

# Final Project - Twitter Application

Andrew Hu  
Ruizhi Ma

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## Abstract

For the CSYE7220 Twitter application final project, this is a full-stack web application. We create client sites using React and Redux; using RESTful API to send/receive data from the server-side asynchronously. We developed server-side using Node.js and Express, Redis, and MongoDB. Finally, we deploy microservice architecture to AWS EKS using Terraform.

## Quick Start

### Deploy to AWS EKS

Prerequisites.

1. Install AWS CLI
2. Install terraform
3. Execute `aws configure` command to configure the AWS setting

Step1.

Go into terraform-eks-cluster folder

Step2.

Execute the following command(it might take about 15 minutes)

`terraform init`

`terraform plan`

`terraform apply`

Step3.

After resources are created, execute the following command

`./deploy.sh`

Step4.

Execute the following command to get service

`kubectl get service`

The result will like following

```
andrew@Andrewde-MacBook-Pro final-yaml % kubectl get service
NAME                TYPE        CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
kubernetes           ClusterIP   172.20.0.1      <none>            443/TCP          88m
linkus-back-lb       LoadBalancer 172.20.183.191  a3fab6a4388394b4abb1f75974c60b50-1517126495.us-east-2.elb.amazonaws.com 80:32460/TCP    87m
linkus-front-lb      LoadBalancer 172.20.70.58   aaba79a7be3cb4e2b9a8f672d8495ec7-373431062.us-east-2.elb.amazonaws.com 80:32486/TCP    87m
todolist-middle-redis-lb LoadBalancer 172.20.181.39  a16b71210324347099518aa3b403ef51-248440793.us-east-2.elb.amazonaws.com 80:31438/TCP    87m
andrew@Andrewde-MacBook-Pro final-yaml %
```

Step5

The working url will become

frontURL?webapp=http://backURL

For example:

<http://aaba79a7be3cb4e2b9a8f672d8495ec7-373431062.us-east-2.elb.amazonaws.com/?webapp=http://a3fab6a4388394b4abb1f75974c60b50-1517126495.us-east-2.elb.amazonaws.com>

## Deploy to localhost minikube

Prerequisites

1. Install Docker
2. Install minikube
3. Start the minikube server

Step1. `./deploy.sh`

Step2. `minikube service list`

NAMESPACE	NAME	TARGET PORT	URL
default	kubernetes	No node port	
default	linkus-back-lb	80	<a href="http://192.168.64.2:32054">http://192.168.64.2:32054</a>
default	linkus-front-lb	80	<a href="http://192.168.64.2:30441">http://192.168.64.2:30441</a>
default	todolist-middle-redis-lb	80	<a href="http://192.168.64.2:32718">http://192.168.64.2:32718</a>
kube-system	kube-dns	No node port	
kube-system	metrics-server	No node port	
kubernetes-dashboard	dashboard-metrics-scraper	No node port	
kubernetes-dashboard	kubernetes-dashboard	No node port	

Step5

The working url will become

frontURL?webapp=http://backURL

For example:

