Smarten
Augmented Analytics

Configuring Load Balancer on AWS

Document Version: 1.0
Product Version: 5.0 and above

www.Smarten.com

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Disclaimer

This document is intended to support administrators, technology managers or developers using and implementing Smarten. The business needs of each organization will vary and this document is expected to provide guidelines and not rules for making any decisions related to Smarten. The overall performance of Smarten depends on many factors, including but not limited to hardware configuration and network throughput.

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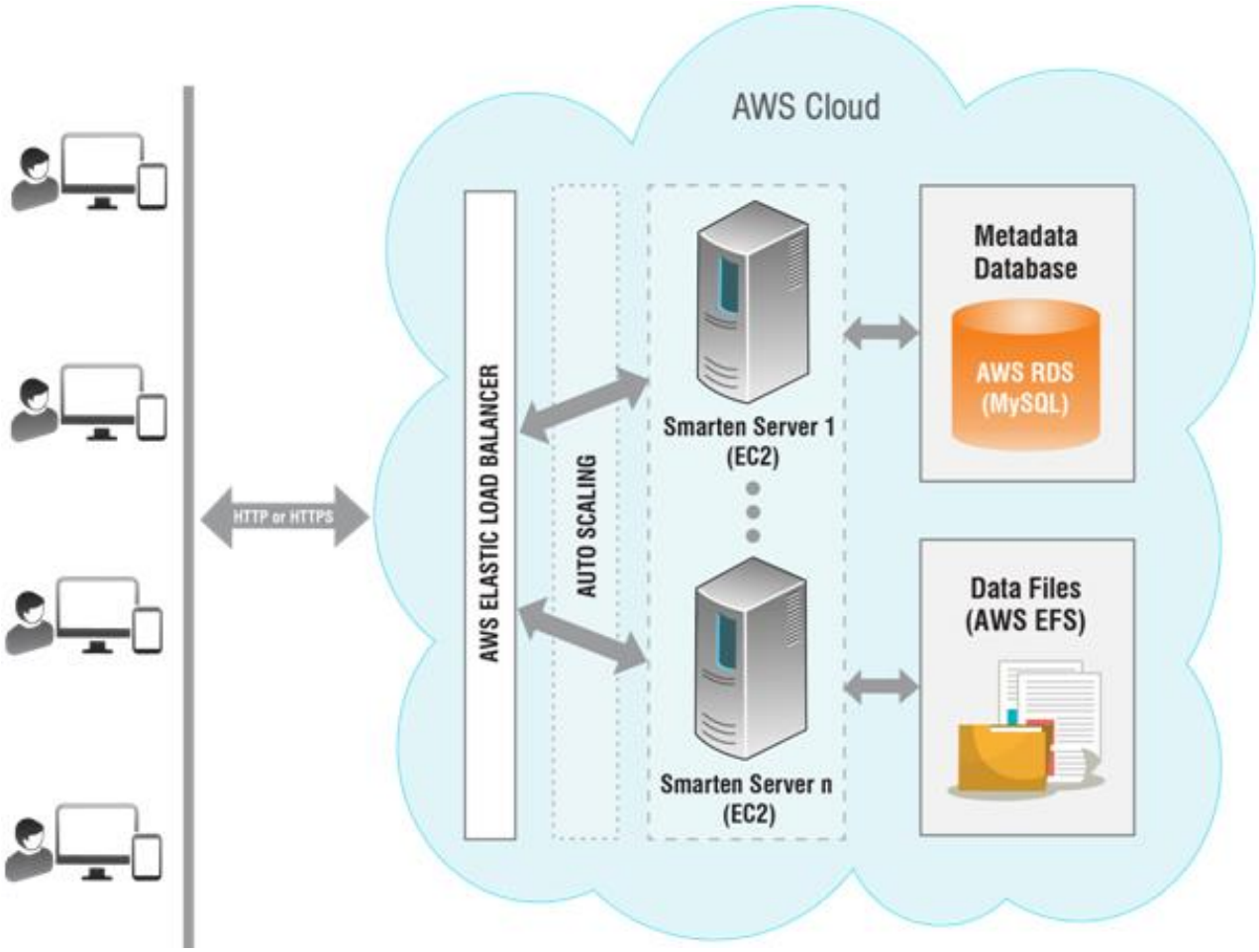
Prerequisite

- Smarten is deployed on AWS EC2 instance as per instructions in Smarten installation manual.
- AWS MySQL RDS instance is setup and running

1 Architecture



SMARTEN LOAD BALANCING ON AWS

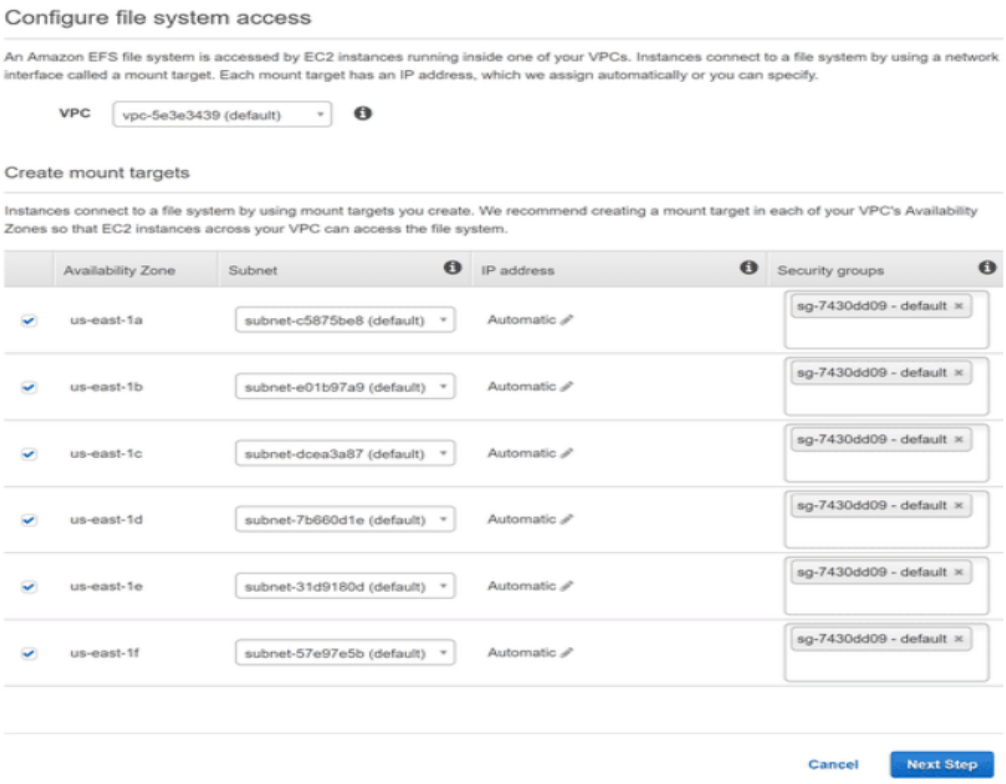
2 Configuring Smarten data folder on EFS

2.1 Creating EFS on AWS

Procedure

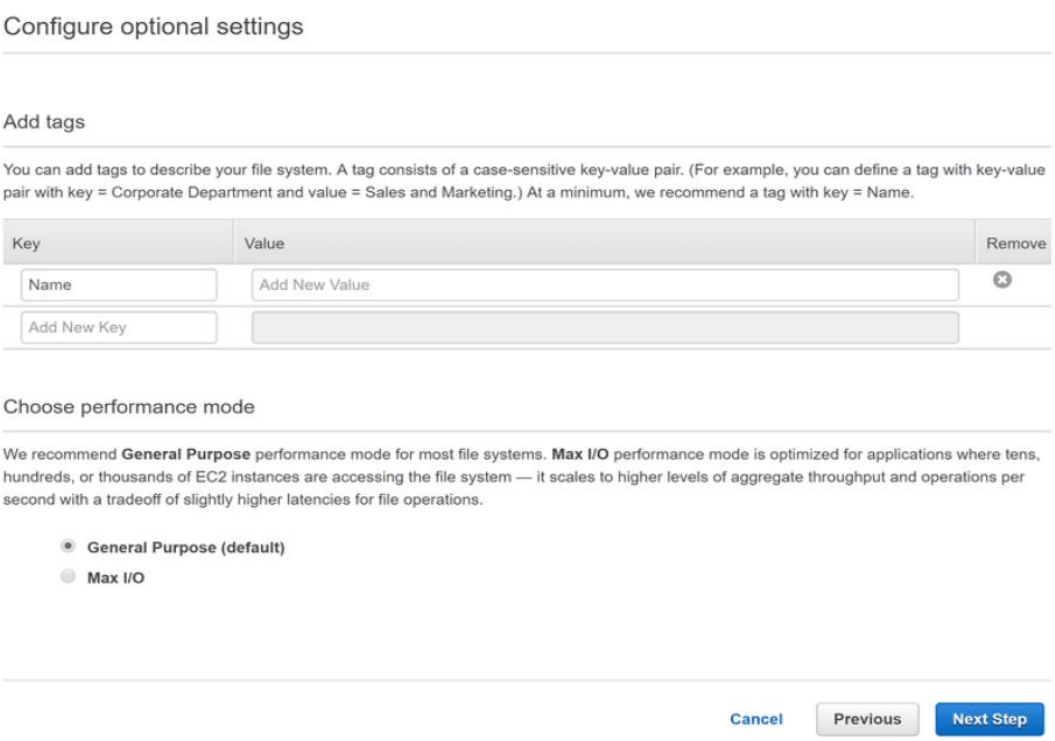
1. Login to AWS console
2. Go to services and select EFS under storage (https://console.aws.amazon.com/efs/)
3. Click “Create file system”

4. Aws will automatically assign an IP address in the availability zone



AWS VPC

5. Add the tag and select the performance mode General purpose



ADD TAGS

6. Review the configuration, and if all okay, then click “Create File System”. It make take a few seconds, once done, you will get a success message.

2.2 Mounting EFS on Smarten Instance

Smarten data folder using through EFS file system. Before mounting, need to install the NFS client using below mention command.

