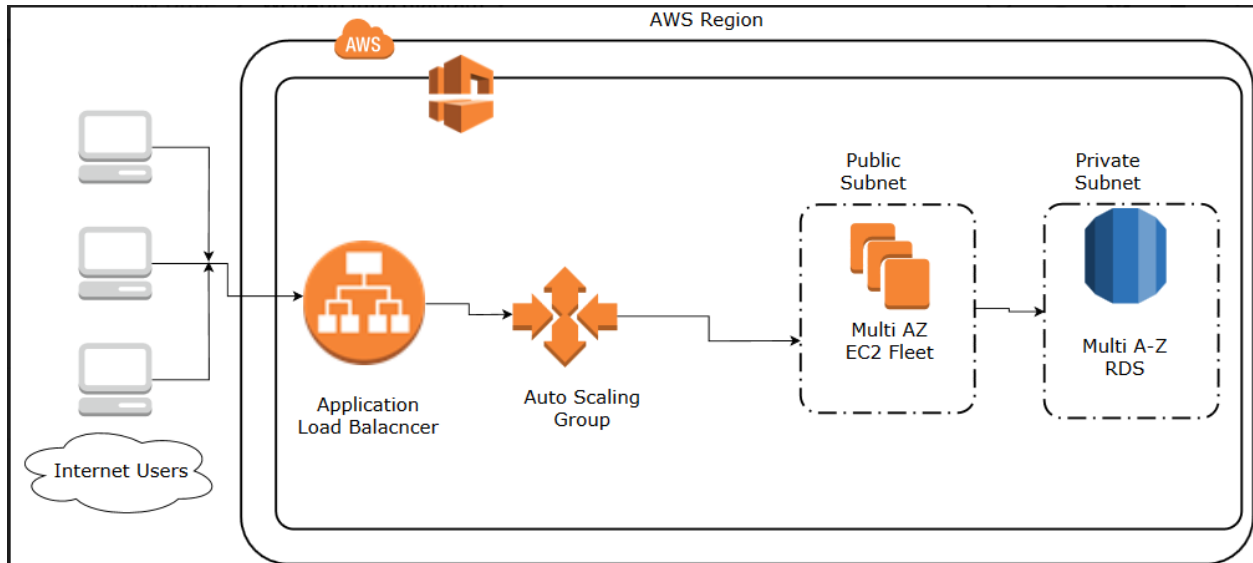


Creating a WebApp with automation and high availability

Design of the infrastructure



Note: All the resources have been tagged with prefix 'hg' signifying name initials

STEPS-

1. VPC with 2 public subnets (had to choose default VPC {vpc-68d7770c | vpc2038} and subnets as I wasn't able to create a new VPC due to **error-The maximum number of VPCs has been reached**)
2. Created following security groups as a part of resourcing:
For EC2- sg-914f62ef | hgwebapp

Type	Protocol	Port Range	Source
HTTP	TCP	80	sg-12301d6c (hgalb sg)
SSH	TCP	22	0.0.0.0/0
HTTPS	TCP	443	0.0.0.0/0

For ALB- sg-12301d6c | hgalb sg

Type	Protocol	Port Range	Source
HTTPS	TCP	443	0.0.0.0/0

3. Created an EBS backed EC2 instance with following config:
 - a. Instance type- t2.micro
 - b. Availability zone- us-west-2a
 - c. Key pair name- hg-trinimbus-oregan
 - d. All other settings as default

- e. Created bash script for multiple packages installation including webserver (see file- [bash.txt](#))
 - f. Defined parameters using aws config (see file- [commands.txt](#))
 - g. Created self-signed certificate and uploaded it to IAM (see file- [commands.txt](#))
4. Created an Application LB with following config:
- a. Name- hgwebappalb
 - b. Listeners- HTTPS
 - c. Availability zone- us-west-2a, us-west-2b
 - d. Chose IAM certificate created in step 3 (a)
 - e. SG allowing only HTTPS (hgalbsg)
 - f. Target group- hgtargetgroup
5. Created Mutli-AZ RDS MySQL instance- hgdbinstance with following config:
- a. Instance type- db.t2.micro
 - b. Storage- GP2 SSD
 - c. Master- hgsqluser
 - d. Privately accessible
 - e. SG- hgrds-sg (sg-43624e3d)

