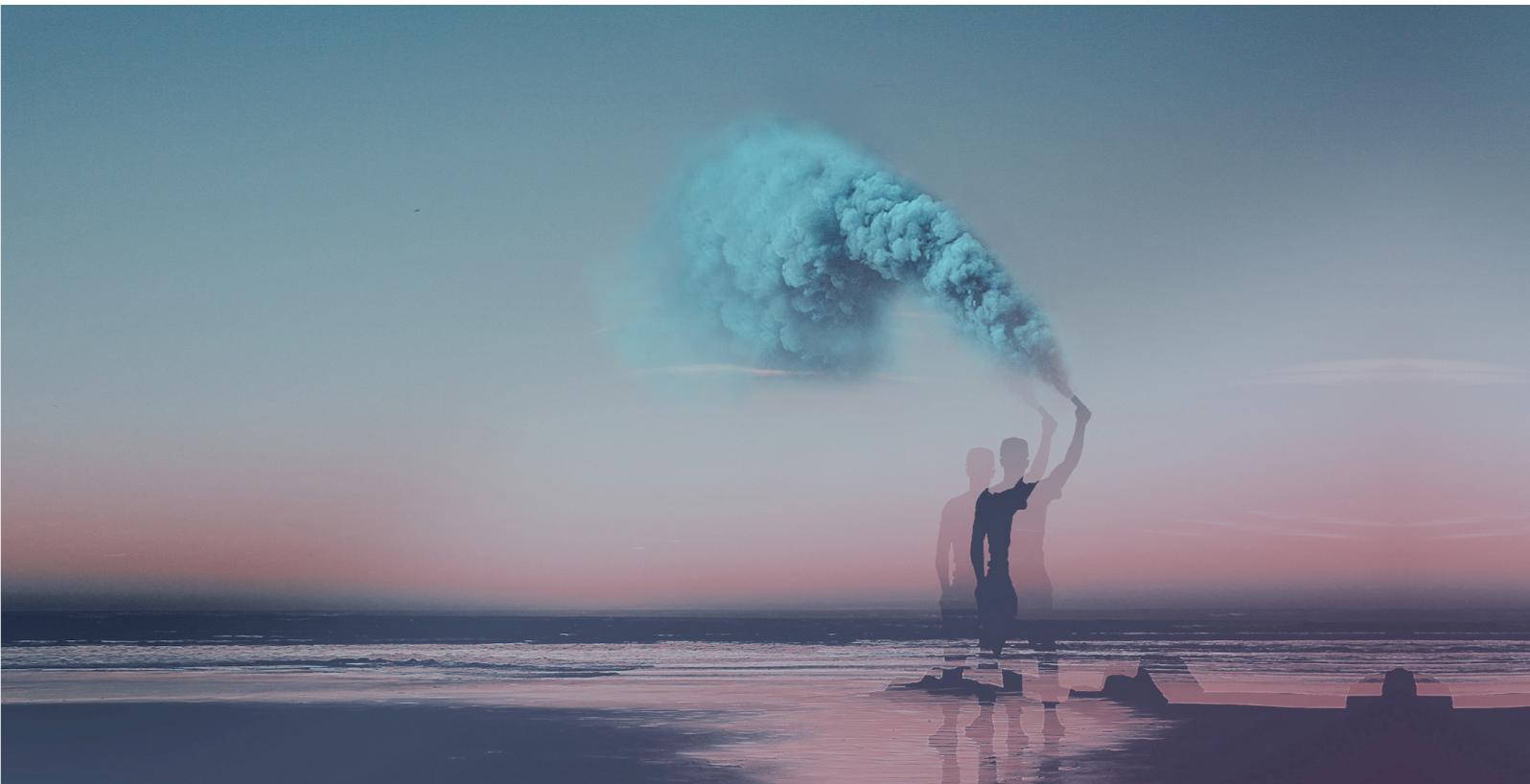


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**Keeping vendors vending**

**A FinTech Case Study**



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## BACKGROUND

After receiving funding from a major bank, an Australian FinTech needed to build out a new, cloud-based payments solution. The platform needed to consume data from up to 50,000 POS terminals and online merchant stores. Critically, the solution needed to comply with the bank's governance, security, and regulatory requirements as well as integrate back into the bank's core networks.

## SOLUTION

The solution comprised two separate platforms: A customer-facing Merchant Platform and a POS Real-Time Monitoring Platform. The Merchant Platform processes payments from either POS terminals or online stores. It is designed to give the fintech's customers instant access to their cash flow, while giving them greater visibility over their accounts.

The POS Real-Time Monitoring Platform enables the FinTech to proactively monitor and manage their customers' POS systems. Live feeds into tens of thousands of POS devices allows the support team to monitor metrics such as signal strength and battery level, enabling proactive troubleshooting before customers experience an issue.

**Kablamo** augmented the FinTech's Agile squads to build these highly scalable, flexible, automated, and PCI compliant applications to support the client's future growth. In order to effectively support the FinTech's existing staff, **Kablamo** deployed a team of five engineers using a 'team augmentation' model. The key skills these engineers covered were Tech Lead, Developer, DevOps Engineer, and UX/UI Designer.

