

Cloud Assignment

Koganti Divya

1. EC2 Instances

Steps:

1. Open AWS and under search box select EC2
2. Click on launch instance
3. Now enter name of your machine (Machine1-Divya)
4. Under AMI select Amazon Linux
5. under instance type select t2.micro
6. Under key pair >> create a new key pair (sydney.pem)
7. Under firewall security group click on create security group
8. And click on launch instance
9. Repeat the same process and create one more instance (Machine2-Koganti)

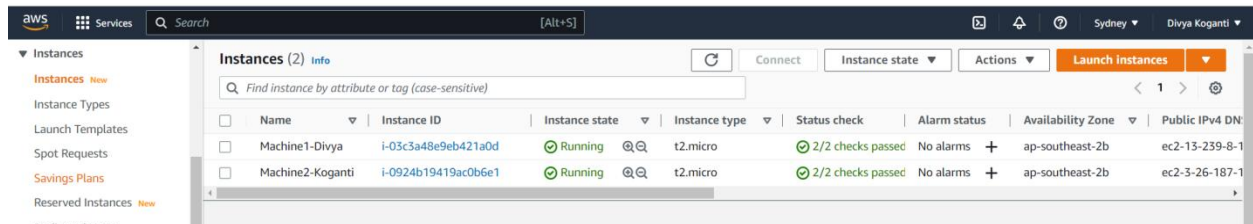


Fig1:Ec2 instances

10. Steps to connect to ec2 machines.

- Select machine1 under instances tab and click on connect.
- Under connect to instance select SSH client
- Now copy the ssh command shown under example
- Now go to the .pem file location directory and open command prompt terminal
- Now paste the ssh command and click on enter
- Type yes to connect and you can see your Machine1-Divya instance running

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```
root@ip-172-31-47-3/home/ec2-user
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\WINDOWS\system32> cd "C:\Users\Pravalika\Documents\cloud"
PS C:\Users\Pravalika\Documents\cloud> ssh -i "Sydney.pem" ec2-user@ec2-13-239-8-195.ap-southeast-2.compute.amazonaws.com
The authenticity of host 'ec2-13-239-8-195.ap-southeast-2.compute.amazonaws.com (13.239.8.195)' can't be established.
ECDSA key fingerprint is SHA256:BhMqjDjcfWJYsU6kZzXPTT14NXBdCp9ePU/dEbYU0.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-13-239-8-195.ap-southeast-2.compute.amazonaws.com,13.239.8.195' (ECDSA) to the list of known hosts.

  _ | _ | _ )
  _ | ( _ /  Amazon Linux 2 AMI
  _ | \ _ | _ |

https://aws.amazon.com/amazon-linux-2/
19 package(s) needed for security, out of 31 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-47-3 ~]$ sudo su
[root@ip-172-31-47-3 ec2-user]#
```

Fig2.Machine1-Divya

```
root@ip-172-31-40-9/home/ec2-user
Windows PowerShell
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PS C:\WINDOWS\system32> cd "C:\Users\Pravalika\Documents\cloud"
PS C:\Users\Pravalika\Documents\cloud> ssh -i "Sydney.pem" ec2-user@ec2-3-26-187-188.ap-southeast-2.compute.amazonaws.com
The authenticity of host 'ec2-3-26-187-188.ap-southeast-2.compute.amazonaws.com (3.26.187.188)' can't be established.
ECDSA key fingerprint is SHA256:1fbR+cCWRCvw9DsjcmDlkoELgUMpoo8eA5du2vAc3DE.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-26-187-188.ap-southeast-2.compute.amazonaws.com,3.26.187.188' (ECDSA) to the list of known hosts.

