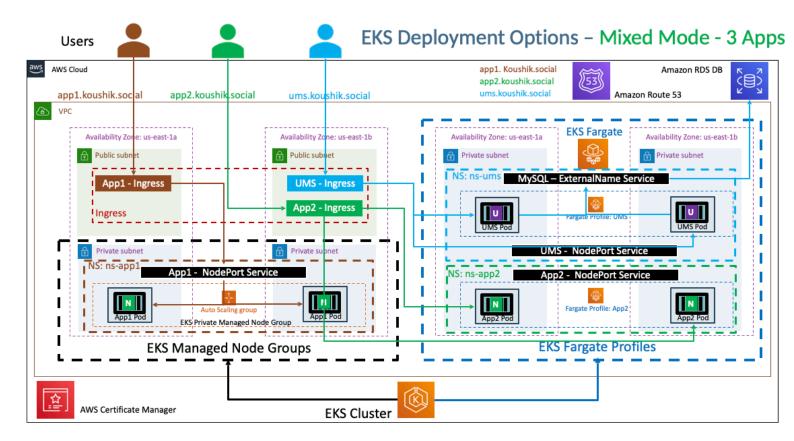
EKS Mixed Mode Deployment - 3 Apps

- Deploy 3 apps in mixed mode
- 2 Apps to 2 different Fargate Profiles
- 1 App to EKS EC2 Manged Node Group



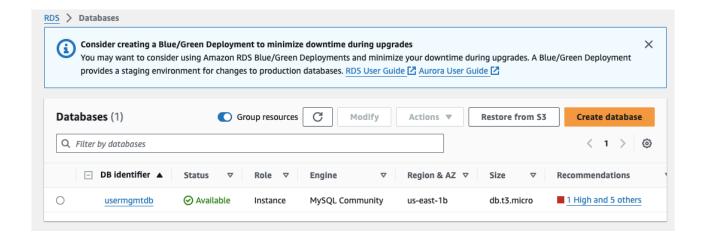
Steps:

- Create Advanced Fargate Profile with yml
- Create Fargate Profiles using YAML files
- Get list of Fargate profiles
- Review App1, App2 and UMS Manifests
- Deploy Apps
- Verify deployed Apps
- Verify using kubectl
- Verify ALB & Target Groups
- Access Applications

Pre req:

- Load-balancer controller should be installed and running in kube-system namespace
- External dns pod should be running in default namespace
- Rds database must be created and running in privater subnet for our usrmgmt microservice

NAMESPACE	NAME	READY	STATUS	RESTARTS
default	external-dns-6c4576979b-ttd9h	1/1	Running	0
kube-system	aws-load-balancer-controller-5484f67599-h8t55	1/1	Running	0
kube-system	aws-load-balancer-controller-5484f67599-vrv7c	1/1	Running	0



Create Advanced Fargate Profile with yml

```
apiVersion: eksctl.io/v1alpha5
kind: ClusterConfig
metadata:
 name: eksdemo1 # Name of the EKS Cluster
  region: us-east-1
fargateProfiles:
  - name: fp-app2
    selectors:
     # All workloads in the "ns-app2" Kubernetes namespace will be
      # scheduled onto Fargate:
      - namespace: ns-app2
  - name: fp-ums
    selectors:
      # All workloads in the "ns-ums" Kubernetes namespace matching the following
      # label selectors will be scheduled onto Fargate:
      - namespace: ns-ums
        labels:
          runon: fargate
```

Create Fargate Profiles using YAML files

eksctl create fargateprofile -f kube-manifests/01-Fargate-Advanced-Profiles/01-fargate-profiles.yml

Get list of Fargate profiles

List Fargate profiles eksctl get fargateprofile --cluster eksdemo1

View in yaml format eksctl get fargateprofile --cluster eksdemo1 -o yaml

Review App1, App2 and UMS Manifests

Check the namespace in yml manifest ns-app1 ns-app2 ns-ums

For Fargate alb.ingress.kubernetes.io/target-type: ip

Deploy Apps

Verify if RDS DB which is required for UMS Service is UP and RUNNING. # Deploy Apps kubectl apply -R -f kube-manifests/02-Applications/

Verify deployed Apps

Verify using kubectl # Verify Ingress kubectl get ingress --all-namespaces

Verify Pods kubectl get pods --all-namespaces -o wide

Verify Fargate Nodes kubectl get nodes -o wide

Verify ALB & Target Groups

Verify ALB Listeneres, Rules Verify Target Groups App1: Should use Target Type as instance App2, UMS: Should use Target Type as ip