Procedure

1. Install NFS client use this command.
   # sudo apt-get install nfs-common

2. Create a folder where you want to mount the EFS. Best practice create folder in /mnt.
   # sudo mkdir /mnt/data

3. Mount the EFS file system with the below mention command.
   # sudo mount -t nfs4 -o
   nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport
   XXXXXXXX.XXXX.amazonaws.com:/ /mnt/data
   XXXXXXXX.XXXX.amazonaws.com >> it’s EFS DNS name

4. Allow port in Smarten instance inbound rules.
   # NFS port 2049

5. Verify EFS mount with below mention command.
   # sudo df –h | grep /mnt/data

6. Mount EFS when instance booting. Open fstab configuration file and add EFS mount point.
   # sudo vi /etc/fstab

XXXXX.XXXX.amazonaws.com:/ /mnt/data nfs4
nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2 0 0

7. Mount EFS file system using below mention command.
   # sudo mount –a

2.3 Copying data folder on EFS

- Copying data folder on EFS using below mention command.
  # sudo cp –r data /mnt

2.4 Configuring data folder path in smarten

- Create a system.properties file using below mention path and add data folder location.
  WILDFLY_HOME /standalone/deployments/smarten.war/conf/
  sudonanosystem.properties
  Add data folder path which is copying in EFS mount point:
  APPLICATION_PATH=/mnt/data

3 Configuring Smarten Metadata DB on RDS MySQL Database

Create “smarten” database in AWS MySQL rds instance.

3.1 Database Creation

Procedure

1. Locate mysql.sql script file from following path.
   WILDFLY_HOME/standalone/deployments/smarten.war/upgrade/mysql.sql

2. Execute script file on above created “smarten” database in MySQL.

3.2 Configuring Database connection parameters in Smarten

Procedure

1. Open file dbConf.properties from path shown below and comment HSQL DB parameter.
   WILDFLY_HOME/standalone/deploymetns/smarten.war/conf/dbConf.properties

   #HSQL Start
   #hibernate.dialect=org.hibernate.dialect.HSQLDialect
   #hibernate.hbm2ddl.auto=update
   #hibernate.connection.driver_class=org.hsqldb.jdbcDriver
   #hibernate.connection.username=sa
   #hibernate.connection.password=
   #hibernate.connection.url=jdbc:hsqldb:<data_folder_path>/DB/elegantjbi;shutdown=true;hsqld
   #hsqldb.write_delay=false;hsqldb.lob_compressed=true;hsqldb.log_size=50;hsqldb.defrag_limit
   =5;
   #hibernate.connection.url=jdbc:hsqldb:hsql://localhost/elegantjbi

#hibernate.connection.url=jdbc:hsqldb:hsql://localhost/<data_tenant_path>
#hibernate.show_sql=false

2. Edit dbConf.properties file by following command and uncomment MySQL DB parameter and add MySQL DB credentials.
WILDFLY_HOME/standalone/deployments/smarten.war/conf/dbConf.properties

hibernate.dialect=org.hibernate.dialect.MySQLDialect
hibernate.hbm2ddl.auto=update
hibernate.connection.driver_class=com.mysql.jdbc.Driver
hibernate.connection.username= **Database Username**
hibernate.connection.password= **Database Password**
hibernate.connection.url=jdbc:mysql://**Database Ip (endpoint) /Database Name**?useUnicode=true&characterEncoding=UTF-8
tenant.db.url.template=jdbc:mysql://**Database Ip (endpoint)** /<data_tenant_path>?useUnicode=true&characterEncoding=UTF-8
tenant.mysql.command.path=mysql,--host=**Database Ip(endpoint)**,--port=**3306**,--user=**Database Username**,--password=**Database Password**

3.3 Configuring Quartz Scheduler

Procedure

1. Open file quartz.properties from path shown below and comment HSQL DB parameter.
WILDFLY_HOME/standalone/deployments/smarten.war/conf/ quartz.properties

#org.quartz.jobStore.class = org.quartz.impl.jdbcjobstore.JobStoreTX
#org.quartz.jobStore.driverDelegateClass = org.quartz.impl.jdbcjobstore.HSQLDBDelegate
#org.quartz.jobStore.tablePrefix = QRTZ_
#org.quartz.jobStore.isClustered = true
#org.quartz.jobStore.clusterCheckinInterval = 20000
#org.quartz.jobStore.useProperties = false
#org.quartz.jobStore.misfireThreshold = 60000
#org.quartz.jobStore.selectWithLockSQL = SELECT * FROM {0}LOCKS UPDLOCK WHERE LOCK_NAME

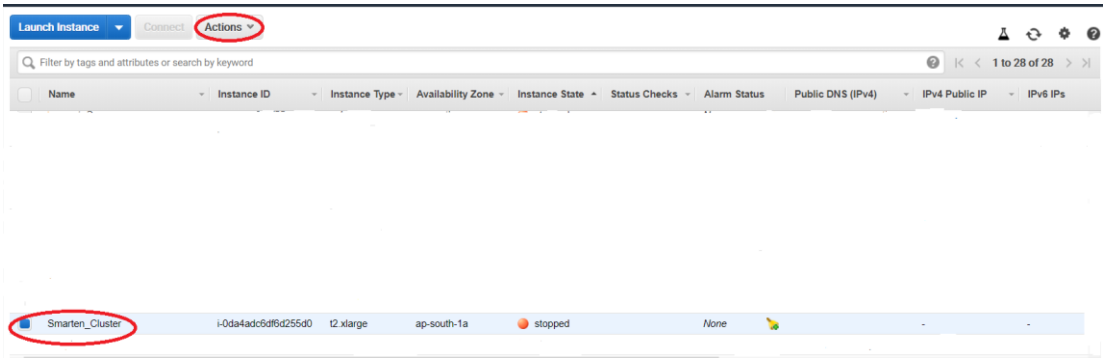
2. Open file quartz.properties from path shown below and uncomment MySQL DB parameter.
WILDFLY_HOME/standalone/deployments/smarten.war/conf/quartz.properties

org.quartz.jobStore.class = org.quartz.impl.jdbcjobstore.JobStoreTX
org.quartz.jobStore.driverDelegateClass = org.quartz.impl.jdbcjobstore.StdJDBCDelegate
org.quartz.jobStore.tablePrefix = QRTZ_
org.quartz.jobStore.isClustered = true
org.quartz.jobStore.clusterCheckinInterval = 20000
org.quartz.jobStore.useProperties = false
org.quartz.jobStore.misfireThreshold = 60000
org.quartz.jobStore.selectWithLockSQL = SELECT * FROM {0}LOCKS WHERE SCHED_NAME = {1} AND LOCK_NAME = ? FOR UPDATE

