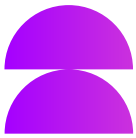
Thought Machine | Microsoft Azure

Leveraging cloud architecture to achieve rock-solid bank resilience



By Gareth Richardson and Janet Jones

This year, Thought Machine joined the Microsoft Azure ecosystem. This follows a number of tier one banks selecting Microsoft Azure as their cloud platform to unshackle from the constraints of legacy on-premise technology. This is exactly the problem that Thought Machine has set out to solve with Vault, a highly configurable single platform powering some of the world's most ambitious banks.

The banking industry's cloud innovation story is now well understood – everyone in the bank knows they can benefit from the greater scalability and agility achieved only through cloud native technologies. While the industry understands the benefits of cloud computing, banks are too often hamstrung by the cost of change and high complexity of existing systems. A frequently asked question is: "How can we mitigate risk as we move to the cloud?" Together, we have insights and expertise to address these concerns.

Ensuring compliance with country specific regulations

To ensure the highest levels of compliance, we jointly adhere to regulation around the world and implement our controls based on the highest standards. Microsoft is closely engaged with regulators worldwide to shape financial services product compliance, and meets the broadest array of certifications and standards in the industry – more than 90, spanning over 50 regions and countries.

Not only does Microsoft heavily invest in progressing regulatory compliance, they provide built-in compliance features to address key requirements. For example, Microsoft has created Azure Blueprints. Similar to a blueprint that enables an engineer or architect to sketch a project design, Azure Blueprints enables cloud engineers to set unique parameters before rapidly developing in a new environment.

Similarly, Thought Machine has taken a number of proactive measures to uphold the highest levels of compliance for customers of Vault. Thought Machine conducts country regulatory reviews and identifies emerging requirements within the information technology and financial services industry across the globe.

Given Vault's architecture, and the fact that data is streamed out in real-time, this lends itself to the possibility of enhanced AI capabilities in capturing fraudulent transactions earlier in the cycle. In addition, as banks move away from multiple legacy cores onto one cloud-based solution, data can more easily and coherently be provided to meet regulatory requirements.

Established resilience through high availability

Microsoft Azure is always highly available in the unlikely event of regional outages. Azure enables you to set up at least two regions and configuration is instantaneous ensuring there is no data or availability loss. Microsoft provides for 99.9 percent uptime in its SLAs as standard. With configuration to use Availability Zones (AZ) across 60 regions this increases to 99.99 percent and for modern services like Cosmos DB (Platform as a Service), it ensures 99.999 percent.

The architecture, too, is built in a way that ensures service reliability. Microsoft invests in building a "diversity of service" within their infrastructure that have built-in redundancies to mitigate against failures – much like the engineering design systems in airplanes. At the platform layer, they have two DNS infrastructures configured active/active, one Windows and one Linux. Like the airplane that has multiple petrol providers for their generators and two subterranean sea cables connecting the US to Europe.

Building on this foundation, resilience is increased by the way software can run on Microsoft Azure. Thought Machine's Vault is cloud native and implemented using microservices to deliver consistent reliability and value. Microservices means functions and services are built and deployed independently and communicate via APIs – an architectural approach that ensures one component failure won't lead to downtime of the whole bank. Being built with cloud native technologies such as Kubernetes and deploying on Microsoft Azure enables banks to benefit from scalability and high availability that go far beyond the capabilities of legacy banks.

Securing data and mitigating risk

Whether it is zero-day attacks, side-channel attacks, or ransomware attacks, Microsoft's hyperscale cloud mitigates data risk. During the Spectre and Meltdown attacks Microsoft could patch its environment through automation and scale much quicker than customers could with their legacy environments – ensuring their cloud services were not impacted as a result.

For side-channel attacks, hackers must execute code on the same physical machines as a banking system runs on, but with cloud services this means they must know the physical location of the servers where customer data is stored and must stay within that environment for some period of time. As cloud services are consistently distributed and not collocated in any one environment for a significant period of time, the risk of such attacks being successful is low. In addressing ransomware risks, Azure cloud services provide for air-gapped back-up of data in a separate environment.

Applications like Vault that run on Microsoft Azure and embrace cloud native technologies to ensure high levels of data security and visibility – something traditional banks have long struggled with. Thought Machine's Vault encrypts data at source and in transit. Not only can banks build customised services through the extraction and analysis of highly available data, they can also benefit from an engine that ensures data is never exposed.