

# Hitachi Capital (UK) PLC AWS Migration Reference

## Requirements

	Completed
AWS Customer name	Hitachi Capital (UK) PLC
APN Partner name	Infinity Works

## What was the challenge?

Hitachi Capital (UK) PLC provides a consumer credit facility to individuals and via retailers to help drive retail sales, by enabling people to spread the cost of buying large items.

Hitachi Capital (UK) PLC faced the challenge of needing to migrate a mission-critical loan platform to a new platform while continuing to deliver a range of finance products, and also to add a cutting edge user experience to customers across multiple revenue stream channels in a competitive market.

## How was AWS leveraged?

### High-level details

A migration to AWS was designed and executed to integrate within the existing on-premises network to increase engineering efficiency. By migrating to managed services within AWS, operational overhead and the lead time of making new infrastructure and services available has also been reduced.

The migration was implemented using a phased approach, using a small subset of AWS technology in the first and second phases, then using additional AWS services in subsequent phases as the number of teams increased and new application integration patterns were required.

### Technical details

The existing Java Spring services running within on-premises infrastructure were re-architected into a front-end JavaScript application and TypeScript microservices using a serverless architecture on AWS. Adoption of JAMStack (JavaScript, APIs and Markup) enabled high performance websites delivered using a CloudFront distribution backed by an Amazon S3 bucket containing the application code.

To reduce the risks associated with a migration, a single customer acquisition channel was selected. Within that channel, to allow early validation of the technical design, a small group of retailers were initially migrated based on their narrow range of required features and low customer volumes. As features went live and the technical stack was validated, additional retailers were gradually migrated onto the platform.

AWS CloudFormation was used to deliver infrastructure as code, allowing consistency between production and non-production environments. Serverless Framework was used to automate the deployment of the AWS Serverless elements.

An automated CI/CD pipeline was created that allowed for cross-account deployments using AWS CodeBuild and AWS CodePipeline. This allowed segregation between production and non-production accounts, reducing risks associated with shared environments, and improving the security of the solution.

To store Docker images used throughout the build and deployment processes, AWS ECR (Elastic Container Registry) was used.

To integrate with systems running within the on-premises network, AWS API Gateway was used, in conjunction with Amazon Virtual Private Cloud (VPC)-based services to enable secure connectivity across multiple AWS accounts.

Queue systems were migrated from relational database-backed queues integrated with the existing Java Messaging System (JMS), to Amazon Simple Queue Service (SQS).

Complex application logic was migrated from state machines represented within database logic to AWS Step Functions in order to reduce the number of moving parts in the solution and to make it easier to visualise the status of workflows, and to move complex retry logic into the infrastructure layer.

Application authentication was migrated to AWS Cognito. This solution provides cryptographically signed JWTs (JSON Web Tokens) that meet Hitachi Capital (UK) PLC's security requirements, and is well-integrated into the AWS Serverless suite of tools such as API Gateway, reducing application complexity by moving logic into the infrastructure layer.

Analytics for the solution was migrated from regular database extracts, to providing near real-time streams of data using AWS Database Migration Service to collect change data and push it to Amazon Kinesis, where it is consumed by multiple Hitachi Capital (UK) PLC teams.

## Outcomes

Hitachi Capital's ability to deliver new functionality and innovative new products to their customers has been increased by migrating the platform and by selecting application components where skills are commonly available in the marketplace, while the total cost of ownership (TCO) of running the new platform has been kept low by limiting the introduction of IT maintenance overhead due to the use of AWS Serverless architecture.

## Disclaimer

This reference written by Infinity Works does not imply an endorsement of AWS or Infinity Works by Hitachi Capital (UK) PLC.