



“This was an excellent team effort. It was quite impressive to see one team pulling together at both project management levels and the technical delivery side. This was a great example of collaboration, with many vendors working together to get this over the line.”

Ian Phoenix
Delivery Director,
Home Office

Home Office completes one of the UK Government's largest cloud transformation projects

Capgemini plays a key role in Amazon Web Services cloud platform implementation, enabling much quicker and efficient digital improvements for UK Immigration Service

The Context

The Home Office is fundamental to the security and safety of the UK, acting as the lead government department for immigration and passports, drugs policy, crime, fire, counterterrorism and the police.

New technology is transforming the way immigration services are delivered; making it faster and easier for members of the public to apply for visas and for Home Office staff to make millions of decisions each year. These systems of critical national importance are dependent on a complex, cloudbased infrastructure.

Overview

Customer: Home Office

Industry: Public sector

Location: UK

Client Challenges / Business Need: the existing hosting platform lacked the scalability and stability necessary to support the Home Office's ambitious transformation agenda

Solution-at-a-glance: Capgemini provided a team of experts to manage the migration from the client's previous supplier to the AWS platform, and a second team who were responsible for maintaining business continuity

Results:

- Build times reduced from two days to one hour
- 35% reduction in weekly incident volume with resolution time reduced from 480 to 90 minutes
- New development environment built in less than four hours when this was previously two weeks
- End-to-end environment build time reduced from four weeks to two days
- Forum Sentry no longer used for certificate management, saving £40K per year
- AWS security group used instead of licensed firewall product, saving £60K per year
- Peak card transaction throughput of 2,000 per hour against 1,200 with previous system

The Challenge

Immigration Technology, the Home Office team responsible for delivering the digital future of immigration, identified that its existing hosting platform lacked the scalability and stability necessary to support its ambitious transformation agenda. Faced with the need to improve delivery efficiency, test capabilities and service performance, the team selected the Amazon Web Services' (AWS) hosting platform and chose Capgemini as its migration partner.

With the existing architecture consisting of more than 1,400 servers containing a vast amount of data, 27 data hosts and 36 external interfaces, this was not a simple lift and shift; it involved the migration of a very large infrastructure and vast amounts of data whilst maintaining continuity of business services.

The Challenge

Capgemini worked collaboratively with the Home Office Immigration Technology team to ensure that the migration opportunity delivered innovations that provide greater reliability and ability to scale, earlier integration testing and more efficient use of the AWS cloud resources, whilst at the same time providing a support team to maintain business as usual (BAU).

The support team and migration team comprised circa 25 Capgemini platform engineering resource including AWS specialists, DevOps and SecOps resource.

Strong Delivery Management Reduces Risk and Accelerates Transition

To achieve a smooth transition, the integrated team created a consolidated migration plan that broke the technology landscape down into distinct end-to-end business flows. This allowed the team to be agile in its approach from an early stage, identifying potential problems and developing mitigation strategies. This approach of continual evaluation and improvement made it possible to make the most suitable technology choices.

By creating such a detailed migration schedule, with almost minute by minute actions, it was possible to anticipate exactly when specific internal or third party resources would be required and to ensure that they were available as necessary. A project command centre acted as a single point of management, maintaining a consistent approach with strong governance to provide vital support and maintain confidence throughout the process. Following six dress rehearsals, this robust and agile delivery methodology delivered the transition in five days and integrated ten third party applications whilst transitioning six business services. This was achieved without any disruption to the business; a testament to the planning and preparation of the collaborative team. Despite the huge scope, no high priority incidents were raised by the operations team following commencement of service into the early Live Support phase. As a result early Life Support was removed after just one week instead of the planned four.



The AWS infrastructure was built using Terraform, creating hardened AWS deployment patterns in code that was then used to deploy the services. The use of AWS native services for elements such as firewalls (moved to Security Groups); routers (moved to Routing Tables); load balancers (moved to ELBs) and managed databases (moved to RDS) not only improved the time to deliver but also made operational support of the service simpler. Building infrastructure components as a code means that new infrastructure can be delivered 50 per cent faster than with the previous hosting provider. Core technical releases are now containerised, guaranteeing that the code will work when promoted to higher environments.

Delivering Business Benefit and Return on Investment

As a result of this careful planning and management, the team was able to successfully achieve the migration without any significant incident, scaling up to 4,500 users in five weeks, winning their approval and providing confidence that the organisation now has the agility to cope with the shifting demands being placed upon it.

