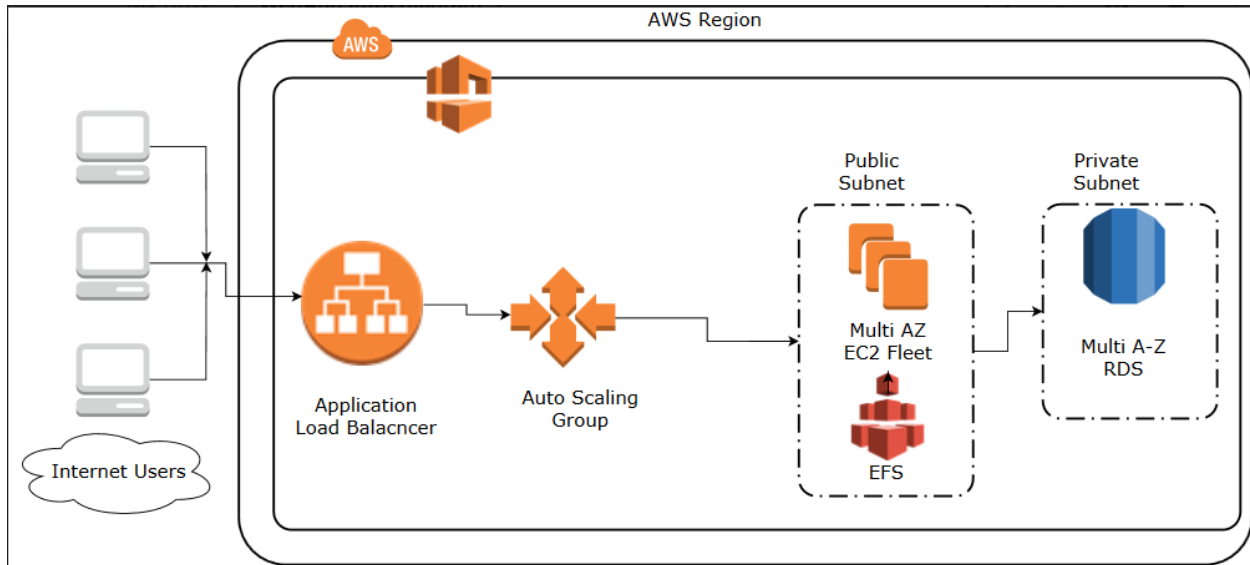


Creating a WebApp with automation and high availability

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 (hgalbbsg)
SSH	TCP	22	0.0.0.0/0
HTTPS	TCP	443	0.0.0.0/0

For ALB- sg-12301d6c | hgalbbsg

Type	Protocol	Port Range	Source
HTTPS	TCP	443	0.0.0.0/0

3. Created and 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 3 (a)
 - e. SG allowing only HTTPS (hgalbsg)
 - f. Target group- hgtargetgroup
 5. Created EFS- hgefs for sharing the code between the 2 EC2 instances including two AZs- west 2a and west 2b
 6. 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- new VPC SG

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

- f. dB name- hgbooks
7. Verified connection to the db by creating a file connect.php under /var/www/html (see file [connect.php](#))
 8. Connected MySQL RDS db from the primary EC2 using commands and created a table named Books (see file- [commands.txt](#))
 9. Created sample.php for accessing the web content from the RDS database (see file- [Sample.php](#))
 10. Created AMI- hgwebappAMI from the current EC2 with all the configuration till now.
 11. Created an Auto Scaling Group with Launch Configuration-hglaunchconfig and AMI- hgwebappAMI
 - a. Added mount instructions in Advanced Details- user data in Launch Configuration
 - b. Used the existing sg- hgwebapp
 - c. Using existing key pair- hg-trinimbus-oregan

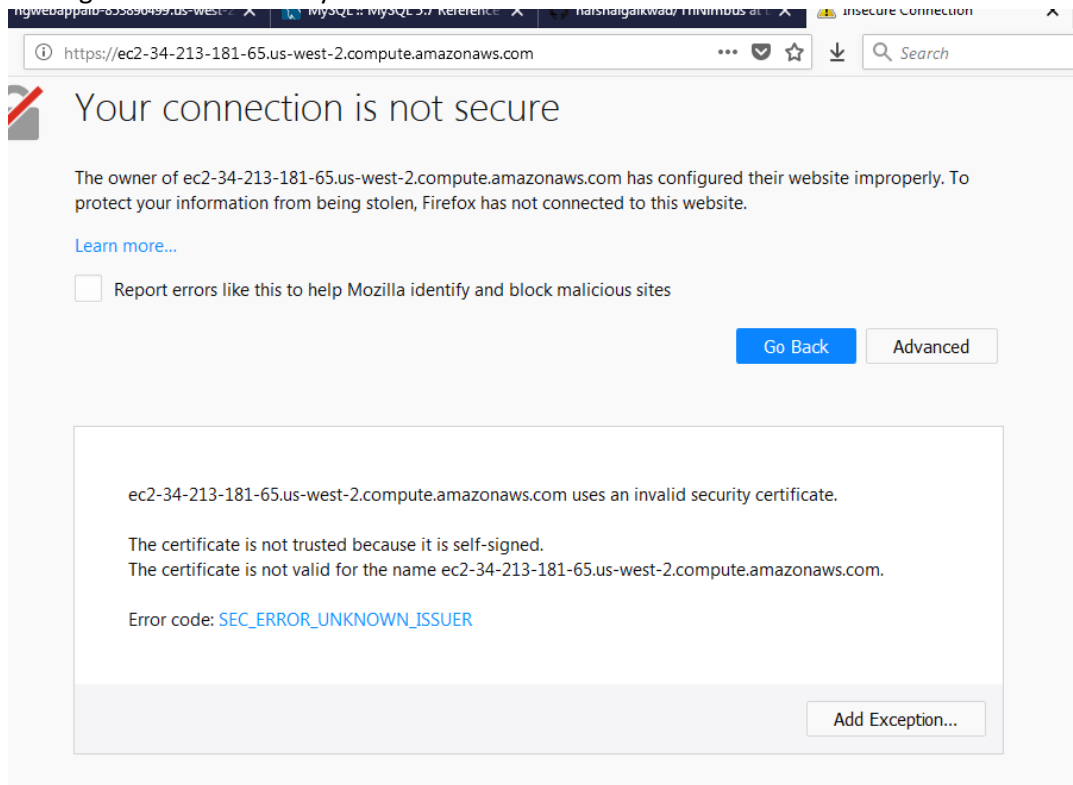
- d. Created auto scaling group- hgautoscaling with subnet in both 2a and 2b AZs
- e. Selected traffic from ALB with target group- hgtargetgroup
- f. Added tag- hginstances to the Auto scaling instances

12. 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

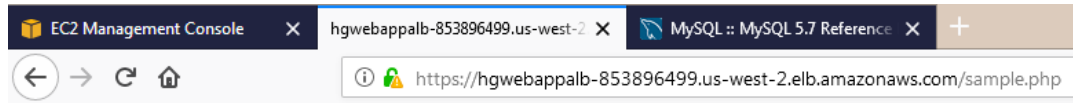


2. Default landing page successfully loaded

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 landing page for PHP 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 the following 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	<code>./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-gdcm' '--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-mysqllib=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-sqlite3' '--disable-phar' '--disable-fileinfo' '--disable-json' '--without-openssl' '--disable-wddx' '--without-curl' '--</code>

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



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

4. 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