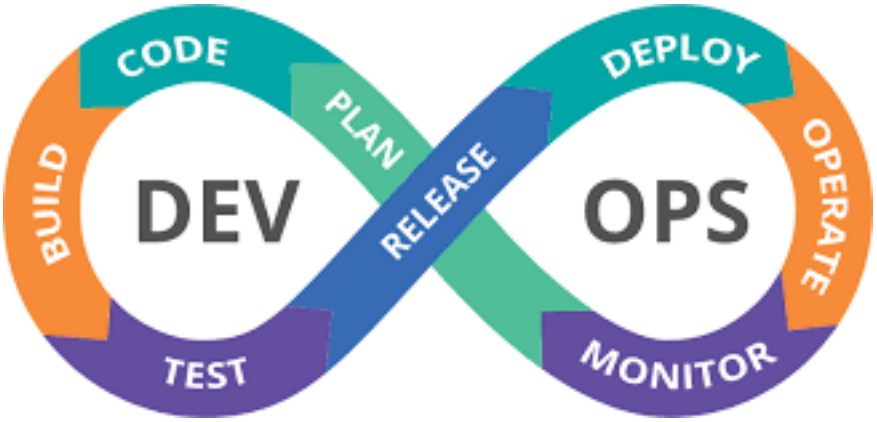
COMPUTER HARDWARE SOFTWARE WORKSHOP

DEVOPS



Introduction

DevOps is a set of practices that combines software development(*Dev*) and IT operations(*Ops*). It aims to shorten the system development life-cycle and provide continuous delivery with high software quality. Other than it being a cross functional combination of the terms and concepts for “development” and “operations”, DevOps characterised by key principles: shared ownership, workflow automation and rapid feedback.

Why DevOps on cloud

1. Bring products at a faster rate to market

2. Reduction of cloud complexity and maintenance of servers

3. Increased security

4. Elimination of Downtime

5. Increased scalability

Toolchains

As DevOps is intended to be a cross functional mode of working, those who practice the methodology used different types of tools-referred to as to as “toolchains” rather than a single one. These toolchains are expected to fit into one or more of the following categories, reflective of key aspects of the development and delivery process.

1. Coding- code development and review, source code management tools, code merging.

2. Building- continuous integration tools, build status.

3. Testing- Continuous testing tools that provide quick and timely feedback on business risks.

4. Packaging- Artefact repository, application pre-deployment staging.

5. Releasing- Change management, release approvals, release automation.

6. Configuring- infrastructure configuration and management, infrastructure as code tools.

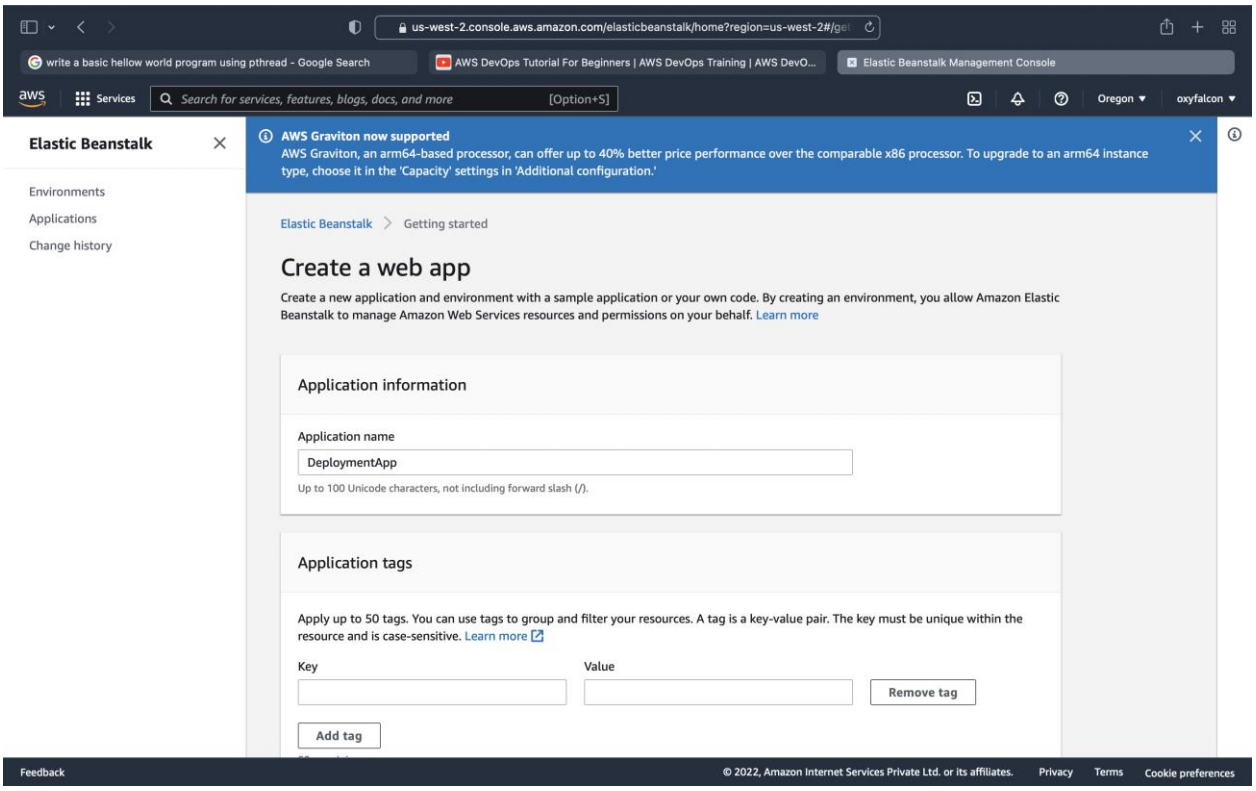
7. Monitoring- Applications performance monitoring, end user experience.