Access Applications

App1: http://app1.koushik.social/app1/index.html App2: http://app2.koushik.social/app2/index.html

UMS Health Status Page: http://ums.koushik.social/usermgmt/health-status

UMS List Users: http://ums.koushik.social/usermgmt/users

Kubemanifests:

```
apiVersion: eksctl.io/v1alpha5
kind: ClusterConfig
metadata:
  name: eksdemo1 # Name of the EKS Cluster
  region: us-east-1
fargateProfiles:
 - name: fp-app2
    selectors:
     # All workloads in the "ns-app2" Kubernetes namespace will be
     # scheduled onto Fargate:
     - namespace: ns-app2
  - name: fp-ums
    selectors:
     # All workloads in the "ns-ums" Kubernetes namespace matching the following
     # label selectors will be scheduled onto Fargate:
      - namespace: ns-ums
        labels:
          runon: fargate
```

```
apiVersion: v1
kind: Namespace
metadata:
   name: ns-app1
# Apps deployed in this namespace will run on a EC2 Managed Node Group
```

```
apiVersion: apps/v1
kind: Deployment
metadata:
 name: app1-nginx-deployment
  labels:
    app: app1-nginx
 namespace: ns-app1
spec:
  replicas: 2
  selector:
   matchLabels:
      app: app1-nginx
  template:
   metadata:
      labels:
        app: app1-nginx
    spec:
      containers:
        - name: app1-nginx
          image: stacksimplify/kube-nginxapp1:1.0.0
          ports:
           - containerPort: 80
          resources:
            requests:
              memory: "128Mi"
              cpu: "500m"
            limits:
              memory: "500Mi"
              cpu: "1000m"
```

```
apiVersion: v1
kind: Service
metadata:
 name: app1-nginx-nodeport-service
 labels:
   app: app1-nginx
 namespace: ns-app1
 annotations:
#Important Note: Need to add health check path annotations in service level if we are planning
   alb.ingress.kubernetes.io/healthcheck-path: /app1/index.html
spec:
 type: NodePort
 selector:
   app: app1-nginx
 ports:
   - port: 80
   targetPort: 80
```

```
Annotations Reference: https://kubernetes-sigs.github.io/aws-load-balancer-controller/latest/guide/ingress/annotations/
apiVersion: networking.k8s.io/v1
kind: Ingress
 name: app1-ingress-service
   app: app1-nginx
 namespace: ns-app1
   # Load Balancer Name
   alb.ingress.kubernetes.io/load-balancer-name: app1-ingress
   # Ingress Core Settings
   #kubernetes.io/ingress.class: "alb" (OLD INGRESS CLASS NOTATION - STILL WORKS BUT RECOMMENDED TO USE IngressClass Resource)
   alb.ingress.kubernetes.io/scheme: internet-facing
   alb.ingress.kubernetes.io/healthcheck-protocol: HTTP
   alb.ingress.kubernetes.io/healthcheck-port: traffic-port
   #Important Note: Need to add health check path annotations in service level if we are planning to use multiple targets in a load bal
   alb.ingress.kubernetes.io/healthcheck-interval-seconds: '15'
   alb.ingress.kubernetes.io/healthcheck-timeout-seconds: '5'
   alb.ingress.kubernetes.io/success-codes: '200'
   alb.ingress.kubernetes.io/healthy-threshold-count: '2'
   alb.ingress.kubernetes.io/unhealthy-threshold-count: '2'
   alb.ingress.kubernetes.io/listen-ports: '[{"HTTPS":443}, {"HTTP":80}]'
   alb.ingress.kubernetes.io/certificate-arn: arn:aws:acm:us-east-1:388059815654:certificate/7294efbf-9752-427c-a8b0-0807f3ccd025
   alb.ingress.kubernetes.io/ssl-redirect: '443'
   external-dns.alpha.kubernetes.io/hostname: app1.koushik.social
         - path: /app1
             service:
               name: app1-nginx-nodeport-service
               port:
                 number: 80
# Important Note-1: In path based routing order is very important, if we are going to use "/*", try to use it at the end of all rules.
```

```
apiVersion: apps/v1
kind: Deployment
 name: app2-nginx-deployment
 namespace: ns-app2
 replicas: 2
   matchLabels:
     app: app2-nginx
       app: app2-nginx
       - name: app2-nginx
         image: stacksimplify/kube-nginxapp2:1.0.0
           - containerPort: 80
            memory: "128Mi"
             cpu: "500m"
             memory: "500Mi"
             cpu: "1000m"
kind: Service
 name: app2-nginx-nodeport-service
   app: app2-nginx
 namespace: ns-app2
   alb.ingress.kubernetes.io/healthcheck-path: /app2/index.html
   alb.ingress.kubernetes.io/target-type: ip
 type: NodePort
   app: app2-nginx
   - port: 80
   targetPort: 80
```

```
nnotations Reference: https://kubernetes-sigs.github.io/aws-load-balancer-controller/latest/guide/ingress/annotations/
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: app2-ingress-service
   app: app2-nginx
  namespace: ns-app2
   # Load Balancer Name
   alb.ingress.kubernetes.io/load-balancer-name: app2-ingress
   alb.ingress.kubernetes.io/scheme: internet-facing
   alb.ingress.kubernetes.io/healthcheck-protocol: HTTP
   alb.ingress.kubernetes.io/healthcheck-port: traffic-port
   alb.ingress.kubernetes.io/healthcheck-interval-seconds: '15'
   alb.ingress.kubernetes.io/healthy-threshold-count: '2'
   alb.ingress.kubernetes.io/unhealthy-threshold-count: '2'
   alb.ingress.kubernetes.io/listen-ports: '[{"HTTPS":443}, {"HTTP":80}]'
   alb.ingress.kubernetes.io/certificate-arn: arn:aws:acm:us-east-1:388059815654:certificate/7294efbf-9752-427c-a8b0-0807f3ccd025
   alb.ingress.kubernetes.io/ssl-redirect: '443'
   external-dns.alpha.kubernetes.io/hostname: app2.koushik.social
   alb.ingress.kubernetes.io/target-type: ip
   - http:
         - path: /app2
               name: app2-nginx-nodeport-service
                 number: 80
# Important Note-1: In path based routing order is very important, if we are going to use "/*", try to use it at the end of all rules.
```

```
apiVersion: v1
kind: Namespace
metadata:
name: ns-ums
# Apps deployed in this namespace will run on a Fargate fp-ums
```

```
apiVersion: v1
kind: Service
metadata:
   name: mysql
   labels:
        runon: fargate
        namespace: ns-ums
spec:
   type: ExternalName
   externalName: usermgmtdb.cxojydmxwly6.us-east-1.rds.amazonaws.com
```

```
apiVersion: apps/v1
   app: usermgmt-restapp
runon: fargate
         app: usermgmt-restapp
runon: fargate
          - name: init-db
               cpu: "500m"
limits:
                  memory: "500Mi"
cpu: "1000m"
                - containerPort: 8095
               - name: DB_HOSTNAME
               value: "mysql'
- name: DB_PORT
                value: "usermgmt"
- name: DB_USERNAME
               value: "dbadmin"
- name: DB_PASSWORD
                       name: mysql-db-password
key: db-password
               periodSeconds: 10
                  path: /usermgmt/health-status
port: 8095
```

```
apiVersion: v1
kind: Secret
metadata:
    name: mysql-db-password
    labels:
        runon: fargate
        namespace: ns-ums
type: Opaque
data:
    db-password: ZGJwYXNzd29yZDEx
```