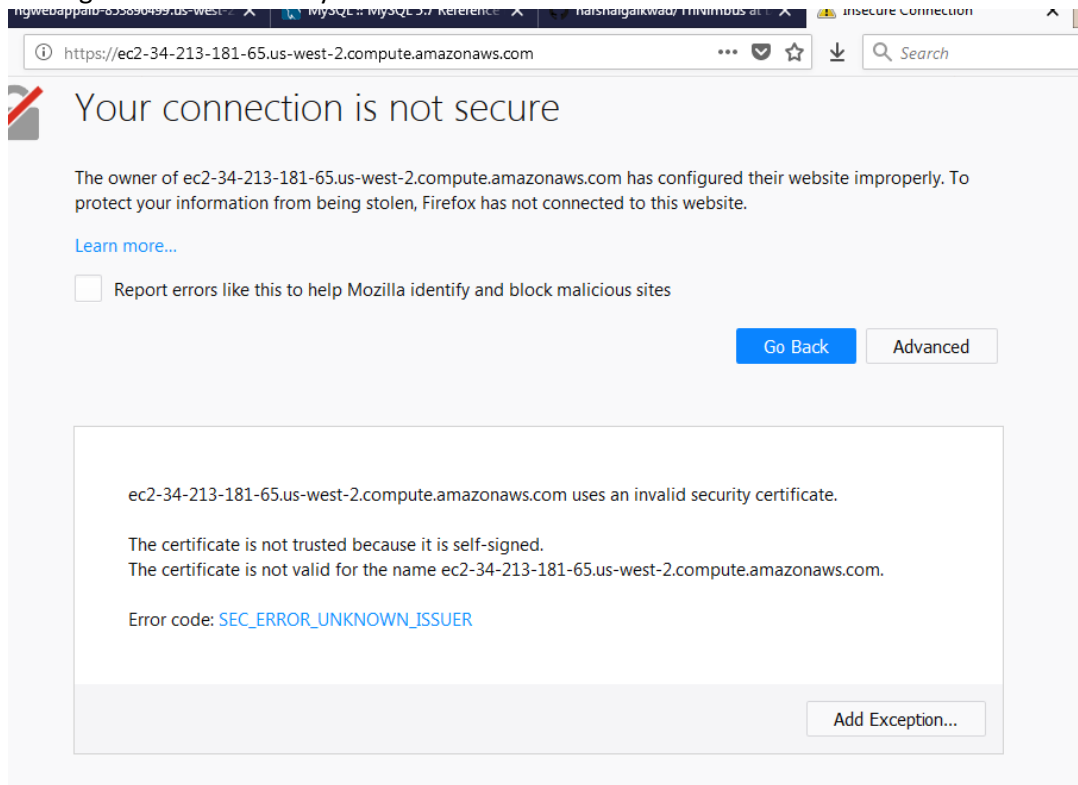
Type	Protocol	Port Range	Source
MySQL/Aurora (3306)	TCP (6)	3306	sg-914f62ef

- f. dB name- hgbooks
6. Verified connection to the db by creating a file connect.php under /var/www/html (see file [connect.php](#))
7. Connected MySQL RDS db from the primary EC2 using commands and created a table named Books (see file- [commands.txt](#))
8. Created sample.php under /var/www/html for accessing the web content from the RDS database (see file- [Sample.php](#))
9. Created AMI- hgwebappAMI from the current EC2 with all the configuration till now.
10. Created an Auto Scaling Group with Launch Configuration-hglaunchconfig and AMI- hgwebappAMI
- a. Used the existing sg- hgwebapp
 - b. Used existing key pair- hg-trinimbus-oregan
 - c. Created auto scaling group- hgautoscaling with subnet in both 2a and 2b AZs
 - d. Selected traffic from ALB with target group- hgtargetgroup
 - e. Added tag- hginstances to the Auto scaling instances

11. Tested failover by shutting down the primary HG WebApp EC2 instances
 - a. The Auto Scaling group launched another EC2 instance
 - b. The network traffic was continuously fed by the Application LB