4 Creating another instance using AMI image

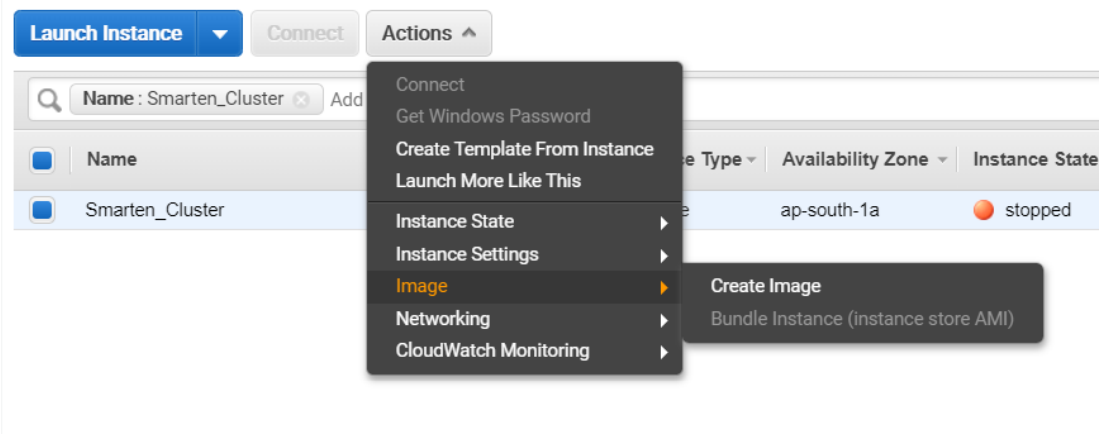
Procedure

1. Stop the excising Smarten instance
2. Select the Smarten instance and click on Action tab.



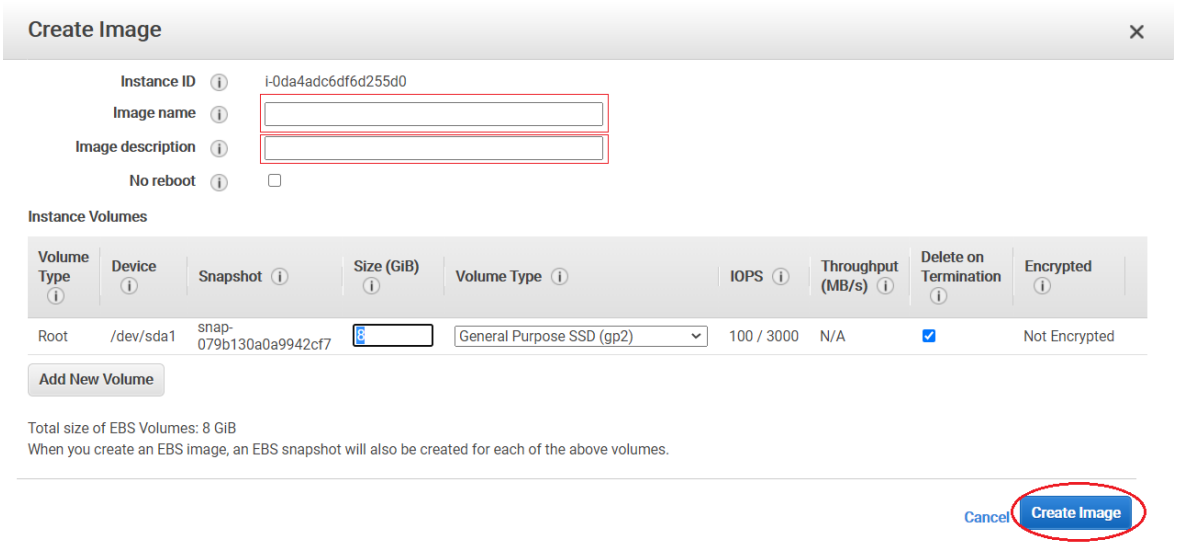
AMI ACTION

3. Expand Action tab and click image > Create Image.



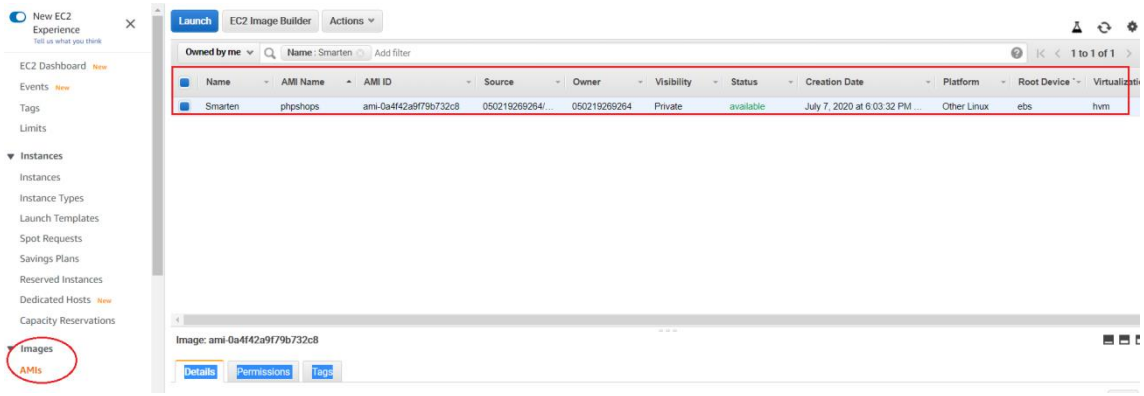
AMI CREATE IMAGE

4. Add image name and image description and click on Create Image.



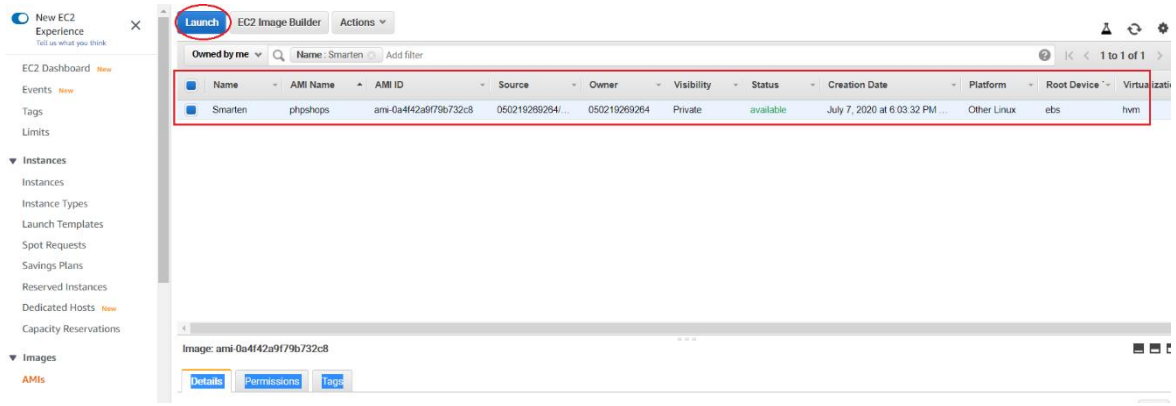
AMI CREATE IMAGE

5. Wait for 5 min to image creation completed, then go to EC2 Dashboard > Images and click on AMIs.



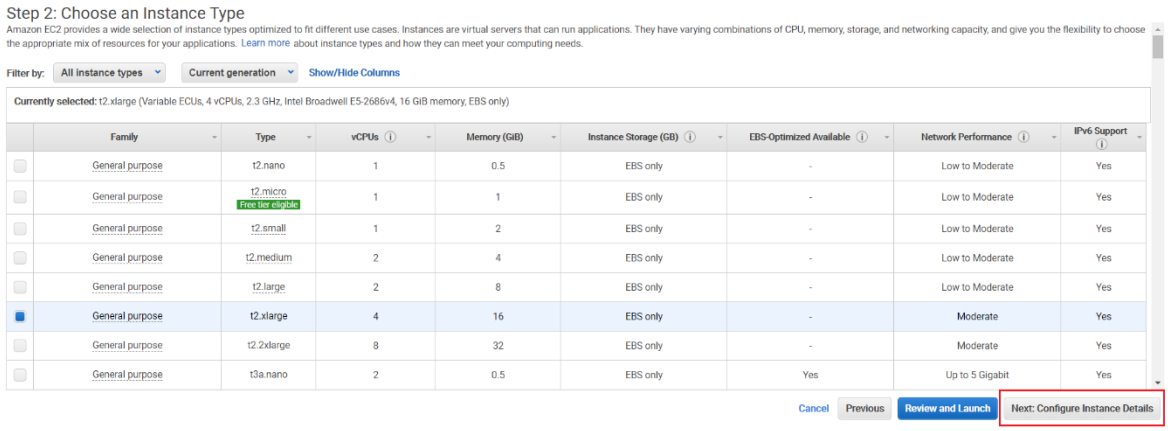
AMI IMAGE COMPLETED

6. Select image and click on launch button.



AMI LAUNCH

7. Select instance type (select same instance type which is set in Smarten instance) and click next.



AMI SELECT INSTANCE TYPE

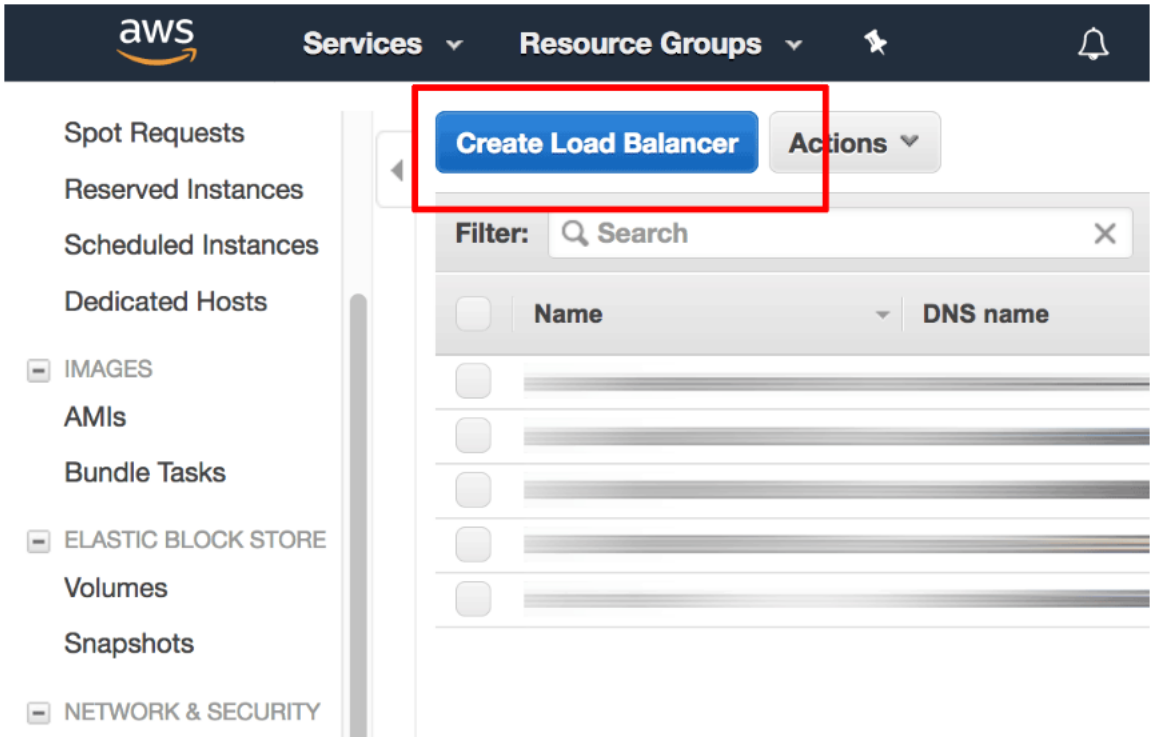
8. Next add storage option, Do not changes anything and click next.
9. Next configure security group, select existing security group which is assign to smarten instance and click next and then review and launch.

5 Configuring AWS Elastic Load Balancer (ELB)

5.1 Creating Elastic Load Balancer with Stickiness

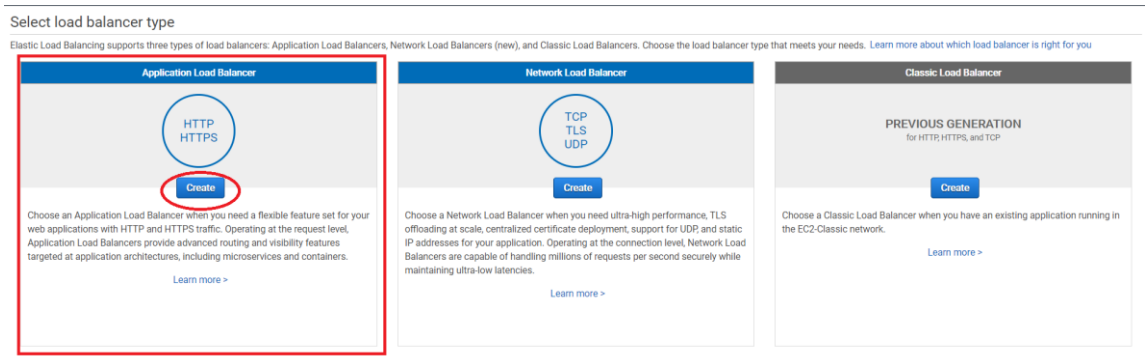
Procedure

1. **From the EC2 Dashboard, select the "Load Balancing > Load Balancer" menu item.**
2. **Click the "Create Load Balancer" button.**



