

# Banking on Cloud: The Next Lap

Why banks need to race ahead  
in cloud adoption







# Preface

In the race to digital transformation, cloud has been a critical enabler. In the early years, the conversation around cloud in the banking community centered on reducing costs and increasing storage and computational capabilities. The concerns around the security, compliance, or skilling, which while valid, slowed banks down and distracted them from the urgency of adoption.

However, things have changed dramatically since then. The discussion about 'Why cloud' is no longer on the table. Banks have realized the need to shift gears and are fully convinced about the need for cloud in their digital transformation journey; what they need to do is to switch to the fast lane to unlock the best path to migration and tangible business value.

There is no universal formula for adoption; every bank must devise a cloud migration strategy based on its particular context and circumstances. That being said, there are some foundational guideposts which every bank must consider on its cloud transformation journey.

- Scale the maturity curve and motor along the cloud continuum
- Take a multi-pronged approach to application modernization to future-proof infrastructure
- Adopt hybrid cloud
- Embrace a multi-cloud approach to leverage best-of-breed capabilities across workloads
- Migrate a sizable workload and look to unlock the full potential of cloud

This paper delves into the need for accelerating cloud adoption, highlights the current state of the industry, and puts forth key recommendations to scale cloud success.



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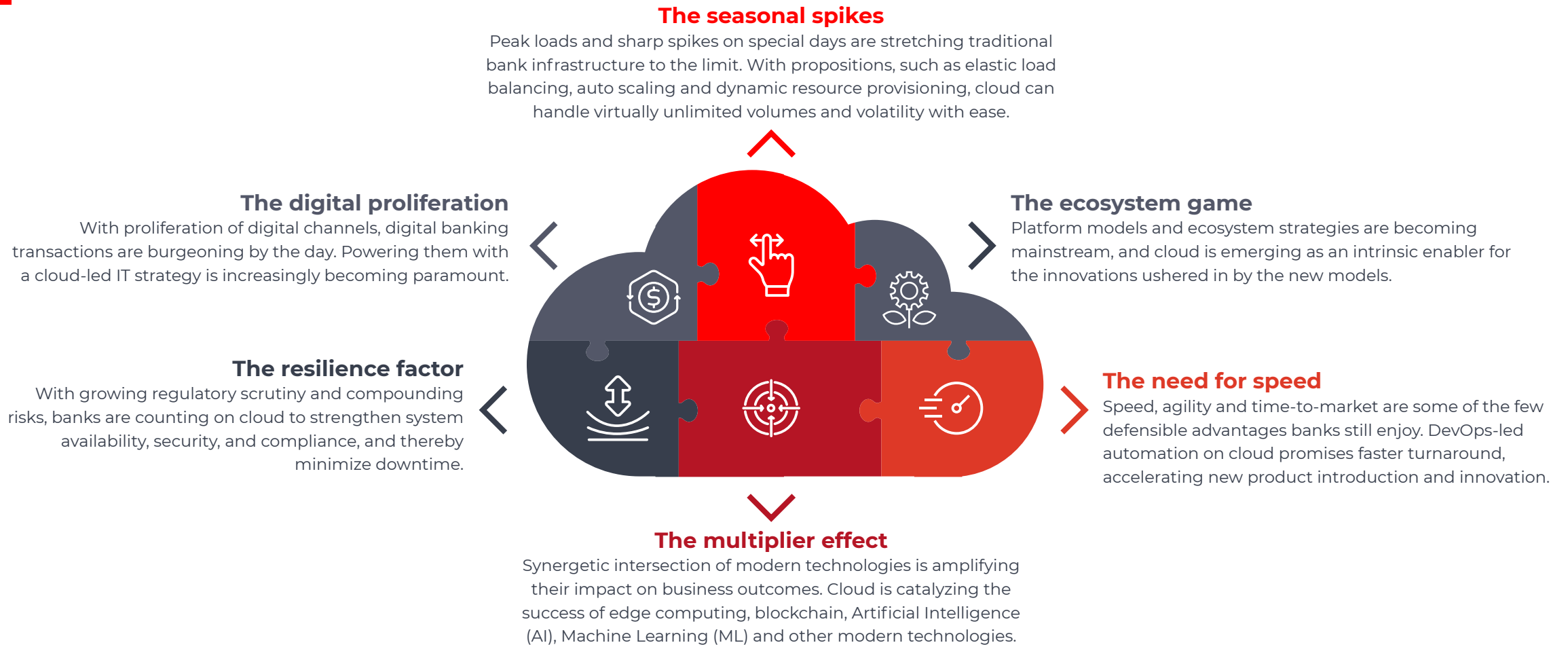
## It's time to shift gears