  _ | _ | _ )
  _ | ( _ /  Amazon Linux 2 AMI
  _ | \ _ | _ |

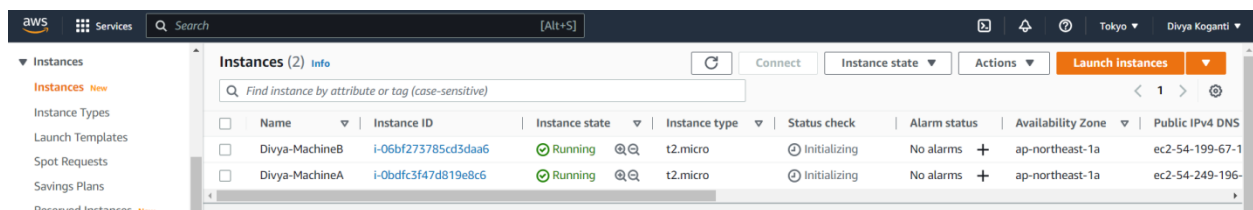
https://aws.amazon.com/amazon-linux-2/
19 package(s) needed for security, out of 31 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-40-9 ~]$ sudo su
[root@ip-172-31-40-9 ec2-user]#
```

Fig3.Machine2-Koganti

2. EBS volume

Steps:

1. When Ever you want to provide an extra storage to your machine you opt for this Elastic Block store (EBS).
2. Created Two machines Divya-Machine A and Divya-Machine B in Tokyo region.



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Fig4: Instances for EBS

3.Under EBS select volumes and you can see default storage allocated for your EC2 machines.

4.Now click on create volume

- Under volume type select any type you want (General purpose SSD (gp2))
- Under size select the amount of GB (1GB)
- Under Availability zone you can select available zone in which your instance got created.
- Now click on create volume.
- Now click on volumes and you can see all volumes and newly created EBS.
- Now select the EBS and click on actions and click on attach volume.
- Under Basic details select your instance and click on attach volume

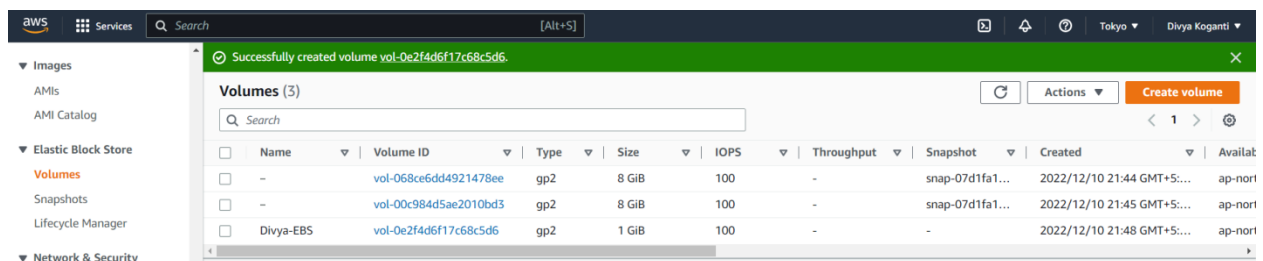


Fig5: EBS volume of 1GB

6.Now log on to Divya-MachineA and make a file system and mount it.

- lsblk – to list all file systems
- mkdir to create a storage directory
- mkfs -t xfs /dev/sdf
- mount -t xfs /dev/sdf storage
- created a storage directory named Divya-Storage
- mounted it to file system and created ten .txt files in it
- umounted the file system.

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```
root@ip-172-31-32-56:~
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\WINDOWS\system32> cd "C:\Users\Pravalika\Documents\Cloud2"
PS C:\Users\Pravalika\Documents\Cloud2> ssh -i "Tokyo.pem" ec2-user@ec2-54-249-196-242.ap-northeast-1.compute.amazonaws.com
Last login: Sat Dec 10 16:21:25 2022 from 157.48.160.173

  _ | _ | _ |
  _ | ( _ | /
  _ | \ | _ |

Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/
19 package(s) needed for security, out of 31 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-32-56 ~]$ sudo su
[root@ip-172-31-32-56 ec2-user]# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
xvda        202:0    0   8G  0 disk
└─xvda1     202:1    0   8G  0 part /
xvdf        202:80   0   1G  0 disk
[root@ip-172-31-32-56 ec2-user]# df -hT
Filesystem      Type      Size  Used Avail Use% Mounted on
devtmpfs        devtmpfs  474M   0  474M   0% /dev
tmpfs           tmpfs     483M   0  483M   0% /dev/shm
tmpfs           tmpfs     483M  412K  483M   1% /run
tmpfs           tmpfs     483M   0  483M   0% /sys/fs/cgroup
/dev/xvda1      xfs       8.0G  1.6G  6.5G  20% /
tmpfs           tmpfs     97M    0   97M   0% /run/user/1000
[root@ip-172-31-32-56 ec2-user]# mkdir divya-Storage
[root@ip-172-31-32-56 ec2-user]# ls
divya-Storage
[root@ip-172-31-32-56 ec2-user]# mkfs -t xfs /dev/xvdf
meta-data=/dev/xvdf          isize=512    agcount=4, agsize=65536 blks
=                               sectsz=512   attr=2, projid32bit=1
=                               crc=1       finobt=1, sparse=0
data      =                   bsize=4096  blocks=262144, imaxpct=25
=                               sunit=0    swidth=0 blks
naming    =version 2          bsize=4096  ascii-ci=0 ftype=1
log       =internal log     bsize=4096  blocks=2560, version=2
=                               sectsz=512  sunit=0 blks, lazy-count=1
realtime  =none           extsz=4096  blocks=0, rtextents=0
[root@ip-172-31-32-56 ec2-user]# mount -t xfs /dev/xvdf /home/ec2-user/divya-Storage
```

