Providing frontline COVID-19 patient aftercare with secure website

When NHS subsidiary, Arden & GEM Commissioning Support Unit took on the adoption, maintenance and on-going development of the national COVID-19 support website, it faced several challenges. The website had been built in a temporary environment, supporting only a small number of users and lacking a robust security framework.

Using Insight's expertise, the website was migrated to the AWS platform, which allowed for an unlimited number of patients without loss of performance or reliability. The move also made the website and app more adaptable so that more features could be added in-line with the changing needs of patients.

The Challenge

NHS Arden & GEM Commissioning Support Unit (Arden & GEM) took on support of a UK-wide NHS website as an information resource for patients that test positive for COVID-19. Alongside the website, Arden & GEM created a gated app that enables patients to track their own recovery with a COVID-19 sponsor and speak to a support worker if needed. As well as providing support to patients, the app enables the NHS to collate data and analysis on patient recovery time and on long COVID symptoms.

However, the initial website had been deployed into a temporary environment, which could only support a small number of patients. There was a requirement to move the website to an AWS Platform as a Service (PaaS) to allow it to evolve as needed and support an unlimited number of COVID-19 positive patients without putting patient data at risk or impacting performance.

When migrating the website to the new platform, Insight had to keep its functionality intact while adapting the code to take advantage of the latest AWS features. As a priority, Insight needed to ensure the website and app could meet the required security standards for hosting large amounts of confidential patient data. It was also necessary to make the website scalable so that it could support rising numbers of COVID-19 patients. Finally, Insight needed to remove several single points of failure in the existing design, any of which could have led to the website going down.

As keeping the website in the test environment was an ongoing security risk, Arden & GEM asked Insight to move it to AWS as quickly as possible, optimising the website for AWS to ensure it was secure, resilient, and scalable.

> "Insight took the time to understand the issues and concerns. They acted as a technical friend to help us shape the platform's cloud first roadmap. Insight seamlessly integrated the new AWS technologies in a secure and scalable manner, ensuring service availability and reducing our risk. We're looking forward to continuing working together as we refactor and grow the solution."
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> **Chris Reynolds**
> Head of Systems Development & Application Services, NHS Arden & GEM Commissioning Support Unit.

Quick Overview

- Arden & GEM, a subsidiary of the NHS, adopted a COVID-19 support website and app for the NHS, building and hosting it locally in a test environment.

- Arden & GEM urgently needed to shift the website and app to the AWS cloud platform to make it more secure, resilient, and scalable.

- Insight implemented a parallel two-part solution. The first part was to replicate the existing website in the new environment so that the NHS could launch the new website as soon as possible. The second part was to refactor the website in order to optimise it.

The Solution

Insight took a two-part approach to the migration.

The first stage was a lift and shift migration, to accelerate the move from the temporary environment and launch the new website as soon as possible. As there were two temporary environments (test and live), Insight moved the test environment first. Once it had transferred the test environment to AWS, it conducted discovery and analysis exercises before starting on the second stage.

The second stage was to refactor the two environments (restructuring their code without changing their functionality) so that they could run efficiently on a managed AWS platform. Actions to make the environments suitable for running on AWS PaaS included:

- Moving databases to AWS Relational Database Service (RDS).

- Ensuring that application servers could automatically scale to meet demand.

- Adding cache layers to improve performance and security and to remove load on the servers (saving costs).

- Adding advanced firewalling to optimise security.

- Implementing Amazon CloudWatch to automatically monitor website performance.

- Adding Amazon Simple Email Service (SES) to provide email functionality within the app.

Once the test environment was successfully refactored and tested, Insight refactored the live environment.

The Benefits

- Insight quickly moved the COVID-19 support website and app to the AWS managed platform, removing the ongoing security risk.

- Once refactored and moved to AWS, the website and app could be scaled up to support the increasing number of users.

- The move to AWS also improved the resilience of the website, by removing single points of failure.

- The app performed better after the move, thanks to Insight's improvements, including the addition of a cache layer.

- The website and app now use auto-scaling to make the most efficient use of AWS PaaS, saving costs and freeing up budget for the NHS to focus on other areas.

- As the website is now on a managed platform, Arden & GEM can focus on evolving the website and app and improving the patient experience, rather than managing infrastructure.

The Results Highlights

Insight refactored and migrated NHS Arden & GEM Commissioning Support Unit's live and test environments to the AWS platform within six weeks.	The website and app can now support a large number of COVID-19 positive patients and can be adapted to support future patient needs.	The website security profile is greatly improved, and it now exceeds NHS data security standards.	The optimised website makes efficient use of AWS PaaS, leading to streamlined operating costs.

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