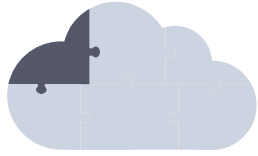
To stay contemporary, banks  
need to change their cloud  
thinking



# The cloud plays in banking

There are several compelling reasons





# The digital proliferation

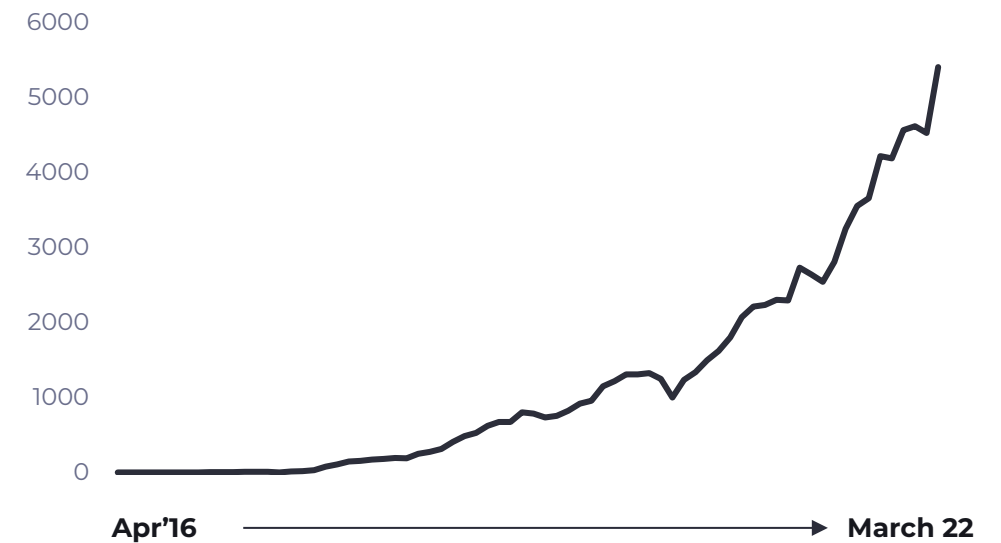
Digital banking transactions are burgeoning by the day

Digitization continues to rewrite the rules of modern-day banking. While half of all banking transactions happened inside the branch a couple of decades ago, today more than 90% occur on digital self-service channels. Making digital payments on the go, customers are transacting anytime, anywhere. Loan, deposit, and savings account transactions have all turned digital to fuel digital banking activity.

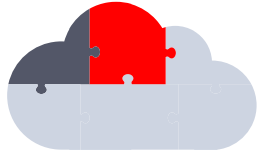
Today, digital payment volumes across the globe are growing at a CAGR of 20%<sup>1</sup>. Take India's UPI for instance. Within 4.5 years of inception, the UPI platform has scaled to 4.6 billion<sup>2</sup> monthly transactions. Similar scale is expected globally as more and more countries adopt open banking and drive real-time payments.

The banking systems of the past were never built to handle volumes of this scale; that changed completely thanks to the dynamic scalability of cloud.

UPI transaction volumes<sup>2</sup> (in Mn)



Source: (1) Grand view research - Digital Payment Market Analysis 2021 (2) NPCI Statistics



## The seasonal spikes

Peak loads and sharp spikes are stretching traditional bank infrastructure to the brink

For most banks, about 80% of the banking infrastructure remains idle for 80% of the times. This approach, while required to manage seasonal spikes, adds to the TCO. Sharp spikes on special shopping days, such as Cyber Monday, Big Billion Day, and Singles' Day sales have exposed the limitations of their infrastructure built on an inflexible architecture.

What banks need is infrastructure that can be scaled up and down on demand to maintain high performance under peak loads, while keeping operational costs under control. For this, they must turn to cloud for its on-demand elastic load balancing, auto-scaling and dynamic provisioning of resources – servers, storage, and computing power.

What's more, by resorting to cloud-native application design, banks can future-proof their infrastructure strategy.