Fig 6: File system created for Divya-MachineA and mounted it

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```
root@ip-172-31-32-56:~
[root@ip-172-31-32-56 ec2-user]# mount -t xfs /dev/xvdf /home/ec2-user/divya-Storage
[root@ip-172-31-32-56 ec2-user]# df -hT
Filesystem      Type      Size  Used Avail Use% Mounted on
devtmpfs        devtmpfs  474M   0  474M   0% /dev
tmpfs           tmpfs     483M   0  483M   0% /dev/shm
tmpfs           tmpfs     483M 412K  483M   1% /run
tmpfs           tmpfs     483M   0  483M   0% /sys/fs/cgroup
/dev/xvda1      xfs       8.0G  1.6G  6.5G  20% /
tmpfs           tmpfs     97M   0   97M   0% /run/user/1000
/dev/xvdf       xfs      1014M  34M  981M   4% /home/ec2-user/divya-Storage
[root@ip-172-31-32-56 ec2-user]# pwd
/home/ec2-user
[root@ip-172-31-32-56 ec2-user]# ls
divya-Storage
[root@ip-172-31-32-56 ec2-user]# cd divya-Storage/
[root@ip-172-31-32-56 divya-Storage]# touch {1..10}.txt
[root@ip-172-31-32-56 divya-Storage]# ls
10.txt 1.txt 2.txt 3.txt 4.txt 5.txt 6.txt 7.txt 8.txt 9.txt
[root@ip-172-31-32-56 divya-Storage]# umount -t xfs /dev/xvdf /home/ec2-user/divya-Storage/
umount: /home/ec2-user/divya-Storage: target is busy.
umount: /home/ec2-user/divya-Storage/: target is busy.
[root@ip-172-31-32-56 divya-Storage]# cd --
[root@ip-172-31-32-56 ~]# umount -t xfs /dev/xvdf /home/ec2-user/divya-Storage
umount: /home/ec2-user/divya-Storage: no mount point specified.
[root@ip-172-31-32-56 ~]# df -hT
Filesystem      Type      Size  Used Avail Use% Mounted on
devtmpfs        devtmpfs  474M   0  474M   0% /dev
tmpfs           tmpfs     483M   0  483M   0% /dev/shm
tmpfs           tmpfs     483M 412K  483M   1% /run
tmpfs           tmpfs     483M   0  483M   0% /sys/fs/cgroup
/dev/xvda1      xfs       8.0G  1.6G  6.5G  20% /
tmpfs           tmpfs     97M   0   97M   0% /run/user/1000
[root@ip-172-31-32-56 ~]# cat
```

Fig7: Created 10 files in divya-Storage and unmounted it

7. Now detach the EBS volume from machine A and attach it to Machine B
8. Now connect to Machine B, create a new directory and mount the same to it.
9. Divya-MachineB EBS volume contains all the ten txt files

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```
root@ip-172-31-37-168:/home/ec2-user/divya-Attach
```

```

  _ | _ | _ )
  _ | (   /   Amazon Linux 2 AMI
  _ | \ _ | _ |

https://aws.amazon.com/amazon-linux-2/
19 package(s) needed for security, out of 31 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-37-168 ~]$ sudo su
[root@ip-172-31-37-168 ec2-user]# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
xvda        202:0    0   8G  0 disk
└─xvda1     202:1    0   8G  0 part /
xvdf        202:80   0   1G  0 disk

[root@ip-172-31-37-168 ec2-user]# df -hT
Filesystem      Type      Size  Used Avail Use% Mounted on
devtmpfs        devtmpfs  474M   0  474M  0% /dev
tmpfs           tmpfs     483M   0  483M  0% /dev/shm
tmpfs           tmpfs     483M  412K  483M  1% /run
tmpfs           tmpfs     483M   0  483M  0% /sys/fs/cgroup
/dev/xvda1      xfs       8.0G  1.6G  6.5G  20% /
tmpfs          tmpfs     97M   0   97M  0% /run/user/1000

[root@ip-172-31-37-168 ec2-user]# ls
[root@ip-172-31-37-168 ec2-user]# fdisk -l
Disk /dev/xvda: 8 GiB, 8589934592 bytes, 16777216 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: DA90AB95-8C11-4BAE-9157-C48213FBAD0C

Device        Start      End  Sectors  Size Type
/dev/xvda1    4096 16777182 16773087   8G Linux filesystem
/dev/xvda128 2048      4095     2048    1M BIOS boot

Partition table entries are not in disk order.

Disk /dev/xvdf: 1 GiB, 1073741824 bytes, 2097152 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
[root@ip-172-31-37-168 ec2-user]# mkdir divya-Attach
[root@ip-172-31-37-168 ec2-user]# mount -t xfs /dev/xvdf /home/ec2-user/divya-Attach/
[root@ip-172-31-37-168 ec2-user]# cd divya/Attach/
bash: cd: divya/Attach/: No such file or directory
[root@ip-172-31-37-168 ec2-user]# cd divya-Attach/
[root@ip-172-31-37-168 divya-Attach]# ls
10.txt 1.txt 2.txt 3.txt 4.txt 5.txt 6.txt 7.txt 8.txt 9.txt
[root@ip-172-31-37-168 divya-Attach]# cat
```

Fig8: Divya-MachineB EBS

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3. Snapshot

Steps:

1. Under EC2 Elastic Block store click on Snapshot
2. Click on create snapshot
3. Under volume id select your volume (Divya-EBS) in Tokyo region
4. Under description enter name of snapshot
5. Now click on create snapshot
6. Now click on snapshots and you can able to see your created snapshot
7. Select your snapshot and click on actions and click on copy snapshot
8. In settings page of copy snapshot under Destination region select the region where you want to create sydney (ap-northeast1)
9. Now click on copy snapshot

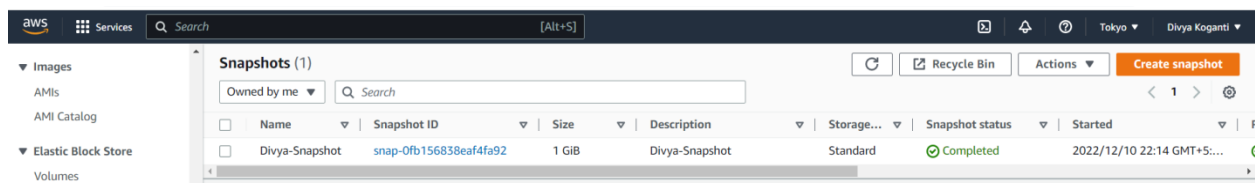


Fig 9: Snapshot created in Tokyo region from Divya-EBS volume

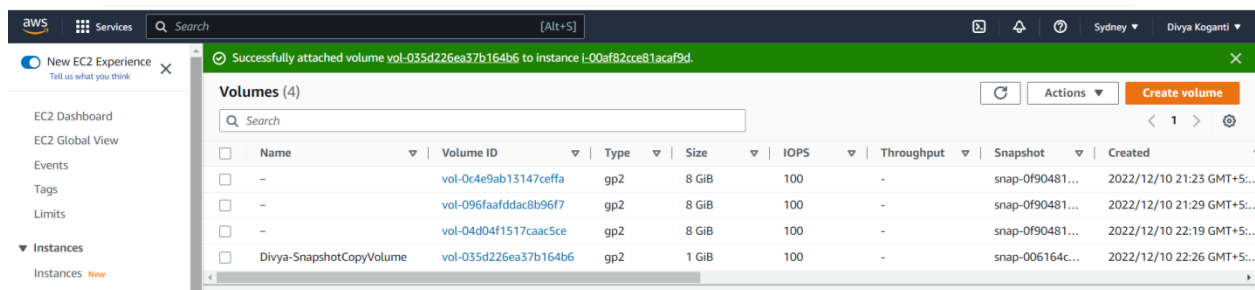


Fig 10: volume created from copy snapshot in Sydney region

10. Create a Divya-Machine C in sydney region and attach the EBS volume created from Snapshot copy
11. Now connect to Divya-Machine C and create a new storage directory named DivyaSnapshot Volume and mount it.
12. switch to the Divya-Snapshot Volume directory and check the list of files in it.

