environment Setup for OpenCMS

## Step by Step process guide

We need the following steps to follow to successfully complete this activity,

- Firstly launch **Master Terraform EC2 instance** in Asia-Pacific Singapore(ap-southeast-1) region on your environment with **AMI - Amazon Linux 2 AMI (ami-04677bdaa3c2b6e24) or** just use your current environment.
- Create an IAM user with full administrator access as programmatically access type and download the **credientials.csv** or make a note of Access key ID and Secret access key for future reference.
- Once you are logged into the Master Terraform instance as **ec2-user ,** do the following steps:

    - Configure AWS by placing Access key ID , Secret Access key generated by above and Default region name as “ap-southeast-1” by below command.
      - aws configure
    - Steps to follow to install Terraform**:**

- sudo wget https://releases.hashicorp.com/terraform/0.11.11/terraform_0.11.11_linux_amd64.zip
    - unzip terraform_0.11.11_linux_amd64.zip
    - sudo mv terraform /usr/local/bin
    - terraform --version

    - sudo yum install git
    - git clone https://github.com/gopinath43/Terraform-Master.git
    - cd Terraform-Master
    - ssh-keygen -f mykeypair ( Enter twice to pass through )
    - terraform init
    - terraform plan
    - terraform apply
- We are using **Terraform-Master** instance to create the 3-tier infrastructure setup first which it contains of 4 instances named as WEB01 , APP01 , DB01 and on addition ANSIBLE-Master instance to configure the software on.
- By now, we have entire infrastructure set has been made.

Here, make a list of ip-address handy of all the instances that we have launched from the above.

| Instances | Public IP | Private IP |
|---|---|---|
| Ansible-Master | | |
| WEB01 | < Elastic IP > | |
| APP01 | | |
| DB01 | < Private IP > | |

Now connect to the Ansible-Master instance from Terraform-Master instance

Ansible Setup :
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- cd Terraform-Master
- scp -i mykeypair mykeypair centos@< Ansible-Master Public IP >:/home/centos
- scp -i mykeypair mykeypair.pub centos@< Ansible-Master Public IP >: /home/centos
- ssh -i mykeypair centos@< Ansible-Master Public IP >
- sudo yum install ansible
- ansible --version
- sudo yum install git
- git clone https://github.com/gopinath43/Ansible-Master.git
- cd Ansible-Master
- cd opencms-deploy/
- vi inventory/hosts

Here, change the private host ip's accordingly as per the newly created WEB01 APP01 DB01 instances with ansible_user as **centos** , below is the screenshot. save and exit.

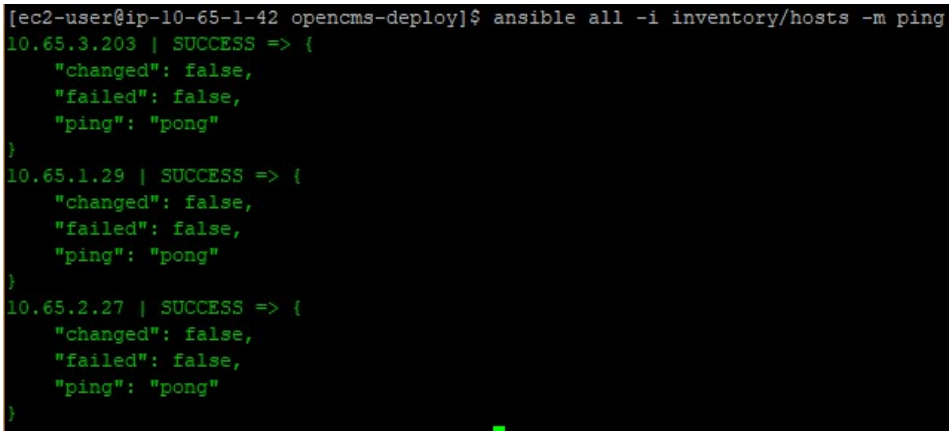
```
[web]
10.65.1.235 ansible_user=centos
[db]
10.65.3.212 ansible_user=centos
[app]
10.65.2.27 ansible_user=centos
```

- Now generate a ssh key rsa on Ansible-Master instance to communicate between all the WEB01 APP01 DB01 instances accordingly.
  - cd
  - ssh-keygen -t rsa ( Enter twice to pass through )
  - cat ~/.ssh/id_rsa.pub (Copy the generated key from ansible master instance)
  - ssh -i mykeypair centos@<WEB01 private ip-address>
  - vi ~/.ssh/authorized_keys ( press o and paste here , save and exit )
  - exit
  - Now try ssh <WEB01 private ip-address> and exit ( Where you are able to connect without a key )

- Repeat to copy only the id_rsa.pub key to authorized_keys for other instances i.e. APP01 and DB01 .
- From above, we have successfully made the setup of SSH key login for all the instance.
- Run this command on all the three instances **setenforce 0 ,** to disable the SELinux.

