



Redwood Bank: Born in the Cloud
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“ In launching a new business bank in a highly regulated environment, Redwood Bank needed to take advantage of latest technology to build a secure and cost-effective banking infrastructure. We decided to partner, wherever possible, with external specialist software, technology and infrastructure providers, to acquire high levels of expertise.

The Redwood Bank team saw significant benefits in adopting a 100% 'Cloud based' strategy and are delighted to be part of the first licensed bank in the UK to fully utilise the Microsoft Cloud platform.

We are proud of our achievements in building and launching our new bank, with a small internal team and within challenging timescales, so we think it would be beneficial to our customers, partners, colleagues and other stakeholders, to share our story. ”

– Gary Wilkinson
CEO & Co-Founder of Redwood Bank



Building a new business bank in a highly regulated environment.

THE ABILITY TO IMPLEMENT A SECURE, REGULATORY COMPLIANT AND FIT FOR PURPOSE TECHNOLOGY INFRASTRUCTURE AND CORE BANKING SOLUTION, WAS A KEY FACTOR IN REDWOOD BANK SECURING A UK BANKING LICENCE.

Background

Redwood Bank's journey started in 2015, when its co-founders, experienced bankers Jonathan Rowland and Gary Wilkinson, met and developed a simple and compelling proposition to build a new digital business bank. Their aim was to develop a bank with advanced technology which would be flexible, personable and which, through its strong relationships with its customers, would have a genuine appetite to lend to British businesses to support their growth.

Redwood's mission is to offer simple and transparent loans and savings accounts to small and medium sized businesses (SME's), focusing on providing simple and well designed business mortgages and business savings accounts, backed-up by personalised service and efficient digital systems.

The Bank operates from its headquarters in Letchworth, Hertfordshire and from its regional office in Warrington, Cheshire.

Unique private-public partnership

The Bank is owned by private investors and by the UK local authority, Warrington Borough Council. It is believed that this is the first time that a UK local authority has made such a direct investment in a licensed bank.

This innovative financial partnership is helping to stimulate economic growth, both in the heartland regions in which it focuses, including Warrington and the North West as part of the UK's Northern Powerhouse region, and nationally.

While Redwood focuses on lending in its heartland regions, it offers its products and services to businesses across mainland Britain.



Vision and strategy

Redwood's vision is to create a robust, secure and profitable bank that is well placed to deliver a proposition built on competitive rates, superior service and straightforward products and processes.

The Bank's core values are summed up through its strapline: 'It's about time'. This frames the Bank's entire approach to customer experience and its operations. Put simply, it's about time a business bank provided consistent, fast loan decisions and deposit account openings, thereby fully respecting customers' time.

Time was also a critical element in the Bank obtaining its banking licence and establishing an effective and successful operating model. The Bank launched just 12 months after submitting its banking licence application to the PRA and FCA, and after a Mobilisation period of just four months following receipt of an initial, restricted banking licence. This is considered to be the fastest initial licence-to-launch of any new bank to date.

Without having an innovative, digitally focused approach to Redwood's IT, Infrastructure and Operations, such timescales could not have been achieved.

Cloud based approach

The Bank's strategic objective was to implement a modern digital environment, providing an effective and efficient banking platform to support Redwood's values and traditional banking model.

It was determined that only a Cloud based IT strategy involving external specialist partners could deliver high quality modern banking software securely, resiliently, in challenging timescales and with the limited technical resources available to such a start-up enterprise.

Cloud based banking for Redwood Bank represents the ability to provide a full range of IT services to support its customers, people and stakeholders and provide a seamless experience across multiple systems in various forms over the internet.

From its inception, the Bank actively undertook to minimise its 'on premise' IT infrastructure and successfully operate with a modest hardware footprint, limited to end user devices and network infrastructure.

This Cloud-based outsourcing strategy enables Redwood to implement sophisticated digital solutions, without the need to build a sizeable in-house IT team.