<http://192.168.64.2:30441?webapp=http://192.168.64.2:32054>

## Monitor

Please type following command to run monitor server

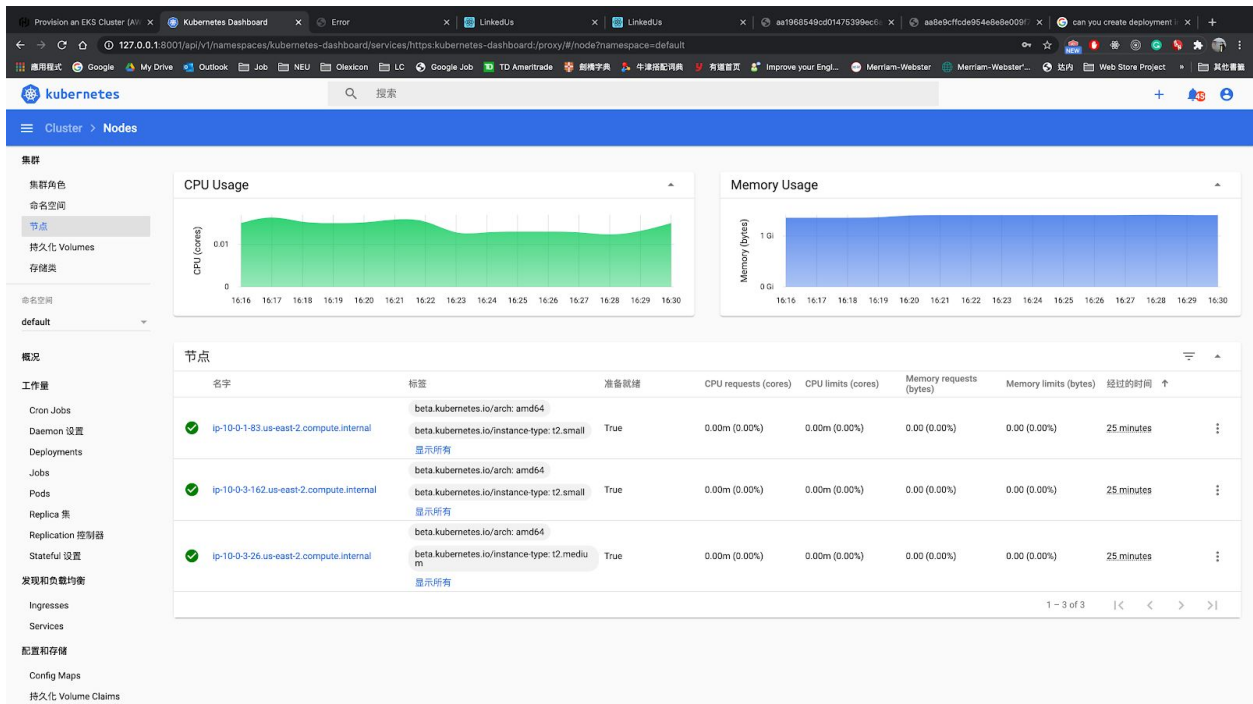
```
kubectl proxy
```

Visit the dashboard by following url

<http://127.0.0.1:8001/api/v1/namespaces/kubernetes-dashboard/services/https:kubernetes-dashboard:/proxy/>

Use following command to generate the token

```
kubectl -n kube-system describe secret $(kubectl -n kube-system get secret | grep service-controller-token | awk '{print $1}')
```



