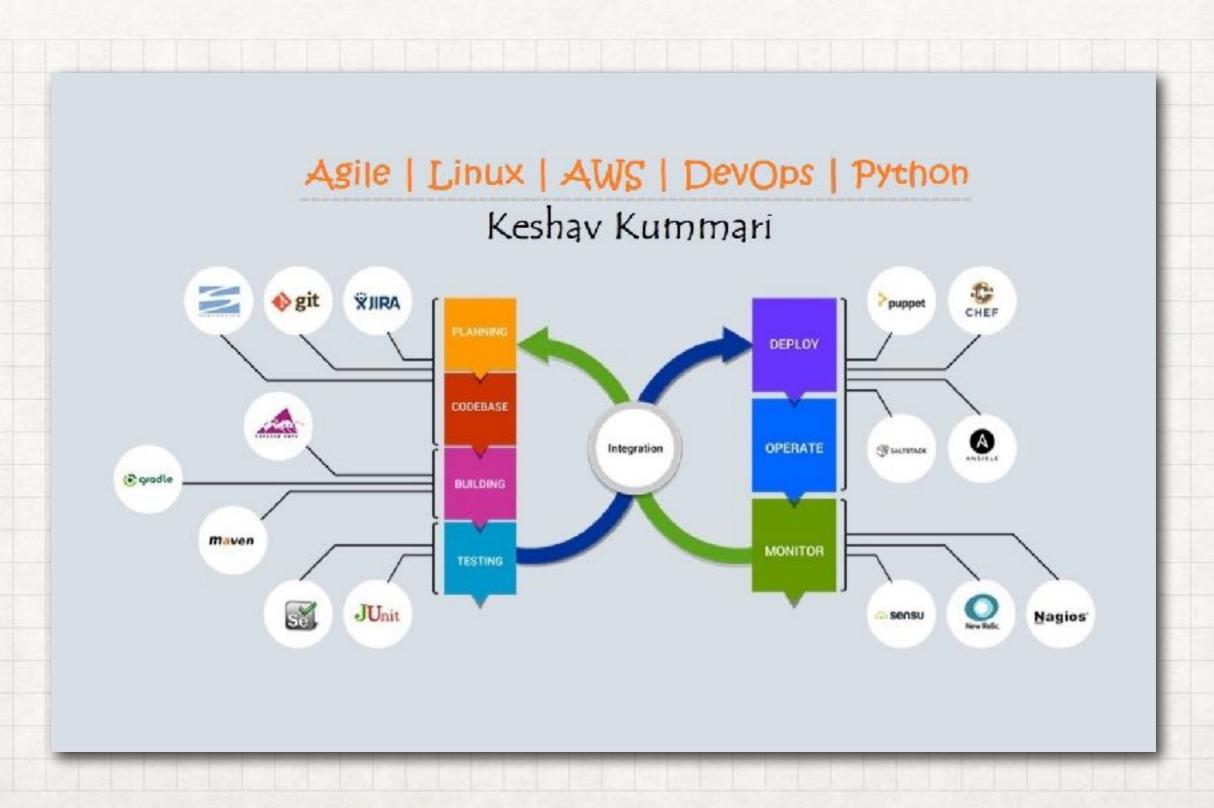
AWS

AWS - ELASTIC BEANSTALK

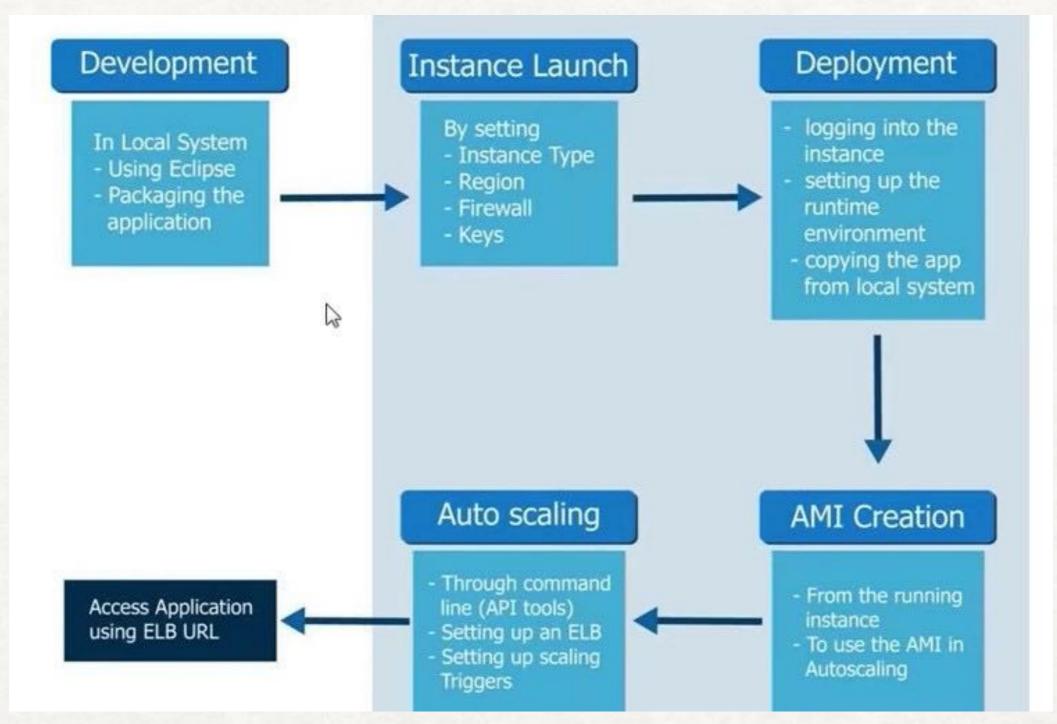


AWS ELASTIC BEANSTALK 1. WHAT IS ELASTIC BEANSTALK?

- AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache Tomcat, Nginx, Passenger, and IIS.
- You can simply upload your code and Elastic Beanstalk automatically handles the deployment, from capacity provisioning, load balancing, auto-scaling to application health monitoring.
- At the same time, you **retain full control** over the **AWS resources powering** your application and can access the **underlying resources** at any time.
- There is no additional charge for Elastic Beanstalk you pay only for the AWS resources needed to store and run your applications.

- With Elastic Beanstalk, you can deploy, Monitor, and scale an application quickly.
- It provides developers or end users with the ability to provision application infrastructure is an almost transparent way.
- It has a highly abstract focus towards infrastructure, focusing on components and performance - not configuration and specifications.
- It attempts to remove, or significantly simplify infrastructure management, allowing applications to deployed into infrastructure environments easily.

DEVELOP & DEPLOY FLOW



Development & Operation Work Flow using Elastic Bean Stack

USAGES OF ELASTIC BEANSTACK



EB-FLOW

BEANSTALK KEY ARCHITECTURE COMPONENTS

- Applications are the high level structure in beanstalk.
- · Either your entire Application, is one EB Application, or
- Each logical component of your Application, can be a EB Application or a EB environment within an application.



BEANSTALK KEY ARCHITECTURE COMPONENTS

- Applications can have multiple environments(Dev, Test, Acceptance, & Production)
- or functional type(Front-End, Back-End)
- Environments are either single instance or scalable
- Environments are either web server environments or worker environments



Elastic Bean Stak

BEANSTALK KEY ARCHITECTURE COMPONENTS

- Application Versions are unique packages which represent versions of apps.
- An Application is uploaded to Elastic beanstalk as an application bundle i.e. .zip
- Each "Application" can have many versions 1:M relationship.
- Application versions can deployed to environments within an application.