DevOps practices and adoption

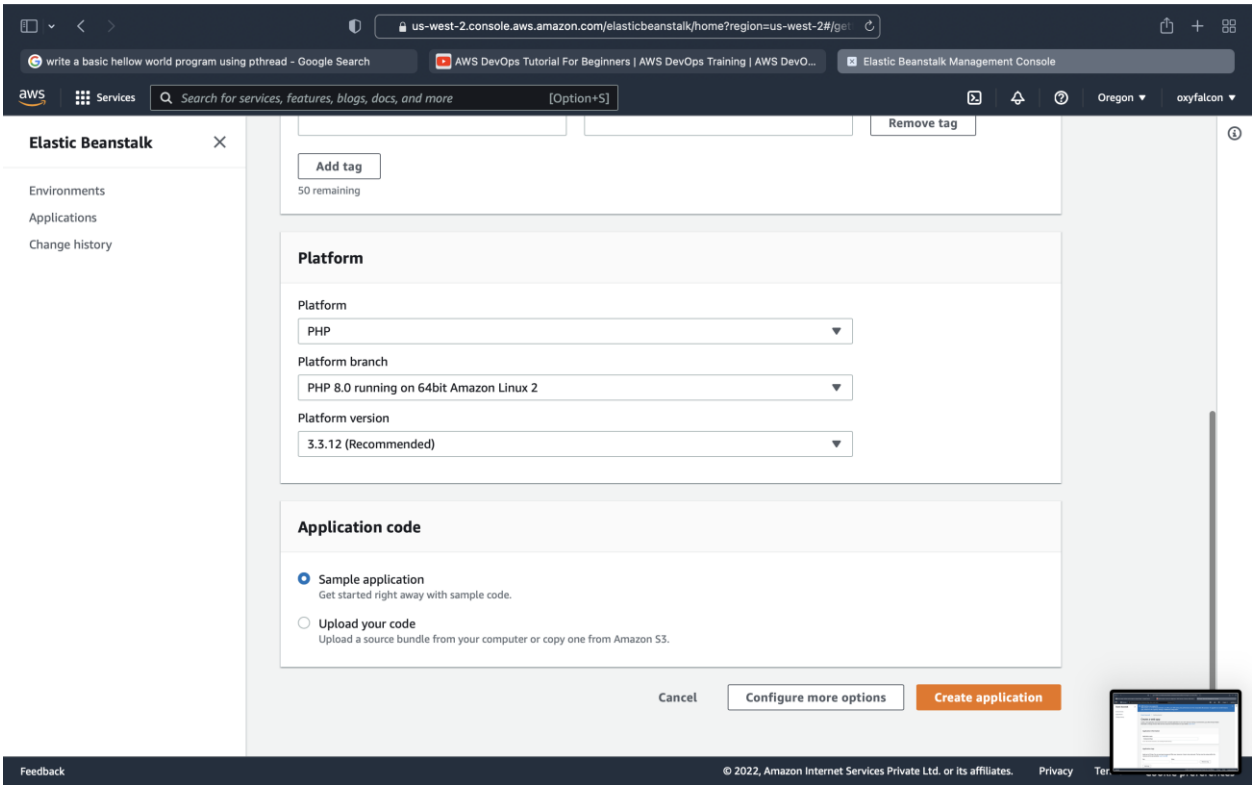
DevOps practices, and their dependencies include a dependency network which connects potential benefits to an ordered chain of practices. Using this network organisations can choose a path that enables fulfilment of their goals.

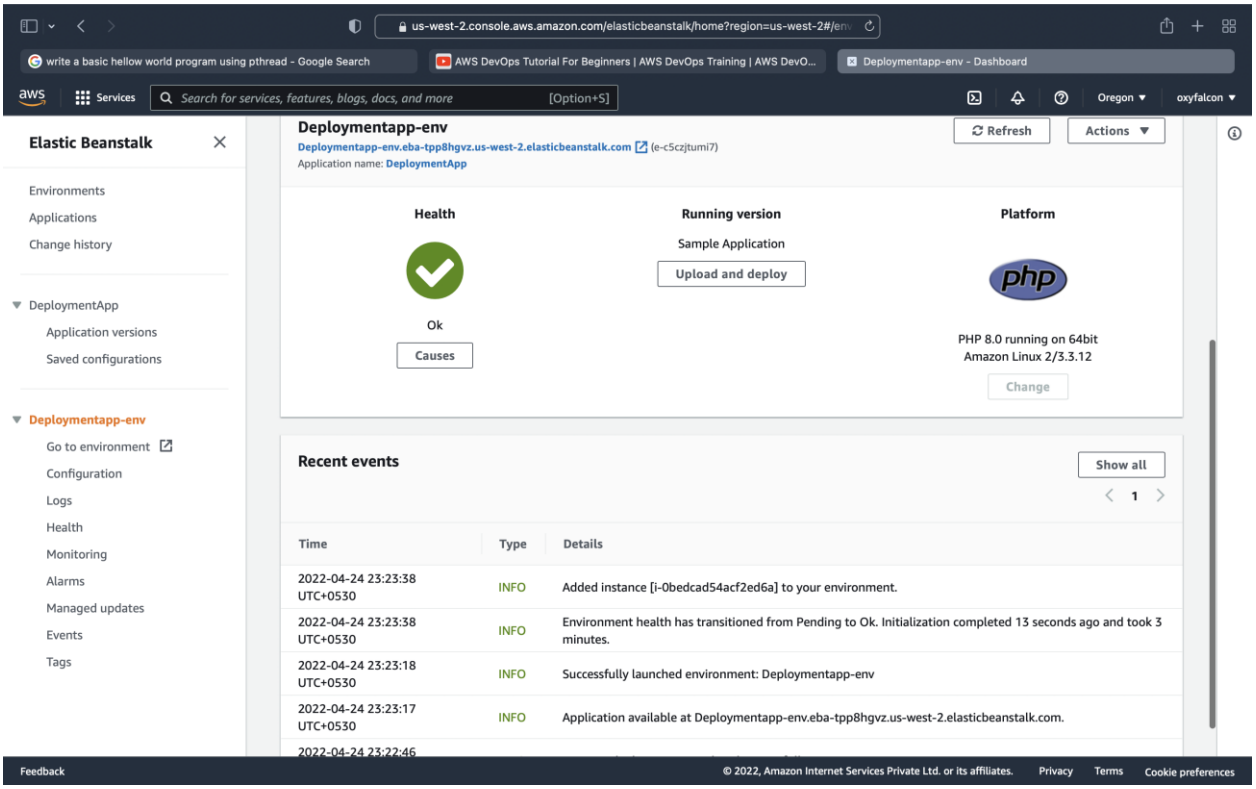
Adoption of DevOps is being driven by many factors including:

1. Use of agile and other development processes and methods
2. Demand for an increased rate of production releases – from application and business unit stakeholders
3. Wide availability of virtualized and cloud infrastructure– from internal and external providers;
4. Increased usage of data centre automation and configuration management tools;
5. Increased focus on test automation and continuous integration methods;
6. A critical mass of publicly available best practices.



Creating a sample app using Elastic Beanstalk




us-west-2.console.aws.amazon.com/elasticbeanstalk/home?region=us-west-2#/env
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Environments
Applications
Change history
DeploymentApp
Application versions
Saved configurations
Deploymentapp-env
Go to environment
Configuration
Logs
Health
Monitoring
Alarms
Managed updates
Events
Tags
Deploymentapp-env
Deploymentapp-env.eba-tpp8hgvz.us-west-2.elasticbeanstalk.com (e-c5czjtumi7)
Application name: DeploymentApp
Refresh
Actions
Health
Ok
Causes
Running version
Sample Application
Upload and deploy
Platform
PHP 8.0 running on 64bit
Amazon Linux 2/3.3.12
Change
Recent events
Show all
1
Time
Type
Details
2022-04-24 23:23:38 UTC+0530
INFO
Added instance [i-0bedcad54acf2ed6a] to your environment.
2022-04-24 23:23:38 UTC+0530
INFO
Environment health has transitioned from Pending to Ok. Initialization completed 13 seconds ago and took 3 minutes.
2022-04-24 23:23:18 UTC+0530
INFO
Successfully launched environment: Deploymentapp-env
2022-04-24 23:23:17 UTC+0530
INFO
Application available at Deploymentapp-env.eba-tpp8hgvz.us-west-2.elasticbeanstalk.com.
2022-04-24 23:22:46
Feedback
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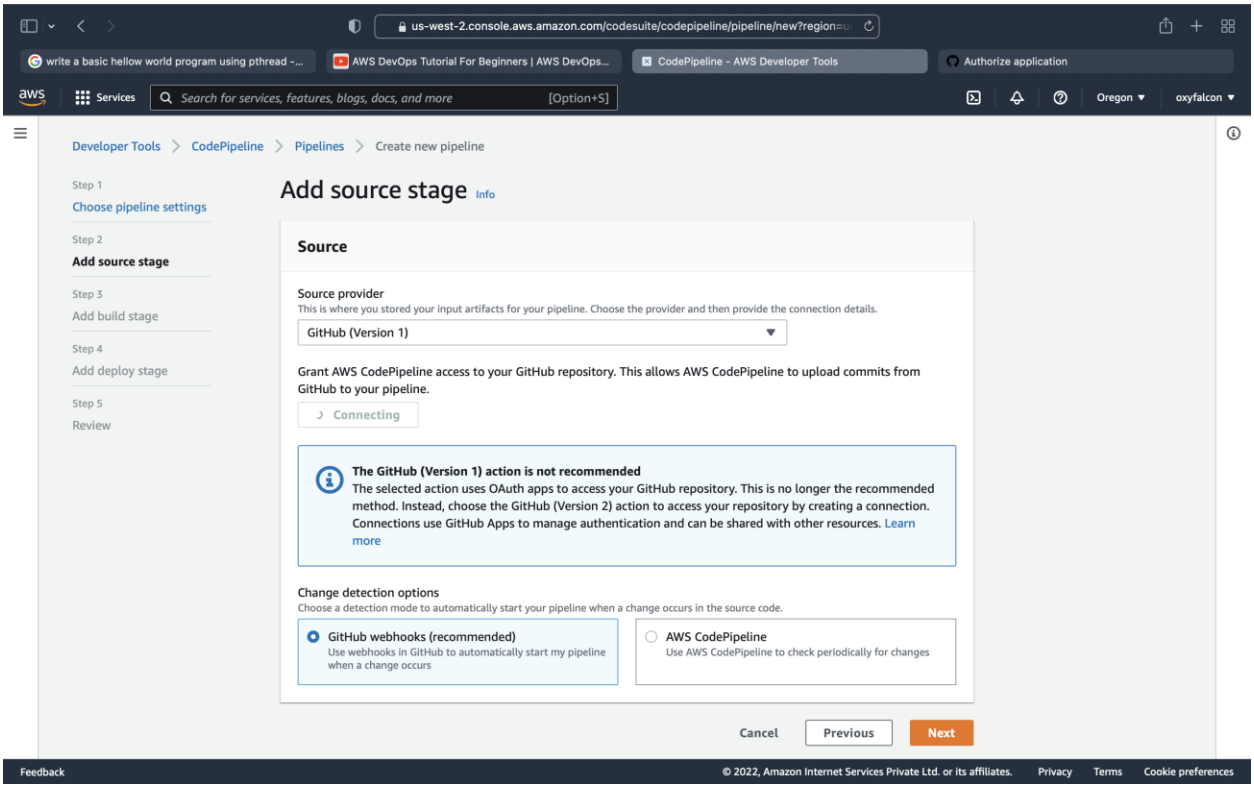
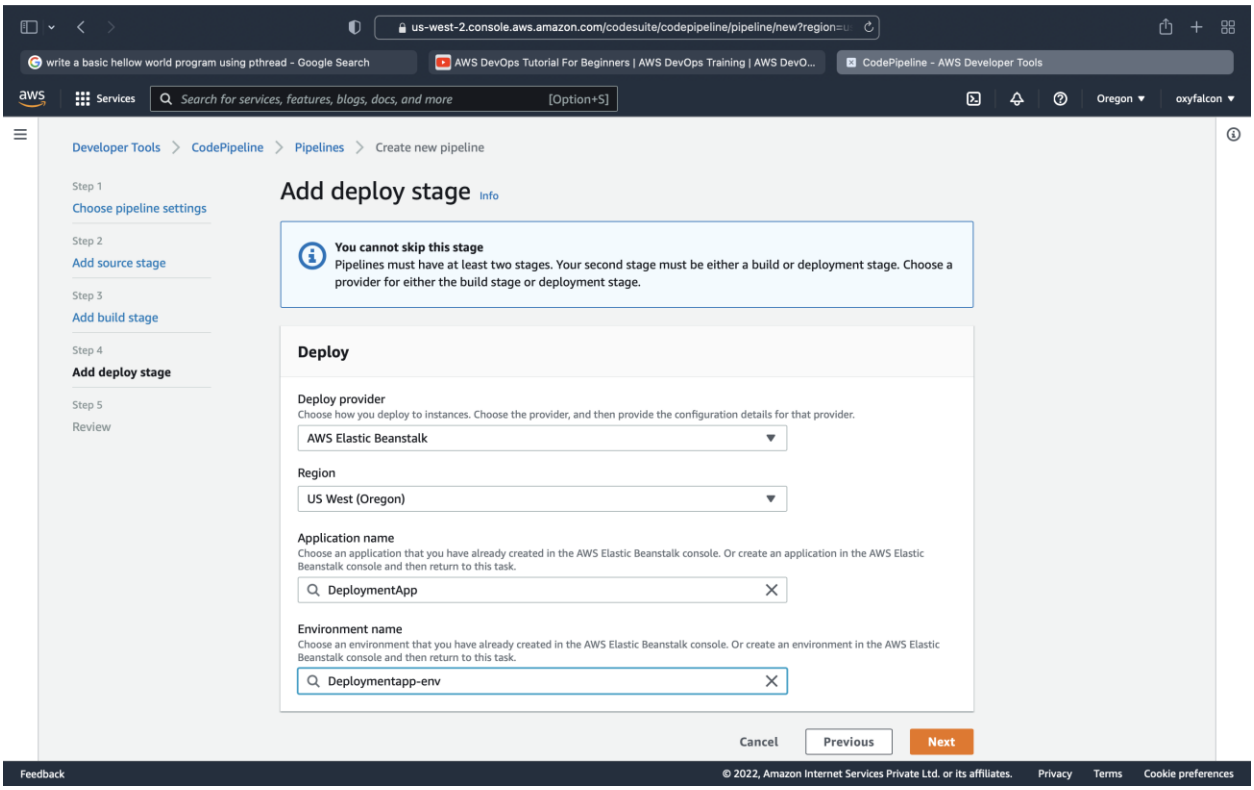
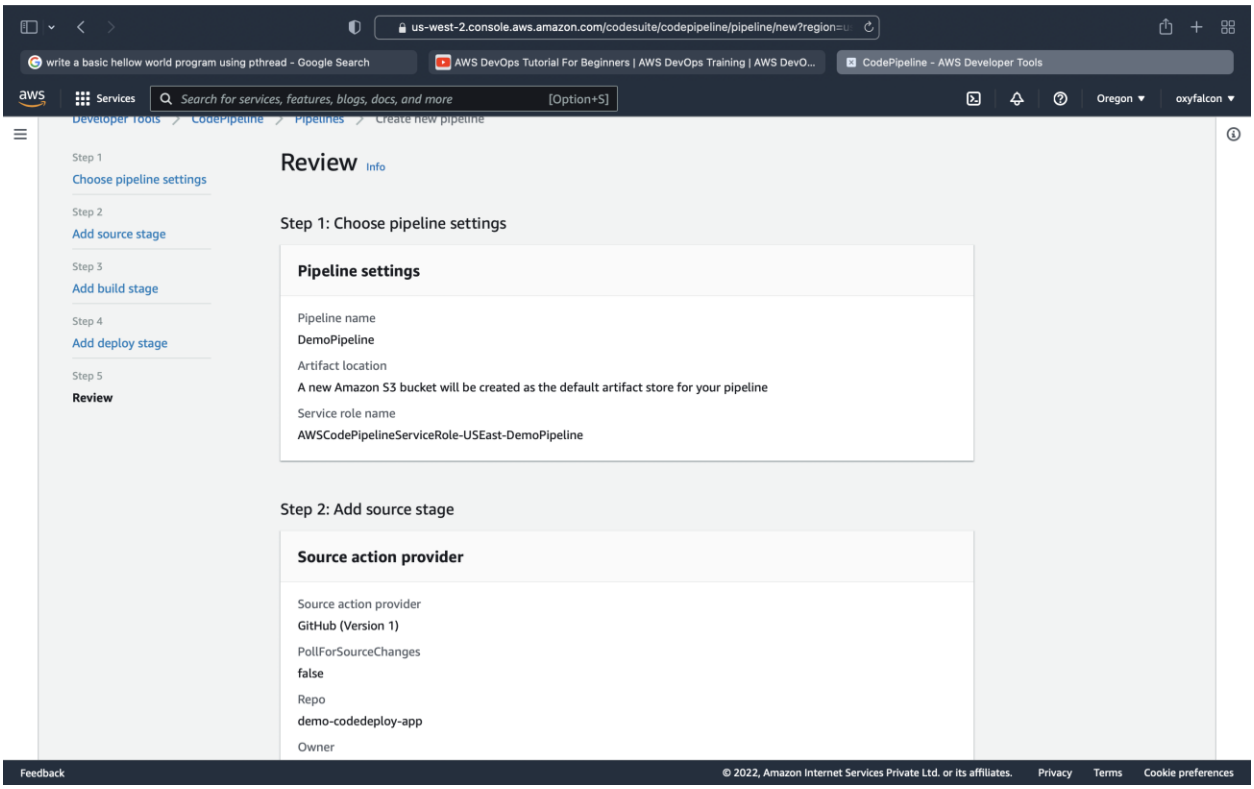
Creating a pipeline using CodePipeline