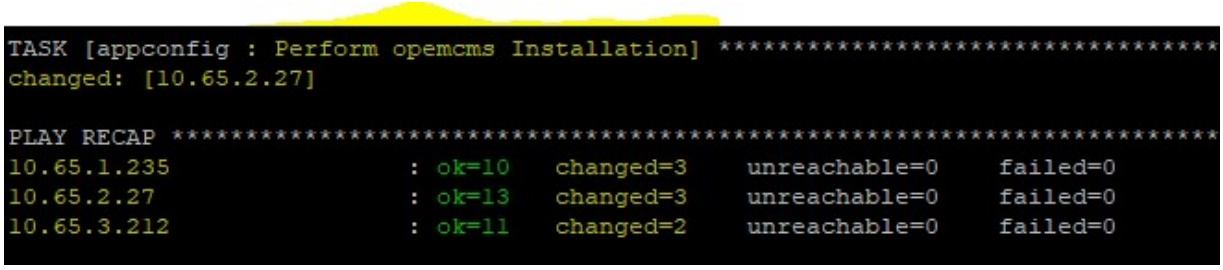
On completion of SSH key setup, follow the below steps from Ansible-Master instance:

  - cd Ansible-Master
  - cd opencms-deploy
  - ansible all -i inventory/hosts -m ping ( Make sure , you are successfully able to ping those instances) as per the below screenshot .




- Now is the time to run the playbook opencms.yml.
  - ansible-playbook -i inventory/hosts opencms.yml

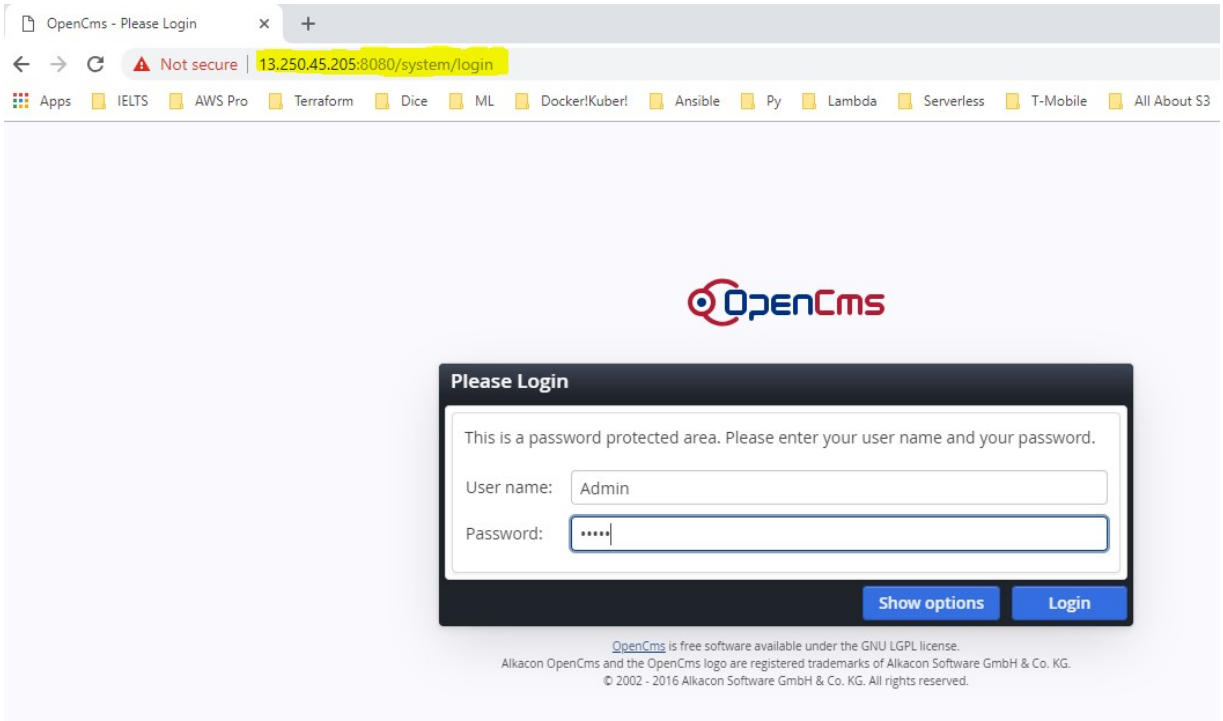
The total installation takes place around **Max : 30 Mints** and the last task , **[Perform Opencms Installation]** alone takes **25 Mints**




Here are the big challenges that I have faced to overcome with lot of errors at the time of playbook execution.

Where I have done lot many changes to the security group – Inbound and Outbound rules ☺

Here comes the final OpenCMS page show up from application.




Where as I can able to login to OPenCMS webpage