## Horizontal Scalling

```
{...} linkus-front-hpa.yaml
1  apiVersion: autoscaling/v1
2  kind: HorizontalPodAutoscaler
3  metadata:
4    name: linkus-front-hpa
5  spec:
6    scaleTargetRef:
7      apiVersion: apps/v1beta2
8      kind: Deployment
9      name: linkus-front
10   minReplicas: 2
11   maxReplicas: 4
12   targetCPUUtilizationPercentage: 50
13
```

```
andrew@Andrewde-MacBook-Pro k8s % kubectl get deploy,hpa
NAME                                READY    UP-TO-DATE    AVAILABLE    AGE
deployment.apps/linkus-back         1/1      1              1            35m
deployment.apps/linkus-front        2/2      2              2            35m
deployment.apps/todolist-middle-redis 1/1      1              1            36m

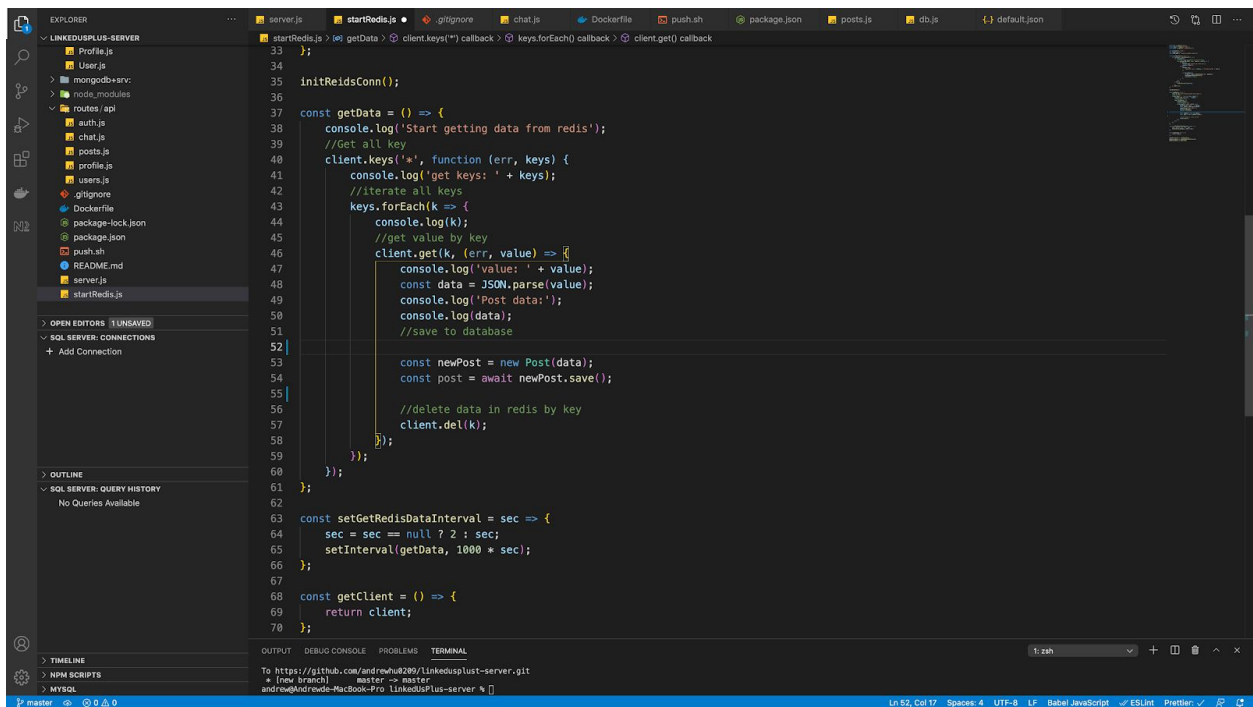
NAME                                REFERENCE    TARGETS    MINPODS    MAXPODS    REPLICAS    AGE
horizontalpodautoscaler.autoscaling/linkus-front-hpa  Deployment/linkus-front  0%/50%      2          4          2            3m26s
andrew@Andrewde-MacBook-Pro k8s %
```

## Queue-mediated

We use redis as our queue-mediated.

```
    },
    if (getClient()) {
      console.log('mi
      getClient().set
      new Date().getTime().toString,
      JSON.stringify(postData)
    });
    console.log('Finish set data to Redis!');
```

getTime(): number;  
(method) Date.getTime(): number  
Gets the time value in milliseconds.




## Functionality

## Sign-Up

 LinkedUs

[Users](#) [Posts](#) [Register](#) [Login](#)

## Sign Up

 Create Your Account

This site uses Gravatar so if you want a profile image, use a Gravatar email

Register

Already have an account? [Sign In](#)

Talking: Weibo Dai

## Sign-in

 LinkedUs

[Users](#) [Posts](#) [Register](#) [Login](#)

## Sign In

 Sign Into Your Account

Login

Don't have an account? [Sign up](#)

## Dashboard

### Dashboard

You have not yet setup a profile, please add some info

[Create Profile](#)

## Add personal profile

### Create Your Profile

Let's get some information to make your profile stand out

\* = required field

Give us an idea of where you are at in your career

Could be your own company or one you work for

Could be your own or a company website

City & state suggested (eg. Boston, MA)

Please use comma separated values (eg. HTML,CSS,JavaScript,PHP)

If you want your latest repos and a Github link, include your username

Tell us a little about yourself

Add Social Network Links

Optional[Submit](#)[Go Back](#)



Profile Created

## Dashboard



Welcome Ruizhi Ma

[Edit Profile](#)

[Add Experience](#)

[Add Education](#)

### Experience Credentials

Company	Title	Years
---------	-------	-------

### Education Credentials

School	Degree	Years
--------	--------	-------

[Delete My Account](#)

## Edit Professional Experience

## Add An Experience

Add any developer/programming positions that you have had in the past

\* = required field

Backend Developer

ABC Company

BOSTON

From Date

06/01/2020

☒ Current Job

To Date

mm/dd/yyyy

Job Description

[Submit](#)

[Go Back](#)

Experience Added

## Dashboard



Welcome Ruizhi Ma

[Edit Profile](#)

[Add Experience](#)

[Add Education](#)