us-west-2.console.aws.amazon.com/codesuite/codepipeline/pipeline/new?region=
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Developer Tools > CodePipeline > Pipelines > Create new pipeline
Step 1
Choose pipeline settings
Step 2
Add source stage
Step 3
Add build stage
Step 4
Add deploy stage
Step 5
Review
Review Info
Step 1: Choose pipeline settings
Pipeline settings
Pipeline name
DemoPipeline
Artifact location
A new Amazon S3 bucket will be created as the default artifact store for your pipeline
Service role name
AWSCodePipelineServiceRole-USEast-DemoPipeline
Step 2: Add source stage
Source action provider
Source action provider
GitHub (Version 1)
PollForSourceChanges
false
Repo
demo-codedeploy-app
Owner
Feedback
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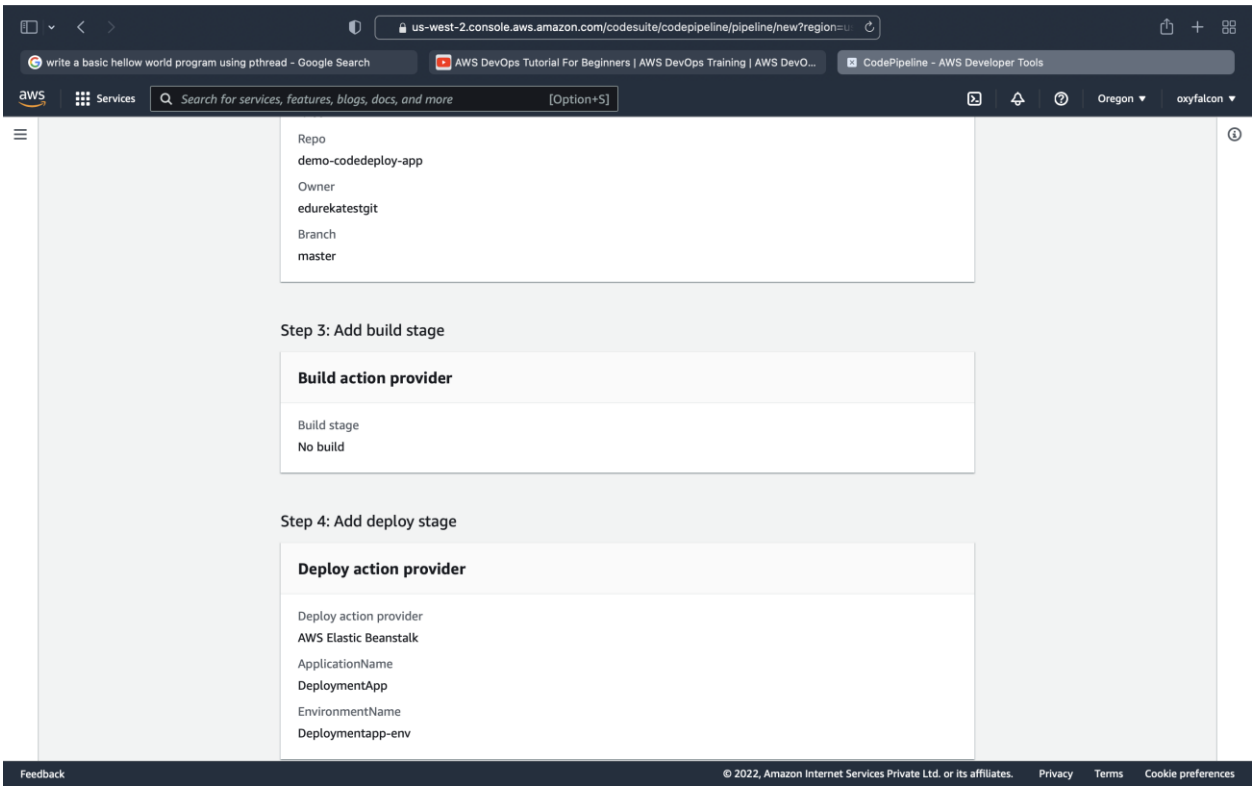
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Repo
demo-codedeploy-app
Owner
edurekatestgit
Branch
master
Step 3: Add build stage
Build action provider
Build stage
No build
Step 4: Add deploy stage
Deploy action provider
Deploy action provider
AWS Elastic Beanstalk
ApplicationName
DeploymentApp
EnvironmentName
Deploymentapp-env
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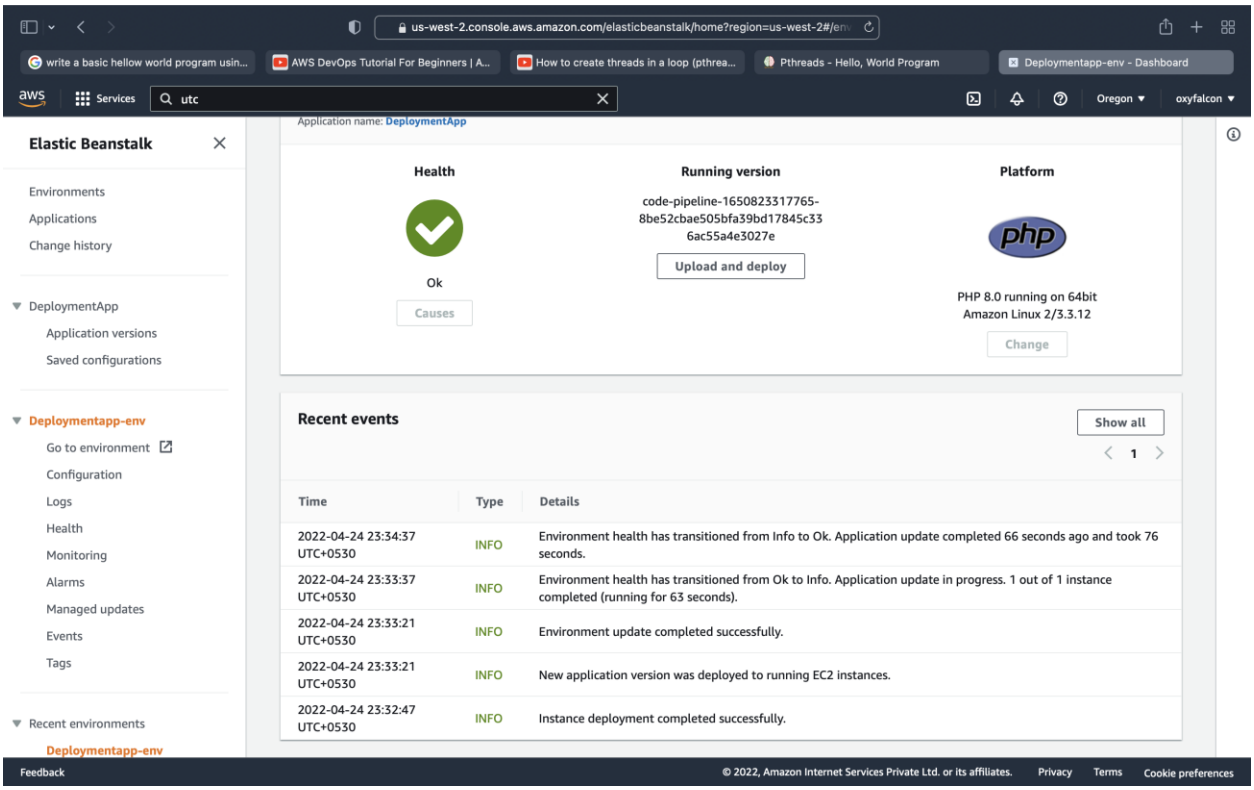
Result