Cloud Assignment

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root@ip-172-31-34-50:/home/ec2-user/divya-snapshotVolume

```
__|_|_|
https://aws.amazon.com/amazon-linux-2/
19 package(s) needed for security, out of 31 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-34-50 ~]$ sudo su
[root@ip-172-31-34-50 ec2-user]# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
xvda        202:0    0   8G  0 disk
└─xvda1     202:1    0   8G  0 part /
xvdf        202:80   0   1G  0 disk
[root@ip-172-31-34-50 ec2-user]# df -hT
Filesystem      Type      Size  Used Avail Use% Mounted on
devtmpfs        devtmpfs  474M   0  474M   0% /dev
tmpfs           tmpfs     483M   0  483M   0% /dev/shm
tmpfs           tmpfs     483M  412K  483M   1% /run
tmpfs           tmpfs     483M   0  483M   0% /sys/fs/cgroup
/dev/xvda1      xfs       8.0G  1.6G  6.5G  20% /
tmpfs           tmpfs     97M    0   97M   0% /run/user/1000
[root@ip-172-31-34-50 ec2-user]# fdisk -l
Disk /dev/xvda: 8 GiB, 8589934592 bytes, 16777216 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: DA90AB95-8C11-4BAE-9157-C48213FBAD0C

Device        Start      End  Sectors  Size Type
/dev/xvda1    4096 16777182 16773087   8G Linux filesystem
/dev/xvda128  2048      4095     2048   1M BIOS boot

Partition table entries are not in disk order.

Disk /dev/xvdf: 1 GiB, 1073741824 bytes, 2097152 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
[root@ip-172-31-34-50 ec2-user]# mkdir divya-snapshotVolume
[root@ip-172-31-34-50 ec2-user]# mount -t xfs /dev/xvdf /home/ec2-user/divya-snapshotVolume/
[root@ip-172-31-34-50 ec2-user]# ls
divya-snapshotVolume
[root@ip-172-31-34-50 ec2-user]# cd divya-snapshotVolume
[root@ip-172-31-34-50 divya-snapshotVolume]# ls
10.txt 1.txt 2.txt 3.txt 4.txt 5.txt 6.txt 7.txt 8.txt 9.txt
[root@ip-172-31-34-50 divya-snapshotVolume]#
```

Fig 11: Divya-Machine C Snapshot Volume

4. AMI

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An Amazon Machine Image (AMI) is a template that contains a software configuration (for example, an operating system, an application server, and applications). From an AMI, you launch an instance, which is a copy of the AMI running as a virtual server in the cloud.

Steps:

- Created an Divya-Machine1 Instance and in the security-groups add inbound rule http port 80 for this machine.
- Connect to the above instance and perform the below commands

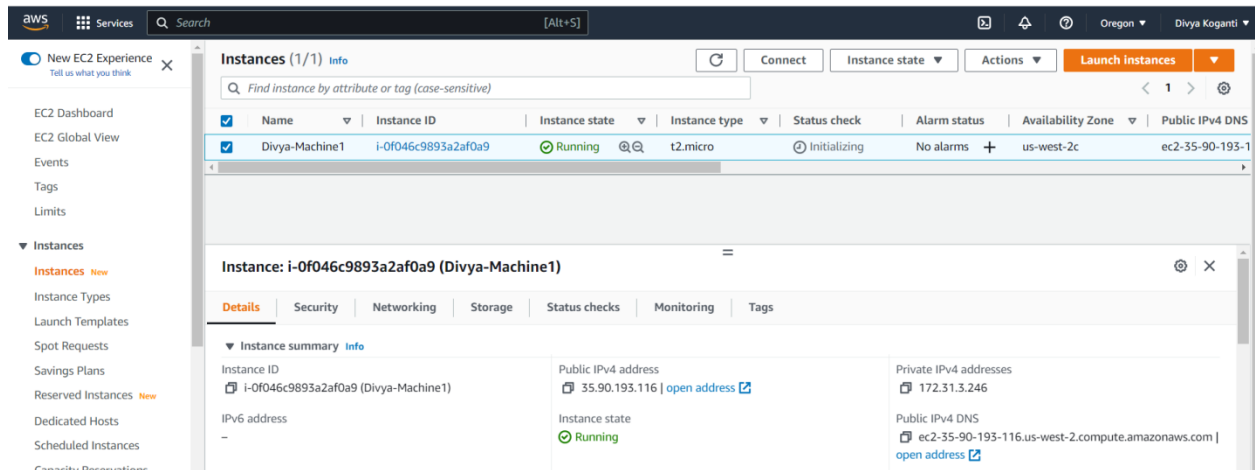


Fig12: Divya-Machine1

Preparing your Ubuntu server

1. `sudo apt update`
2. `sudo ufw allow ssh`
3. `sudo ufw allow 80`
4. `sudo ufw allow 443`
5. `sudo ufw enable`

