

CELENT

UNIONBANK OF THE PHILIPPINES: MIGRATING CORE BANKING TO THE CLOUD





Winner of Celent Model Bank 2023 Award for Cloud Migration

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CASE STUDY AT A GLANCE

FINANCIAL INSTITUTION	UnionBank of the Philippines (UnionBank) 
INITIATIVE	Migration of core banking platform to the cloud
SYNOPSIS	<p>UnionBank of the Philippines has the ambition to operate fully in the cloud. In line with this, it has migrated its on-premise core banking platform to the Finacle Digital Banking suite running on AWS. UnionBank onboards around 1.2 million new customers each year and aims to open 25 million new accounts in the next few years. This move allows UnionBank to keep acquiring and delivering transactions for its clients without worrying about capacity or underlying infrastructure.</p>
TIMELINES	<ul style="list-style-type: none"> • July 2021 – Cloud migration project commences • September 2021 – Functional training defined • June 2022 – Systems integration testing • August 2022 – Customization porting completion • September 2022 – UAT, performance, and security testing • September 2022 – Data migration build and test • December 2022 – Go live
KEY BENEFITS	<ul style="list-style-type: none"> • UnionBank’s move to cloud unlocked its ability to onboard 100K new customers monthly during the pandemic, and enabled rapid onboarding of an additional 1 million customers from Citibank Philippines acquisition. • Estimated TCO cost savings of 44% over a 5Y period (compared to business-as-usual estimate) for its IT estate after moving to cloud. • Resilience – As an outcome of the cloud-native architecture and leveraging the managed services capabilities of AWS, the Finacle on AWS application is highly resilient and able to scale efficiently to support rapid growth and cater to fluctuations in user transaction volume. The resulting experience for the bank’s customer is a stable application with little to no downtime.
KEY VENDORS	  

CELENT PERSPECTIVE

The Celent Model Bank Award for Cloud Migration recognizes best practice, leadership vision, and strong business outcomes in successfully modernizing and migrating its core banking platform to the cloud.



Key step to run fully in the cloud

UnionBank has the ambition to run fully in the cloud, with this ambition likely to be realized in 2023. Migrating to a new core banking platform in the cloud is one of the most significant and challenging areas of this goal, given its mission-criticality for customers and the bank.



Business scalability and platform for expansion

Shifting to a cloud model allowed UnionBank to onboard 100K+ new customers per month during the pandemic, and facilitated onboarding its acquisition of CitiBank Philippines. This growth was supported without the need for significant capex on new infrastructure. This provided UnionBank with the platform to enable ambitious growth plans to drive financial inclusion in the Philippines.



Greater agility and speed-to-market

UnionBank has shifted to a DevOps continuous integration and continuous delivery model, with production fully automated. Leveraging containerization and microservices architecture on AWS cloud, deployment time for Finacle has decreased from 4–5 days to 3–4 hours, allowing faster innovation and agility.



Enables UnionBank to expand innovation through fintech collaboration

The Finacle platform provides a full range of open APIs which are accessible to UnionBank's fintech partners directly through a secure API sandbox to allow them to develop and propose new services. This will facilitate significantly faster ecosystem-driven innovation, supporting UnionBank's collaborative approach with fintechs and enhancing its early API gateway move in the market.



Significant TCO and operation efficiency benefits

Major improvements in infrastructure administration productivity as well as simplification through shifting to a cloud model has allowed staff to be redeployed to more strategic work. It produced an overall estimated TCO costs saving of 44% over a five-year period (compared to business-as-usual estimate).

DETAILED DESCRIPTION

UnionBank has upgraded and migrated its legacy, on-premise core banking system to the cloud-native Finacle Digital Banking SaaS suite running on AWS cloud.

Introduction

While its roots date back to 1968, the current name of UnionBank of the Philippines followed an IPO listing and the granting of a universal bank license in 1992. The bank (commonly known in the Philippines as UnionBank) provides a broad range of consumer and commercial banking services, including loans and deposits, cash management, and corporate and consumer finance. It operates through the key following business segments (excluding HQ operations):

- **Consumer Banking** (around 43% 2021 operating income) – Individual customers’ deposits and consumer type loans, such as automobiles and mortgage financing, credit card facilities, and funds transfer facilities.
- **Corporate and Commercial Banking** (22%) – Loans and other credit facilities and deposit and current accounts for corporate, institutional, small and medium enterprises, and middle-market customers.
- **Treasury and Trust** (31%) – Managing the bank’s liquidity and funding requirements, as well as trust, asset management, and fiduciary services provided by the bank to its customers.