Elastic Beanstalk
Environments
Applications
Change history
DeploymentApp
Application versions
Saved configurations
Deploymentapp-env
Go to environment
Configuration
Logs
Health
Monitoring
Alarms
Managed updates
Events
Tags
Recent environments
Deploymentapp-env
Application name: DeploymentApp
Health
Ok
Causes
Running version
code-pipeline-1650823317765-8be52cbae505bfa39bd17845c33 6ac55a4e3027e
Upload and deploy
Platform
PHP 8.0 running on 64bit Amazon Linux 2/3.3.12
Change
Recent events
Show all
Time
Type
Details
2022-04-24 23:34:37 UTC+0530
INFO
Environment health has transitioned from Info to Ok. Application update completed 66 seconds ago and took 76 seconds.
2022-04-24 23:33:37 UTC+0530
INFO
Environment health has transitioned from Ok to Info. Application update in progress. 1 out of 1 instance completed (running for 63 seconds).
2022-04-24 23:33:21 UTC+0530
INFO
Environment update completed successfully.
2022-04-24 23:33:21 UTC+0530
INFO
New application version was deployed to running EC2 instances.
2022-04-24 23:32:47 UTC+0530
INFO
Instance deployment completed successfully.
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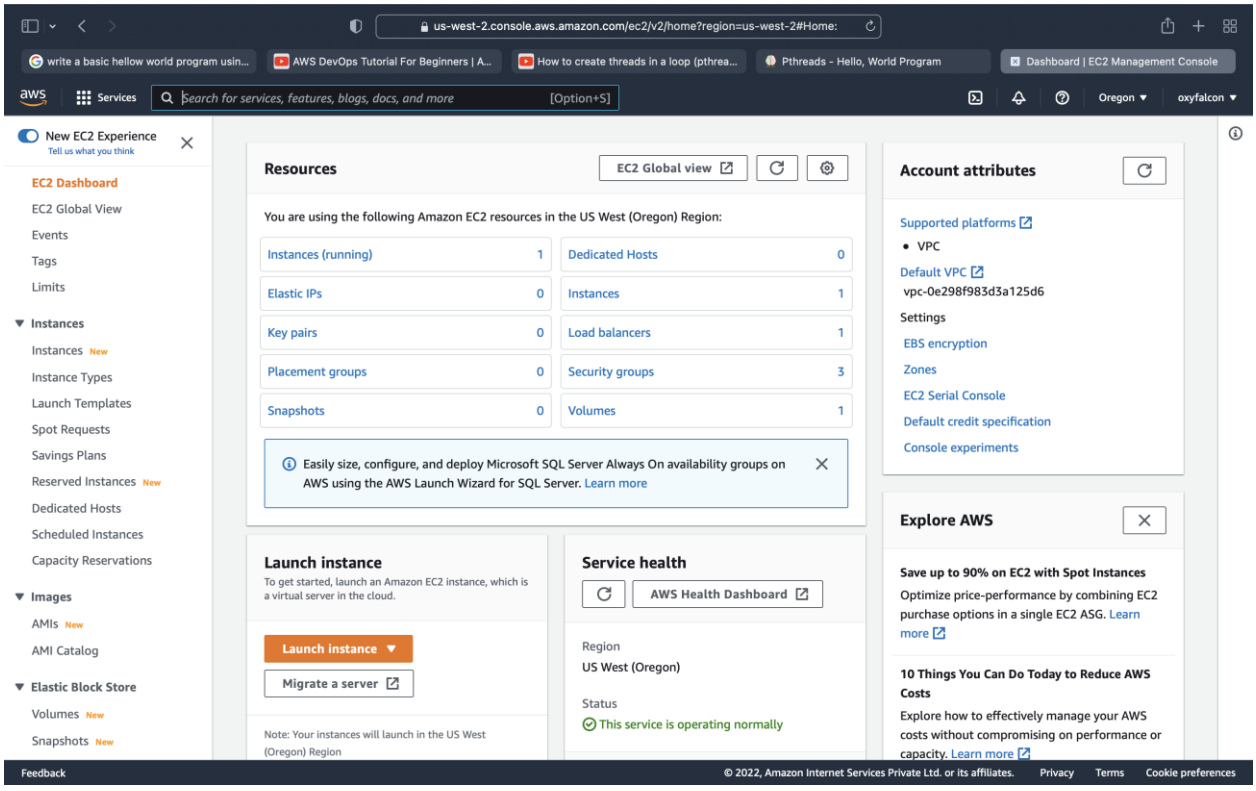
New EC2 Experience
Tell us what you think
EC2 Dashboard
EC2 Global View
Events
Tags
Limits
Instances
Instances New
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances New
Dedicated Hosts
Scheduled Instances
Capacity Reservations
Images
AMIs New
AMI Catalog
Elastic Block Store
Volumes New
Snapshots New
Resources
EC2 Global view
You are using the following Amazon EC2 resources in the US West (Oregon) Region:
Instances (running) 1
Dedicated Hosts 0
Elastic IPs 0
Instances 1
Key pairs 0
Load balancers 1
Placement groups 0