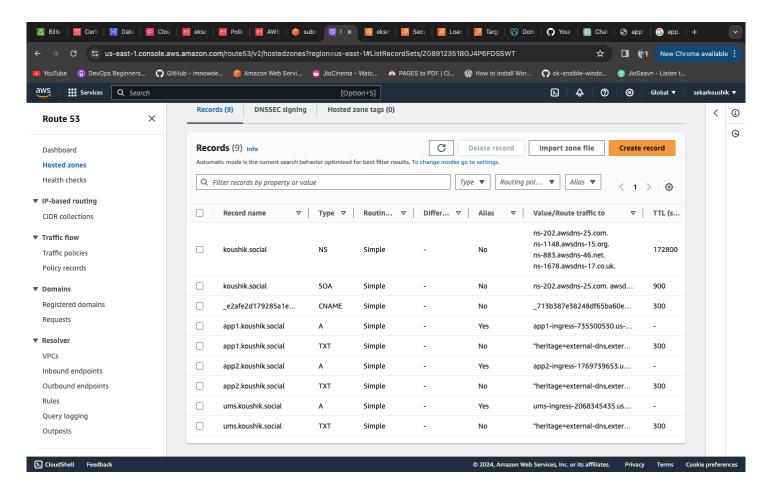
```
apiVersion: v1
kind: Service
metadata:
 name: usermgmt-restapp-nodeport-service
 labels:
   app: usermgmt-restapp
   runon: fargate
 namespace: ns-ums
 annotations:
#Important Note: Need to add health check path annotations in service level if we are planning to use m
   alb.ingress.kubernetes.io/healthcheck-path: /usermgmt/health-status
spec:
 type: NodePort
 selector:
   app: usermgmt-restapp
 ports:
   - port: 8095
  targetPort: 8095
```