In the latter half of 2022, the Consumer Banking segment extended significantly following the acquisition of Citi Philippines consumer business in August. This brought a significant credit card, consumer loan, and wealth business, as well as around 1 million additional customers to the bank. Overall, UnionBank is a top ten bank in the Philippines (measured by assets), although following the acquisition it is likely to be a top five Philippines bank for 2023 based on revenue.

Table 1: UnionBank of the Philippines Snapshot

Year Founded	1968 incorporated / 1992 universal bank license & IPO
Assets	Approx. ₱1tn/ US\$21bn (Q3 2021)
Geographic Presence	Philippines
Employees (2022)	Around 9,000 (including Citi PH acquisition)
Other Key Metrics	>11m accounts, 200+ branches, 7,000+ ATMs
Relevant Technologies and Vendors	Infosys Finacle (Core banking) AWS (Cloud infrastructure)

Source: UnionBank of the Philippines

UnionBank has been one of the strongest growing banks in the country, onboarding around 1.2 million customers annually in recent years, with ambitions of acquiring 25 million new accounts over the next few years. This high growth meant that UnionBank needed a core banking platform that could scale both resiliently and efficiently, and allow the bank to enable a strong customer experience and innovation.

UnionBank therefore upgraded and migrated its legacy, on-premise core banking system to the latest Finacle Digital Banking suite running on AWS cloud, maintained on a SaaS basis. This has allowed it to expand with scale, with automated provisioning of only the required infrastructure on an as-needed basis. This was achieved through an 18-month project running from July 2021 to a go-live in December 2022, including migration of around 8 million customer accounts.

Opportunity

The Philippines is one of the fastest growing emerging markets in the world, experiencing 7.4% GDP growth in 2022 (overall GDP is around US\$420bn), with a rising population of over 115 million. While historically the Philippines has had a relatively low formal banking penetration, this has increased significantly in recent years, with account penetration almost doubling between 2019 and 2021—from 29% to 56% according to the Philippine’s central bank Bangko Sentral ng Pilipinas (BSP) financial inclusion surveys.

In some respects, the COVID-19 pandemic did have a positive affect here, encouraging strong growth of digital online transactions and a need for electronic payments. However, this was also facilitated by implementation of PhilSys, the national digital identity system, and growth of internet penetration (with mobile phone penetration over 75%). A strong overall focus on financial inclusion, guided by the National Strategy for Financial Inclusion Plan 2022–2028, is set to continue, with the formal banking sector likely to expand by double digits over the coming years. Indeed, the BSP is looking to shift 50% of total retail transactions to digital channels and increase the number of Filipino adults with banks accounts to 70% by the end of 2023.

While the underlying market opportunity for Filipino banks is robust, competition has also increased with a buoyant fintech sector emerging in recent years. Currently, over 200 fintech companies operate in the country, covering payments, eWallets, remittance, lending, and cryptocurrencies. The central bank has also recently approved licenses for six digital banks (including UnionBank Digital), although it has followed this with a three-year moratorium to maintain stability. This has created margin pressure for the banking sector, which has maintained a continued need for cost control despite the country’s long-term growth prospects.

Alongside this, the BSP also launched its Open Finance Framework in 2021. This is an open API framework with a three-year road map over 2021–2024, implementing open banking in a tiered approach across five phases: product information, credit application, account information, payment/transfer

integration, and non-banking products. This will require banks to provide open API access to allow customers to share their data with approved third party providers.

UnionBank Challenges

While UnionBank had been successful in being one of the fastest growing banks (based on number of new accounts), this had been placing increasing pressure on its IT infrastructure. With the Philippines digital economy also expanding, driving significant growth in per-customer transaction volumes, overall capacity requirements were growing exponentially, with significant transactions peaks. This resulted in high capex spend on server investment, with a significant burden on its financial planners that had to try to estimate likely demand and allocate funds accordingly.

Concurrently, from a fintech challenge perspective, UnionBank had decided to adopt a collaborative approach rather than view them as just competitors. One of the bank's values is defined as *ubuntu*, an ancient African word that means "I am because we are." For UnionBank, *ubuntu* emphasizes the spirit of collaboration it has adopted, and the belief that innovation results from working together rather than against one another. The challenge here is the need to simplify and enhance the collaboration experience with partners, making it easy to work with UnionBank from both a business and technical perspective. As such, the bank was keen to lead rather than wait for regulatory deadlines to provide open API access—and was one of the first movers in the market to provide an API gateway for its banking services.