Cloud Assignment

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```
ubuntu@ip-172-31-3-246: ~
allow ARGS                add allow rule
deny ARGS                 add deny rule
reject ARGS               add reject rule
limit ARGS                add limit rule
delete RULE|NUM           delete RULE
insert NUM RULE           insert RULE at NUM
prepend RULE              prepend RULE
route RULE                add route RULE
route delete RULE|NUM     delete route RULE
route insert NUM RULE     insert route RULE at NUM
reload                    reload firewall
reset                     reset firewall
status                    show firewall status
status numbered           show firewall status as numbered list of RULES
status verbose            show verbose firewall status
show ARG                  show firewall report
version                   display version information

Application profile commands:
app list                  list application profiles
app info PROFILE          show information on PROFILE
app update PROFILE        update PROFILE
app default ARG           set default application policy

ubuntu@ip-172-31-3-246:~$ sudo ufw allow ssh
Rules updated
Rules updated (v6)
ubuntu@ip-172-31-3-246:~$ sudo ufw allow 80
Rules updated
Rules updated (v6)
ubuntu@ip-172-31-3-246:~$ sudo ufw allow 443
Rules updated
Rules updated (v6)
ubuntu@ip-172-31-3-246:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y/n)? y
Firewall is active and enabled on system startup
ubuntu@ip-172-31-3-246:~$ sudo apt install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils bzip2 libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.3-0 mailcap mime-support ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser bzip2-doc
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils bzip2 libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.3-0 mailcap mime-support ssl-cert
0 upgraded, 13 newly installed, 0 to remove and 17 not upgraded.
Need to get 2136 kB of archives.
After this operation, 8505 kB of additional disk space will be used.
```

Fig13: Preparing Ubuntu server

- Installing and testing Apache2
1. sudo apt install apache2
 2. sudo systemctl status apache2
 3. <http://YOURSERVERIPADDRESS/>

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-3-246:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2022-12-10 17:19:18 UTC; 39s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 2433 (apache2)
    Tasks: 55 (limit: 1143)
   Memory: 4.9M
      CPU: 29ms
   CGroup: /system.slice/apache2.service
           └─2433 /usr/sbin/apache2 -k start
             └─2435 /usr/sbin/apache2 -k start
               └─2436 /usr/sbin/apache2 -k start

Dec 10 17:19:18 ip-172-31-3-246 systemd[1]: Starting The Apache HTTP Server...
Dec 10 17:19:18 ip-172-31-3-246 systemd[1]: Started The Apache HTTP Server.
ubuntu@ip-172-31-3-246:~$
```

Cloud Assignment

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Fig 14: Testing apache2

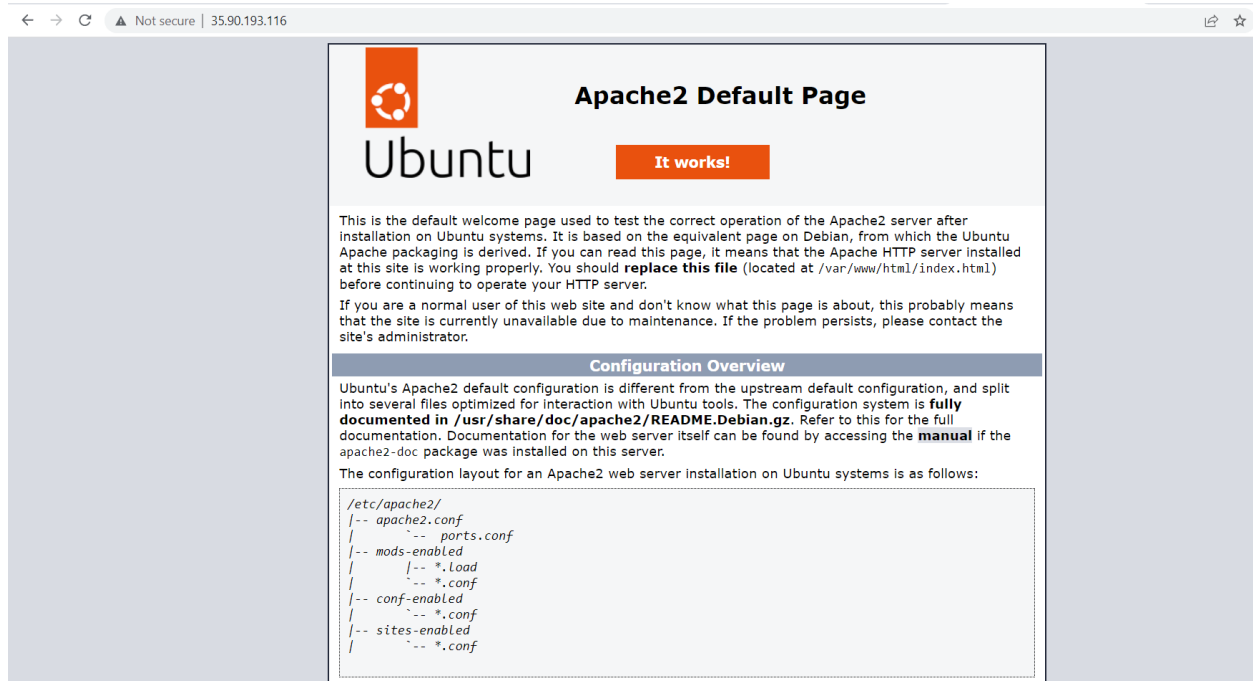


Fig 15: Testing apache2 on browser

- Installing and testing PHP

1. `sudo apt install php8.1`
2. `php --version`
3. `sudo systemctl restart apache2`
4. `echo " " | sudo tee -a /var/www/html/phpinfo.php > /dev/null`
5. <http://YOURSERVERIPADDRESS/phpinfo.php>