AWS EB

ELASTIC BEANSTALKADVANTAGES

- Developer retain full control over the AWS resources
- Root access to your EC2 instances
- Basily manage configuration changes in one place
- Use any database Amazon RDS, Amazon SimpleDB, or Oracle
- 5 Create custom AMIs
- Run other services side-by-side in EC2
- Easily move your application out of Elastic Beanstalk

HIGHLIGHTS OF EB

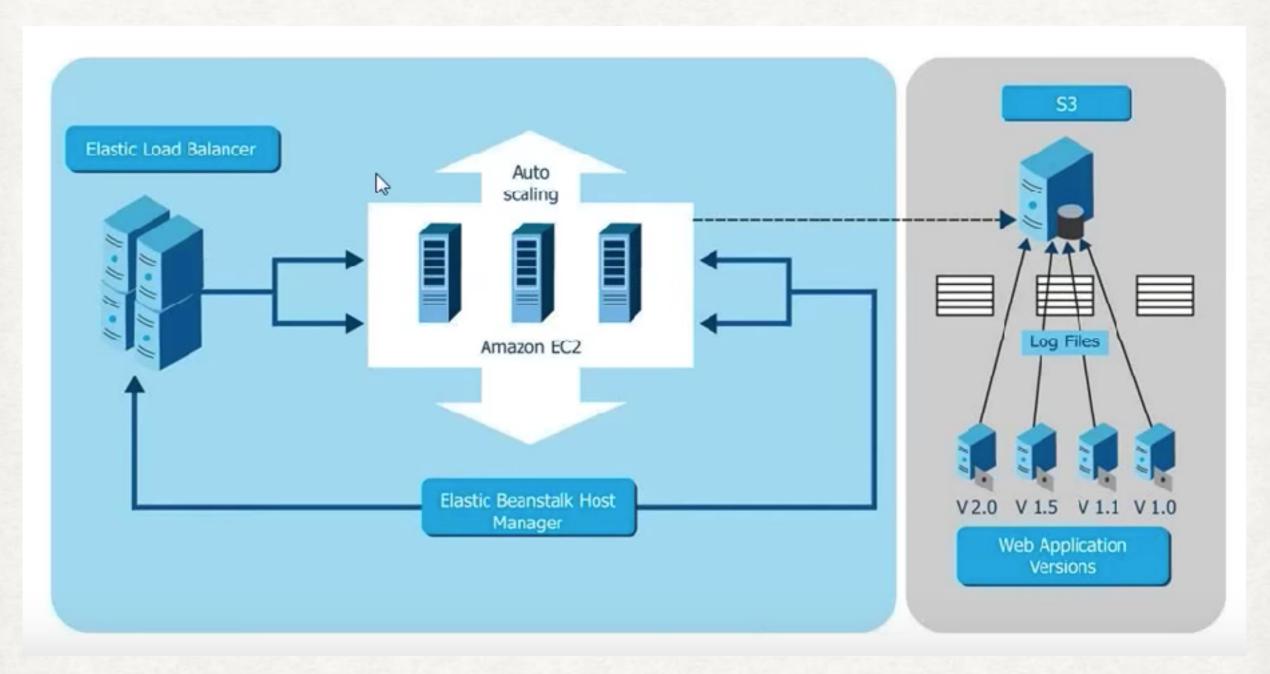
- Easy to Use Automated Scalability
- Complete Control
- Flexible
- Reliable

Free of Cost

Why Not Use My Own App Server AMI?

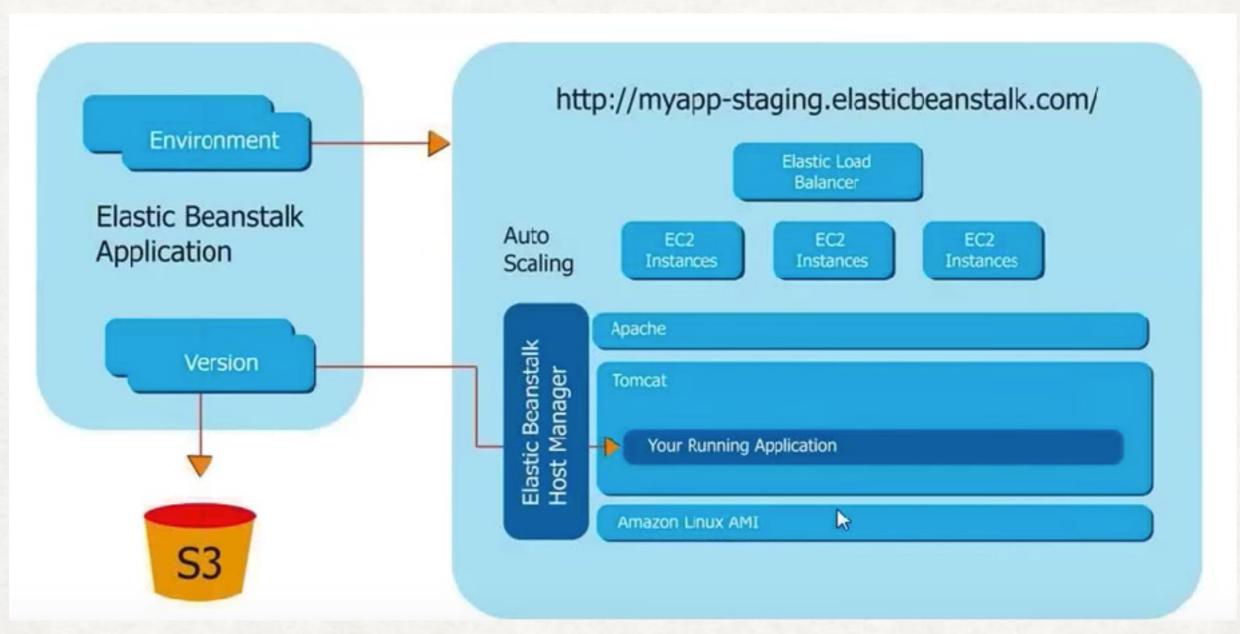
- Automated Provisioning & De-Provisioning of Environments
- Automated version deployment(Including Rollback)
- Managed Environments settings
- Built-in monitoring and notifications
 - Application Health and Other Important Events
- Basic log file rotation to Amazon S3
- Easy troubleshooting
 - Snapshot logs
 - Restart application server

