



## Case Study

### About the Customer

The Joint Nature Conservation Committee (JNCC) are the public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation.

By providing a shared nature conservation service for the UK, JNCC are the mechanism for the UK Government and devolved administrations to pool their resources to obtain evidence and advice on nature conservation and natural capital. By operating at a UK level, JNCC are able to achieve value for money through economies of scale and avoid duplication of effort.

The JNCC operate a large project portfolio including Geological Conservation, Marine Conservation Zones, UK Biodiversity Indicators, Air Pollution and Fisheries Advice amongst others.

More recently, the JNCC started work on the Integrating Tools for Air Pollution Assessment (ITAPA) - which aims to develop a free, online tool based on the Dutch AERIUS product suite, to support UK risk assessments of air pollution effects on ecosystems and thereby facilitate meeting statutory reporting requirements. The Netherlands estimate AERIUS has saved €25 million in the first 18 months through the time saved by local authorities and regulators.

### The Challenge

The AERIUS Product Suite has been designed to run on traditional infrastructure such as virtual machines. The new version aims to be a cloud-native, containerised solution that is portable, customisable and lightweight.

The main aspect of AERIUS is the computation element that requires a large amount of processing power. JNCC required an environment that was able to scale automatically using enormous amounts of processing power to meet demands at an affordable price.



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Mobilise designed and built two platforms, Amazon Elastic Container Service (ECS) and Amazon Elastic Kubernetes Service (EKS), so JNCC could assess the different technologies. Both platforms were designed to scale to 500 EC2 nodes; providing a total of 4000vCPU and 16,000GiB of memory. Using spot instance technology, JNCC could now take advantage of cloud computing at a minimal price.



Elastic Container Service (ECS)



Elastic Kubernetes Service (EKS)

## The Solution

As an AWS Well Architected Partner, Mobilise worked with JNCC and AERIUS to develop an AWS Well Architected Design for EKS & ECS. Mobilise engineers then developed Terraform Infrastructure as Code to automatically deploy both solutions into isolated environments.

### Spot Instance Technology

The AERIUS Product Suite contains stateful services that need to remain highly available to ensure smooth running of the service. Therefore, the clusters were designed to run a mix of EC2 On-Demand nodes for stateful services (15%) and EC2 Spot for remaining stateless services (85%).

### CICD Pipelines

Using GitLab, Mobilise engineers created a series of automated CICD pipelines that handled both the infrastructure deployments using Terraform and application deployments using Terraform & HELM. This automation enabled AERIUS developers to easily roll out changes to the platforms.

### Monitoring

In order for JNCC to gain insights into how AERIUS workloads were performing on the platforms, Mobilise engineers used AWS Container Insights to highlight workload performance, service maps, operational readiness and application logging.

## The Results

JNCC conducted several weeks of load and performance based testing against both ECS and EKS platforms to see how the AERIUS Product Suite performed in a cloud environment.

The use of spot instance technology coupled with a steady on-demand presence has reduced AWS platform costs by 70% whilst instilling JNCC with confidence that their platform is resilient and can automatically handle EC2 node failures.

Highly automated Infrastructure as Code CICD pipelines have enabled developers who are unfamiliar with AWS services, the chance to easily make changes and provision new infrastructure. The extensibility of the IaC has enabled JNCC to provision new environments and deploy applications with reliable, secure mechanisms.

Using data gained from these tests and their own developers experience with each platform, JNCC were able to identify ECS as their platform of choice for the future.

## About Mobilise Cloud

Mobilise helps government and commercial organisations to ensure their migration to Cloud is a success from strategy through to design, delivery and organisational and operational change.

Mobilise has a wealth of experience in gaining best value from IT infrastructure provision, and has partnered with the leading Cloud providers including Amazon Web Services and Microsoft Azure to ensure a range of industry leading options are available to replace IT infrastructure with the 'right cloud' service, and to deliver ongoing IT transformation through cloud native services at pace.

People are key to the transition to Cloud, and Mobilise is experienced in communicating the change and gaining buy-in at all levels of an organisation to create excitement and active participation, and enabling customer teams to ensure they can participate fully in the technology change required.

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