Cloud Assignment

Koganti Divya

```
ubuntu@ip-172-31-3-246: /
update-alternatives: using /usr/bin/php8.1 to provide /usr/bin/php (php) in auto mode
update-alternatives: using /usr/bin/phar8.1 to provide /usr/bin/phar (phar) in auto mode
update-alternatives: using /usr/bin/phar.phar8.1 to provide /usr/bin/phar.phar (phar.phar) in auto mode

Creating config file /etc/php/8.1/cli/php.ini with new version
Setting up libapache2-mod-php8.1 (8.1.2-1ubuntu2.9) ...

Creating config file /etc/php/8.1/apache2/php.ini with new version
Module mpm_event disabled.
Enabling module mpm_prefork.
apache2_switch_mpm Switch to prefork
apache2_invoke: Enable module php8.1
Setting up php8.1 (8.1.2-1ubuntu2.9) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for php8.1-cli (8.1.2-1ubuntu2.9) ...
Processing triggers for libapache2-mod-php8.1 (8.1.2-1ubuntu2.9) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-3-246:~$ cd /
ubuntu@ip-172-31-3-246:/$ php --version
PHP 8.1.2-1ubuntu2.9 (cli) (built: Oct 19 2022 14:58:09) (NTS)
Copyright (c) The PHP Group
Zend Engine v4.1.2, Copyright (c) Zend Technologies
    with Zend OPcache v8.1.2-1ubuntu2.9, Copyright (c), by Zend Technologies
ubuntu@ip-172-31-3-246:/$ udo systemctl restart apache2
Command 'udo' not found, but can be installed with:
sudo apt install udo
ubuntu@ip-172-31-3-246:/$ sudo systemctl restart apache2
ubuntu@ip-172-31-3-246:/$ echo '<?php phpinfo(); ?>' | sudo tee -a/var/www/html/phpinfo.php>/dev/null
tee: invalid option -- '/'
Try 'tee --help' for more information.
ubuntu@ip-172-31-3-246:/$ echo '<?php phpinfo(); ?>' | sudo tee-a/var/www/html/phpinfo.php>/dev/null
sudo: tee-a/var/www/html/phpinfo.php: command not found
ubuntu@ip-172-31-3-246:/$ echo '<?php phpinfo(); ?>' | sudo tee -a /var/www/html/phpinfo.php > /dev/null
tee: /var/www/html/phpinfo.php: No such file or directory
ubuntu@ip-172-31-3-246:/$ echo '<?php phpinfo(); ?>' | sudo tee -a /var/www/html/phpinfo.php > /dev/null
ubuntu@ip-172-31-3-246:/$ sudo systemctl restart apache2
ubuntu@ip-172-31-3-246:/$ echo '<?php phpinfo(); ?>' | sudo tee -a /var/www/html/phpinfo.php > /dev/null
ubuntu@ip-172-31-3-246:/$
```

Fig 16: Connecting PHP

Cloud Assignment

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← → ↻ Not secure | 35.90.193.116/phpinfo.php

PHP Version 8.1.2-1ubuntu2.9	
System	Linux ip-172-31-3-246 5.15.0-1026-aws #30-Ubuntu SMP Wed Nov 23 14:15:21 UTC 2022 x86_64
Build Date	Oct 19 2022 14:58:09
Build System	Linux
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/8.1/apache2
Loaded Configuration File	/etc/php/8.1/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/8.1/apache2/conf.d
Additional .ini files parsed	/etc/php/8.1/apache2/conf.d/10-opcache.ini, /etc/php/8.1/apache2/conf.d/10-pdo.ini, /etc/php/8.1/apache2/conf.d/20-calendar.ini, /etc/php/8.1/apache2/conf.d/20-ctype.ini, /etc/php/8.1/apache2/conf.d/20-exif.ini, /etc/php/8.1/apache2/conf.d/20-ffi.ini, /etc/php/8.1/apache2/conf.d/20-fileinfo.ini, /etc/php/8.1/apache2/conf.d/20-ftp.ini, /etc/php/8.1/apache2/conf.d/20-gettext.ini, /etc/php/8.1/apache2/conf.d/20-iconv.ini, /etc/php/8.1/apache2/conf.d/20-phar.ini, /etc/php/8.1/apache2/conf.d/20-posix.ini, /etc/php/8.1/apache2/conf.d/20-readline.ini, /etc/php/8.1/apache2/conf.d/20-shmop.ini, /etc/php/8.1/apache2/conf.d/20-sockets.ini, /etc/php/8.1/apache2/conf.d/20-sysmsg.ini, /etc/php/8.1/apache2/conf.d/20-syssem.ini, /etc/php/8.1/apache2/conf.d/20-sysvshm.ini, /etc/php/8.1/apache2/conf.d/20-tokenizer.ini
PHP API	20210902
PHP Extension	20210902
Zend Extension	420210902
Zend Extension Build	API420210902,NTS
PHP Extension Build	API20210902,NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	disabled
IPv6 Support	enabled
DTrace Support	available, disabled
Registered PHP Streams	https, ftps, compress.zlib, php, file, glob, data, http, ftp, phar
Registered Stream Socket Transports	tcp, udp, unix, udg, ssl, tls, tlsv1.0, tlsv1.1, tlsv1.2, tlsv1.3

Fig 17: Testing PHP on browser

5. Load Balancer

Steps:

- Create a EC2 machine (Divya-A) and add security group with inbound rule allowing SSH and HTTP port.
- Prepare your UBUNTU server and install and test apache2
- Install and test PHP8.1
- Create an AMI and create two instances from AMI with security group allowing inbound rule for SSH and HTTP port.

