



Aspire's dynamic DevOps solution helped a global education firm achieve faster time-to-market and reduced downtime in deployment

About The Customer

Our customer is a leading international education company. It is a global advisory and educational management firm, and is the largest operator of kindergarten-to-grade-12 schools in the world. The company has its network over 80 schools in over a dozen countries. It works internationally with public and private sector clients on school improvement initiatives.





The Challenge

During this pandemic, most of the schools are operating online which directly increased the usage of the online education portal of the customer. More schools opted to use the online education portal, due to which there was a huge responsibility from the customer to make sure all the public and private schools are able to perform flawless.

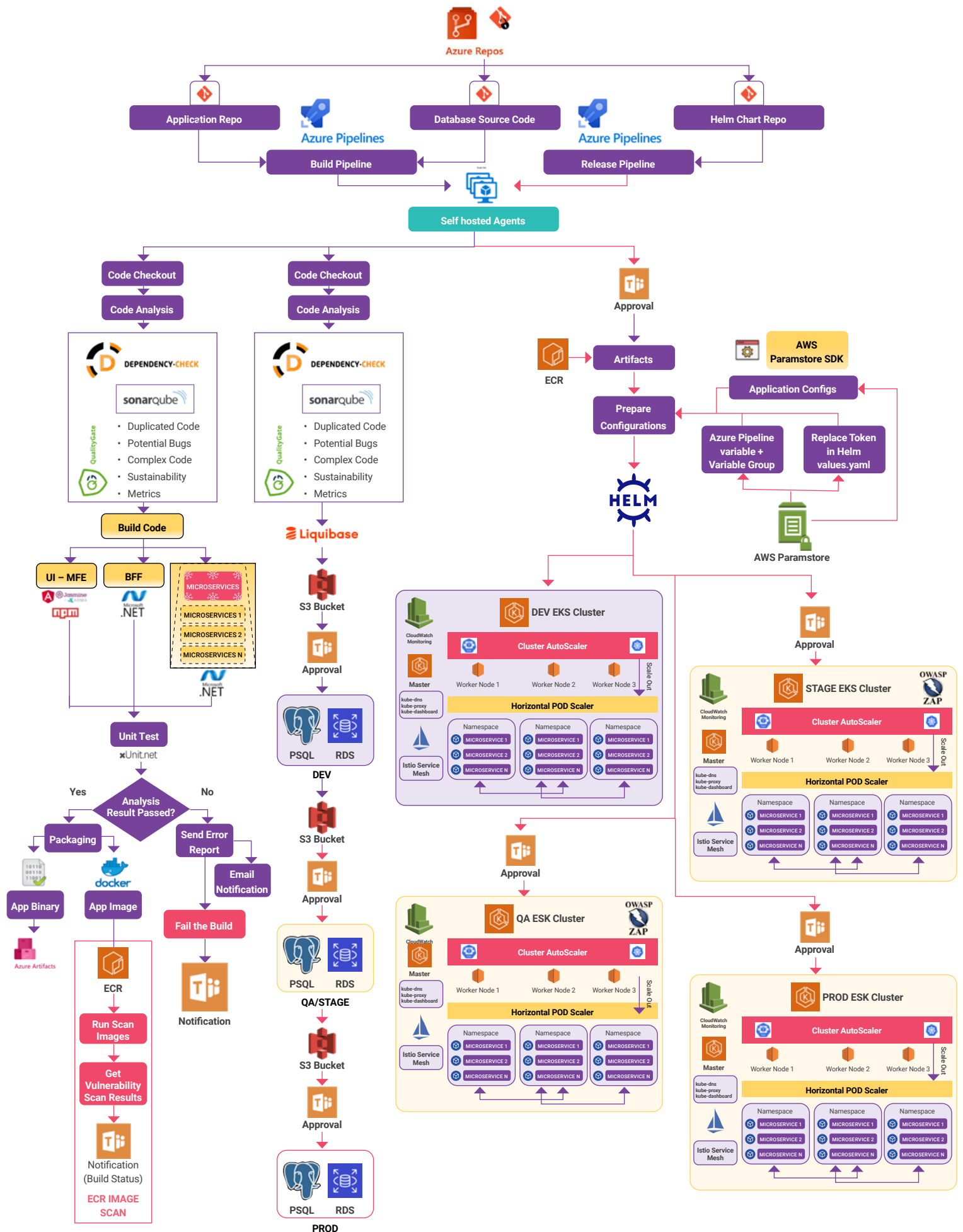
The customer was in need of a Portal comprising of Academic Services, Non-Academic Services, Reporting Services, Customer Relation Management (CRM) system, Back-end Management Services, and other common base framework services like Integration with third-party systems, User, Role & Privilege Management Services, Configuration Services, Workflow Engine, etc.