CREATE LOAD BALANCER

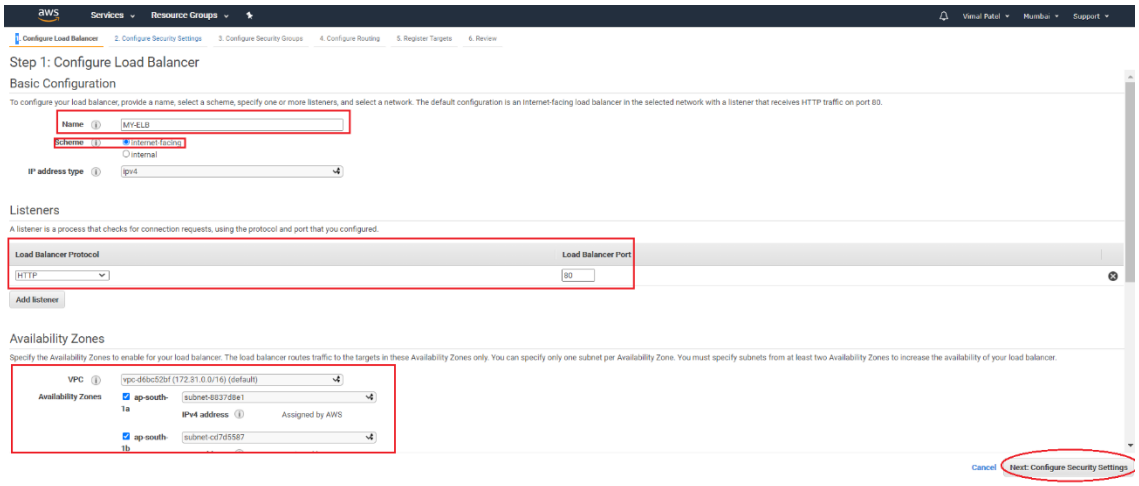
3. **Select Application Load Balancer Type and click on Create.**



LOAD BALANCER TYPE

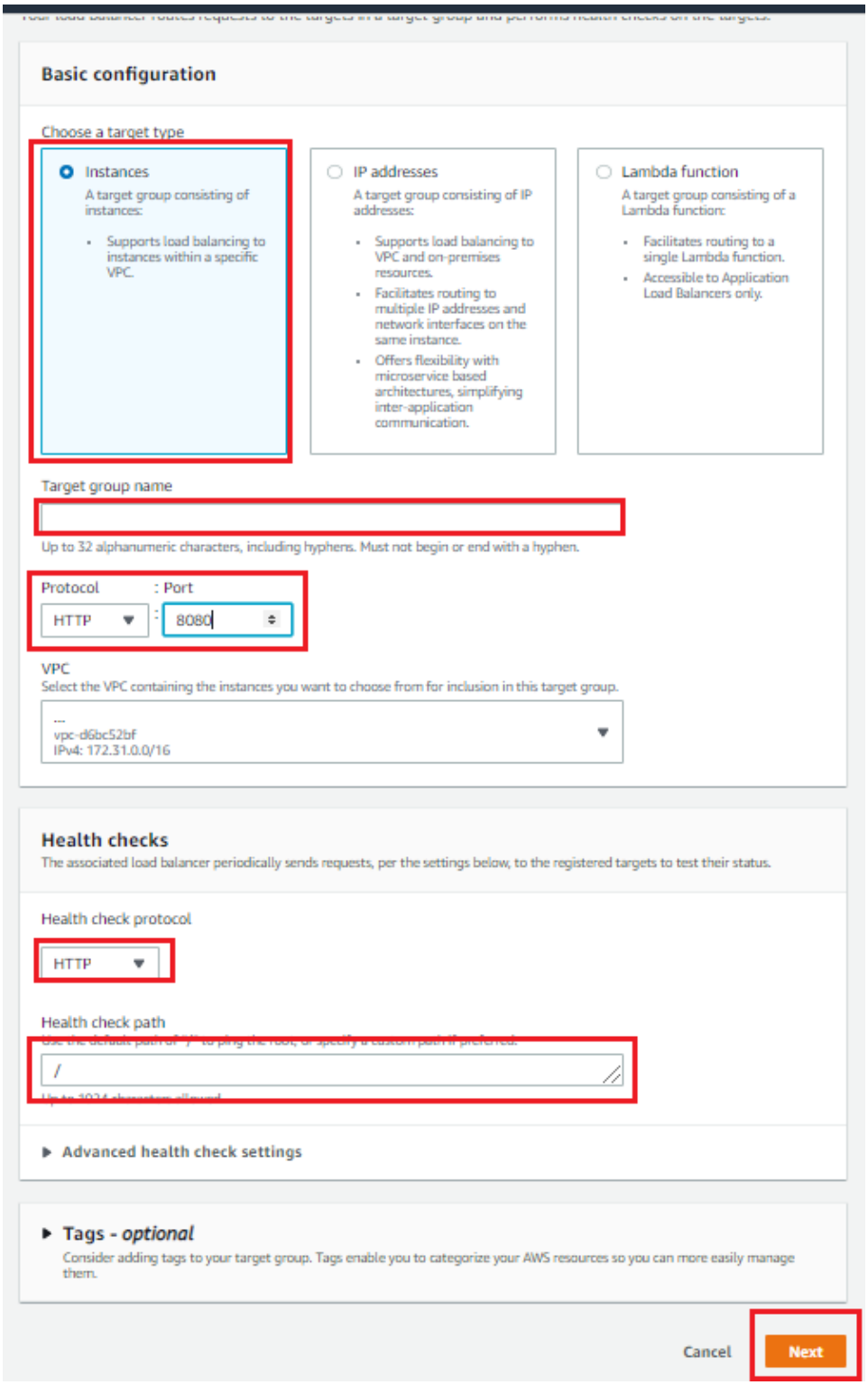
4. **On the subsequent "Configure Load Balancer" page:**
   - Enter a name for the load balancer and specify the scheme as "Internet facing".
   - In the "Listeners" section, ensure that there is an HTTP listener on load balancer port 80.
   - In the "Availability Zones" section, select the availability zones.

- Click the “Next: Configure Security Settings” button to proceed.



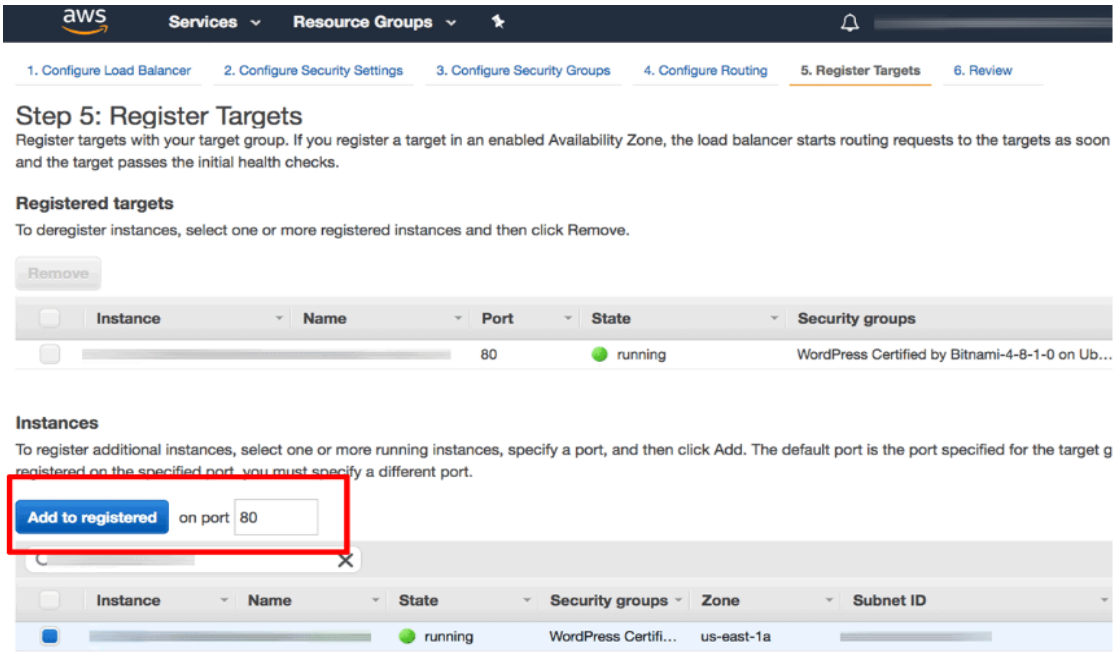
LOAD BALANCER SECURITY

5. **Click Next “Configure Security Settings”**
   - Select the option to “Create a new security group”
   - Add a security rile to allow inbound traffic on port 80 (the HTTP port) with source “Anywhere”.
6. **Next click on the “Configure Routing” page:**
   - In the “Target group” section, create a new target group and assign it a name.
   - Ensure that the protocols is set to “HTTP”, the port to “8080” and the target type to “instance”.
   - With this configuration, traffic between the load balancer and the instance will be transmitted using HTTP.
   - In the “Health checks” section, define the protocol as “HTTP” and the path to “/smarten”.
   - Click the “Next: Register Targets” button proceed.



LOAD BALANCER BASIC CONFIGURATION

7. On the “Register Targets” page, use the instance ID obtained is step 1 to identify and select the both of “Smarten Instance”.
8. Click the “Add to registered” button to move the instance into the list of registered targets.
9. Click the “Next: Review” button to proceed.



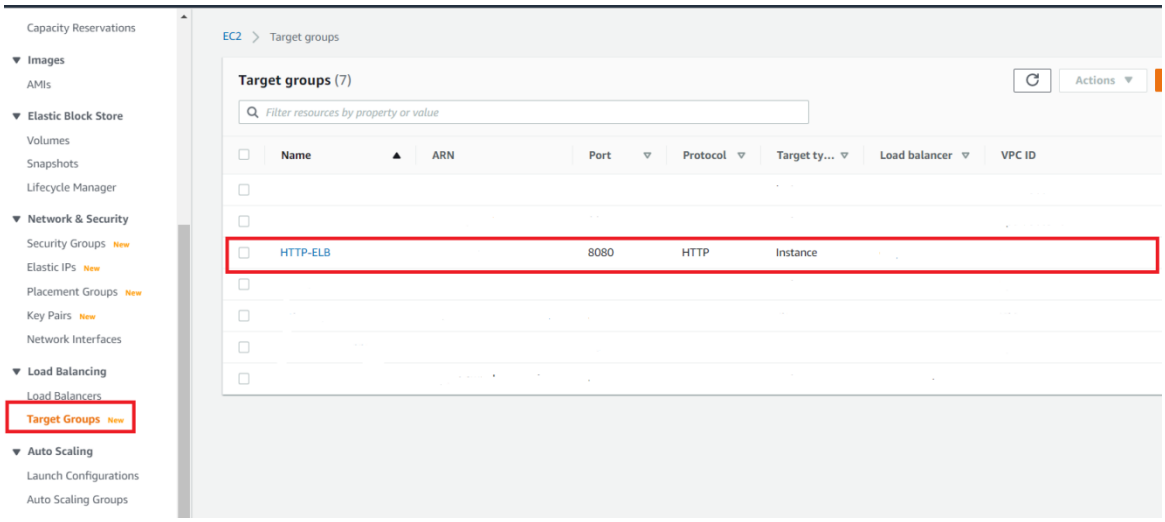
LOAD BALANCER REGISTER TARGETS

5.2 Enable Stickiness

Sticky session is a mechanism to route requests from the same client to the same target.