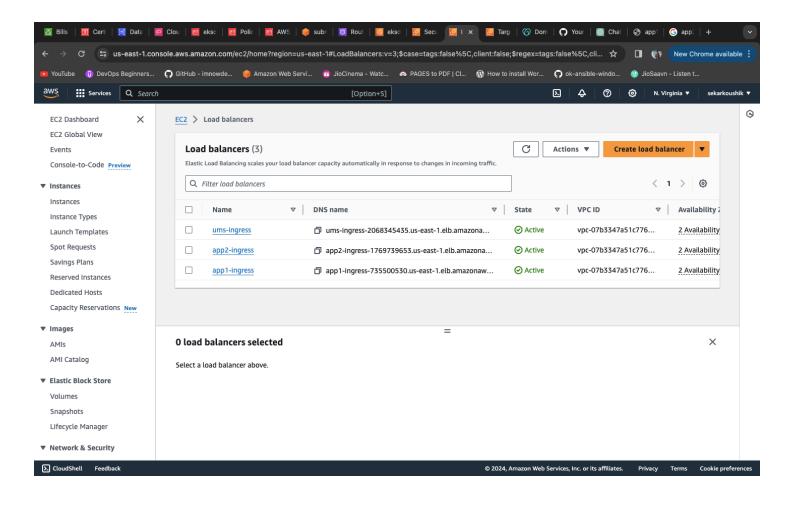
```
oiVersion: networking.k8s.io/vl
kind: Ingress
 name: ums-ingress-service
 labels:
   app: usermomt-restapp
   runon: fargate
 namespace: ns-ums
   alb.ingress.kubernetes.io/load-balancer-name: ums-ingress
   #kubernetes.io/ingress.class: "alb" (OLD INGRESS CLASS NOTATION - STILL WORKS BUT RECOMMENDED TO USE IngressClass Resource)
   alb.ingress.kubernetes.io/scheme: internet-facing
   # Health Check Settings
   alb.ingress.kubernetes.io/healthcheck-protocol: HTTP
   alb.ingress.kubernetes.io/healthcheck-port: traffic-port
   alb.ingress.kubernetes.io/healthcheck-interval-seconds: '15'
   alb.ingress.kubernetes.io/healthcheck-timeout-seconds: '5'
   alb.ingress.kubernetes.io/success-codes: '200'
   alb.ingress.kubernetes.io/healthy-threshold-count: '2'
   alb.ingress.kubernetes.io/listen-ports: '[{"HTTPS":443}, {"HTTP":80}]'
   alb.ingress.kubernetes.io/certificate-arn: arn:aws:acm:us-east-1:388059815654:certificate/7294efbf-9752-427c-a8b0-0807f3ccd025
   alb.ingress.kubernetes.io/ssl-redirect: '443'
   external-dns.alpha.kubernetes.io/hostname: ums.koushik.social
   # For Fargate
   alb.ingress.kubernetes.io/target-type: ip
   - http:
         - path: /
               name: usermgmt-restapp-nodeport-service
                 number: 8095
```