Part of the challenge for UnionBank with respect to both areas was that its core banking platform was an old version of Finacle (from Infosys) running on-premise. While not antiquated as such (compared to some COBOL-based systems running in many developed markets), the bank's version dated back to the start of last decade, following an initial go-live on Finacle back in 2005. (Celent would classify this as a modern traditional platform rather than being cloud-native.) While scalable, it required upfront infrastructure provisioning and an extensive team of administrators (across system, network, database, and security) to operate. Similarly, while it used a message-based architecture that was open to integrate with other applications and enable the bank's channels, it was not an API-first platform designed to support the more complex external ecosystems that UnionBank required.

UnionBank Objectives

The roots to UnionBank's approach to these challenges date back to 2016 when it started a digital transformation journey to become "digital to the core" and embrace both technology and digital banking into its business model, looking to change its people and culture to be more agile and collaborative. Following an initial three-year program, it developed the ambition to become the first bank in the Philippines to operate fully in the cloud to support its underlying objective of propelling financial inclusion in the country—it has a moonshot vision of reaching 65 million customers. At the business level, this cloud ambition was driven by several key levers:

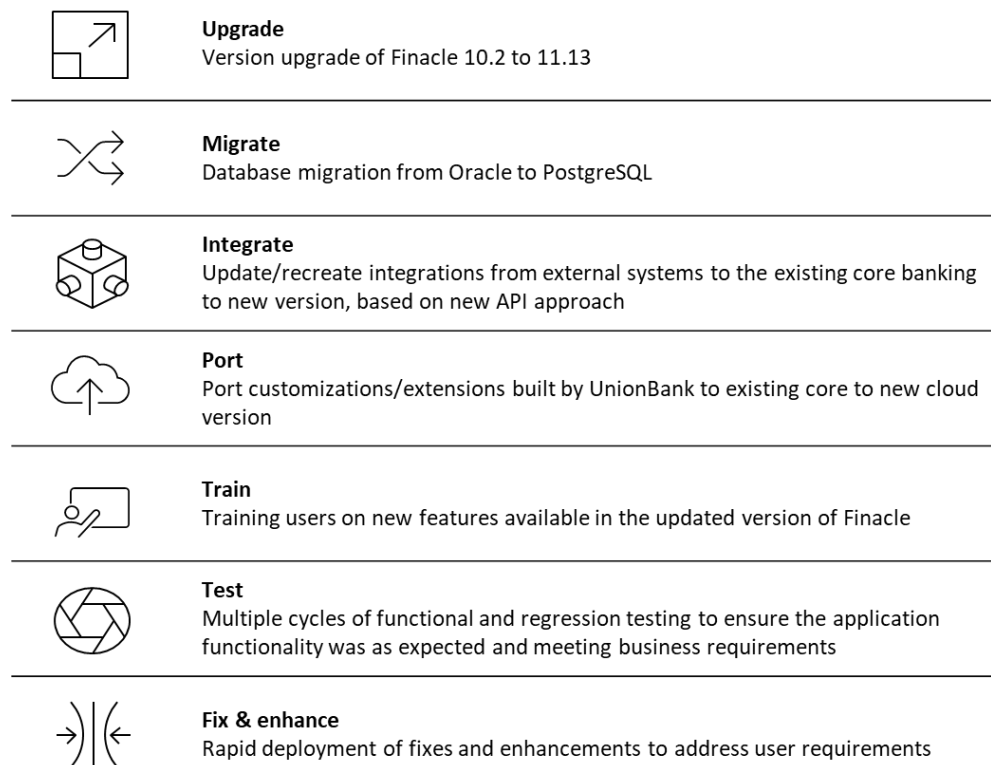
1. Business agility – It wanted the ability to deploy features faster and to innovate more quickly, with fewer errors and potential issues.
2. Hyperscale capacity – It wanted the ability to scale at scale, without the upfront cost of traditional approaches.
3. Operational resilience - It wanted to improve SLAs and reduce/negate unplanned outages.
4. People transformation – It wanted to improve the efficiency and, particularly, the innovation capability of their workforce
5. Cost savings – It wanted to achieve infrastructure cost savings, reducing total cost of ownership (TCO) and operating costs.

