greatlearning

Lab Brief

Course: Cloud Computing on AWS

EC2 Autoscaling | Shell Scripting with CLI

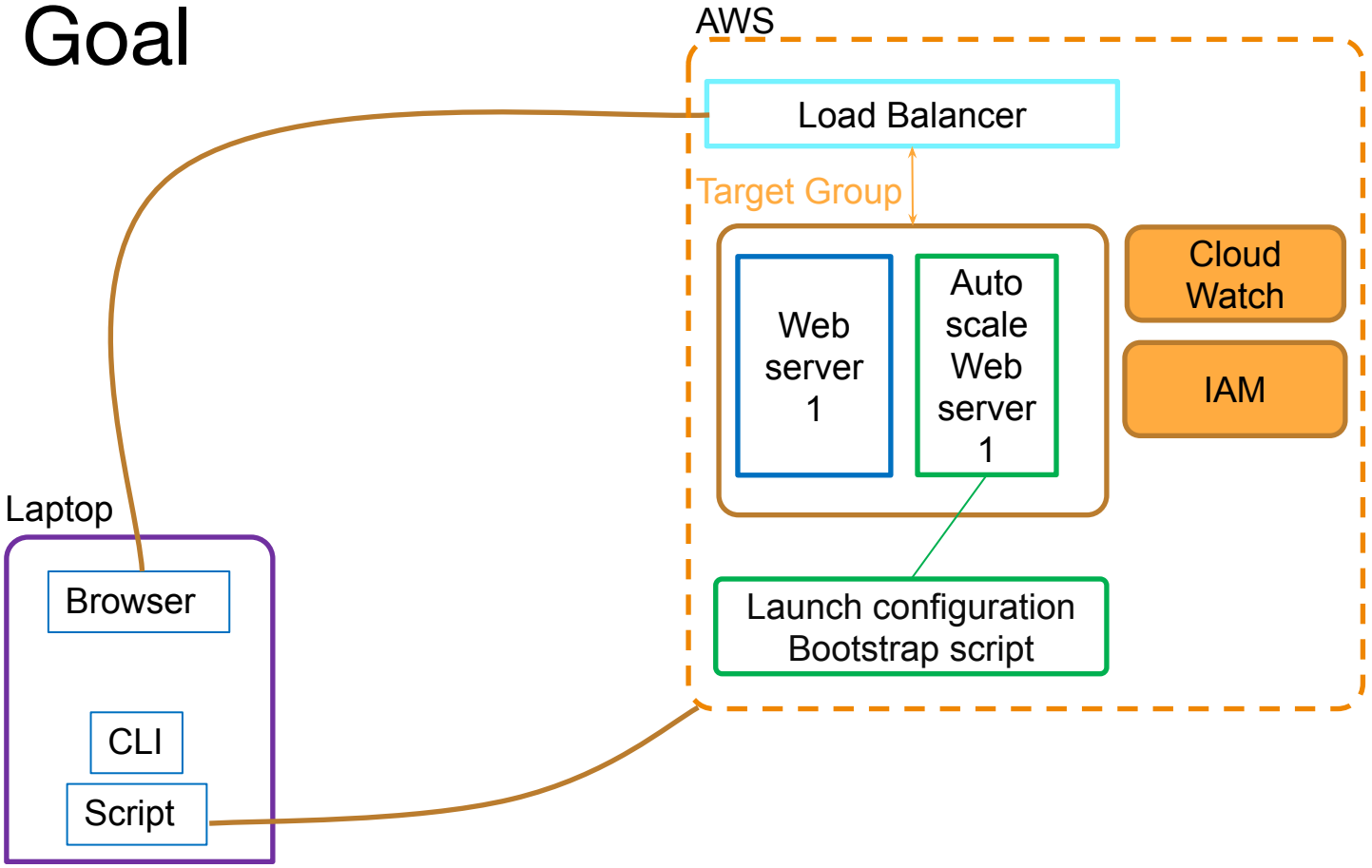
(Deploy multiple EC2 instances using Autoscaling with load balancing & target groups. Write a shell script to list resources in AWS.)