### Experience Credentials

Company	Title	Years	
ABC Company	Backend Developer	2020/05/31 - Now	<a href="#">Delete</a>

### Education Credentials

School	Degree	Years
--------	--------	-------

[Delete My Account](#)

## Edit Educational Experience

## Add Your Education

Add any school or bootcamp that you have attended

\* = required field

From Date

☒ Current School

To Date

Program Description

LinkedUs

Users

Friends

Posts

Message

Dashboard

Logout

Education Added

Dashboard

Welcome Ruizhi Ma

Edit Profile

Add Experience

Add Education

Experience Credentials

Company	Title	Years	
ABC Company	Backend Developer	2020/05/31 - Now	Delete

Education Credentials

School	Degree	Years	
Northeastern University	Master	2019/08/31 - Now	Delete

Delete My Account

## Browse other people's profile

LinkedUs

Browse and connect with developers

Users

Friends

Posts

Message

Dashboard

Logout

Andrew Hu

Student or Learning

View Profile

Add friend

✓ Java

✓ JavaScript

✓ SpringMVC

✓ SpringBoot

Risu

Developer

View Profile

Add friend

✓ Java

✓ JavaScript

Nicole

Intern

View Profile

Add friend

✓ Photoshop

## Add a friend or remove a friend

LinkedUs

Users

Friends

Posts

Message

Dashboard

Logout

Andrew Hu now is your friend

Developers

Browse and connect with developers

Andrew Hu removed from your friend list


## My Friends


 Browse and connect with your friends

No friends found...

## Your friend list

## My Friends

 Browse and connect with your friends




**Andrew Hu**

Student or Learning

[View Profile](#)
[Remove friend](#)

- ✓ Java
- ✓ JavaScript
- ✓ SpringMVC
- ✓ SpringBoot




**Nicole**

Intern

[View Profile](#)
[Remove friend](#)

- ✓ Photoshop




**Merphy**

Instructor at Northeastern University

Boston, MA

- ✓ [Helping students to find coop](#)

## Post

UsersFriendsPostsMessageDashboardLogout


### Posts

Welcome to the community

Say Something...

Create a post

Submit




Nicole

Hi everyone! I am Nicole and this is my first time on LinkedUs. Nice to meet you guys!

Posted on 2020/12/13

2 Discussion




Ruizhi Ma

Hi, my name is Ruizhi Ma and this is my first post here!

Posted on 2020/12/13

Discussion

## Dirty word filter

UsersFriendsPostsMessageDashboardLogout


### Posts

Welcome to the community

Say Something...

Create a post

Submit




Andrew

\*\*\*\* you!

Posted on 2020/12/12

Discussion




Andrew

hello

Posted on 2020/12/12

Discussion



Andrew

\*\*\*\*

Posted on 2020/12/12

Discussion

## Leave the comment below a post

LinkedUs

Users

Friends


Posts

Message

Dashboard

Logout

Back To Posts



Hi everyone! I am Nicole and this is my first time on LinkedUs. Nice to meet you guys!


Posted on 2020/12/13

Nicole

Leave a Comment

Welcome Nichole!

Submit



Welcome Nicole!

Posted on 2020/07/03

Andrew Hu

## Remove the Post/Comment

LinkedUs

Users

Friends

Posts


Message

Dashboard

Logout

Comment Removed

Back To Posts



Hi everyone! I am Nicole and this is my first time on LinkedUs. Nice to meet you guys!