The move to cloud was sponsored by UnionBank CIO/COO Dennis Omila and green lit by the bank’s president Edwin R. Bautista. Other key supporters included CTO Henry R. Aguda, Consumer Finance head Ana Aboitiz Delgado, Chief Data Officer Dr. David Haroon, Head of Cards Business Anton T. Corro, Chief CX Officer Ana Aboitiz Delgado, and Chief of HR Michelle Rubio.

Solution

The main project involved migrating UnionBank’s on-premise core banking system to an upgraded microservices-based system running on the cloud. This entailed the following aspects, as shown in figure 1.

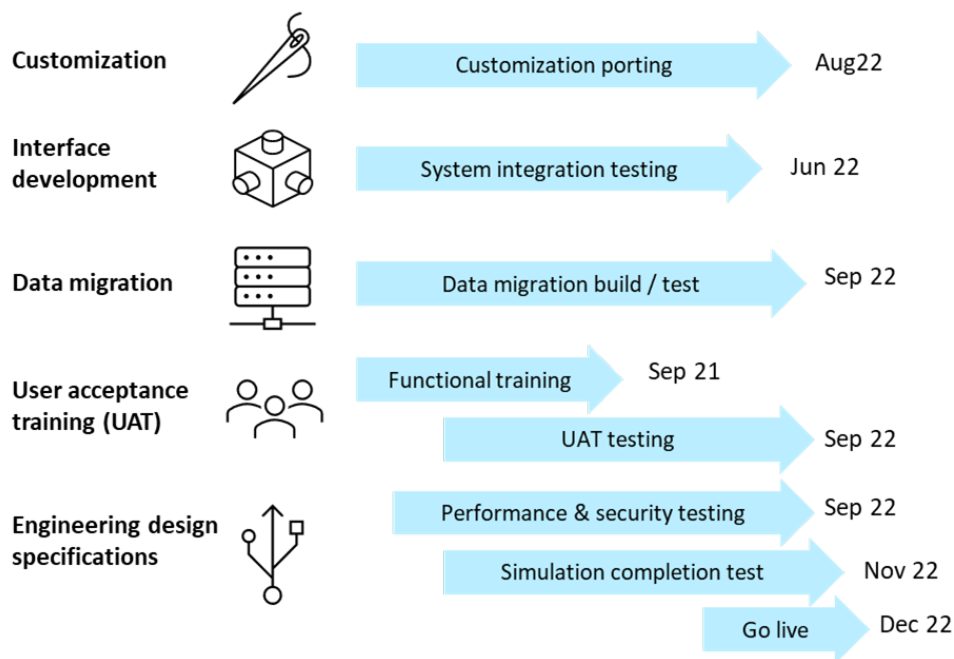
Figure 1: Key Project Aspects



Source: UnionBank, Celent

This involved a project team of 75+ active members, although given the complexity of the system, the project affected the entire bank. The program ran for around 18 months starting in July 2021, with go-live in December 2022. Key project workstream tracks and phase milestones are shown in Figure 2.

Figure 2: Key project tracks and milestone phase timelines



Source: UnionBank, Celent

At the start of its digital transformation journey in 2016, UnionBank adopted the mantra “Nobody gets left behind.” This philosophy continues, and a key element of its digital initiative is people and culture transformation. In this, as role requirements develop, UnionBank continues to upskill its “UnionBankers,” in areas such as robotics, agile methodology, design thinking, solution design, coding, and now, cloud.

In its previous operating model, UnionBank had various administrator roles for each domain, such as system administrators, network administrators, database administrators, and security administrators. But in the cloud model, the cloud administrator performs all roles. UnionBank has re-trained their engineers/operators to be cloud-fluent architects capable of running DevOps. Their job is greatly simplified because many of the previous services are now managed services. Indeed, as part of the move of Finacle onto the AWS cloud, Finacle platform management is now maintained through Infosys Finacle on a SaaS basis.

Finacle on AWS cloud

The Finacle core banking platform itself is now running as a cloud-native platform on AWS, with the following benefits compared to running on-premise:

- **Containerized microservices:** Finacle consists of a number of microservices, each independently deployable, scalable, and focusing on one main concern. These are orchestrated on a CNCF-standard Kubernetes platform—Amazon Elastic Kubernetes Service (Amazon EKS). The microservices can

automatically scale-out or scale-back independently in response to traffic, and the underlying infrastructure can also scale using auto-scaling groups.