greatlearning

Learning Outcomes

1. Be able to create autoscale group
2. Create a launch configuration
3. Create a target group (TG) and push EC2 instances to it via Autoscale
4. Attach the autoscale TG to the Loadbalancer
5. Use bootstrap scripts to install and configure the EC2 instance
6. Create an IAM API user to be used with CLI
7. Write a shell script using CLI and execute in your laptop

Final Goal


AWS
Load Balancer
Target Group
Web server 1
Auto scale Web server 1
Cloud Watch
IAM
Launch configuration Bootstrap script
Laptop
Browser
CLI
Script

greatlearning

What is needed?

1. AWS Account Credentials
2. EC2 Instances (Linux)
3. Load Balancer with Target Group
4. Launch configuration, autoscale group, bootstrap script
5. Linux Terminal for ssh access from your laptop
6. Shell script environment (any text editor of your choice)

Command reference - 1

```
#To be used with the manually created EC2 instance
#!/bin/bash
yum update -y
yum install httpd -y
service httpd start
chkconfig httpd on
IP_ADDR=$(curl http://169.254.169.254/latest/meta-data/public-ipv4)
echo "Manual instance with IP $IP_ADDR" > /var/www/html/index.html
echo "ok" > /var/www/html/health.html
```

Command reference - 2

```
#To be used with the autoscale launch configuration
#!/bin/bash
yum update -y
yum install httpd -y
service httpd start
chkconfig httpd on
IP_ADDR=$(curl http://169.254.169.254/latest/meta-data/public-ipv4)
echo "Autoscale instance with IP $IP_ADDR" > /var/www/html/index.html
echo "ok" > /var/www/html/health.html
```

Command reference - 3

```
printf "\nLooking for EC2 instances\n"
printf "**********************************************************************************************************************\n"
ID_LIST1=$(aws ec2 describe-instances --filters Name=instance-state-name,Values=running,stopped | grep InstanceId | awk
'{printf "%s", $2}')
ID_LIST2=${ID_LIST1//\"}    #Get rid of the double quotes
ID_LIST3=${ID_LIST2//\,/ }  #Replace the comma with a space
if [ "x$ID_LIST3" = "x" ]; then
  printf "No instances found to be listed\n"
else
  printf "Listing instances $ID_LIST3"
fi
```

The following URL is a great resource that will help you in your scripting
https://docs.aws.amazon.com/cli/latest/reference/index.html

Use the following to install the CLI on Mac
sudo easy_install pip
sudo pip install awscli --upgrade --ignore-installed six

How to do it? - 1

1. Create 1 EC2 instance using the 7 step workflow (use t2.micro / t2.small instance type only)
    a) Use the usual Amazon Linux AMI in AZ1
    b) Use the bootstrap script to install the http server & to create the htmls
    c) No PEM is needed as we are not going to SSH
2. Create a LB with TG
    a) Associate the EC2 instance to it
    b) Ensure all AZ are selected when creating the TG
    c) Once the instance turns "healthy" hit the LB to ensure the page is being served
3. Create a launch config & autoscaling group
    a) Use the bootstrap script for the autoscale launch config, tag = "autoscale"
    b) Min instance = 1, max = 2
    c) Setup the cloud watch alarm (add 1 instance if cpu>80, remove when <30)
    d) No notifications are needed
    e) Document your observations once the setup is completed
4. Hit the LB again and state your observations
5. Manually terminate the autoscale EC2 instance, wait for 2-3 mins and state your observations

How to do it? - 2

1. Go to IAM
    a) Create the user for the CLI access, name it "apiuser"
    b) Attach the AWS managed policy "Administrator"
    c) Download the access key + secret CSV
2. CLI setup
    a) Use the above information to configure the AWS CLI
    b) Run "aws ec2 describe-instances" to check the CLI setup
3. Write a small script to list/describe (capture the output in the document)
    a) Only the instance IDs of the EC2 instances
    b) The load balancers available in the account
    c) The target group in the account
    d) The autoscale group
    e) Launch configuration
    f) IAM users available in the account