Security groups 3
Snapshots 0
Volumes 1
Easily size, configure, and deploy Microsoft SQL Server Always On availability groups on AWS using the AWS Launch Wizard for SQL Server. Learn more
Launch instance
To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.
Launch instance
Migrate a server
Note: Your instances will launch in the US West (Oregon) Region
Service health
AWS Health Dashboard
Region
US West (Oregon)
Status
This service is operating normally
Account attributes
Supported platforms
VPC
Default VPC
vpc-0e298f983d3a125d6
Settings
EBS encryption
Zones
EC2 Serial Console
Default credit specification
Console experiments
Explore AWS
Save up to 90% on EC2 with Spot Instances
Optimize price-performance by combining EC2 purchase options in a single EC2 ASG. Learn more
10 Things You Can Do Today to Reduce AWS Costs
Explore how to effectively manage your AWS costs without compromising on performance or capacity. Learn more
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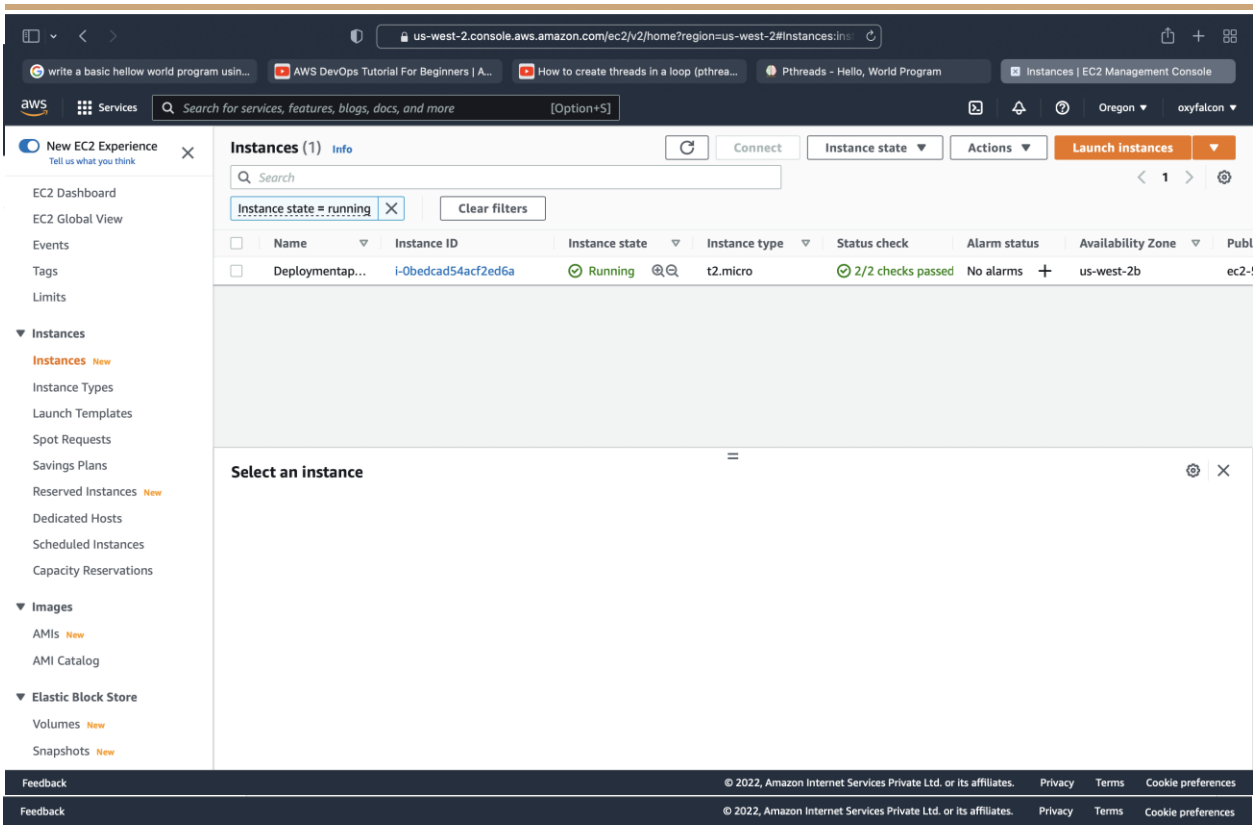
us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#Instances:ins
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How to create threads in a loop (pthrea...
Pthreads - Hello, World Program
Instances | EC2 Management Console
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Instances
Instances New
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances New
Dedicated Hosts
Scheduled Instances
Capacity Reservations
Images
AMIs New
AMI Catalog
Elastic Block Store
Volumes New
Snapshots New
Instances (1) Info
Connect
Instance state
Actions
Launch instances
Search
Instance state = running
Clear filters
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Deploymentap...
i-0bedcad54acf2ed6a
