



Supporting CGI in Connecting the UK's First Generation Smart Meters



In 2013, the UK government ordered a smart meter rollout across the UK to put energy control back into the hands of its citizens. Under this initiative, the UK government expects energy suppliers to have installed 53 million smart meters to 30 million customers (including households and businesses) by 2020. This will allow customers to adopt energy efficiency measures and, in turn, help keep energy costs low and price increases at a minimum. Energy suppliers are handling this rollout in two phases – first-generation devices (SMETS1), which ended in March 2019, and then second-generation devices (SMETS2).

The Challenge

To date, around 13.65 million smart meters have been installed across UK households and businesses, with the majority of these being SMETS1. However, according to recent government and consumer reports, one in ten of these first-generation devices stopped working after a customer switched suppliers. This loss in smart functionality for more than a million customers means meter readings are no longer being shared with suppliers and important usage information is no longer available via the in-home display.

To keep the UK government's smart meter programme on-track, global IT and business consulting firm CGI has been involved with connecting the SMETS1 devices to the national smart metering system. CGI would need to deliver a solution that would stand up against aggressive timescales, involvement from multiple stakeholder groups, several test assurance streams, and a tightly regulated environment. CGI quickly concluded that a secure, trusted, repeatable and immutable DevOps / Continued Integration and Continuous Delivery (CI/CD) solution would be the answer.

Reviewing requirements, CGI decided to adopt the AWS Public Cloud Platform to underpin this solution.



The Solution

With the UK government's smart meter deadline rolling ever-closer, CGI needed to deliver its solution with speed, whilst also maintaining high security and compliance in a regulated environment. To accomplish this, CGI turned to a specialist partners, HeleCloud – an Advanced Consulting Partner and HashiCorp SI, Reseller, and Implementation Partner.

CGI selected HeleCloud due to its expert capabilities in SecDevOps, a key requirement on the AWS platform, and in-depth knowledge of the AWS Cloud platform. As well as delivering managed services on the AWS platform, HeleCloud has provided CGI with technology expertise to within the infrastructure and CI/CD processes and tooling along with CGI's internal teams. HeleCloud has also provided project management services, in alignment with Agile Development Methodologies with Cloud Computing, including Scrum and Kanban.

CGI and HeleCloud have together developed a Cloud-based system that meets very high industry standards.

CGI has been following the Infrastructure as Code (IaC) and immutability principles. As a result, the risk of human error has been minimised and consistency across environments and builds has been guaranteed. Application components have been decoupled to separate instances and services to allow for smaller incremental changes rather than requiring a full redeployment of the application each time.

HashiCorp's Terraform product is central to the implementation of the IaC principle and enables CGI to build, change, and release multiple versions of the infrastructure safely and efficiently. The code has been broken down into smaller individual modules to maximise reuse and ensure the same implementation is applied across all environments. Individual environment pipelines have been established that deploy all components and configuration settings at the push of a button. This allows more frequent and rapid deployments in a secure and predictable manner.

CGI's environments contain a varied set of AWS services including RDS, Elasticsearch Redis, EC2, Parameter Store, Lambda, CodePipeline, CodeBuild, CloudHSM, and Direct Connect. Key to the solution was the development of an AMI factory, utilising both AWS and HashiCorp products to optimise time between build and deploy, and to provide a parameter-driven, automated, repeatable and trusted set of processes. CloudWatch dashboards were implemented to generate alerts and visualise status of application processes.

The Results

The objectives of application consistency, resilience, and rapid iterations have been successfully achieved, and infrastructure deployment time has been reduced significantly allowing for more regular multiple daily environment deployments.

“Our decision to partner with HeleCloud as an AWS specialist gave us the acceleration required to deliver on our requirements, which continues through our Managed Service operations. The CGI and HeleCloud relationship is now well established, and we look forward to benefiting from it during the next phases of our delivery, and beyond.”

**Rich Brown, CGI Director
and Programme Manager**