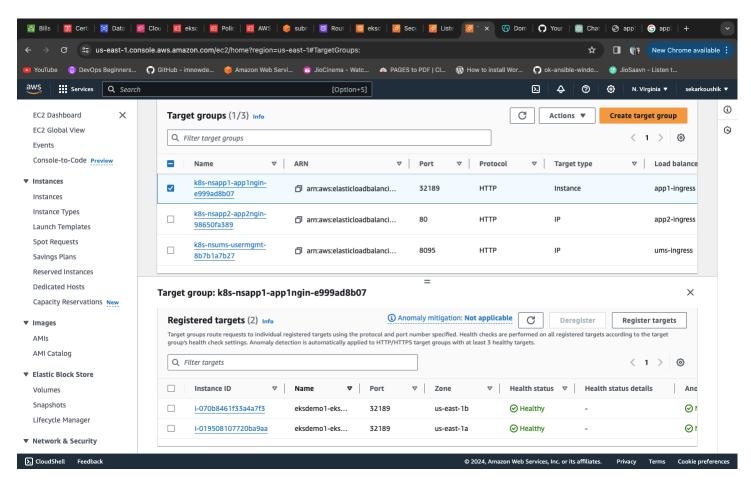
```
eksctl create fargateprofile -f kube-manifests/01-Fargate-Advanced-Profiles/01-fargate-profiles.yml
2024-02-05 17:06:01 [i] creating Fargate profile "fp-app2" on EKS cluster "eksdemo1" 2024-02-05 17:06:35 [i] created Fargate profile "fp-app2" on EKS cluster "eksdemo1" 2024-02-05 17:06:35 [i] creating Fargate profile "fp-ums" on EKS cluster "eksdemo1" 2024-02-05 17:06:54 [i] created Fargate profile "fp-ums" on EKS cluster "eksdemo1"
> eksctl get fargateprofile --cluster eksdemo1 -o yaml
   name: fp-app2
   podExecutionRoleARN: arn:aws:iam::388059815654:role/eksctl-eksdemo1-fargate-FargatePodExecutionRole-BxqTutXXeVE2
   selectors:
   - namespace: ns-app2
   status: ACTIVE
   subnets:
   - subnet-0d43d09ff2b86cbd1
   - subnet-0fd74930dd5ace459
   name: fp-ums
   podExecutionRoleARN: arn:aws:iam::388059815654:role/eksctl-eksdemo1-fargate-FargatePodExecutionRole-BxqTutXXeVE2
   selectors:
   - labels:
        runon: fargate
     namespace: ns-ums
   status: ACTIVE
   subnets:
   - subnet-0d43d09ff2b86cbd1
   subnet-0fd74930dd5ace459
```

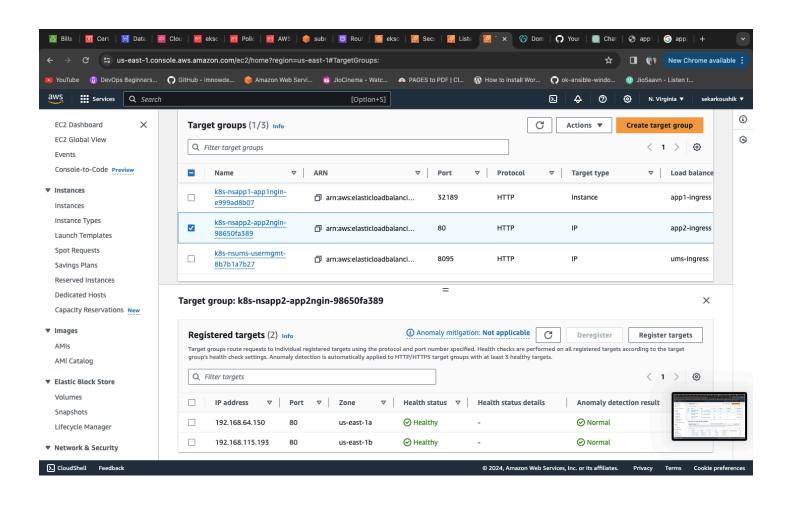
```
https://orange.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/stage.com/st
```