- **Service mesh:** Istio service mesh orchestrates all inter-service communication as well as ingress and egress—delivering security, traffic routing, engineering, policy enforcement, and deep observability via Prometheus integration.
- **Managed-backing services:** All of the backing services—whether database (Postgres or Oracle), caching (Redis), or search—can be realized through the native managed services on AWS, including Amazon Relational Database Service (Amazon RDS), Amazon ElastiCache, and Amazon OpenSearch Service.
- **Storage:** All data in-out use cases in Finacle support Amazon Simple Storage Service (Amazon S3) object storage, which is extremely reliable and can scale infinitely while being widely accessible from multiple points.
- **Leveraging spot instances:** Finacle batch services can fully utilize Amazon EC2 spot instances for scaling the soft and non-real-time use cases. Batch services are resilient to Spot interruptions and can quickly respawn the replacement pods on available resources. A large number of EC2 instance types can participate in spot scaling, delivering significant cost savings on compute.
- **High availability:** All Finacle microservices are stateless. With a minimum of two replicas running across the EKS cluster stretching across two or more AWS Availability Zones (AZs), this provides high availability at the application layer. In the event of pod, node, or AZ failure, the application continues to be available and full capacity is regained automatically within a few seconds. Similarly, Finacle supports RDS in multi-AZ deployment mode, making for high availability at the database layer.
- **Security:** Finacle utilizes the Kubernetes-native Secrets interface to allow clients to fully manage sensitive data such as private keys, certificates, cryptos, passwords, and passkeys in secure systems like AWS Key Management Service (AWS KMS) or an external vault—while utilizing run-time access to these during application initialization.

Results

Both the wider shift to cloud on AWS and the shift of its core banking platform to cloud have produced significant benefits for UnionBank. Considering the bank's four objectives, key project results are shown in Figure 3.

Figure 3: Results Support All Objectives

UnionBank objectives	Project results
A Business agility & hyperscale capability	<ol style="list-style-type: none"> 1 UnionBank has been able to onboard 120k net new customers monthly as well as absorb 1 million worth of customer from the Citibank acquisition. 2 It has also been able to support orders of magnitude growth in digital accounts and InstaPay transactions.
B Operational resilience	<ol style="list-style-type: none"> 1 Finacle core banking had 75% faster data retrieval times post migration, with backup times reduced from 8 to 2 hours. 2 For other application move to AWS (such as SAP HANA S/4), downtime and speed eliminated/ significantly increased.
C People transformation	<ol style="list-style-type: none"> 1 1 administrator can now support an average of 40 services on the cloud compared to 20 on-premise, with virtual machines managed increasing from an average of 80 per admin on-premise to 150-250 per admin in the cloud. 2 Current engagement model with AWS and Finacle has allowed UnionBank's teams more time to engage with business and innovate instead of running BAU operations.
D Cost savings	<ol style="list-style-type: none"> 1 UnionBank estimates that total TCO cost savings over a 5-year period will be 44% for its IT estate compared to its business as usual (BAU) estimates. 2 For Finacle, there were \$385k in annual cost savings in storage alone, with the shift in tape storage to AWS reducing costs for UnionBank 35% annually. 3 Moving to cloud has moved costs from high capex to opex instead. This relieves a significant burden for financial planners/ budgeting because they do not have to try and estimate + allocate funds to purchase servers. 4 Better licensing flexibility with vendors, allowing UnionBank to pay as they go, and more leverage to negotiate better terms based on their true usage patterns.

Source: UnionBank, Celent

In addition to these immediate benefits, UnionBank sees several longer-term benefits that it expects to realize from 2023 onwards:

1. **Leveraging cloud-native core** – As customers rapidly adopt digital channels for their bank transactions, the bank must process an increasing number of transactions and cater to seasonal and monthly spikes. The new Finacle core banking version is lightweight, modular, and containerized, and hence each component can be scaled independently. With the auto-scaling features available in AWS Cloud, the Finacle on AWS core banking suite allows for automatic infra provisioning to cater to increases in volumes. The outcome is a stable core banking suite that can cater to customers with the same efficiency, at any level of usage.