Partnering with specialist providers

As a result, Redwood outsourced the majority of its IT functions to specialist as Software as a Service ('SaaS') and Infrastructure as a Service ('IaaS') partners.

In late 2016, very few financial services organisations had really embraced the Cloud. Concerns were prevalent globally within financial services IT regarding security, loss of control and the ability to conform to financial regulations.

The Bank's journey started on the cusp of a change in attitude amongst regulators and financial services firms in adopting Cloud-based outsourced solutions and the use of Fintech expertise.

This coincided with the views of the Bank's own stakeholders, with its founders and investors being strongly of the view that the Cloud was a secure, timely and cost effective platform on which to build a new bank.

Core banking in the Cloud

At the heart of the IT strategy was the selection of a cost effective and fit for purpose core banking platform. The software had to be deployed in a secure hosted environment and delivered over the Internet to enable secure remote access, including mobile and home working. Critically, the banking platform must have already been proven in the UK banking sector.

Redwood sought Cloud service providers who offered established SaaS/IaaS solutions and who had successfully implemented these within financial institutions regulated by the PRA and FCA.

The Savings and Commercial Lending platform offered by London based firm, DPR Consulting, became the preferred core banking solution.



“A real advantage in using the Microsoft Cloud with the support of our technology partners was the ability to adopt an integrated set of Cloud based tools which are deployed within a single secure environment. This enabled us to establish a secure, modern digital banking platform within regulator guidelines in under six months. ”

– Michael Harriman
Director of Information Technology
Redwood Bank



Microsoft Cloud platform

DPR is a Microsoft Gold Partner providing origination and servicing solutions to banks, building societies and specialist lenders.

DPR's core banking software benefitted from being centred on Microsoft technology. DPR quickly evaluated the feasibility of hosting the software in Microsoft's Cloud platform, Azure. DPR's specialist infrastructure partner, CSI (formerly Niu Solutions), supported the Bank in the transition of DPR's software into the Azure Cloud.

This approach allowed the Bank to establish a Microsoft Cloud platform, whilst its start-up team could focus on the delivery of customer journeys, rather than dedicate a disproportionate amount of internal time and resources towards hardware and IT infrastructure. Redwood contracted with DPR to deploy and support its core banking platform using DPR's 'Launchpad programme', which is optimised to help start-ups like Redwood accelerate time to market by providing a library of proven process templates that span the full lifecycle of lending and deposit taking.

In parallel, DPR's systems architecture group worked with CSI and Microsoft to optimise the core technology for what was to be the first pure Azure implementation of the system.

CSI was selected for its experience in moving regulated applications to the Cloud and providing Managed Services to Financial Services businesses.

DPR and CSI support Redwood by providing continuous monitoring and alerting for the core banking software and the underlying Azure infrastructure.

Timely and efficient customer journeys

The key components of Redwood Bank's customer journeys include online deposit and loan application systems, as well as online account management with integrated communications and security.

Modern, Cloud based technology supports each step in the Redwood customer journey, where a focus on timeliness and simple design provides a smooth, consistent and seamless customer experience.

Redwood's Cloud based approach also enabled multiple specialist partners to simultaneously complete a timely and integrated development of the customer facing website and online banking systems.

These were deployed as secure digital interactions within a Microsoft Azure trusted domain and focused on ease of customer use and simplicity of surrounding processes, including identity verification Know Your Customer and Anti-Money Laundering checks, as well as on customer support.

Kentico, the Microsoft Azure based Content Management System (CMS) and marketing platform, was integrated with the DPR system in Azure, providing a seamless web-based customer journey and access point for online banking.



Redwood Bank's Cloud solution

The key components of Redwood Bank's customer journeys include online deposit and loan application systems, as well as online account management with integrated communications and security.

To supplement the DPR core banking platform based in Microsoft Azure, Redwood also deployed Microsoft Office 365 to provide business support and Microsoft Intune to manage secure corporate and secure personal devices in a mobile and home working environment.