Cloud Assignment

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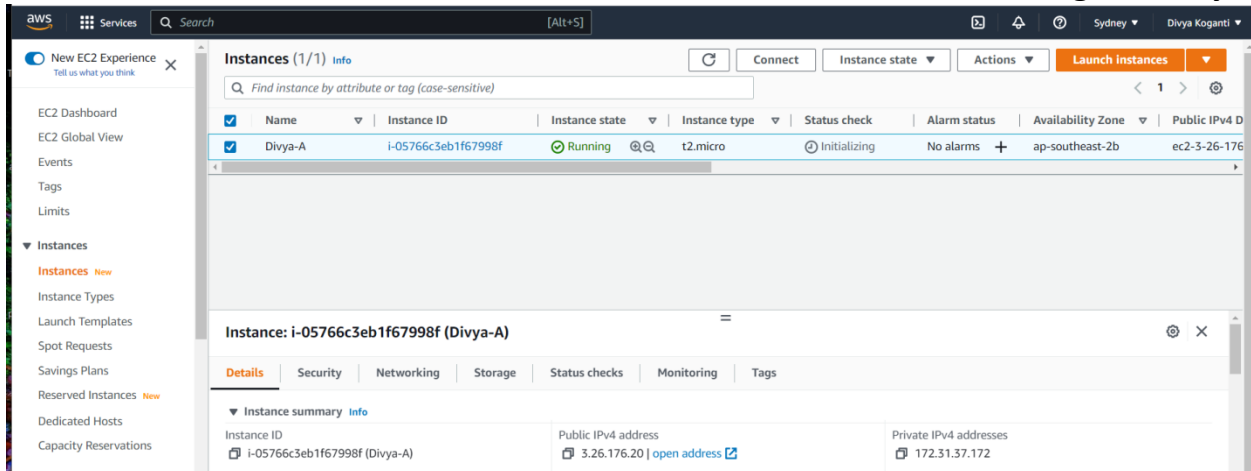


Fig 18: Divya-A

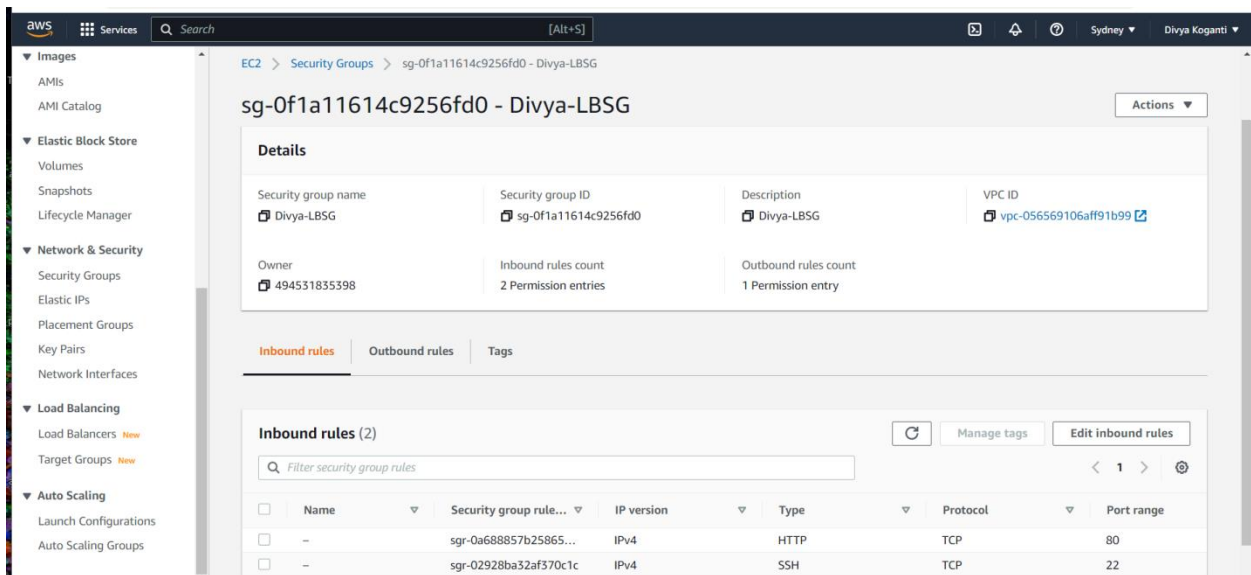


Fig 19: Security Group- Divya-LBSG for Load Balancer

- Under Load balancing from EC2 service click on Load Balancer and click on create a load balancer.
- Click on create Application load balancer and Give name to your load balancer (DivyaAPLB) and select all mappings under Network Mapping.
- Under security groups create a new security group allowing inbound rules for SSH and HTTP port.
- Under Listeners and routing, need to create a new target group (Divya-APLBTG) and include your target machines under it.
- Now connect your Target Group to your Load balancer and click on create