Prior to the engagement, the client had an initial version of both platforms running on Kubernetes on Google Cloud. The decision was made to move to **AWS** because the client had only one DevOps engineer and Google Cloud's Kubernetes was too complex to manage. Ease of integration and connectivity were key factors to selecting **AWS** given other challenges relating to third-party providers. The cloud environment had to connect into the major bank's internal systems via a dark fibre network managed by one of Australia's largest telcos. For example, adding a new endpoint would take multiple days and frequently resulted in outages. With the platform requiring rapid scalability, this was unacceptable.

Through benchmark testing, **Kablamo** highlighted **AWS'** technical superiority, especially for relational databases, key management, identity access management and connectivity. Critically, by teaching the FinTech's staff best-practice **AWS** development, adding a new endpoint is now an intuitive process that takes only minutes, rather than days.

Additionally, a crucial feature of the platform was that it had to integrate with the bank's internal systems. The maturity of **AWS'** platform to provide robust VPN interconnectivity into the bank and provide encryption services to integrate with leading HSM vendors, were key factors in deciding to shift away from Kubernetes.



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## AWS SOLUTION COMPONENTS

Initially, the FinTech had existing versions of both the Merchant Platform and the POS Real-Time Monitoring platform running in Kubernetes on Google Cloud. The **Kablamo** engineers discovered the client was experiencing multiple issues in managing the environment as it was overly complex and deployments frequently caused outages.

**Kablamo** recommended rearchitecting for **AWS** primarily because it is much easier to manage. Initially, the client was hesitant to move from Google Cloud.

In order to highlight the benefits of **AWS'** zero downtime deployments, **Kablamo** ran performance benchmarks and **AWS** won on every test. This helped highlight the benefit of moving to **AWS** as it outperformed Kubernetes on Google Cloud despite the tests being run on lower-spec versions of **ECS**.

Once the superior performance and management capabilities of **AWS** were validated, **Kablamo** kicked off multiple technical meetings to investigate various approaches to the two platforms.

The FinTech proved an ideal user testing environment where **Kablamo** could integrate the support team's experience day-in and day-out, in what was essentially a continuous feedback loop. Throughout the process, **Kablamo's** focus was enabling the FinTech to communicate better with itself and its merchants, while re-enforcing best practice **AWS** development.

While multiple **AWS** services were used in the development of the platforms, the following demonstrate particularly innovative uses of **AWS** services.

**Direct Connect:** As a partner of one of Australia's largest banks, the platforms had to integrate with the bank's internal network. Using Direct Connect, **Kablamo** were able to connect the **AWS** environment directly into the bank's internal systems. This involved negotiations not just with the bank, but also one of Australia's largest telcos who manages the dark fibre network. This involved various infrastructure design iterations but ultimately resulted in connections through the telco, via DirectConnect, into the bank's two geographically redundant sites – one in Sydney and the other in Melbourne.

**Elastic Container Service (ECS) + Elastic File System (EFS) + Systems Manager (SSM):** As part of the cloud native design, **Kablamo** developed a containerised platform which features more than 20 microservices running across more than 10 environments in four **AWS** accounts. While this ensures strong governance, it also presents some unique challenges.

Due to a design stipulation that the platform had to have shared session states, this required shared storage across the container platforms. While **EFS** enables shared storage, **Kablamo** had to mount it directly into the containers and do so at run time – something **ECS** could not do in the manner needed. To overcome this, **SSM** was used to manipulate the containers so **EFS** could be attached correctly. **Kablamo** coordinated closely with **AWS TAMs** to develop this unique solution.



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**Key Management Service (KMS):** Not only did the Merchant Platform require PCI compliance, it also had to comply with the partner bank's internal policies. This was critical. During development, **Kablamo** had to ensure the bank controlled keys so access could be revoked in the event of a data breach or data corruption. Using **KMS**, **Kablamo** gave the bank a Customer Master Key (CMK) from which all other merchant keys were derived. This enables the bank to revoke individual keys where necessary and ensure all customer data and PII remains protected.

**ECR+CodePipeline:** The client's key challenge in Kubernetes on Google Cloud was that it was too complex to manage and adding new endpoints would take several days and frequently cause outages. With **ECR**, **Kablamo** were able to store build artefacts to ensure repeatability which means APIs can be deployed in an infrastructure-as-code fashion. This means adding a new endpoint is now as simple as changing a few **CodePipelines**. The process now takes only a few minutes with no downtime – a significant improvement from the days it would take with their last provider.

## OUTCOME FOR THE CLIENT

Ultimately, in close collaboration with the client – and the various third-party stakeholders – a platform was built that features:

- **Cloud Nativity:** **Kablamo** designed and built a new containerised platform which includes 20+ microservices running across 10+ environments in 4 **AWS** accounts to ensure strong governance.
- **PCI Compliance:** **Kablamo** worked with the FinTech to provide a highly-scalable and secure **AWS** cloud-based payments platform which achieved PCI Compliance.
- **Major Bank integration:** **Kablamo's** experts helped consult around security with the major bank on network and governance design, which opened up secure API communication to the core banking platform.

All this was delivered in just nine months, in time for a “soft” go-live with the beta POS distributor – three months earlier than originally anticipated.

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