Microsoft Sharepoint allowed non-technical end users to manage documents and interactions between the operations, compliance, risk and credit underwriting teams, throughout the customer lifecycle.

The Cloud IT infrastructure implemented by Redwood Bank is based on:

Microsoft Azure Cloud hosted:

- Core Banking origination and servicing
- Integrated marketing website including:
 - Deposits applications
 - Broker management portal
 - 'Self-service' account management
 - Ancillary systems

Microsoft Office 365 deployed for end-user functions:

- Exchange Online
- SharePoint / One Drive
- Skype for Business
- Microsoft Teams

Microsoft Enterprise Mobility + Security

Azure Active Directory Premium:

- Secure Single Sign On
- Multi Factor Authentication

Microsoft Intune:

- Mobile and home working
- Device management
- Securing personal devices

Azure Information Protection Premium:

- Bitlocker encryption
- Shared file protection

Microsoft Advanced Threat Analytics

Azure AD Cloud based identity management

Microsoft Dynamics 365:

- Customer Relationship Management



Outsourced service providers

Having chosen a Microsoft based core banking platform, the Redwood Bank team embarked on a search for fit-for-purpose solutions, where possible, within the Microsoft Cloud, to provide a fully functional banking operation.

Microsoft provided support throughout the Bank's Mobilisation project. Redwood were assisted by Microsoft in establishing relationships within Microsoft's Customer Service Provider (CSP) network. Microsoft's Financial Services, Commercial Markets Strategy Group and Cloud Services Support teams, offered oversight and expertise.

Cloud based 'Ancillary' systems were identified to complement the capabilities of the core banking platform, including:

- Payments gateway
- Identity and credit controls
- Regulatory reporting
- Financial accounting
- Compliance
- Human resources and payroll
- Ancillary systems.

Redwood also established relationships with outsourced service providers who possessed the expertise to supplement the core banking systems for the following functions:

- Website design and development
- Email and office services
- Internet access
- Cybersecurity
- Physical infrastructure
- Voice and telephony (VoIP)
- Customer Relationship Management
- Mobile Device Management
- Microsoft licensing.



Specialist partners

Redwood was assisted by Microsoft in establishing relationships within Microsoft's Customer Service Provider (CSP) network.

Key partners in Redwood's Cloud solution include:



- Microsoft
- DPR Consulting (core banking)
- CSI, formerly Niu Solutions (Azure Infrastructure management and security services)
- New Signature (Office 365 managed services)
- Newton IT (Hardware and telephony)
- Distinction (Website design and monitoring)

Relationships with these partners were comprehensively scrutinised by the PRA and FCA throughout the banking licence authorisation period.





Regulatory environment

Within the UK financial services regulatory environment, the FCA performs a role in protecting consumers and financial markets, enhancing the integrity of the UK financial system and promoting competition.

The FCA scrutinises the business plans of new banking licence applicants. Complex IT systems and the outsourcing of key operational aspects of a new bank are areas of particular interest to the FCA, and which they give considerable focus to.

In November 2016, the FCA published a document, “Guidance for firms outsourcing to the ‘cloud’ and other third-party IT services”.

Redwood, in developing its business plan and subsequently in implementing its operating model, used these guidelines to ensure that the Bank adhered to the FCA’s cloud and outsourcing requirements.

Outsourcing services and the Cloud

The FCA guidelines identify areas that banks need to consider in relation to outsourcing to the Cloud and other third-party IT services, including:

- Legal and regulatory considerations
- Risk management
- International standards
- Oversight of service provider
- Data security
- Data Protection Act (GDPR)
- Effective access to Data
- Access to business premises
- Relationship between service providers
- Change management
- Business Continuity Planning
- Recovery and Resolution
- Exit plan.

Throughout the licence authorisation period, during the Mobilisation phase and post-launch, the FCA and Deloitte, the Bank’s internal auditors, have actively reviewed the implementation of systems and processes in accordance with these guidelines.



