



Aspire empowers a leading learning company to transition to Cloud and manage their end-to-end infrastructure in AWS



*attention.
always.*



About the Customer

Pearson is a next-generation learning company which does business in 125 countries. They help students/learners by providing new ideas, new ways of thinking, and new ways of interacting to create innovative learning solutions.

The Challenge

The customer, in order to provide the learning solutions to the students without interruptions, had used Docker containers with Elastic Beanstalk setup. The team was performing deployment of Docker Images to Elastic Beanstalk using JAR and need to check whether the latest packages are deployed to the Container Instances. Due to increase in number of requests, manual scaling needed with periodical metrics; they faced the following business and technical challenges with their existing setup:

- » Manually scaling the Beanstalk instances and checking the newly scaled instances are deployed successfully with the new packages, which were time and resource-consuming
- » JAR used for Beanstalk deployment got outdated and not updating the beanstalk configuration, so they have to do it manually
- » Manual changes delayed the development activity which made an impact in deadlines
- » To reduce the downtime in case of deployment failure, two beanstalks are used for Blue/green processes which are done manually. Even this process needs domain change which will cause downtime
- » No notification on deployment failure in Jenkins job setup, Job is marked as success even though elastic beanstalk fails
- » The customer was in need of an automated one click deployment, Auto scaling solution that can reduce the time and resource-consuming and also notification on deployment status.



Aspire's Solution

Aspire Systems DevOps team designed End-to-End infrastructure using Elastic container service - Fargate(serverless), ECR, Code deploy and ALB which will completely automate deployment.

GitHub actions:

- » Migrated the CICD from Jenkins to GitHub Actions
- » Replaced AWS Secret/access key with AWS IAM role in GitHub workflow – Using OIDC
- » Completely automated CICD – Job trigger on push (to main branch) / manual workflow
- » Trigger the automation test suite on successful deployment - workflow dispatch
- » Sonar and CodeQL on Pull-request and on push to main branch in separate workflow

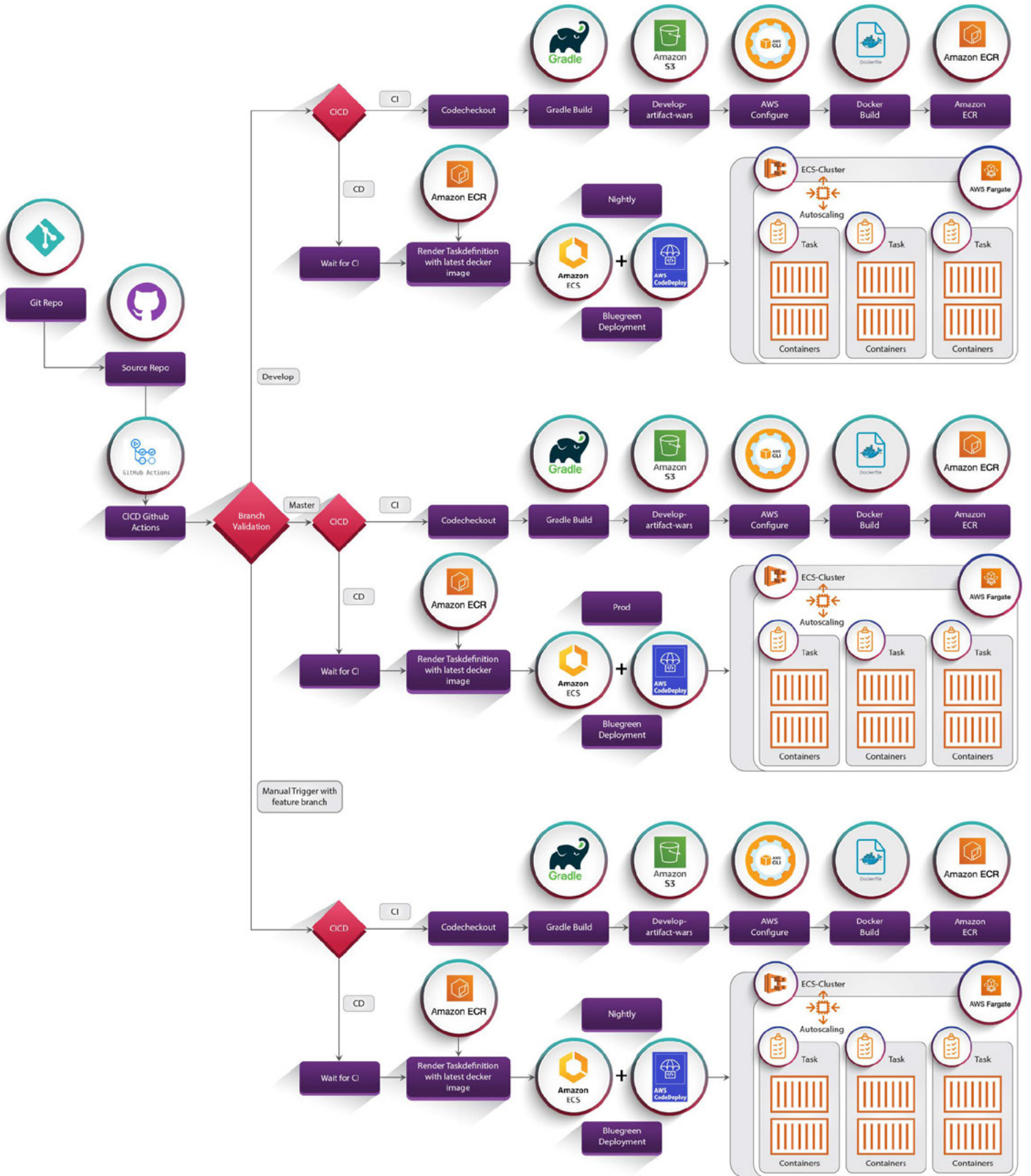
Terraform: Used for Dynamic Provisioning of all the required resources for the application

ECS-Fargate:

- » Serverless
- » Autoscaling based on CPU utilization
- » Fargate Datadog setup - Monitoring
- » Logs stream to CloudWatch
- » Secrets - Parameter store/secret-manager

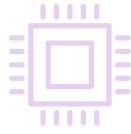
Code Deploy:

- » Blue Green deployment
- » ALB to distribute traffic
- » Mail notification for deployment status using SNS
- » Migration from EBS to ECS-FARGATE, which helped them in handling traffic during peak hours with no downtime and no manual changes





Technology Snapshot



» **TOOLS:**

- » **IAS:** Terraform
- » **CI/CD:** GitHub Actions
- » **CODE QUALITY CHECK:** SonarQube, CodeQL
- » **SECRET MANAGEMENT:** Parameter store/
secret-manager
- » **LOG MANAGEMENT:** CloudWatch-log group
- » **Artifact/Image:** ECR, S3
- » **Notification:** SNS
- » **Domain:** Route 53
- » **PLATFORM:**
- » ECS [Elastic container Service]
- » **LANGUAGES:** Java





Technology Snapshot

- » Aspire's Infra plan helped the customer to run application **without manual intervention**
- » Aspire's Deployment Workflow helped the team to **deploy on one click**
- » Using **ECS-FARGATE**, reduction in manual maintenance achieved
- » Deployment time reduced to **15 minutes without downtime**
- » **70-80% reduction in manual tasks** performed during deployment
- » More than **70% reduction** in critical application crashes by auto scaling.
- » **50% reduction** in failure rate of deployment

Future Impact

Aspire DevOps team ensured the design is durable with increase in number of requests/user count. The team also made sure that the flow is easily adaptable and meets the standard.



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