The number of support incidents has dramatically reduced following the migration and those that occur can be resolved much more quickly, creating significant savings in terms of system maintenance and making it easier to action new infrastructure requests. For example:

- the cycle time from initial code development to launch in the integration environment has been reduced from one day to six minutes
- and, with new centralised operational tooling for validation, verification and testing, application code deployment has been reduced from 45 minutes to five minutes.

Security and resilience are, of course, two essential requirements of the AWS platform. To provide the necessary availability, the new architecture is built around three availability zones, meaning that a localised failure can be handled with no detrimental impact on performance. All data is encrypted both when stored and as it flows between applications, with independent security specialists having tested the system for penetration resistance to ensure that it is a robust, resilient platform for the future.

Key Benefits of the New Platform

- On-demand deployment of big data infrastructure has seen environment build times reduced from two days to one hour
- 35 per cent reduction in weekly incident volume with resolution time reduced from 480 to 90 minutes

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An Innovative Platform Supporting New Services

The redesigned and simplified infrastructure has improved the stability and resilience of the Home Office's cloud environment, enhanced reliability of deployment and improved the security of the production service. It has also increased the ability to scale and to optimise infrastructure costs. This has resulted in more efficient and better protected digital services, ready and available for operational business and live services. For example, the organisation can now process 5,000 priority biometric cases; 3,000 biometric travel documents; 44,000 biometric residence permits and 8,000 initial accommodation cases per month.



This project really demonstrates our ability to deliver value to the customer; we on-boarded security cleared teams rapidly, while working in a pressurised environment, working collaboratively to deliver a very successful programme."

Gary van Heerden
Account Executive,
Capgemini UK

It has also opened up new possibilities for the Home Office, enabling greater interaction and information exchange with other government bodies. Previously a request for access from another government organisation was expected to take months to address, as any changes required significant time and resource to enact. Now, with the simplified infrastructure, boundary control design is future proof which will allow the Home Office to integrate with other departments with minimal changes. What's more, change can be delivered much more quickly as teams within the organisation have been empowered to become self-reliant for many requirements.

Today the Home Office has a much more efficient technology infrastructure, can respond to requests faster and is able to share the lessons learned across the wider government to improve collaboration and inform other transformation initiatives.

With the move to AWS, the Home Office has undertaken one of the largest cloud transformation projects in UK government, and one of the largest UK public sector implementations of AWS technology to date. This places the project in the top 25 change programmes, which has delivered the objective of transforming immigration and visa services. Led by Civil Servants at the Home Office, and supported by Capgemini, Home Office's long standing partner, the new platform has given Immigration Technology the foundations for delivering lasting transformation that meets the needs of government and citizens in the future.

The Collaborative Approach:

The Home Office and Capgemini jointly ensured that this was a "one team" project from the outset, with close collaboration between hybrid teams comprising civil servants, contractors, Capgemini staff and third parties at all stages. Capgemini staff were tightly integrated with the immigration teams, working on-site with the client, and providing security-cleared experts at short notice and as required, ensuring agile ways of working at all times.

The Home Office's business knowledge, its commitment to innovation, as well as continual improvement to processes and procedures, were key to the project's success. The Home Office management team was heavily involved in the migration, and they were dedicated to meeting their commitment to senior stakeholders to meet aggressive deadlines while ensuring that highest quality levels were maintained. During the AWS migration project, the client moved offices from Fleet Street to East Croydon. Despite the disruption, the teams still delivered successfully whilst also ensuring no disruption to usual business activity.

For more information on this project, please contact:

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About Capgemini

A global leader in consulting and technology services, Capgemini is at the forefront of innovation to address the entire breadth of clients' opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. Capgemini is driven by the conviction that the business value of technology comes from and through people. It is a multicultural company of 200,000 team members in over 40 countries. The Group reported 2016 global revenues of EUR 12.5 billion.

Learn more about us at
www.uk.capgemini.com

About Home Office

The first duty of the government is to keep citizens safe and the country secure. The Home Office has been at the front line of this endeavor since 1782. As such, the Home Office plays a fundamental role in the security and economic prosperity of the United Kingdom. The Home Office is a ministerial department, supported by 28 agencies and public bodies, and is the lead government department for immigration and passports, drugs policy, crime, fire, counter-terrorism and police.

Further information is available at:
www.gov.uk