Microsoft Financial Services Support

Microsoft is committed to assisting firms which are authorised and regulated by the PRA and FCA, to comply with their regulatory obligations. This was seen as a significant advantage by Redwood in its strategy of basing its IT infrastructure in the Microsoft Cloud.

The paper 'Enabling Compliance: Microsoft's approach to the FCA's finalised cloud guidance', (November 2016) details how Microsoft as a Cloud service provider ('CSP'), assists regulated firms to meet the standards set out in the FCA's guidance.

Redwood evaluated its use of the Cloud, performed due diligence and risk assessment checks on Microsoft and other partners, before committing to the use of Microsoft Cloud Services. Regular reviews and ongoing oversight of each Cloud partner is performed on an ongoing basis.

Redwood Bank entered into a specific agreement with Microsoft, a Financial Services Amendment addendum to the Microsoft Online Subscription Agreement. The agreement ensures that Microsoft conforms to the privacy, security and regulatory requirements of a UK regulated financial institution.

The Microsoft Cloud 'Financial Services Compliance Program' (FSCP) supports financial services firms in their assessment of the risks of using Microsoft's Cloud services.

The Bank benefits from Microsoft's ongoing commitment and extensive resources to ensure regulatory, legal and data compliance. This includes GDPR Data Protection requirements and, in particular, a commitment to building privacy by design into the development of Microsoft services.

Microsoft Cloud technology helped accelerate Redwood's readiness to meet GDPR deadlines with Microsoft 365, Dynamics 365 and Azure providing data privacy controls and security capabilities to ensure Redwood demonstrates GDPR compliance.



Cloud security

Security was considered critical in the selection of Cloud Service Providers. The Bank focused on the ability of potential partners to provide data security, information management, data controls and compliance with industry standard certifications, including ISO 27000 series.

Redwood's management team considers that the significant investment, experience, expertise and resources of large-scale Cloud providers, such as Microsoft, offer a more reliable, cost effective and futureproof security environment, than could be built in-house using bespoke on-premise alternatives.

Microsoft currently invests 1 billion dollars every year on Cloud security. This investment is particularly relevant to a start-up organisation with finite IT resources.

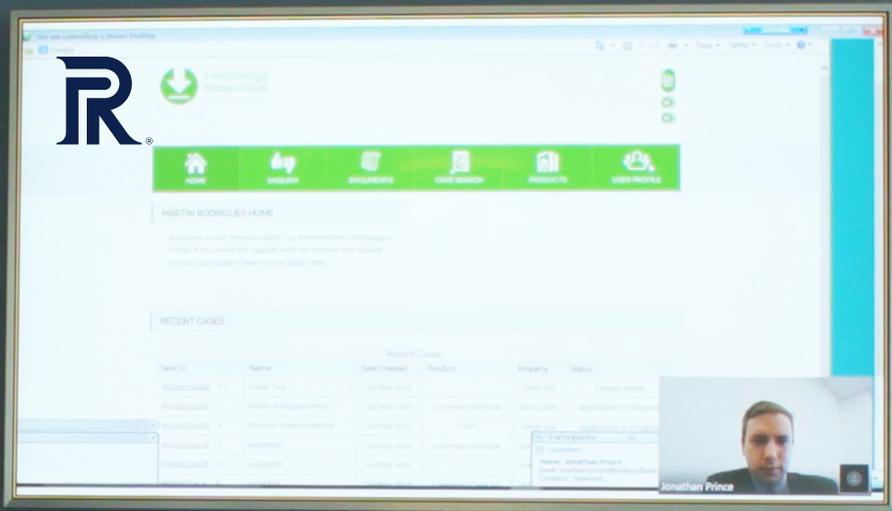
Redwood's partners were selected based on their security expertise, technical infrastructure, and their ability to remotely and securely monitor, identify and remediate security vulnerabilities and threats via the Cloud.