FLOW OF AWS ELASTIC BEANSTALK



Architecture of EB

EXAMPLE OF AWS EB

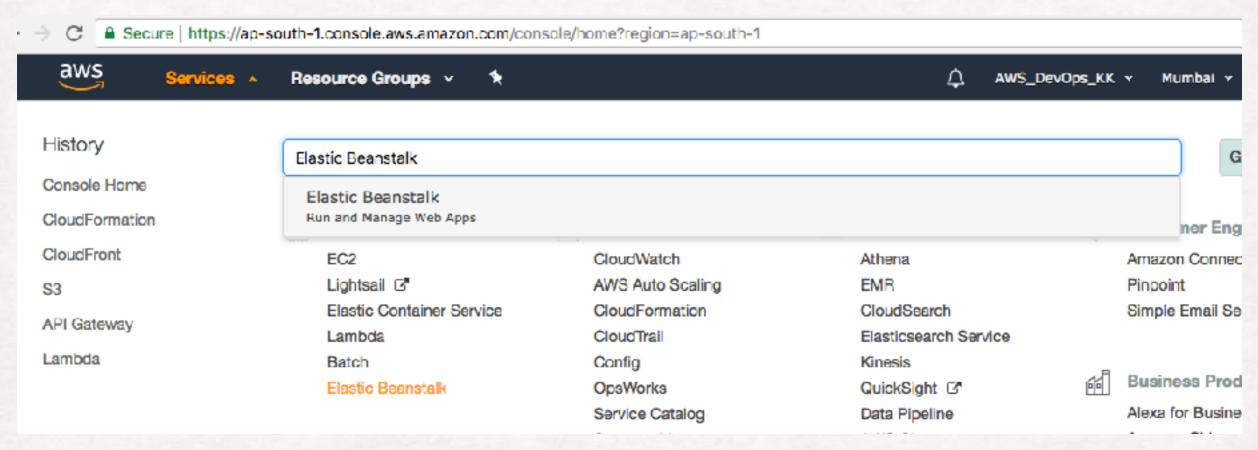


EB FLOW

HOW DO I ACCESS ELASTIC BEANSTALK?

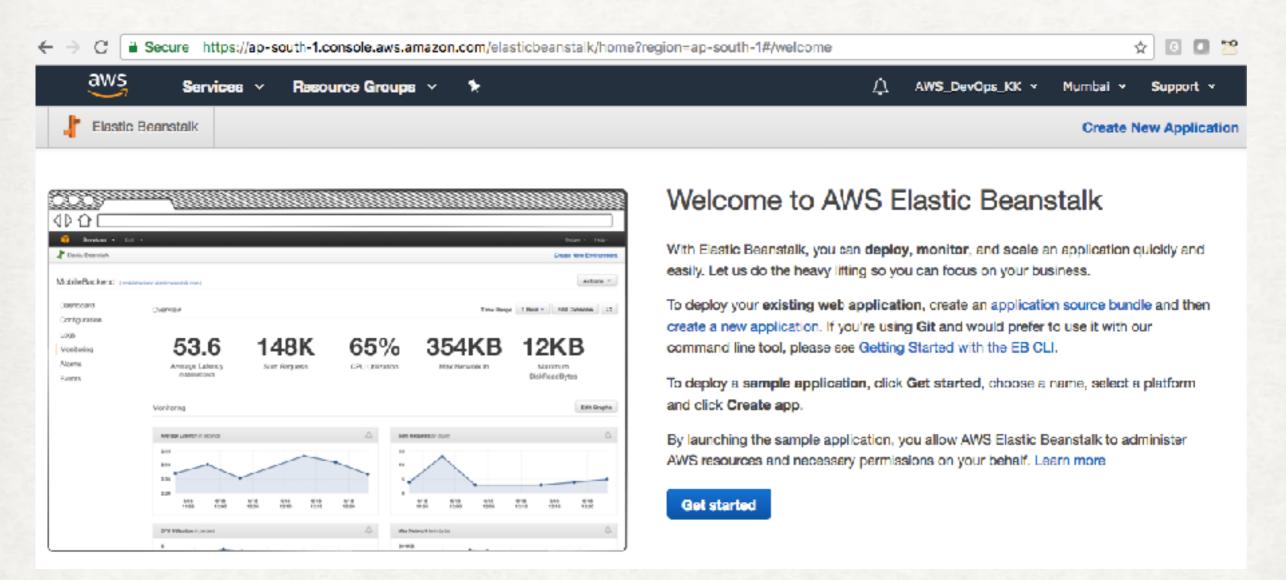
- AWS Management Console
- AWS Toolkit for Eclipse, Visual Studio
- Command Line Tools
- SDK's and API

STEPBY STEPPRACTICAL STEPS OF EB

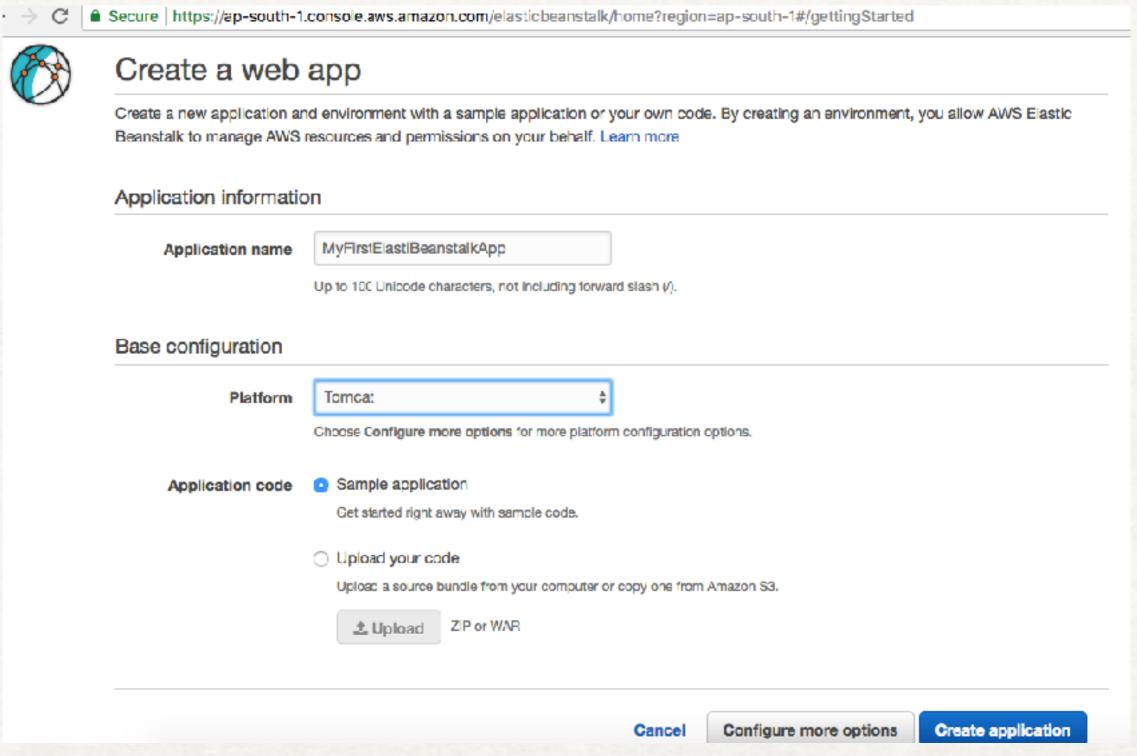


Step-1: Go to AWS Management Console & Search for EB

STEP-2: CLICK ON "GET STARTED"