Posted on 2020/12/13

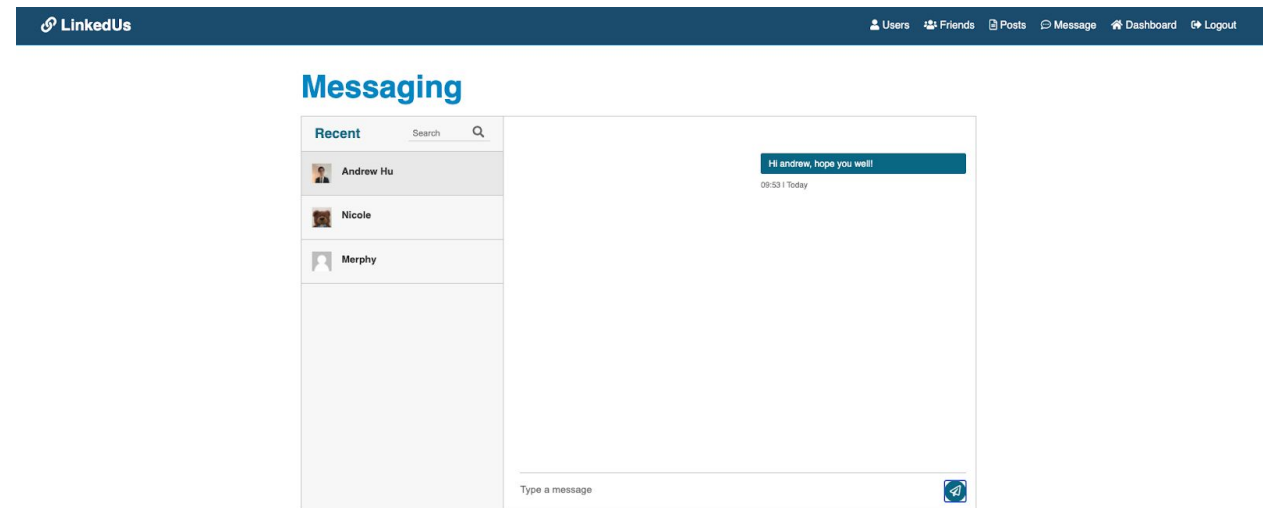
Nicole

Leave a Comment

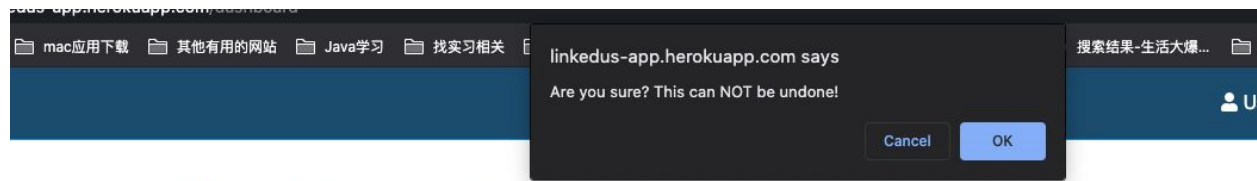
Comment the post

Submit

## Real-time friend to friend chat application



## Delete account



## Dashboard



Welcome Ruizhi Ma

[Edit Profile](#)

[Add Experience](#)

[Add Education](#)

### Experience Credentials

Company	Title	Years	
ABC Company	Backend Developer	2020/05/31 - Now	<a href="#">Delete</a>

### Education Credentials

School	Degree	Years	
Northeastern University	Master	2019/08/31 - Now	<a href="#">Delete</a>

[Delete My Account](#)

Your account has been permanently deleted

## Store data in MongoDB



OverviewReal TimeMetricsCollectionsProfilerPerformance AdvisorOnline ArchiveCommand Line Tools

DATABASES: 1COLLECTIONS: 4

Visualize Your DataRefresh

Create Database

NAMESPACES

<dbname>

postsprofilestodolistsusers

<dbname>.posts

COLLECTION SIZE: 277KBTOTAL DOCUMENTS: 11INDEXES TOTAL SIZE: 36KB

FindIndexesSchema Anti-PatternsAggregationSearch Indexes

INSERT DOCUMENT

FILTER{"filter":"example"}

FindReset

QUERY RESULTS 1-11 OF 11

\_id: ObjectId("5fd439c8b5bfafcffa06ecae")

text: "hello"

name: "Andrew"

avatar: "http://www.gravatar.com/avatar/24486b25699f5abc5c8bc8569101bf1e?s=200&r=pg6..."

user: ObjectId("5fd439b7b5bfafcffa06ecad")

> likes: Array

> comments: Array

\_\_v: 0

\_id: ObjectId("5fd43b01b5bfafcffa06ecb0")

text: "xxxx"

name: "Andrew"

avatar: "http://www.gravatar.com/avatar/24486b25699f5abc5c8bc8569101bf1e?s=200&r=pg6..."

user: ObjectId("5fd439b7b5bfafcffa06ecad")

> likes: Array

> comments: Array

\_\_v: 0