This allows Redwood personnel to concentrate on monitoring and managing the services provided by external partners under Service Level Agreements, as well as allocating greater focus to end users, the most well established vulnerability within data security. Redwood's efforts with end users include education and training, live simulations, building a security-aware culture and the implementation of best practice governance frameworks.

Data location

The Bank's IT and security policies restrict the transfer of customer and personal data outside the European Economic Area (EEA). However, the management team considered that the use of Microsoft's UK-based datacentres were the most appropriate locations to store data 'at rest'.

Data is encrypted, both in transit and at rest within the Microsoft Azure infrastructure, and on end-point devices including end user personal devices within the firm's Bring Your Own Device (BYOD) policy.



“The cloud is enabling a wave of innovation, empowering financial institutions to create new value chains that cross business and industry boundaries. You can turn data into insight, transform ideas into action, and turn change into opportunity. This is exactly what Redwood Bank have delivered and we applaud their pioneering approach and adoption of this technology. ”

– Richard Peers
Director of Global Financial Services
Microsoft



Microsoft Trust Centre

A plethora of security documentation and an extensive knowledge base are available to financial services organisations through the Microsoft Trust Centre and Service Trust Portal, which provide transparency to Cloud security, privacy and compliance.

This assisted Redwood in developing its Cloud platform during the PRA/FCA banking licence authorisation period.

Cybersecurity audits and penetration tests were undertaken during the pre-launch Mobilisation period and have continued regularly since launch.

Shadow IT

Redwood uses Microsoft Cloud based monitoring tools to assist in identifying, assessing and controlling threats and risks of Cloud based applications in use on corporate and personal devices used within the Bank's IT estate. This is known as 'Shadow IT'.

Redwood deploys Azure Information Protection, in order to lock down data and set policies for the protection of customer and corporate data.

Customer satisfaction

Customer and broker sentiment has been monitored during the Bank's initial six months of operations, using Cloud based tools to survey and monitor product performance, experience, behaviour and satisfaction.

Redwood Bank's Cloud based systems are delivering on the brand promises of ease, simplicity, and speed.

Feedback from customer surveys include:

- “ **Much easier account opening compared with the excruciating delays of more established institutions. ”**
- “ **Once the account was up and running everything is easy and there is always a helpful voice on the phone. ”**
- “ **The account is already open, and I only applied this afternoon. ”**



Cloud benefits

Redwood Bank has clearly benefitted from the scalability, agility and cost effectiveness of building a bank in 'the Cloud'.

As a start-up, the Bank has benefitted commercially from the cashflow advantages of reducing upfront costs, enabling it to scale its operations as it grows, as well as from delivering on its promises to customers.

Supplementary benefits realised during the Bank's Mobilisation process include:

- Deployment of a cost effective, resilient, banking platform
- Reduction in the number of disparate solutions required for management and monitoring of the estate, for example, virus and malware protection, data encryption
- Holistic approach to Cybersecurity
- Improved Disaster Recovery with a simplified approach to testing and verification.

The Microsoft Cloud has provided additional benefits that have been embraced by Redwood's users:

- Secure, integrated document management
- User managed intranet
- Companywide email, instant messaging, telephone and video conferencing
- Integrated and secure mobile device management for corporate and BYOD devices.



Summary

Redwood Bank has worked very closely with the UK's financial services regulators and with its key partners, to ensure it could implement a secure and 'fit for purpose' banking platform to meet fully the needs of its customers.

Redwood Bank was 'Born in the Cloud' as the development, adoption and governance of Cloud technology had matured sufficiently to meet the demanding expectations of both the customers and regulators of a Cloud based bank.

Although other financial service organisations are transitioning to the Cloud and will be considered Cloud based banks, Redwood's team is very pleased and proud to have, alongside our partners, adopted this technology to enable the launch of a start-up bank which is 100% based in the Cloud.

Redwood's Cloud platform is enabling flexible, timely and efficient customer service, which is already generating exceptional customer feedback. Going forward, this technology will enable the Bank to expand its products and operations and allow it to continue to focus on the optimisation of customer experience.