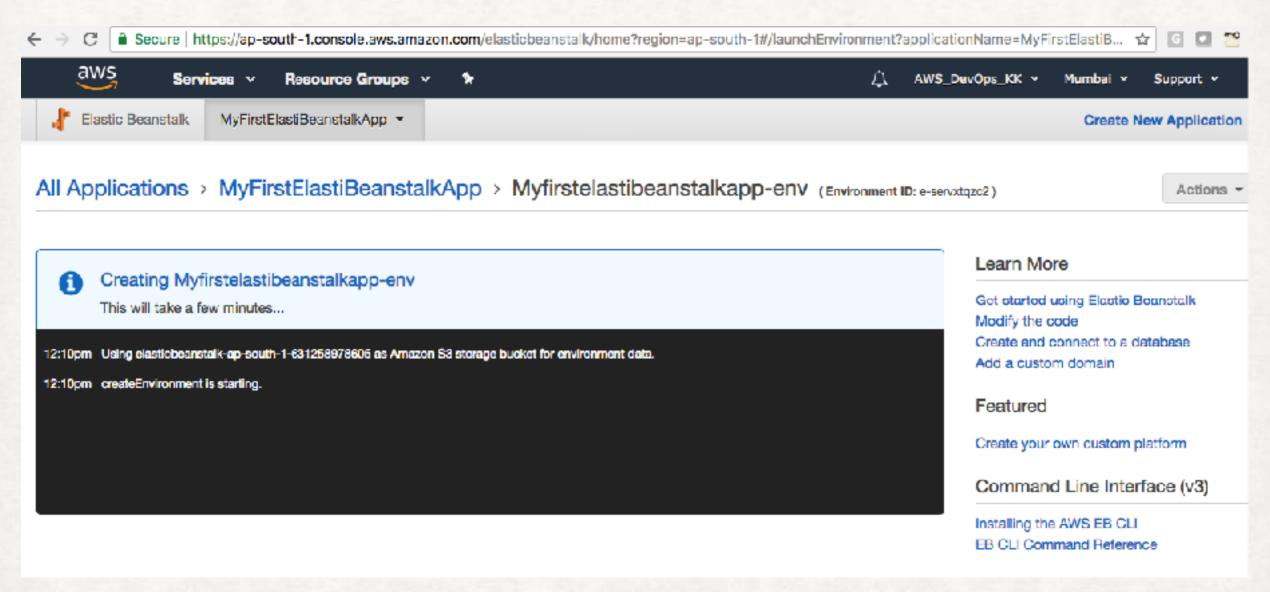


STEP-3: PROVIDE APPLICATION NAME & PLATFORM



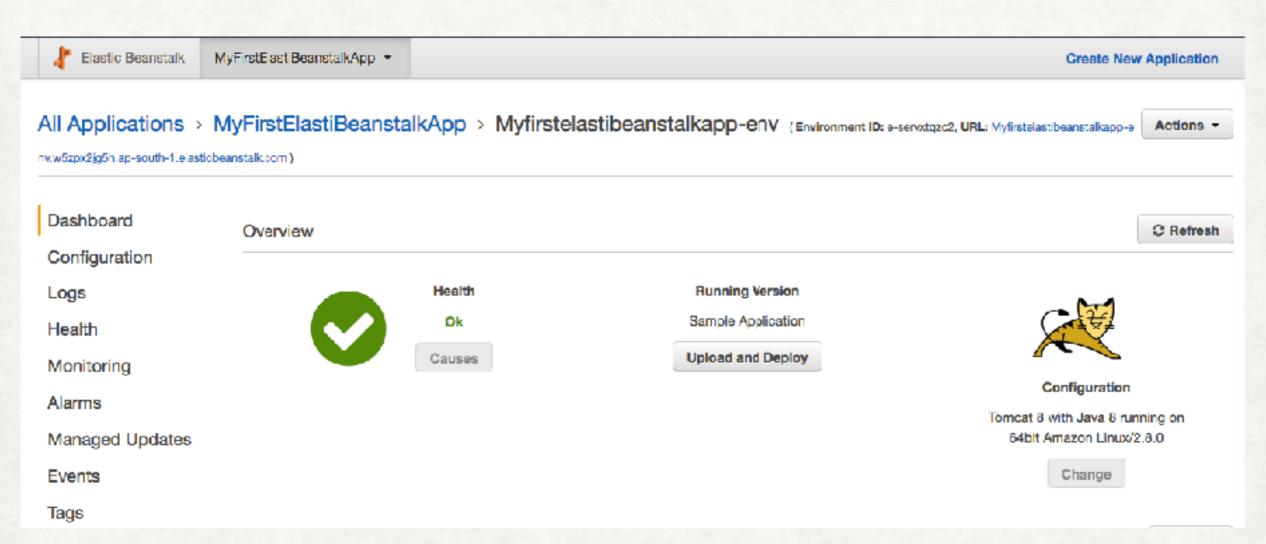
Click on "Create Application"

STEP-4: IT'S CREATING NOW!



Observe the output

STEP-5: IT'S CREATED!



Navigate each tab which is located at Left Side Panel

STEP-6: GO THROUGH ALL THE LEFTSIDE PANEL TABS

Dashboard

Configuration

Logs

Health

Monitoring

Alarms

Managed Updates

Events

Tags

Events		C Refresh ☐
Severity TRACE \$	2018-03-2	5 12:15:00 UTC+0530 2018-05-13 12:18:00 UTC+0530
Time	Туре	Details
2018-05-18 12:13:10 UTC+0530	INFO	Successfully launched environment: Myfirstelastibeanstalkapp-env
2018-05-13 12:12:45 UTC+0530	INFO	Environment health has transitioned from Pending to Ok. Irritialization completed 9 seconds ago and took 2 minutes.
2018-05-13 12:11:46 UTC+0530	INFO	Added instance [i-00d1524174c7f2250] to your environment.
2018-05-13 12:11:37 UTC+0530	INFO	Waiting for EC2 instances to launch. This may take a few minutes.
2018-05-18 12:10:49 UTC+0530	INFO	Created EIP: 52.66.134.146
2018-05-13 12:10:46 UTC+0530	INFO	Environment health has transitioned to Pending. Initialization in progress (running for 24 seconds). There are no instances.
2018-05-13 12:10:33 UTC+0530	INFO	Created security group named: awseb-e-servxtqzc2-stack-AWSEBSecurityGroup-U1W7LNN3AGW5
2018-05-13 12:10:09 UTC+0530	INFO	Using elasticbeanstalk-ap-south-1-631258978605 as Amazon S3 storage bucket for environment data.
2018-05-13 12:10:08 UTC+0530	INFO	createEnvironment is starting.

We are looking at one of the TAB output i.e. Events

STEP-7: CHECK THE CLI COMMANDS

Learn More

Get started using Elastic Beanstalk Modify the code Create and connect to a database Add a custom domain

Featured

Create your own custom platform

Command Line Interface (v3)

Installing the AWS EB CLI EB CLI Command Reference

If you want to use a command line to create, manage, and scale your Elastic Beanstalk applications, please use the Elastic Beanstalk Command Line Interface (EB CLI).

Get Started

- \$ mkdir HelloWorld
- \$ cd HelloWorld
- \$ eb init -p PHP
- \$ echo "Hello World" > index.html
- \$ eb create dev-env
- \$ eb open

To deploy updates to your applications, use 'eb deploy'.