Running
t2.micro
2/2 checks passed
No alarms
us-west-2b
Select an instance
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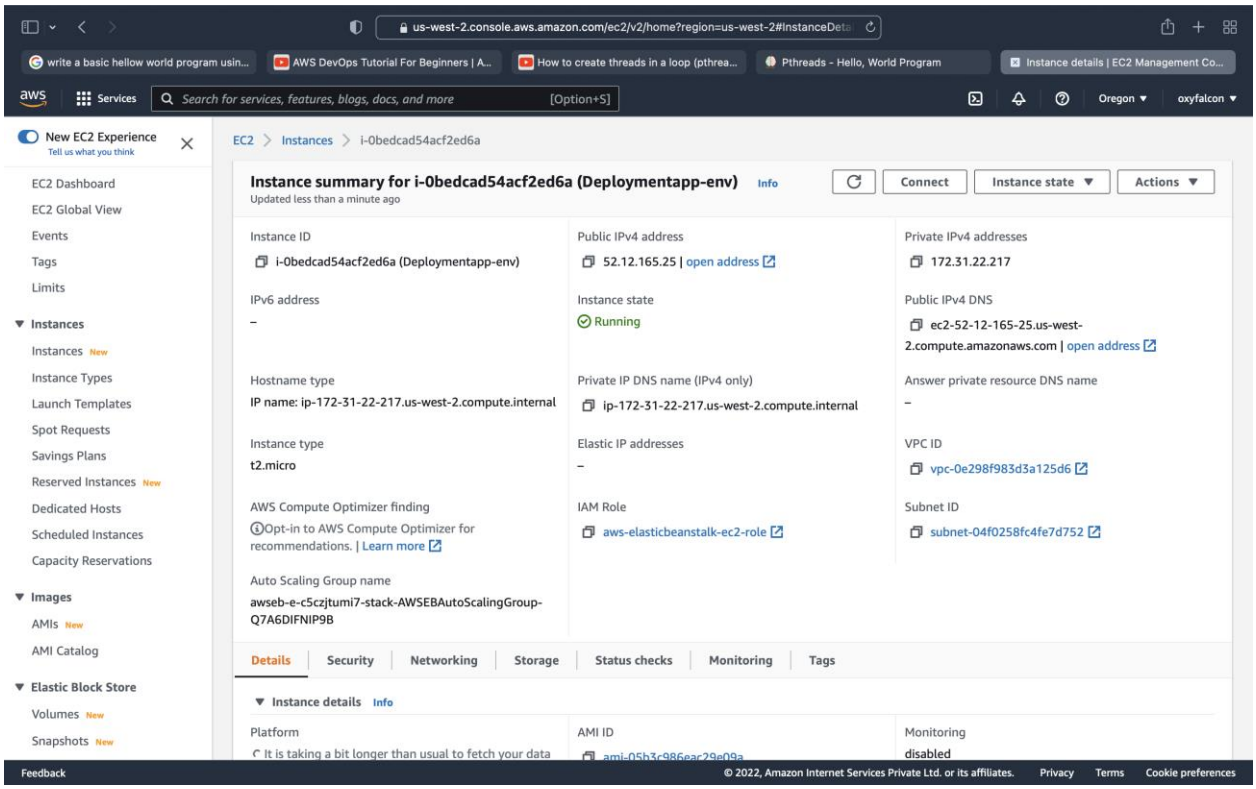
us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#InstanceDeta
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Tell us what you think
EC2 Dashboard
EC2 Global View
Events
Tags
Limits
Instances
Instances New
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances New
Dedicated Hosts
Scheduled Instances
Capacity Reservations
Images
AMIs New
AMI Catalog
Elastic Block Store
Volumes New
Snapshots New
EC2 > Instances > i-0bedcad54acf2ed6a
Instance summary for i-0bedcad54acf2ed6a (Deploymentapp-env) Info
Updated less than a minute ago
Connect
Instance state
Actions
Instance ID
i-0bedcad54acf2ed6a (Deploymentapp-env)
Public IPv4 address
52.12.165.25 | open address
Private IPv4 addresses
172.31.22.217
IPv6 address
–
Instance state
Running
Public IPv4 DNS
ec2-52-12-165-25.us-west-2.compute.amazonaws.com | open address
Hostname type
IP name: ip-172-31-22-217.us-west-2.compute.internal
Private IP DNS name (IPv4 only)
ip-172-31-22-217.us-west-2.compute.internal
Answer private resource DNS name
–
Instance type
t2.micro
Elastic IP addresses
–
VPC ID
vpc-0e298f983d3a125d6
AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations. | Learn more
IAM Role
aws-elasticbeanstalk-ec2-role
Subnet ID
subnet-04f0258fc4fe7d752
Auto Scaling Group name
awseb-e-c5czjtumi7-stack-AWSEBAutoScalingGroup-Q7A6DIFNIP9B
Details
Security
Networking
Storage
Status checks
Monitoring
Tags
Instance details Info
Platform
It is taking a bit longer than usual to fetch your data
AMI ID
Monitoring
disabled
Feedback
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