



## Turning banking upside down

Virgin Money Digital Bank is using the cloud to create a faster, more responsive, customer-centric bank of the future

### Objective

Deliver personalized, on-demand digital banking services based on real-time insights from customer data

### Approach

Validate public cloud suitability and build a fully automated and secure AWS environment, using a Minimum Viable Cloud methodology

### IT matters

- Maximized agility, security, and manageability of the cloud environment
- Proved effectiveness of analytics required for a data-driven banking platform
- Created a new, highly dynamic cloud-aligned operating model

### Business matters

- Proved the viability of a cloud platform to improve customer insights
- Met aggressive timeline for rolling out new digital banking service
- Ensured compliance with regulatory requirements such as GDPR



Virgin Money is a financial services brand used by three independent brand licensees in the United Kingdom, Australia, and South Africa. Virgin Money UK offers savings, mortgages, credit cards, current accounts, currency services, pensions, investments, and protection products to over three million customers across the country.

Banking in the UK has traditionally been an old-school industry, slow to change and marked by entrenched business practices and stable competition. Virgin Money is pursuing a plan to buck this system. The bank says it is aiming to transform banking the same way successful technology platform businesses like eBay, Facebook, and Spotify have evolved their industries.

The new venture, known as Virgin Money Digital Bank (VMDB), will leverage real-time, deep analysis of data to create a customer-centric, digitally enabled service. The service aims to “re-imagine the basics of banking” by delivering new, on-demand, targeted services based on real-time insights it derives from customer data. Services will include universal accounts, money pools, and digital assistance. Plans call for a 2019 rollout with 200,000 customer sign-ups in the first year, and one million by 2024.



“Working with CTP, we were able to produce an enterprise-class cloud development platform in less than four months—less than 20 percent of the time we estimated that it would have taken building the platform in its existing onsite operating model.”

– Jem Walters, Director of Digital Enablement, Virgin Money

### **Demonstrating what the cloud can do**

To create the VMDB, Virgin Money needed to prove that the cloud could handle the large volumes of data necessary to enable their services. The bank engaged Cloud Technology Partners, a Hewlett Packard Enterprise company, to study the issue, create proofs of concept (POCs) for an analytics and Big Data platform, and partner on a project to build out the cloud and data platforms.

Could the cloud handle all the demands? And could the bank stand up a new cloud environment in time to meet the aggressive rollout goal?

VMDB brought in Cloud Technology Partners (CTP) for a series of engagements to help answer these questions, starting with the build-out of a Minimum Viable Cloud (MVC).

### **Creating a Minimum Viable Cloud**

Working with VMDB, CTP built a fully automated deployment of an MVC on AWS, addressing core infrastructure, security, operations, and automation

components. The MVC passed multiple third-party security audits to establish the AWS platform as a secure environment for future development.

The foundational services in the MVC addressed key concerns common to all applications for highly regulated, enterprise clients, including security, compliance, availability, manageability, transparency, and scalability, similar to the build-out of a new data center. The MVC implementation goes beyond those typical data center capabilities to include “Defense in Depth” level security, extensive security and operations logging and monitoring, full stack provisioning and configuration automation, cost management, and creation of a new cloud-aligned operating model designed to manage a highly dynamic environment.

The new cloud platform is based on CTP methodologies, AWS, and industry best practices to maximize the agility, security, and manageability of the cloud deployment. In addition to leveraging the AWS extensive portfolio of services, CTP deployed technology from Trend Micro, HashiCorp, Sumo Logic, Dome9, Chef, Jenkins, Atlassian, JFrog, and a variety of open-source tools.





## Building analytics proof of concepts

Once the first set of approvals was secured, VMDB engaged CTP to work jointly with its client analytics team to create five separate POCs dealing with issues surrounding the Big Data environment. The bank set out to assess the array of available analytics tools and models to demonstrate the value of a data-driven banking platform. The VMDB-CTP team pushed through the POCs, validating the efficacy of the overarching analytics function and four separate underlying use cases.

The most pressing POC involved the ability to process advanced text-based analytics. VMDB needed to prove it could build machine-learning models, so it developed a “topic model” based on data stored in an Amazon S3 cloud service. CTP ingested the data, and then used a Latent Dirichlet Allocation (LDA) statistical model to show how documents can be categorized into different topics.

The second POC examined the use of graph databases. For instance, if the bank wants to mine data based on fraud, it can

build a graph database, generate graphs of customer transactions, and look for patterns that are fraudulent. As customer transactions reach high volumes, it’s harder to do in a transitional database. CTP tested the system at one million users, using a graph database management system.

In parallel, CTP tested out scenarios comparing the bank’s ability to migrate part of an existing data warehouse onto the cloud vs. building it from scratch. It took four weeks to shift the data onto the cloud—a quarter of the time it would have taken to build in a traditional environment.

Finally, CTP tested the bank’s ability to control the flow of data and metadata. With all the regulatory requirements the bank faces—including new regulations, such as the EU’s General Data Protection Regulation (GDPR)—the bank needs to be able to extract the metadata from the data processing pipeline and create an end-to-end view of the technical metadata. CTP used a metadata management system to create a system that harvests metadata throughout the data pipeline, understands the data lineage, and does impact analyses.



## Customer at a glance

### Solution

Cloud-based, customer-centric digital banking services

### HPE Pointnext services

- HPE Cloud Advisory and Professional Services

## Clearing the way for implementation

Following the POCs, CTP, and the VMDB client team partnered on a new project: creating a business case for the cloud and data components. They performed a cost analysis and a high-level risk analysis report to justify the final build-out. That project concluded in December 2017, clearing the way for a third and final 18-month project to implement the cloud and data strategy.

Throughout the multi-step process, AWS validated the architecture and advised on further services, such as Service Catalog, AI, ML, Managed Services, and security best practices. The AWS Services mix includes multiple accounts and VPCs, VPN Gateway, VPC Peering, IAM, Security Groups, KMS, Encryption, Route 53, IGW, Directory Services, CloudWatch, Config, CloudTrail, Lambda, EC2, EMR, S3, and RDS.

## A platform for the future

The financial services industry is a competitive business—and a slip-up in planning or execution can set a bank back years. Virgin Money Digital Bank is taking a progressive approach, going all-in on cloud in an effort to create a unique banking platform for the future. Working with CTP and other partners, VMDB is validating its vision, removing risk and charting a new course for success.

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