All Applications

MyFirstElastiBeanstalkApp

Filter by Application Name:

Actions -

Myfirstelastibeanstalkapp-env

Environment tier: Web Server

Platform: Tomcat 8 with Java 8 running on 64bit

Amazon Linux/2.8.0

Running versions: Sample Application

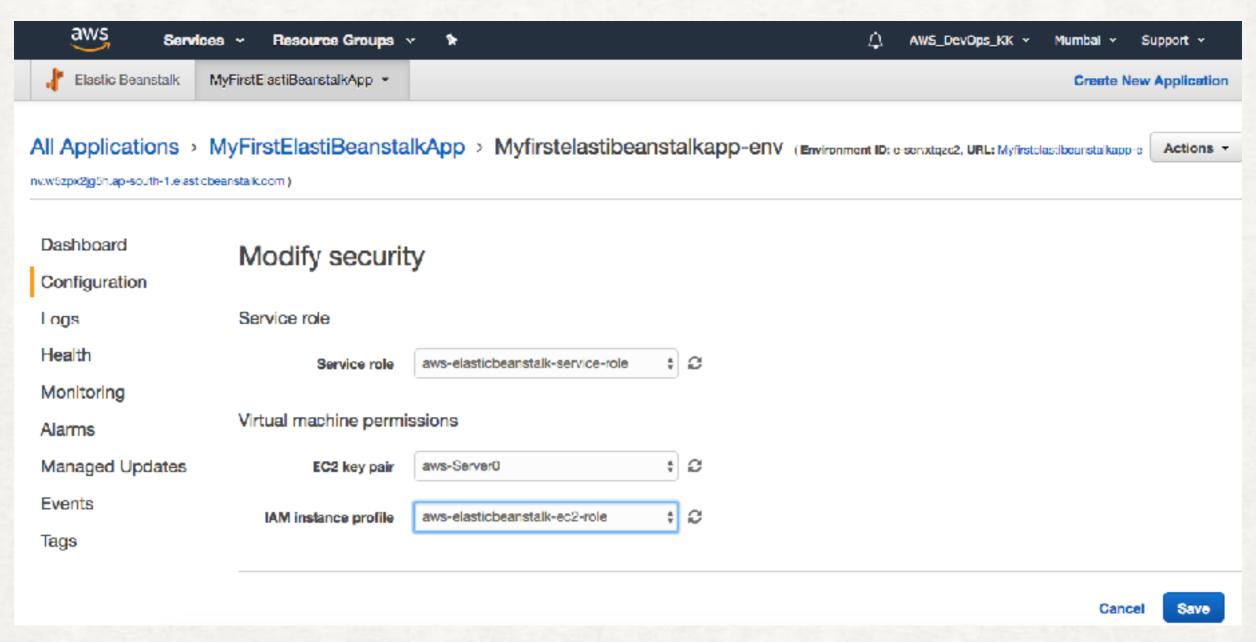
Last modified: 2018-05-13 12:13:10 UTC+0530

URL: Myfirstelastibeanstalkapp-env.w5zpx2jg6h....

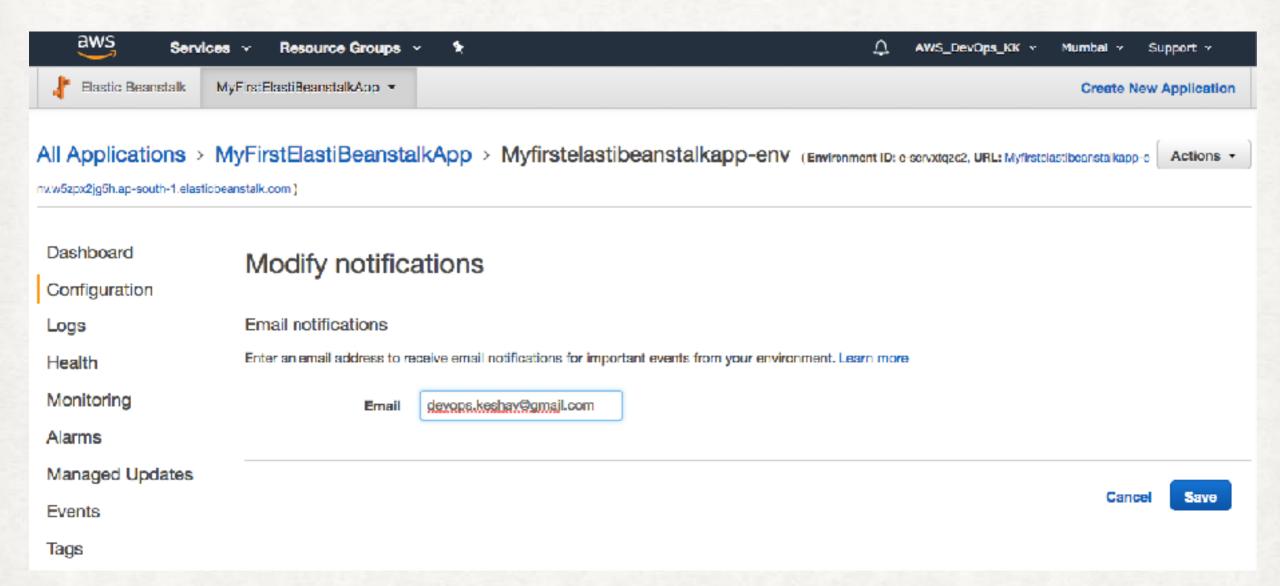
AWS CLI Commands

STEP-8: DO REQUIRED CONFIGURATION CHANGES

Add "Private Key"



STEP-9: ADD EMAIL ID FOR ALERTS



Click on "Save"

STEP-10: ADD DB PARAMETERS

Database settings

Choose an engine and instance type for your environment's database.

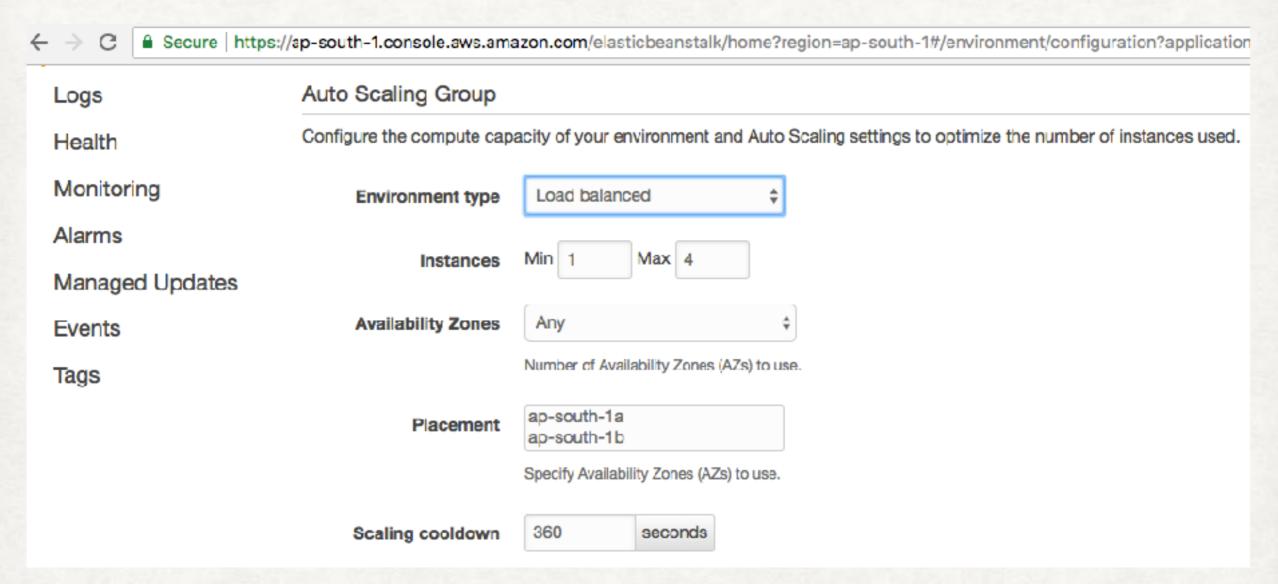
Engine	mysql \$
Engine version	5.6.39 \$
Instance class	db.t2.micro \$
Storage	5 GB
	Choose a number between 5 GB and 1024 GB.
Username	elasticbeanstalk
Password	********
Retention	Create snapshot \$
	When you terminate your environment, your database instance is also terminated. Choose Create snapshot to save a snapshot of the database prior to termination. Snapshots incur standard storage charges.
Availability	Low (one AZ)