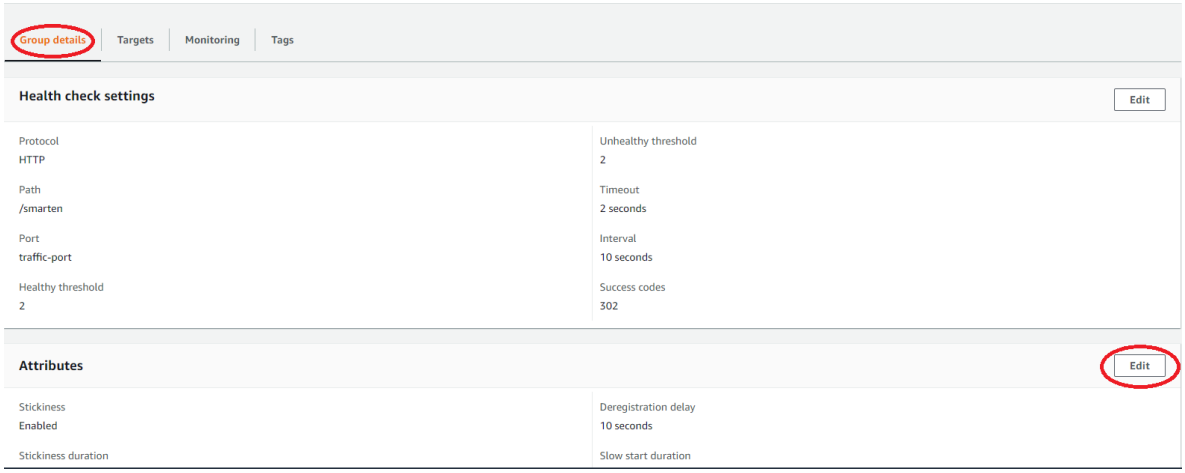
Procedure

1. On the navigation pane, under LOAD BALANCING, choose Target Groups.



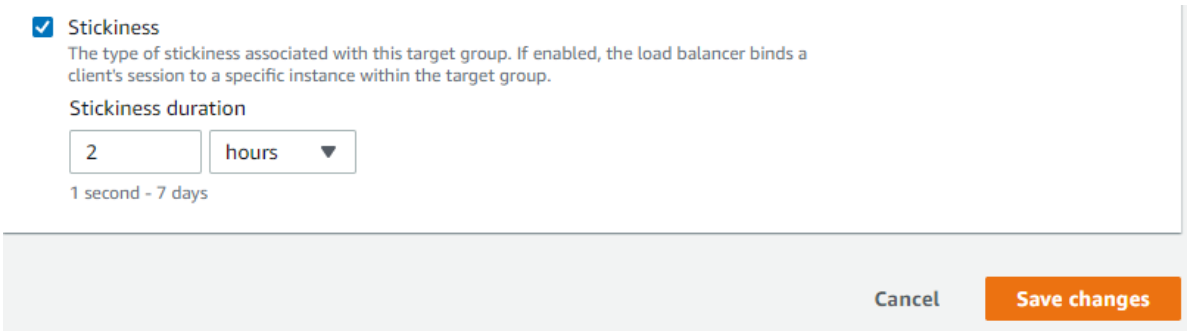
LOAD BALANCER TARGET GROUPS

2. Choose the name of the target group to open its details page.
3. On the Group details tab, in the Attributes section, choose Edit.



LOAD BALANCER ATTRIBUTES

4. On the Edit attributes page, do the following:
   a. Select Stickiness
   b. For Stickiness duration, specify a value between 1 second and 7 days.
   c. Choose save changes.



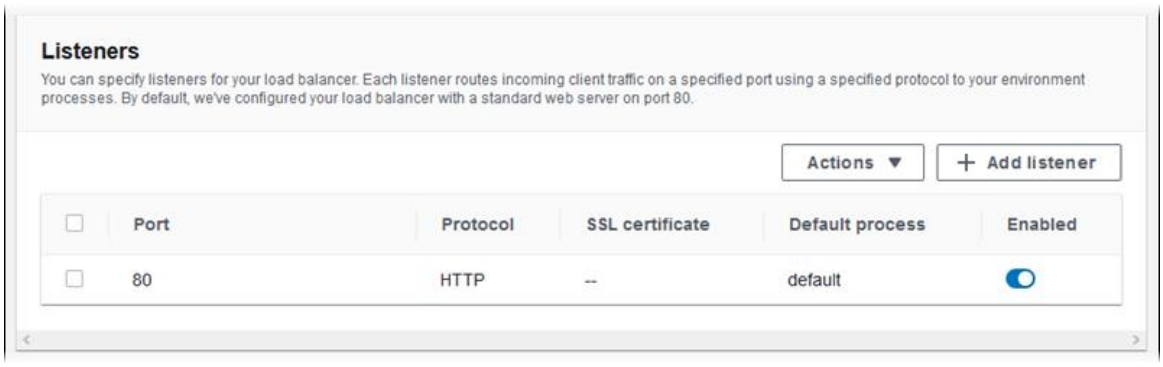
LOAD BALANCER STICKINESS

5.3 Elastic Load Balancer Other Configuration

- **Listeners**
  Use this list to specify listeners for your load balancer. Each listener routes incoming client traffic on a specified port using a specified protocol to one or more processes on instances.

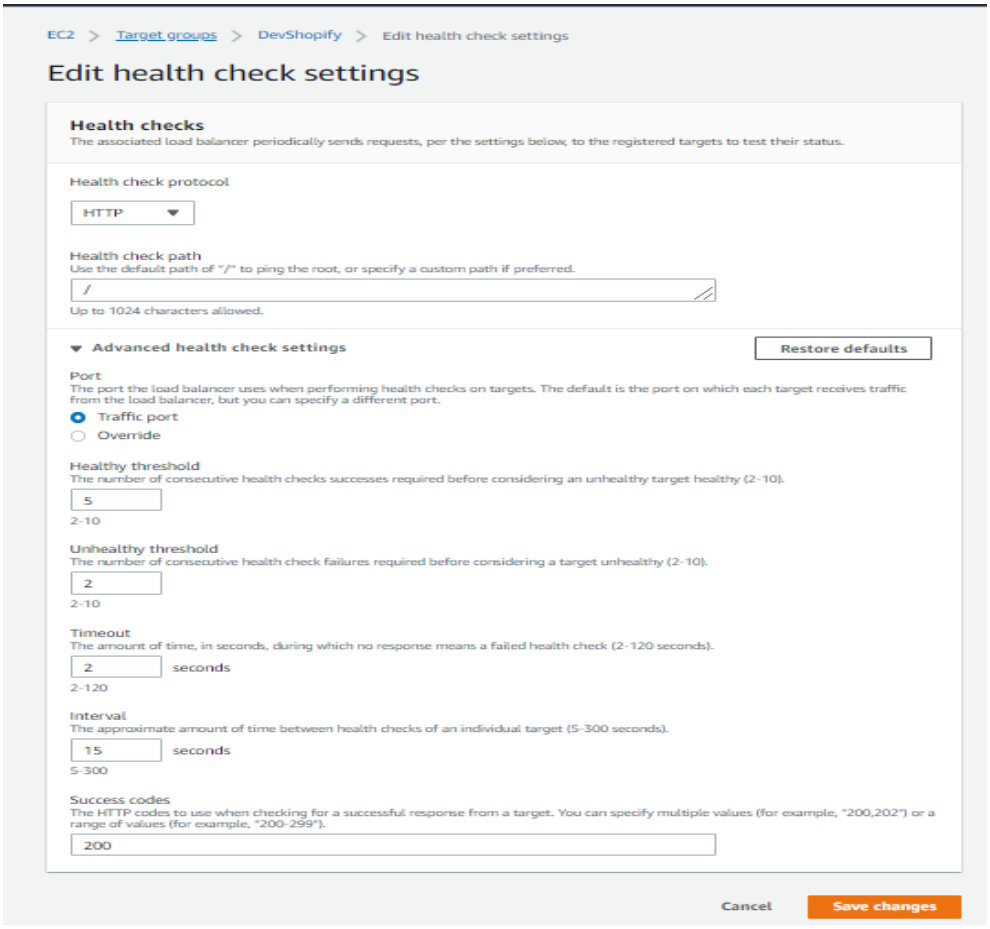
To add a listener

- Choose Add listener.
- In the Application Load Balancer listener dialog box, configure settings you want, and then choose Add.