- The customer expected the Aspire team to design a solution with future vision to make a stabilized platform to handle huge load in a cost-effective way
- Expected a zero downtime during the deployments
- Reduce load times, save bandwidth, and speed responsiveness
- Security centric system design





Architecture Diagram





Aspire's Solution

The Aspire team has implemented a release-based branching model which helps the developers to easily collaborate with other teams without any code conflicts

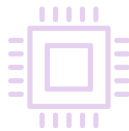
The team ensured that the code is bug free, without vulnerabilities and meets the coding standards using the tools SonarQube and OWASP dependency check

The vulnerability report generated during the SonarQube code analysis are sent as an email attachment to the developers for their reference

- The team has a multi-environment setup comprising of DEV, QA, STAGE and PROD with dynamic configuration handled in pipeline setup. The Pipeline setup was seamless without manual intervention expect for approval on deployment phase to the environments with proper rollback feature enabled
- All the Sensitive data in the pipeline flow was made sure that it is secured and encrypted
- Frontend applications were deployed as micro frontend services (MFE), which help the development team to collaborate and work independently
- The build artifacts for UI based application were properly versioned and maintained in a centralized location like Azure Artifacts in a secured way
- The customized NuGet dependency packages were stored in a centralized Azure artifact feed location with access restricted only to the developers using LDAP
- The application specific docker images were stored in ECR with image scanning enabled for vulnerability check
- To handle huge load in a cost-effective way and to reduce the man power, the team had designed a solution to use AWS EKS cluster with auto scaling of nodes and pods based on load
- The Aspire team also ensured zero percent downtime, using Istio's service mesh configuration along with the feature blue green based deployment with helm charts
- For fast, scalable and durability of real time streaming data pipelines and real time streaming applications have implemented an approach involving AWS Kafka



Technology Snapshot



CICD Tools:

- Azure DevOps

Code Quality Check Tools:

- SonarQube, OWASP ZAP

Artifact Management:

- Azure Artifact, S3 bucket

Secret Management:

- AWS SSM

Deployment Platform:

- AWS EKS, CloudFront, Elastic Beanstalk

Log Management:

- CloudWatch, ELK

Queuing Service

- AWS Kafka

Service Mesh

- Istio

Languages

- .NET, Angular & Java



Result and ROI

- Aspire's automation in pipelines help the customer to achieve zero downtime during deployments and reduced the manual work.
 - The containerization of the applications enabled the team to handle large number of end users at ease.
 - The end-to-end flow was completely secured and we gained the customer's trust.
 - Sprint Spill over reduced to zero
 - **45%** reduction in deployment cost
 - With automation features, productivity increased by **33%**
 - Improved code coverage of **80%** by automation review process
 - Achieved **20%** reduction in defect leakage into production driven by increase in build frequency
 - Reduced time to market by **40%**
 - **40%** reduction in time to identify and mitigate bugs
 - **200%** increase in release frequency
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Future Impact

- Aspire team ensured that a proper disaster recovery setup is implemented. The design ensured that the customer can handle enormous number of end users at ease.
- The team also implemented industry best practices across the development and also the workflow. Thus implemented a proper DevOps process and culture.



About Aspire



Aspire Systems is a global technology services firm serving as a trusted technology partner for our customers. We work with some of the world's most innovative enterprises and independent software vendors, helping them leverage technology and outsourcing in our specific areas of expertise. Our core philosophy of "Attention. Always." communicates our belief in lavishing care and attention on our customer and employees.

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