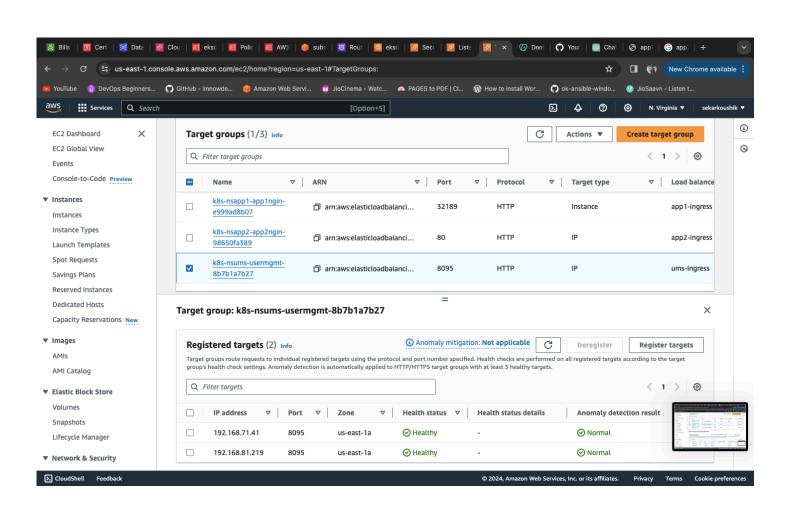
NAMESPACE	podsall-names		READY	STATUS	RESTARTS	AGE	IP	NODE
NAMESPACE		READINESS GATES	KEADY	STATUS	RESTARTS	AGE	11	NODE
default	external-dns-6c4		1/1	Running	0	25h	192.168.127.250	ip-192-168-122-9.ec2.interna
l	<none></none>	<none></none>	-/ -		ř			_p
kube-system	aws-load-balance	r-controller-5484f67599-h8t55	1/1	Running	0	26h	192.168.66.135	ip-192-168-70-237.ec2.interr
al	<none></none>	<none></none>						
kube-system	aws-load-balance	r-controller-5484f67599-vrv7c	1/1	Running	0	26h	192.168.116.200	ip-192-168-122-9.ec2.interna
ι	<none></none>	<none></none>						
kube-system	aws-node-gkdj7		2/2	Running	0	26h	192.168.122.9	ip-192-168-122-9.ec2.interna
l	<none></none>	<none></none>						
kube-system	aws-node-wb5m9		2/2	Running	0	26h	192.168.70.237	ip-192-168-70-237.ec2.intern
al	<none></none>	<none></none>			•	201	400 460 00 55	1. 402 462 70 227 1.1
kube-system al	coredns-d9b6d6c7		1/1	Running	0	28h	192.168.89.55	ip-192-168-70-237.ec2.intern
aı kube-system	<none> coredns-d9b6d6c7</none>	<none></none>	1/1	Running	0	28h	192.168.88.127	ip-192-168-70-237.ec2.intern
al	<none></none>	<none></none>	1/1	Kunning	U	2011	192.100.00.12/	1p-192-100-70-237.ec2.1ntern
kube-system	kube-proxy-f8x8k	THORE .	1/1	Running	0	26h	192.168.70.237	ip-192-168-70-237.ec2.intern
al	<none></none>	<none></none>	-/ -		ŭ		23212331731237	1p 151 100 70 257100211111011
kube-system	kube-proxy-18bc2		1/1	Running	0	26h	192.168.122.9	ip-192-168-122-9.ec2.interna
ιĺ	<none></none>	<none></none>						
ns-app1	app1-nginx-deploy	yment-859d7bb997-9c4kb	1/1	Running	0	19m	192.168.101.30	ip-192-168-122-9.ec2.interna
ι	<none></none>	<none></none>						
ns-app1	app1-nginx-deploy	yment-859d7bb997-qkqg5	1/1	Running	0	19m	192.168.72.247	ip-192-168-70-237.ec2.intern
al	<none></none>	<none></none>						
ns–app2		yment-76959c4978-cx96t	1/1	Running	0	19m	192.168.115.193	fargate-ip-192-168-115-193.e
c2.internal	<none></none>	<none></none>						
ns-app2		yment-76959c4978-d956t	1/1	Running	0	19m	192.168.64.150	fargate-ip-192-168-64-150.ec
2.internal	<none></none>	<none> rvice-6cb448c6fc-8jx9z</none>	1/1	Running		19m	192.168.71.41	f i- 100 160 71 410
ns-ums .internal	<pre><none></none></pre>	<pre><rue></rue></pre> <pre></pre> <pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><p< td=""><td>1/1</td><td>Kunning</td><td>0</td><td>1911</td><td>192.100./1.41</td><td>fargate-ip-192-168-71-41.ec2</td></p<></pre>	1/1	Kunning	0	1911	192.100./1.41	fargate-ip-192-168-71-41.ec2
ns-ums		rvice-6cb448c6fc-jp27k	1/1	Running	0	19m	192.168.81.219	fargate-ip-192-168-81-219.ec
2.internal	<none></none>	<none></none>	-, -	- Railli I II I		13111	192110010111219	
		iles-Advanced-YAML						