LOAD BALANCER LISTENERS

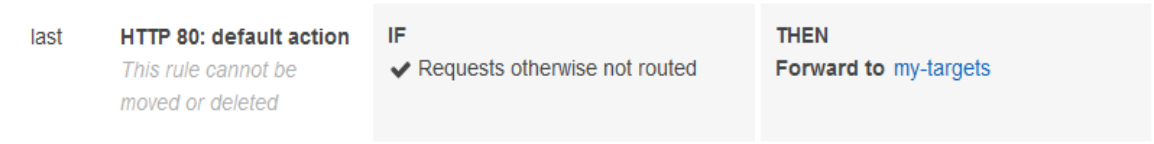
- **Health check**
  Use the following setting to configure process health checks:
  - **Health check protocol** – Http
  - **Health check path** - /smarten
  - **Healthy threshold** – 5
  - **Unhealthy threshold** – 2
  - **Timeout** – 2 Seconds
  - **Interval** – 15 Seconds
  - **Success codes** – 302



LOAD BALANCER HEALTH CHECK

- **Rules**

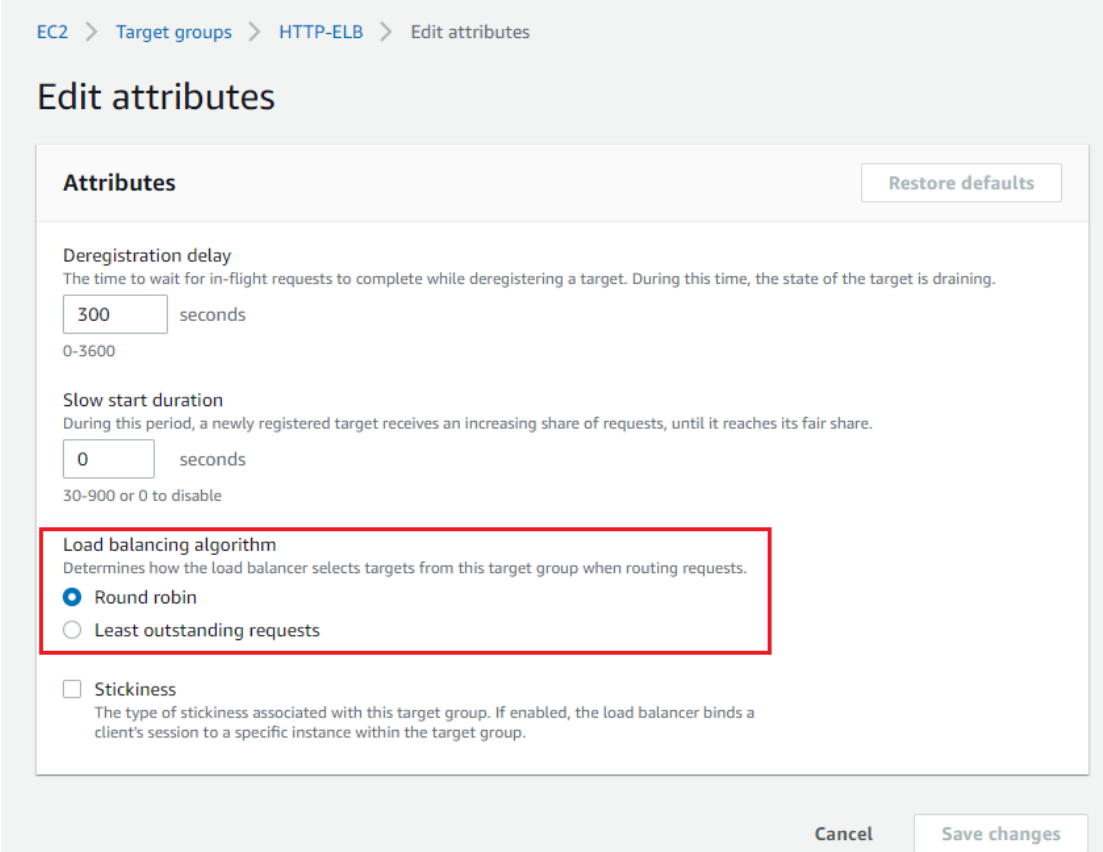
When create a listener, define actions for the default rule. Default rules can't have conditions. If the conditions for none of a listener's rules are met, then the action for the default rule is performed.



LOAD BALANCER RULE

> Note:
> For Smarten we don't have required any additional rule..

- **Routing algorithm**
  Application Load Balancers by default used round robin algorithm. Routing is performed independently for each target group, even when a target is registered with multiple target groups.



LOAD BALANCING ALGORITHM

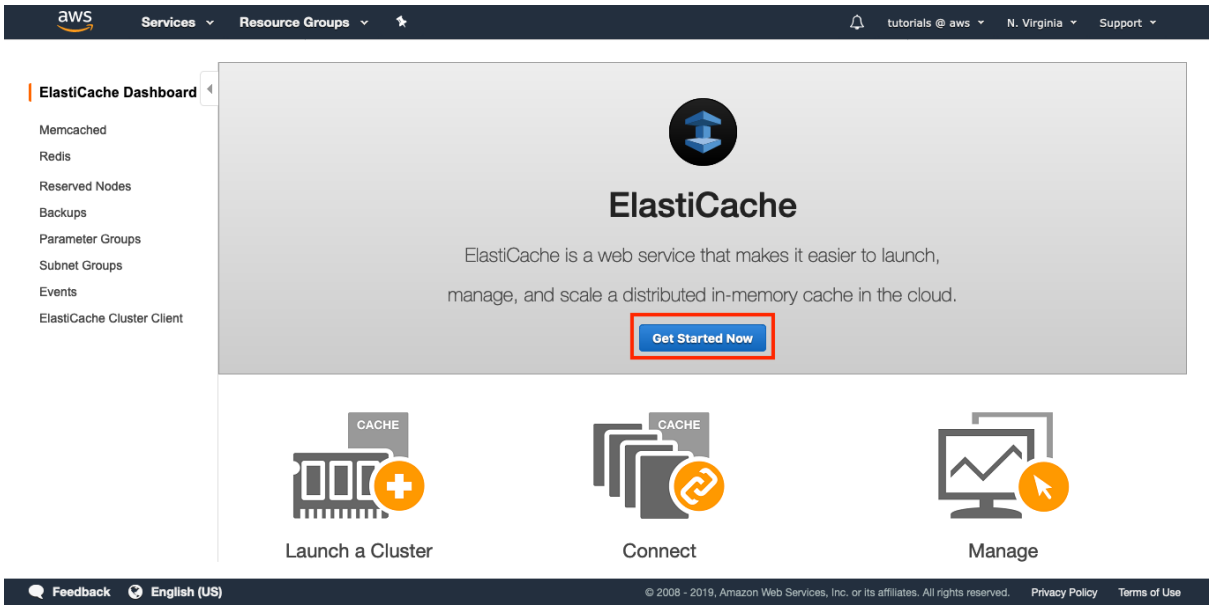
6 Configuring Smarten for non-sticky sessions

Amazon Elasticache for Redis is highly suited as a session store to manage session information such as user authentication tokens, session state, and more. Simply use ElastiCache for Redis as a fast key-value store with appropriate TTL on session keys to manage your session information.