Outputs-

1. Self-signed SSL successfully attached to all instances in the ELB and itself

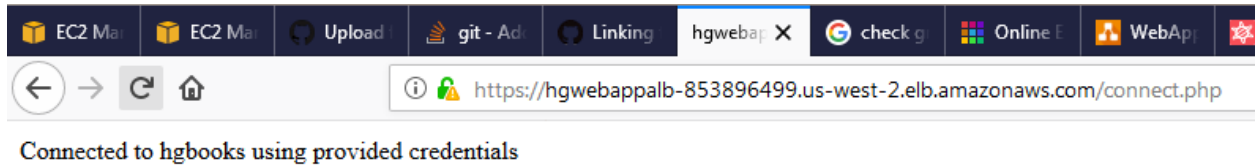


2. Default landing page successfully loaded

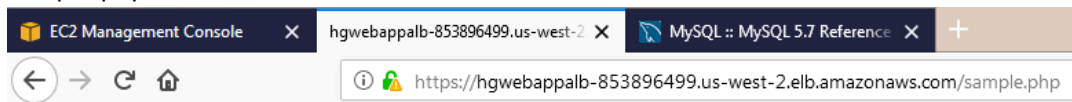
The screenshot shows a web browser window with the address bar displaying `https://hgwebappalb-853896499.us-west-2.elb.amazonaws.com`. The page content is the default PHP landing page for version 5.3.29. It features a purple header with the text "PHP Version 5.3.29" and the PHP logo. Below the header is a table with system information.

System	Linux ip-172-31-39-218 4.14.33-51.34.amzn1.x86_64 #1 SMP Fri Apr 13 18:18:26 UTC 2018 x86_64
Build Date	May 12 2015 22:42:47
Configure Command	'./configure' '--build=x86_64-redhat-linux-gnu' '--host=x86_64-redhat-linux-gnu' '--target=x86_64-amazon-linux-gnu' '--program-prefix=' '--prefix=/usr' '--exec-prefix=/usr' '--bindir=/usr/bin' '--sbindir=/usr/sbin' '--sysconfdir=/etc' '--datadir=/usr/share' '--includedir=/usr/include' '--libdir=/usr/lib64' '--libexecdir=/usr/libexec' '--localstatedir=/var' '--sharedstatedir=/var/lib' '--mandir=/usr/share/man' '--infodir=/usr/share/info' '--cache-file=../config.cache' '--with-libdir=lib64' '--with-config-file-path=/etc' '--with-config-file-scan-dir=/etc/php.d' '--disable-debug' '--with-pic' '--disable-rpath' '--without-pear' '--with-bz2' '--with-exec-dir=/usr/bin' '--with-freetype-dir=/usr' '--with-png-dir=/usr' '--with-xpm-dir=/usr' '--enable-gd-native-ttf' '--with-t1lib=/usr' '--without-gdbm' '--with-gettext' '--with-gmp' '--with-iconv' '--with-jpeg-dir=/usr' '--with-openssl' '--with-pcre-regex=/usr' '--with-zlib' '--with-layout=GNU' '--enable-exif' '--enable-ftp' '--enable-magic-quotes' '--enable-sockets' '--with-kerberos' '--enable-ucd-snmp-hack' '--enable-shmop' '--enable-calendar' '--without-sqlite' '--with-libxml-dir=/usr' '--enable-xml' '--with-system-tdzdata' '--with-mhash' '--with-apxs2=/usr/sbin/apxs' '--libdir=/usr/lib64/php' '--enable-pdo=shared' '--with-mysql=shared,/usr' '--with-mysqli=shared,/usr/lib64/mysql/mysql_config' '--with-pdo-mysql=shared,/usr/lib64/mysql/mysql_config' '--with-pdo-sqlite=shared,/usr' '--without-gd' '--disable-dom' '--disable-dba' '--without-unixODBC' '--disable-xmlreader' '--disable-xmlwriter' '--without-qlite3' '--disable-phar' '--disable-fileinfo' '--disable-json' '--without-openssl' '--disable-wddx' '--without-curl' '--

3. Checked the connection by accessing connect.php



4. The webpage is accessible through the ALB's DNS name with the values it reads from RDS with sample.php



Welcome to HGBooks !!

The One-Stop solution for all the book readers

Book id	Title	Author	Price	Language
1	Around the World	John D	50	English
2	In Search of Lost Time	Marcel Proust	60	English
3	Ulysses	James Joyce	40	English
4	Hamlet	Shakespeare	80	English
5	War and Peace	Leo Tolstoy	100	English

5. Autoscaling in action when primary EC2 is shutdown

Launch Instance ▾ Connect Actions ▾							
search : hg ✕ Add filter							
<input type="checkbox"/>	Name ▾	Instance ID ▾	Instance Type ▾	Availability Zone ▾	Instance State ▾	Status Checks ▾	Alarm S
<input checked="" type="checkbox"/>	hginstances	i-02dae2c36b8ec4f0a	t2.micro	us-west-2b	● running	✓ 2/2 checks ...	None
<input type="checkbox"/>	hginstances	i-0bc731e0646bd0f20	t2.micro	us-west-2b	● running	✓ 2/2 checks ...	None
<input type="checkbox"/>	HG WebApp	i-0e3c14537ea7a0324	t2.micro	us-west-2a	● stopped		None