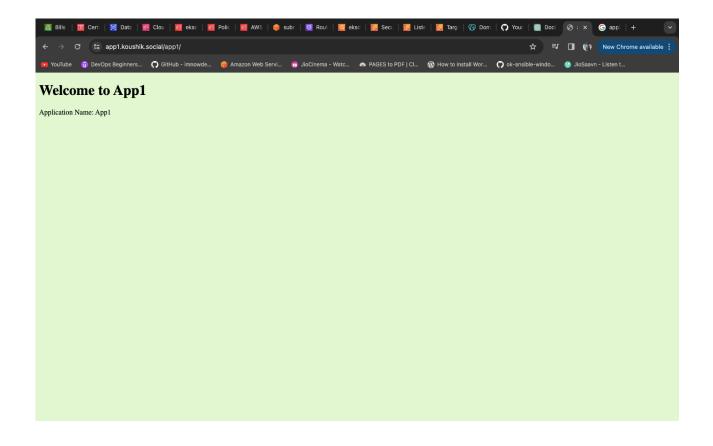


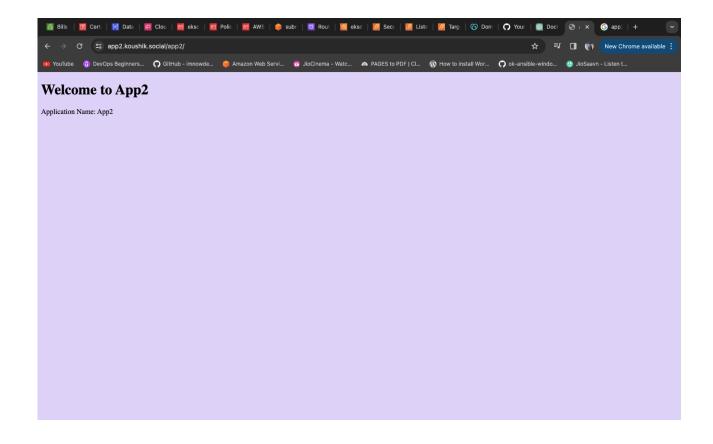






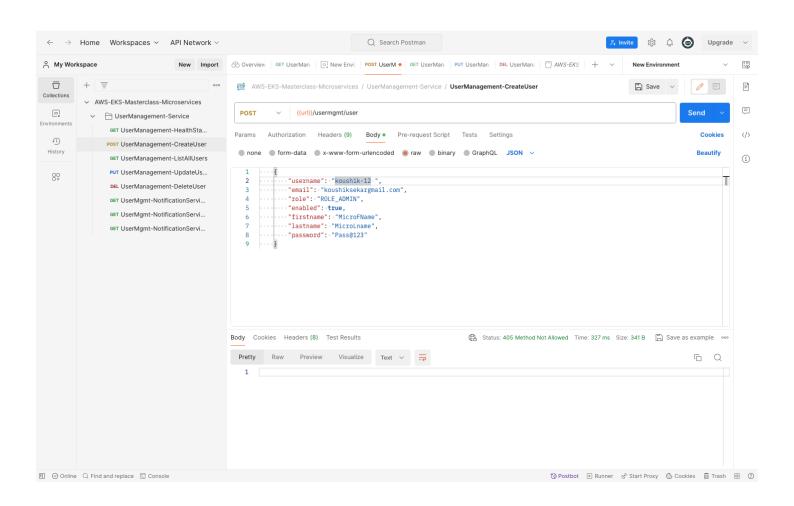








User Management Service UP and RUNNING - V1



sys				
mysql> use usermgmt; Reading table information for completion You can turn off this feature to get a q				
Database changed mysql> show tables -> ^C mysql> show tables; ++ Tables_in_usermgmt ++ users ++ 1 row in set (0.00 sec) mysql> select * from users;				
+	enabled	+ firstname	 lastname	password
koushik-12 koushiksekargmail.com kVZnXW ROLE_ADMIN koushik-07 koushiksekargmail1.com vpSgKq ROLE_ADMIN				\$2a\$04\$GpYpDxw7ENSyd/ln7oi1w0UZtlW0NKaTUNTeFc2Ee9jpCW2 \$2a\$04\$mTDhhloIfc6k7X0Ds1qgxekwBbeP1g3vw39YnzCT7WYf4d4
2 rows in set (0.00 sec)				
mysql>	~~~~	III 4.1 GB ———		—— B ₀ 0.0 kB↓