6.1 Configuring Redis Server on AWS Elasticache

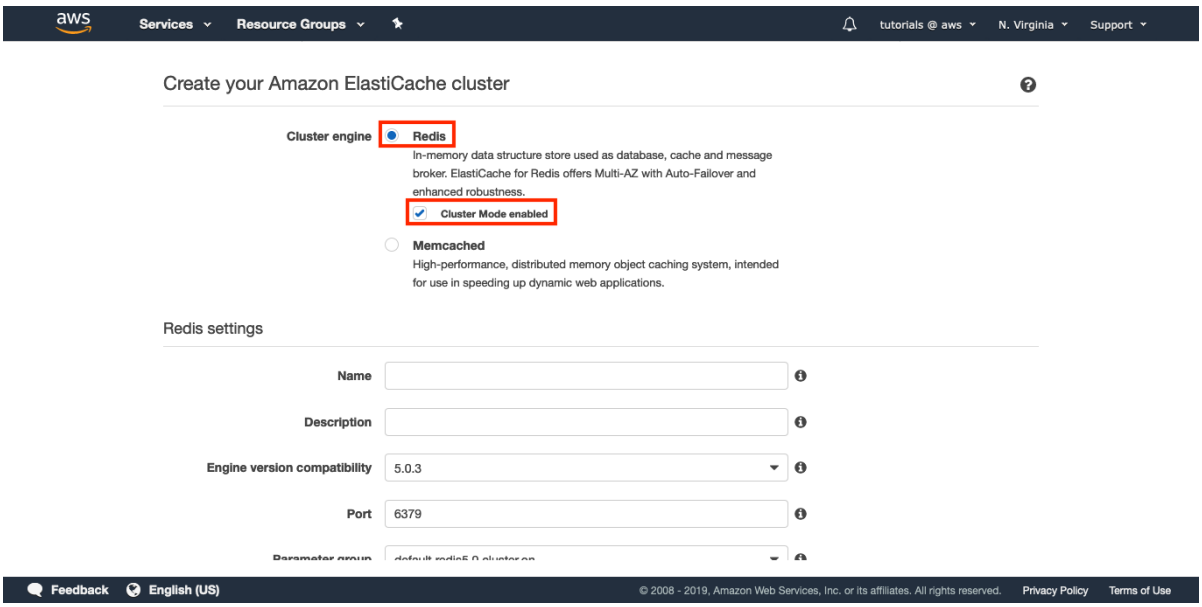
Procedure

1. Open the Amazon ElastiCache console at https://console.aws.amazon.com/elasticache/
2. Click on "Get Started Now"



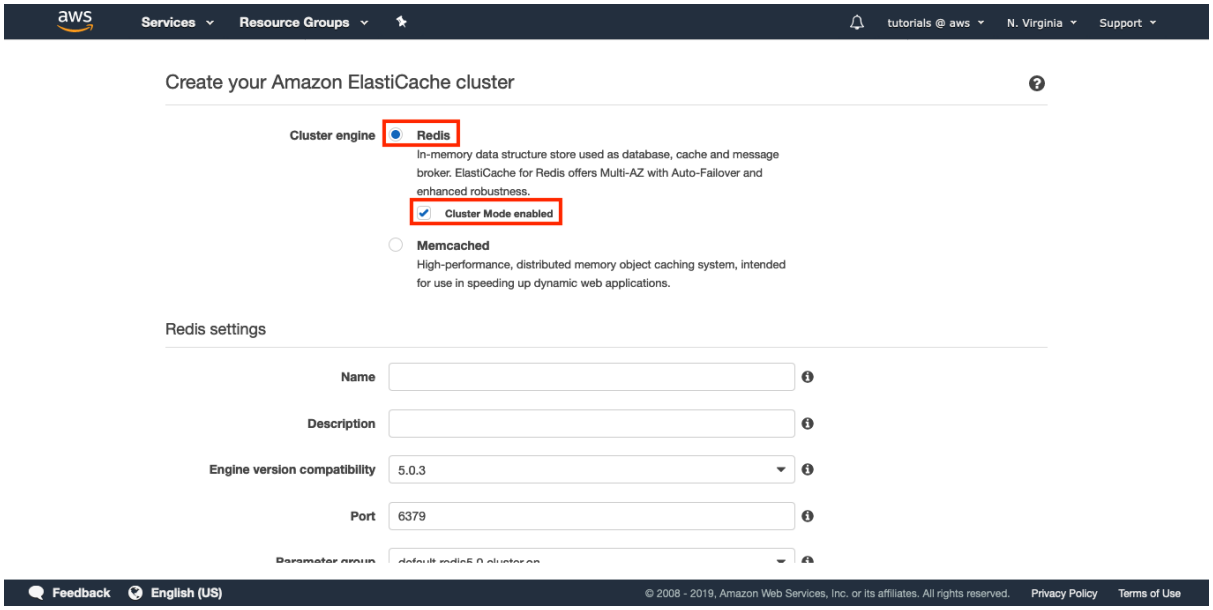
AWS ELASTICACHE

3. Select "Redis" as your cluster engine.



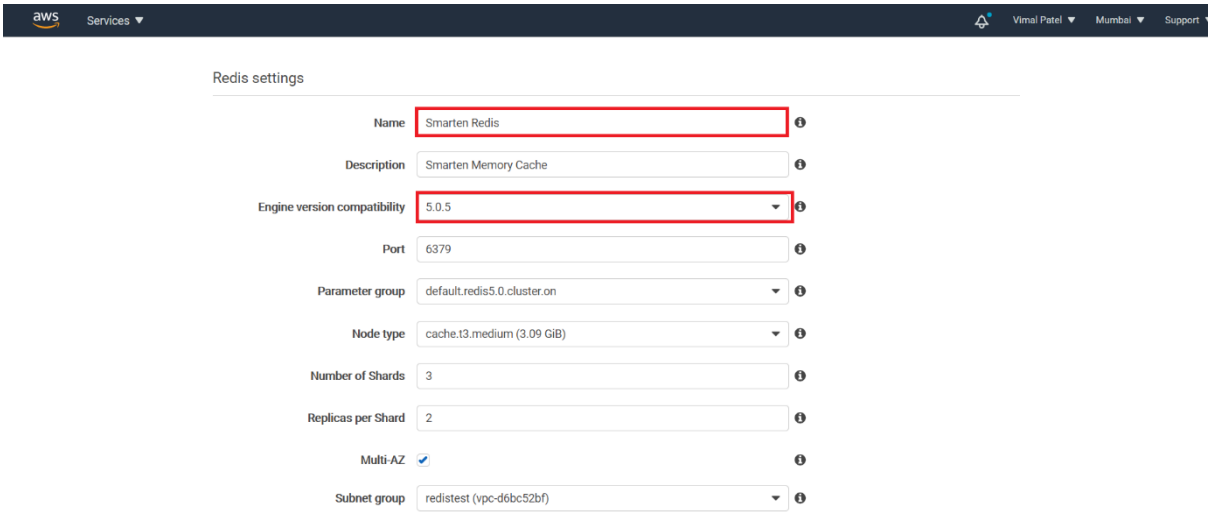
AWS ELASTICACHE CLUSTER

4. Check “Cluster Mode enabled”.



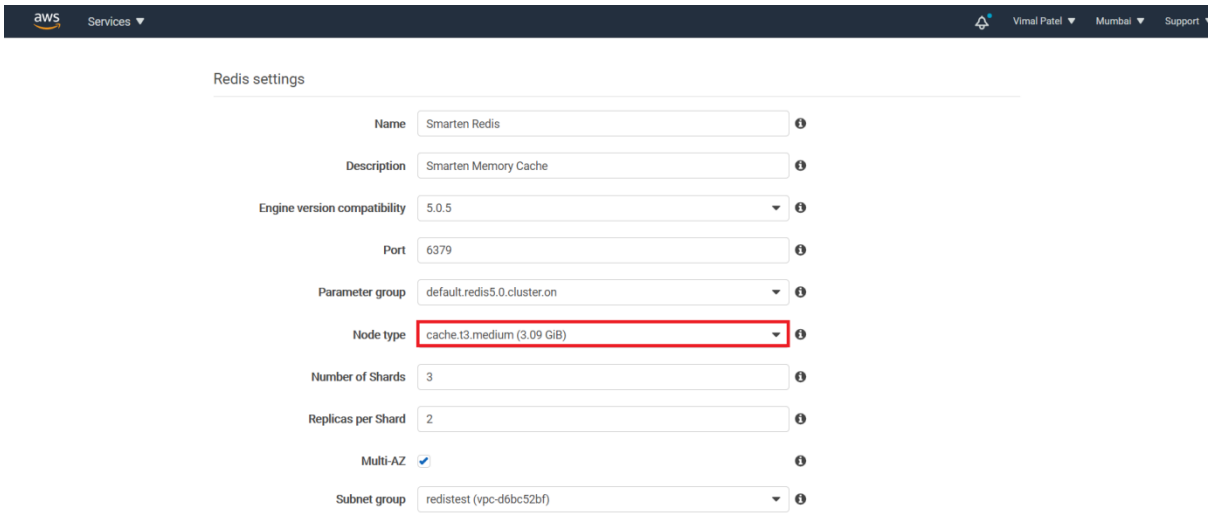
AWS REDIS ELEASTICACHE CLUSTER

5. Fill a name for your Redis Cluster and Engine version compatibility.



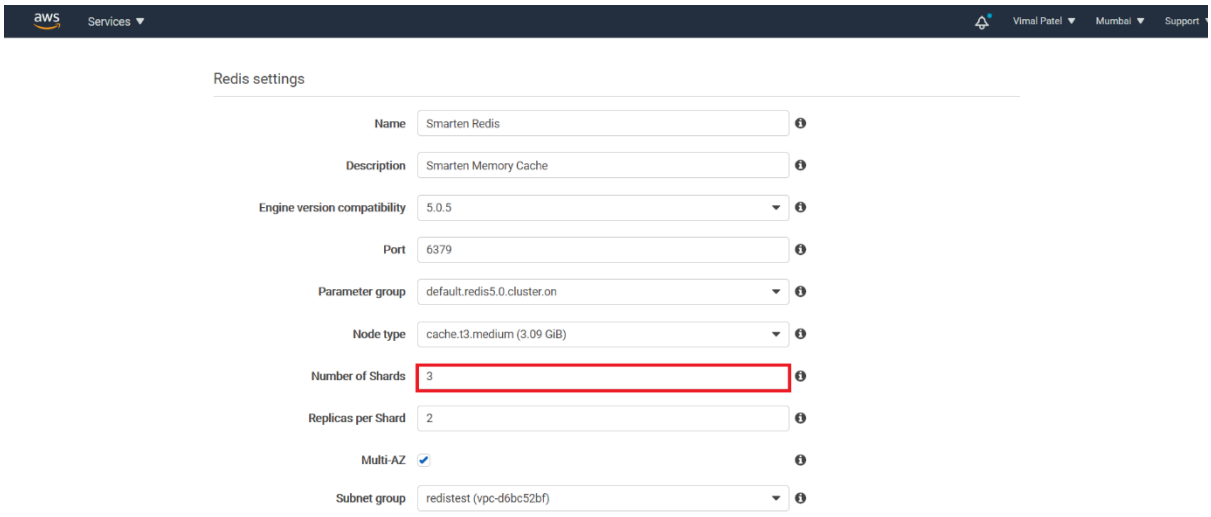
AWS REDIS ELEASTICACHE CLUSTER CONFIGURATION

6. Change the node type to cache.t3.medium, the size of node should depend on workload and should start with the m5 or r5 instance families.



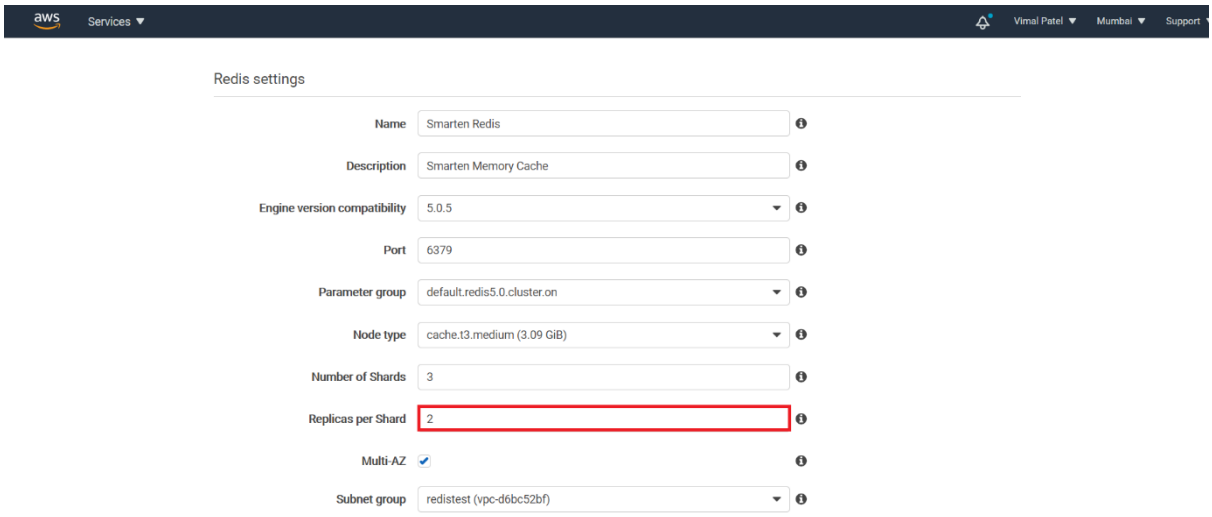
AWS REDIS ELASTICACHE NODE CONFIGURATION