STEP-11: MODIFY THEAUTO SCALING GROUP AS PERTHE REQUIREMENT

Logs	Auto Scaling Group					
Health	Configure the compute cap	acity of your environment and Auto Scaling settings to optimize the number of instances used.				
Monitoring	Environment type	Single instance				
Alarms		Min 1 Max 1				
Managed Updates	Instances	Min 1 Max 1				
Events	Availability Zones	Any \$				
Tags		Number of Availability Zones (AZs) to use.				
	Placement	ap-south-1a ap-south-1b				
		Specify Availability Zones (AZs) to use.				
	Scaling cooldown	360 seconds				
	Time-based Scaling					
	Use the following settings to control time-based scaling actions. Learn more					
	Current status	1 instance(s) in service, Min: 1, Max: 1				
	Time zone 🧿 UTC 🔘 🗆	Actions - Add scheduled action				
	□ Name	Min Max Desired Next occurrence (UTC)				

Edit required things

STEP-12: ADD AUTOSCALING GROUP



Select Load Balancer & Add the AutoScaling

ADD AUTO SCALING

Scaling triggers	
Metric	NetworkOut
Statistic	Average Choose how the metric is interpreted.
Unit	Bytes \$
Period	5 Min The period between metric evaluations.
Breach duration	5 Min The amount of time a metric can exceed a threshold before triggering a scaling operation.
Upper threshold	75 Bytes
Scale up increment	1 EC2 instances
Lower threshold	10 Bytes
Scale down increment	-1 EC2 instances

Click on "Save"

STEP-13: PART OF CONFIGURATION TAB, WE HAVE MODIFIED FEW

All Applications > MyFirstElastiBeanstalkApp > Myfirstelastibeanstalkapp-env (Environment ID: e-servxtqrc2, URL: Myfirstelastibeanstalkapp-e nv.w5zpx2|g5h.ap-south-1.elasticbeanstalk.com) Dashboard Apply configuration Configuration overview Cancel Configuration Capacity Software Instances Logs AWS X-Ray: enabled EG2 instance type: t2.micro Environment type: load balancing, auto scaling Health Rotate logs: disabled (default) EC2 image ID: ami-0od3f063 Availability Zones: Any Instances: 1-4 Log streaming disabled (default) Monitoring interval: 5 minute Monitoring Environment properties: 2 Roof volume type: container default Root volume size (GB): container default Alarms Root volume IOP3, container default Security groups: sg-085d6ac5a5d28aa61 Managed Updates Events Modify Modify Modify Tags Rolling updates and deployments Load balancer Security Load balancertype: classic Deployment policy: All at once Service role: aws-elasticbeanstalk-service-role Listeners: 1 Bolling updates: disabled Mrtual machine key pair: --Session stickiness: disabled Health check: enabled Virtual machine instance profile; aws-elasticbeanstalk-Cross-zone load balancing: disabled ec2-role Connection draining: disabled (detault)

Scroll Down

Modify.

Modify

Modify

PAGE 2

D 4					100		
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M	•			v			٠.

Network

Health check path: blank

Health reporting system: Enhanced

Modify

This environment is not part of a VPC.