2. **Promoting fintech innovation with an API sandbox** – UnionBank expects Finacle on AWS to improve agility. The Finacle SaaS provides a full range of APIs and flexible data access. UnionBank’s fintech partners directly access a highly secure API sandbox to develop and propose new services catered to its customers. The fintech partners can in turn bring new services and offerings to many more Filipinos.
3. **Agility for growth** – To cater to the growing expectations of customers and deliver them new features and solutions, UnionBank was implementing agile ways of working to rapidly design, develop, test, and deploy new features. Finacle on AWS Cloud leverages containerization and microservices architecture and provides a fully automated solution that has reduced deployment time from 4–5 days to 3–4 hours and allowed the bank to move to a DevOps model. This helps the bank to further increase its pace of innovation and become more agile.
4. **Reduction in total cost of ownership** – The Finacle on AWS core banking suite reduces the need for upfront infra provisioning. Auto-scaling features of the AWS cloud allows the solution to elastically scale based on usage and thereby cater to seasonal spikes in transaction volumes. The move from Oracle database to open-source PostgreSQL also reduced license costs.
5. **Operational efficiency** – By leveraging managed services offerings from Finacle, UnionBank can focus on solving business challenges, and the operational heavy lifting of the core banking system can be taken care of by Infosys (the SaaS provider).

Significantly, UnionBank also considers that its move to cloud was instrumental in allowing it to be in a position to achieve the Citi Philippines acquisition in 2022. Following Citigroup’s decision to exit its consumer business in 2021, several banks were keen to bid for the franchise. However, one of the reasons UnionBank was able to make the winning bid was that it believed that it would be able to exit the Transition Services Agreement in one year. This was based on its ability to leverage cloud rather than create its own infrastructure to transition and test systems, as well as its Agile development approach to be able to move at speed.

Lessons Learned and Future Plans

For UnionBank, key project success factors include:

- **Top-down goal-setting and executive sponsorship** – The bank’s broader digital transformation and cloud strategy have been driven strongly by senior leadership, with clear goals and objectives to encourage an aggressive approach to cloud adoption. This included both technology (CIO, CTO, CDO) and business leadership (president, business unit heads, CXO, and HR), with the board and executive team able to articulate a clear and consistent vision of the value of cloud to the bank. The board has a “Future Ready” approach, open to being trained on, and incorporating, new concepts and practices.
- **Focusing bank on value-add activities** – The bank has used the move to cloud to rethink many of the pieces in their value chain, choosing to use AWS and Finacle to take on undifferentiated heavy-lift workloads (infrastructure

and managed services for Finacle) to allow business (and IT) staff to focus on innovating and customer experience.

- **People transformation with training and development** – The program was part of a wider people transformation program, with staff reskilled to higher value activities (as part of its “Nobody gets left behind mantra”). This included UnionBank partnering with AWS to create a learner’s guild program (ULAP) to develop employees to work with cloud technologies and services. Importantly, this included cloud training for people outside of technology, such as HR, audit, and risk, so they were able to understand and deal with the implications of cloud transformation.
- **Partnerships with common purpose** – UnionBank considered having the right partners a crucial part of its transformation, being open to learning from their international and cross-industry experience, and involving them early in the planning stages (rather than after requirement identification and implementation). UnionBank believes that effective partners are those that share underlying objectives and common purpose (such as driving financial inclusion).
- **Working with regulator** – UnionBank had a constructive and open working relationship with the Filipino banking regulator (BSP), which has been progressive in its consideration of the regulatory elements to cloud. The BSP recently detailed its policies around cloud adoption, which has allowed UnionBank to move with speed through the approval process.

On the flip side, the main area that UnionBank would improve for future projects would be around UAT testing, which was sometimes affected by environmental downtimes as application patches or changes were made. The bank believes that moving to a blue/green deployment strategy would allow for faster recovery here. With this approach, two separate but identical environments are run (current “blue” application version and new “green” application version). The green version is used for testing, with a simple fallback to the blue environment if deployment fails. Once testing has been completed on the green environment, live application traffic is directed to the green environment and the blue environment is deprecated. With applications running in the cloud, this is relatively straightforward to implement, as environments can be provisioned very easily.

Future plans

With the migration of the core banking platform to the cloud, UnionBank is geared to completing full migration of its applications to the cloud by moving the other critical systems that interface with the core banking platform. This is something it expects to complete in 2023, with over 800 applications already shifted. Following this, UnionBank looks to achieve greater pace in its digital innovation journey—launching newer and beneficial services that will enrich the customer experience. This will be to support the government’s wider drive for financial inclusion and growth of electronic payments.

This is focused around leveraging Finacle’s open API repository, allowing it to develop its ecosystem strategy to innovate new services with the fintech community in the Philippines. This includes potentially developing services for

different metaverses, decentralized financial services embedded in Web 3.0 platforms, and possibly blockchain-based financial services.

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