Cloud Assignment

Koganti Divya

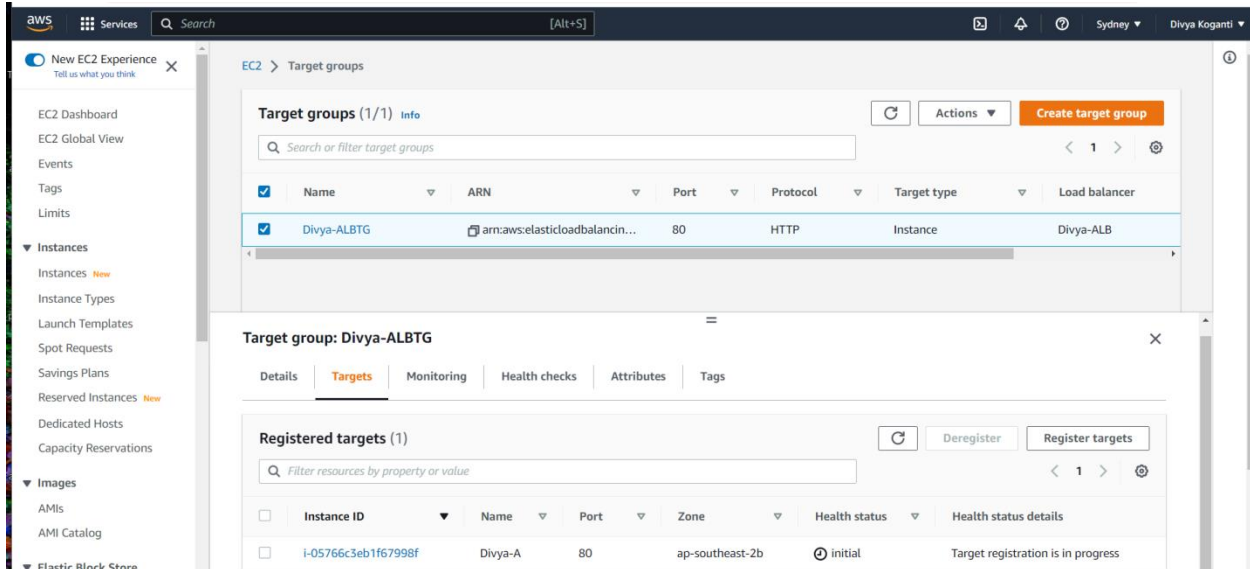


Fig 20: Target Group

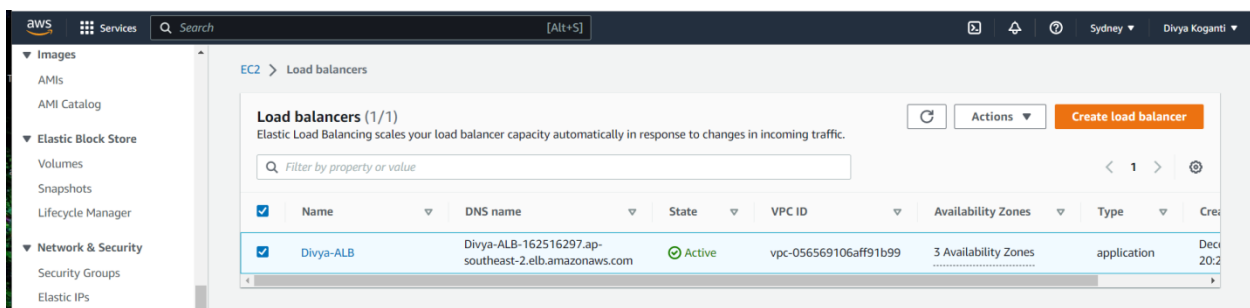


Fig21: Load Balancer

- Now connect to your Load balancer by copying the DNS name and pasting in the browser.
- You can also check to which machine it is being connected using DNS name/phpinfo.php and you can check the ip address of your machine to which it is being connected



 **Apache2 Default Page**

Ubuntu It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in `/usr/share/doc/apache2/README.Debian.gz`**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```
/etc/apache2/  
|-- apache2.conf  
|   |-- ports.conf  
|-- mods-enabled  
|   |-- *.load  
|   |-- *.conf  
|-- conf-enabled  
|   |-- *.conf  
|-- sites-enabled  
|   |-- *.conf
```

Fig22: Connecting to UBUNTU using Load balancer

Cloud Assignment

Koganti Divya

PHP Version 8.1.2-1ubuntu2.9	
System	Linux ip-172-31-37-81 5, 15 0-1026-aws #30-Ubuntu SMP Wed Nov 23 14:15:21 UTC 2022 x86_64
Build Date	Oct 19 2022 14:58:09
Build System	Linux
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/8.1/apache2
Loaded Configuration File	/etc/php/8.1/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/8.1/apache2/conf.d
Additional .ini files parsed	/etc/php/8.1/apache2/conf.d/10-opcache.ini, /etc/php/8.1/apache2/conf.d/10-pdo.ini, /etc/php/8.1/apache2/conf.d/20-calendar.ini, /etc/php/8.1/apache2/conf.d/20-ctype.ini, /etc/php/8.1/apache2/conf.d/20-exif.ini, /etc/php/8.1/apache2/conf.d/20-ffi.ini, /etc/php/8.1/apache2/conf.d/20-fileinfo.ini, /etc/php/8.1/apache2/conf.d/20-ftp.ini, /etc/php/8.1/apache2/conf.d/20-gettext.ini, /etc/php/8.1/apache2/conf.d/20-iconv.ini, /etc/php/8.1/apache2/conf.d/20-phar.ini, /etc/php/8.1/apache2/conf.d/20-posix.ini, /etc/php/8.1/apache2/conf.d/20-readline.ini, /etc/php/8.1/apache2/conf.d/20-shmop.ini, /etc/php/8.1/apache2/conf.d/20-sockets.ini, /etc/php/8.1/apache2/conf.d/20-sysvmsg.ini, /etc/php/8.1/apache2/conf.d/20-sysvsem.ini, /etc/php/8.1/apache2/conf.d/20-sysvshm.ini, /etc/php/8.1/apache2/conf.d/20-tokenizer.ini
PHP API	20210902
PHP Extension	20210902
Zend Extension	420210902
Zend Extension Build	API420210902,NTS
PHP Extension Build	API20210902,NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	disabled
IPv6 Support	enabled
DTrace Support	available, disabled

Fig23: Connecting to PHP using Load balancer