Managed updates

Managed updates: disabled

Modify

Notifications

Email address: --

Modify

Database

Engine: --

Instance class: --

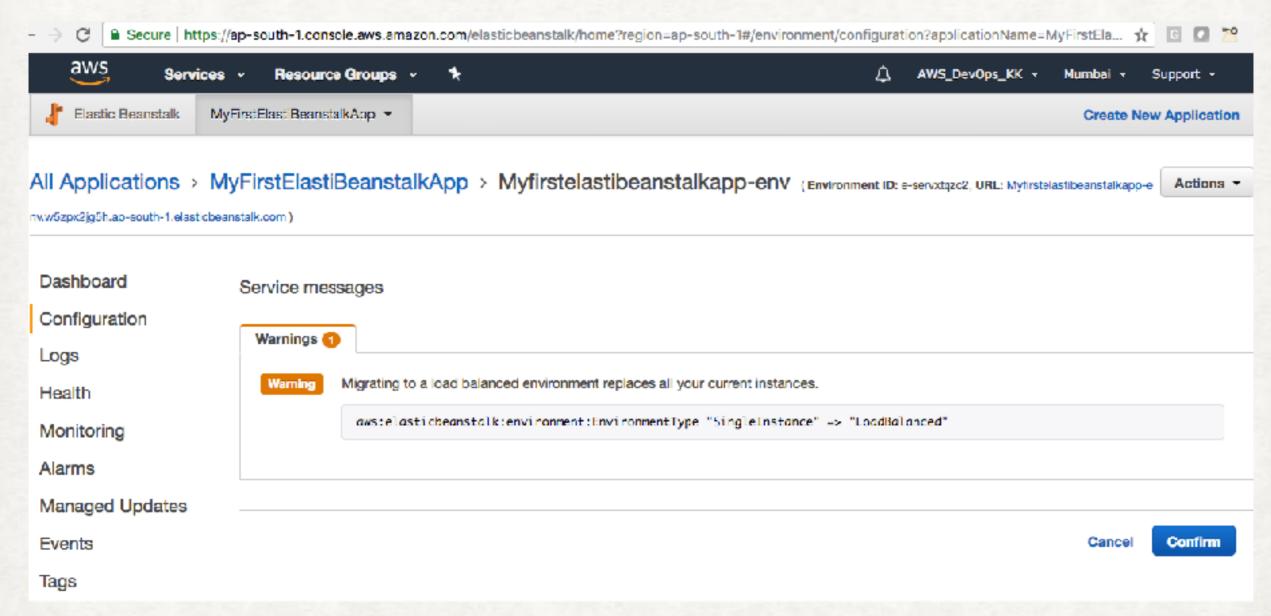
Storage (GB): --

Multi-AZ: --

Modify

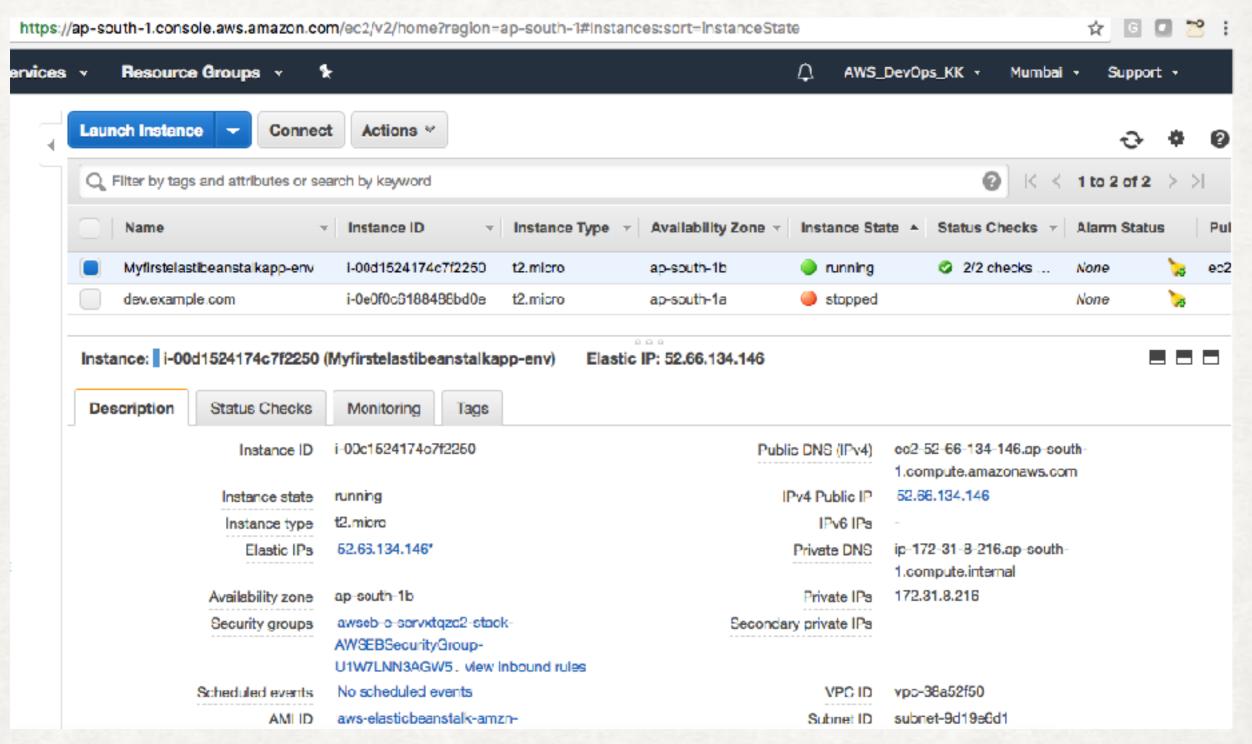
Scroll Up & Click on "Apply Configuration"

STEP-14: APPLYING ALL THE CONFIGURATION CHANGES WERE MADE BY US



Click on "Confirm"

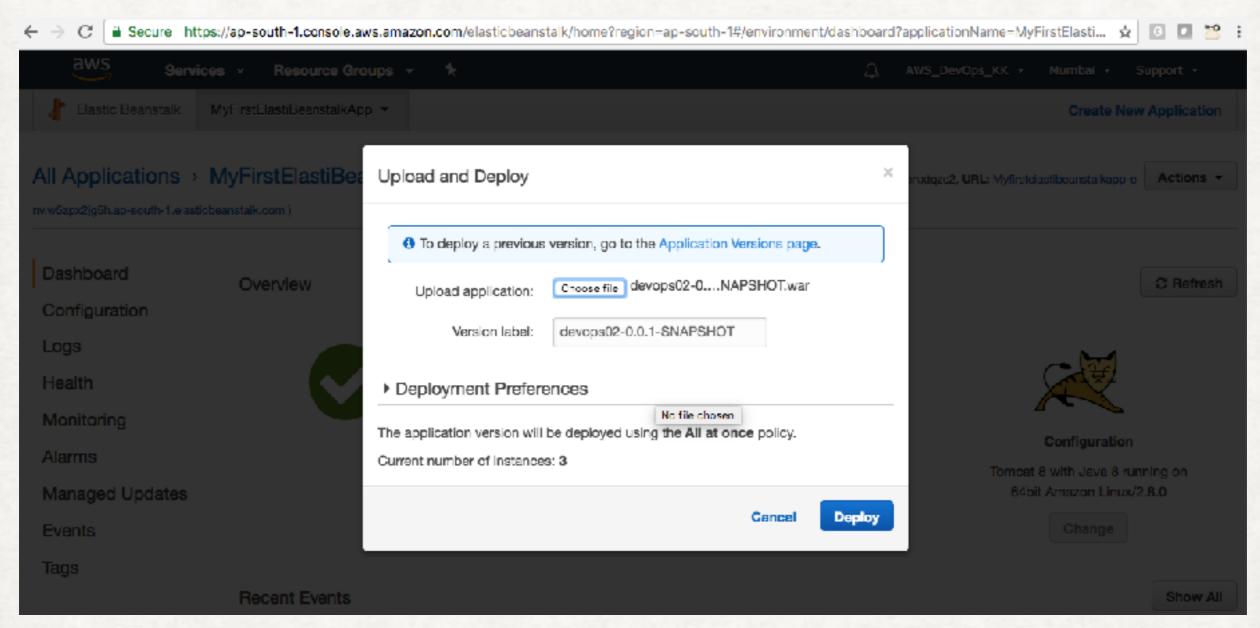
STEP-15: CROSS CHECK THE RESOURCES



EC2 Instance is created

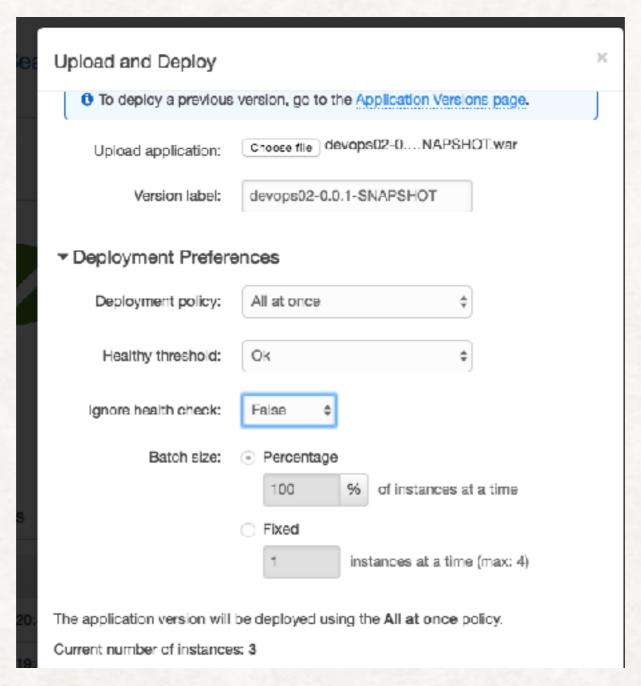
STEP-16: CLICK ON UPLOAD & DEPLOY A JAVA BUILD