7. In Number of Shared, select 3. It means the data will be partitioned in three different master nodes.



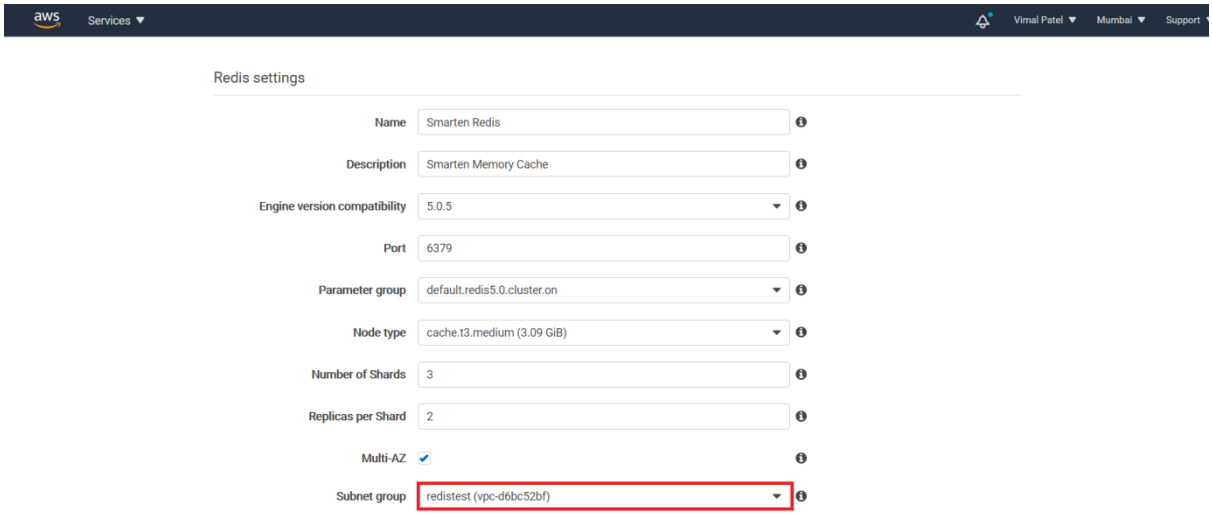
AWS REDIS ELASTICACHE NODE CONFIGURATION

8. In Replicas per Shared, select 2. It means each master node will have two replicas. In case of a failure, an automatic failover will be triggered and one of the replicas will take over the role of the master node.



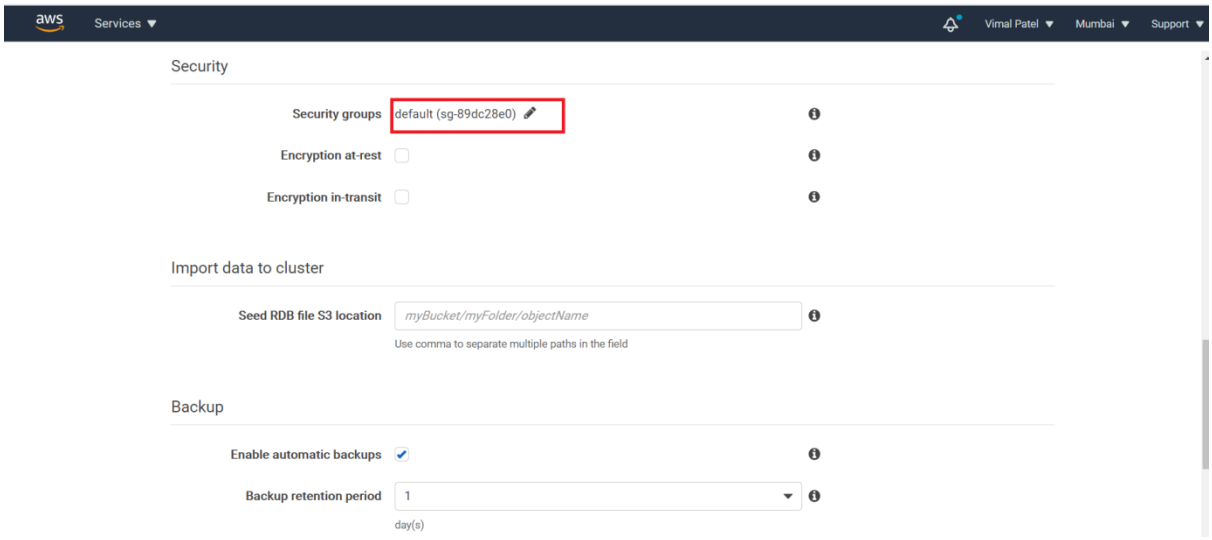
AWS REDIS ELASTICACHE REPLICA CONFIGURATION

9. Select a Subnet group.



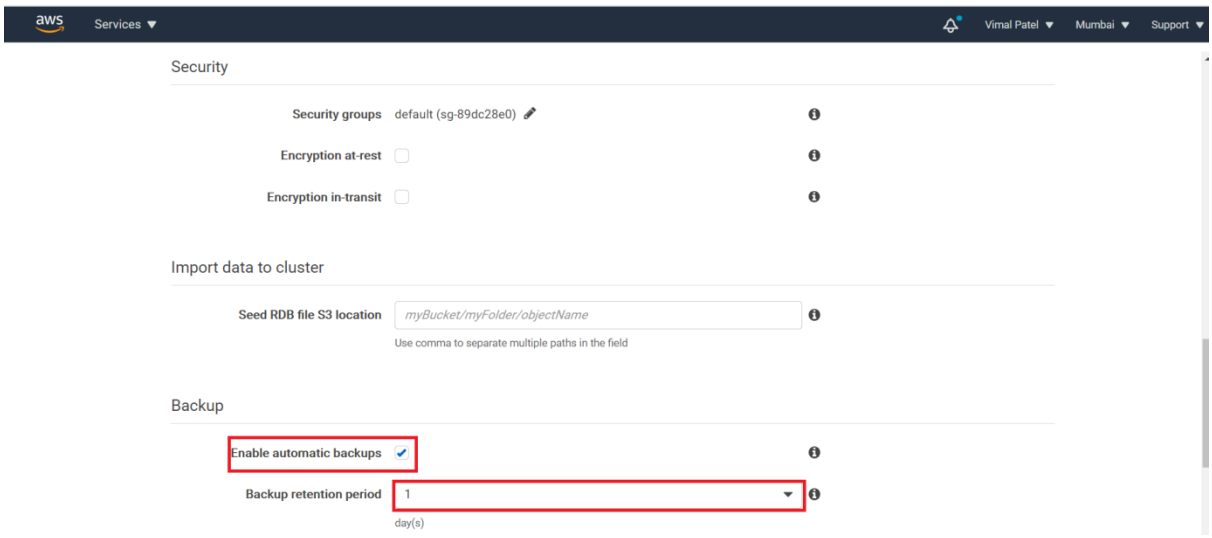
AWS REDIS ELASTICACHE SUBNET GROUP CONFIGURATION

10. Select a Security group for Redis Cluster, make sure the Security group allows incoming TCP connections on port 6379.



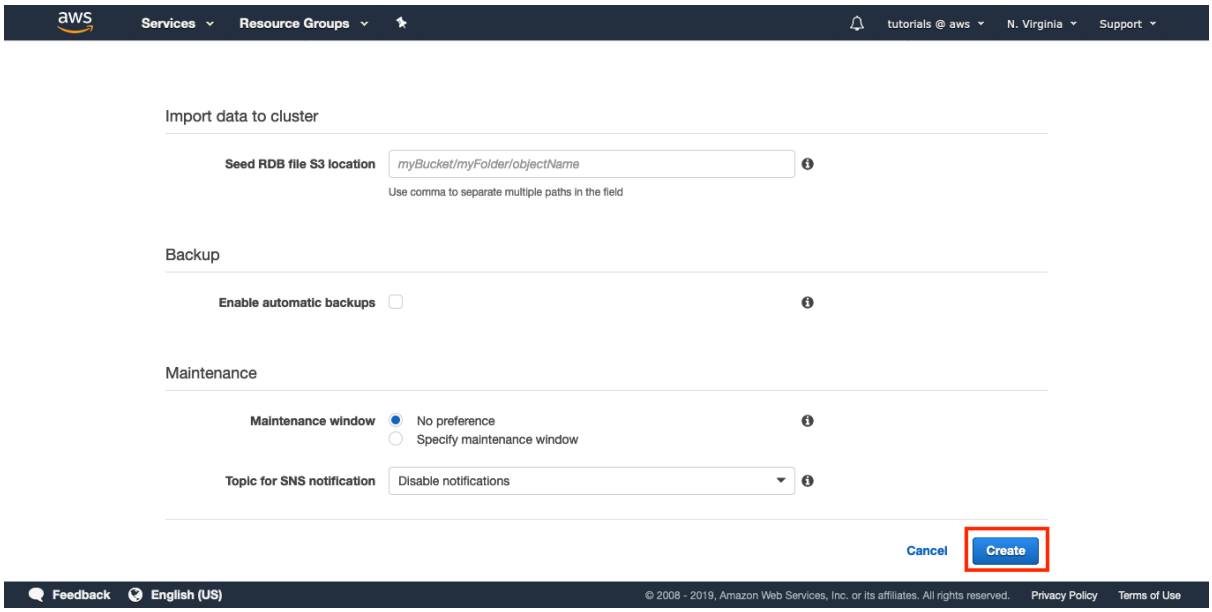
AWS REDIS ELASTICACHE SECURITY GROUPS

11. Enable automatic backups and set backup retention period.



AWS REDIS ELASTICACHE AUTOMATIC BACKUPS

12. Click on “create”. A Redis Cluster will get initialized and once it becomes “available”.



AWS REDIS ELASTICACHE CLUSTER

6.2 Enabling session sharing in Smarten

Procedure

1. Click on Redis cluster and copy Redis primary endpoint.

AWS REDIS ELEASTICACHE CLUSTER ENDPOINT

2. Open file redishhttpSession.xml from path shown below.
   WILDFLY_HOME/standalone/deployments/smarten.war/WEB-INF/redishhttpSession.xml

3. Enter Redis primary endpoint and port in tedishhttpsSession.xml file.

```
<bean class="org.springframework.data.redis.connection.lettuce.LettuceConnectionFactory">
        <constructor-arg name="host" value="redis-test.rat81s.ng.0001.aps1.cache.amazonaws.com"/>
        <constructor-arg name="port" value="6379"/>
</bean>
```

SMARTEN REDIS CONFIGURATION

4. After changes save and closed file and start Smarten services.

7 Running Smarten

Make sure the application server is running and Smarten application is successfully installed before running smarten.
All types of users, including Administrators, can log in from the same URL.

Open web browser and type URL
http://<host name>:<port number>/smarten/

For example, http://192.168.1.1:8080/smarten/

Log in to application using default credentials provided

Enter Username - admin
Enter Password - admin

8 Product and Support Information

Find more information about Smarten and its features at www.smarten.com
Support: support@smarten.com
Sales: sales@smarten.com
Feedback & Suggestions: support@smarten.com
Support & Knowledgebase Portal: support.smarten.com