On my Local Machine I have Have build i.e. devops02-0.0.1-SNAPSHOT.war file



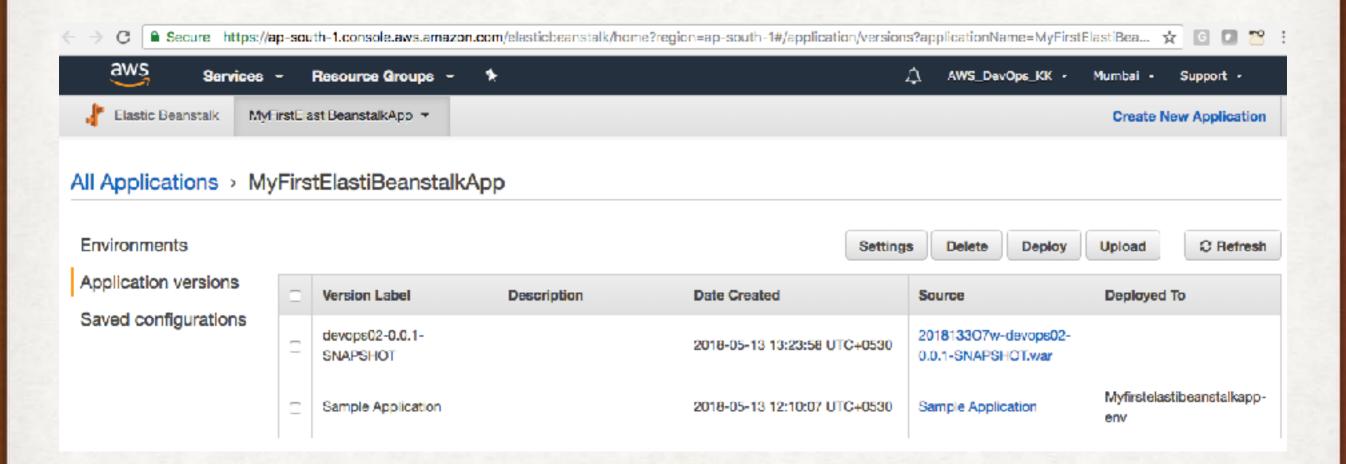
Upload a .war file

Click on Deployment Preference & Check the configuration

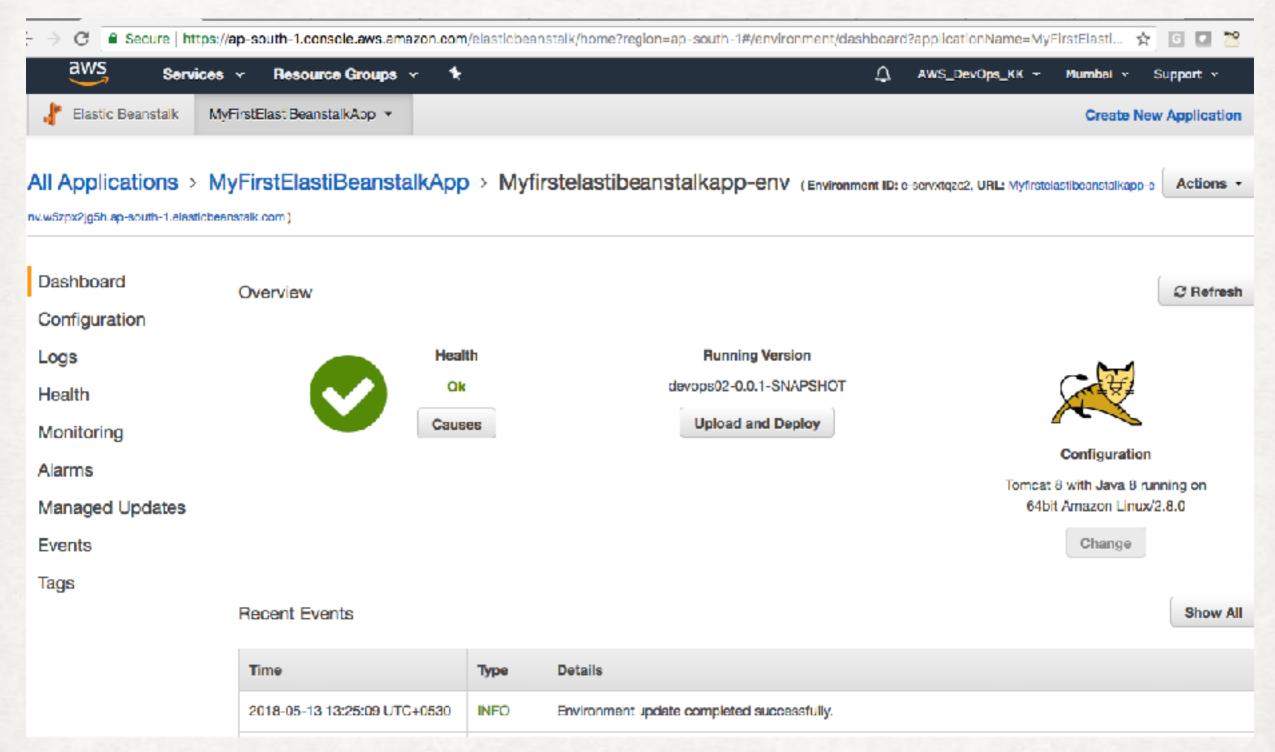


Click on Deploy

STEP-17: CLICK ON APPLICATIONS VERSIONS & CHECK THE LIST OF VERSIONS

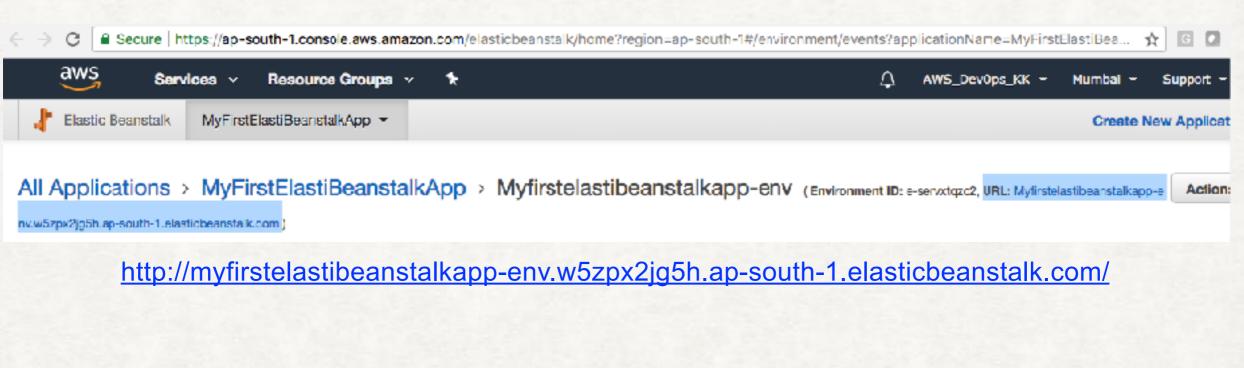


STEP-18: JAVA BUILD HAS BEEN DEPLOYED TO TOMCAT



Go to Events check the steps

COPY THE URL & GO TO BROWSER & CHECK





Java Application is Up!

SUMMARY & EXAM TIPS

- You can have multiple versions of your applications
- Your applications can be split in to tiers(Web Tier/Application Tier/Database Tier)
- You can update your application
- You can update your configuration
- Updates can be 1 instance at a time, a % of instances or an immutable update
- You pay for the resources that you use, but Elastic Beanstalk is free
- If elastic beantalk creates your RDS database then it will delete it when you delete your application.
- If not then the RDS instance stays
- Know what languages are supported!

- Apache Tomcat for Java applications
- Apache HTTP Server for PHP applications
- Apache HTTP Server for Python applications
- Nginx or Apache HTTP Server for Node.js applications
- Passenger or Puma for Ruby applications
- Microsoft IIS 7.5, 8.0 for .NET applications
- Java SE
- Docker
- GO