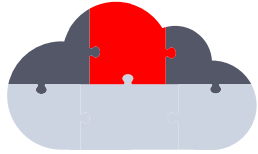
**583K\***

Transactions per second processed by Alibaba during the 2020-singles day sale

**100M**

UPI transactions per day processed by Finacle clients, thanks to growing number of digital payments and embedded finance use cases

Source: \*Alibaba statistics



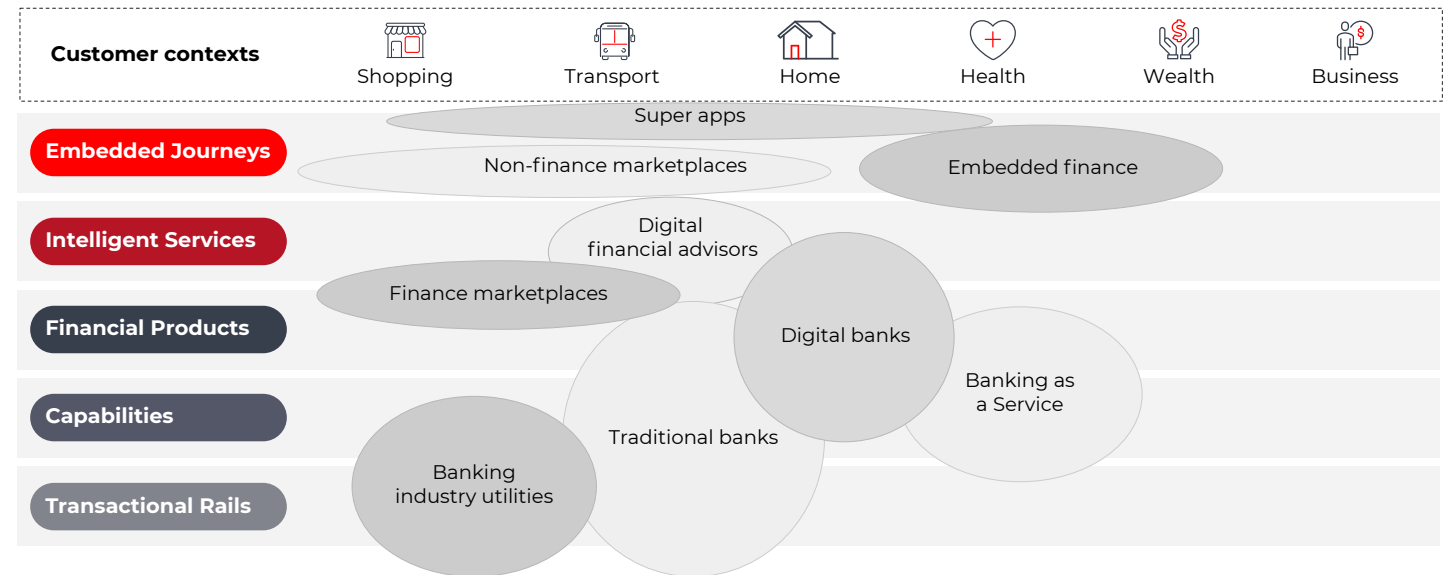
# The ecosystem game

Platform models and ecosystem strategies are becoming mainstream

The emergence of digital business ecosystems is changing banking irrevocably. Blurring the competition boundaries, different players across the banking value chains, such as banks, FinTechs, non-banks, tech giants, are joining hands to create more value for customers. These ecosystems, along with regulatory steer, are driving newer banking business models - marketplace, embedded finance and more - built around collection, consumption and sharing of data between systems. Since cloud can process and exchange massive quantities of data in real-time, it is the ideal enabler of these business models.

These new, cloud-based ecosystems will enable connected organizations to build on each other's innovations in new ways, rapidly iterating within the partnership to accelerate the pace of industry change. Another reason for banks to embrace cloud is that it enables them to leverage the latest (cloud-native) tools and technologies ushered in by new age FinTech and large-tech providers.

## New business model archetypes play in different layers of the industry value chain



Source: Developing Innovative Banking Business Models, 2021 by IIFS, in association with Infosys Finacle





# The resilience factor

Systems availability and security is critical and non-negotiable

The pandemic has changed the dynamics of the banking business, with digital-first transactions and remote-first operations becoming the norm. In doing so, it has also highlighted the importance of resilient systems. Not only do customers expect banks to provide always-on, 24/7 services, even regulations, such as Operational Resilience rules in the EU and UK, mandate banks to strengthen the stability and robustness of their systems, ensuring undisrupted system availability and security. Any lapses, such as system downtimes, cyber-attacks, or regulatory sanctions, can pose significant operational, financial as well as reputational risk for the bank.

Thankfully, cloud holds the key to solve several of these challenges. It almost mitigates the outages and disruptions, imbibes the principles of security by design, and promotes adherence to varied compliance requirements.





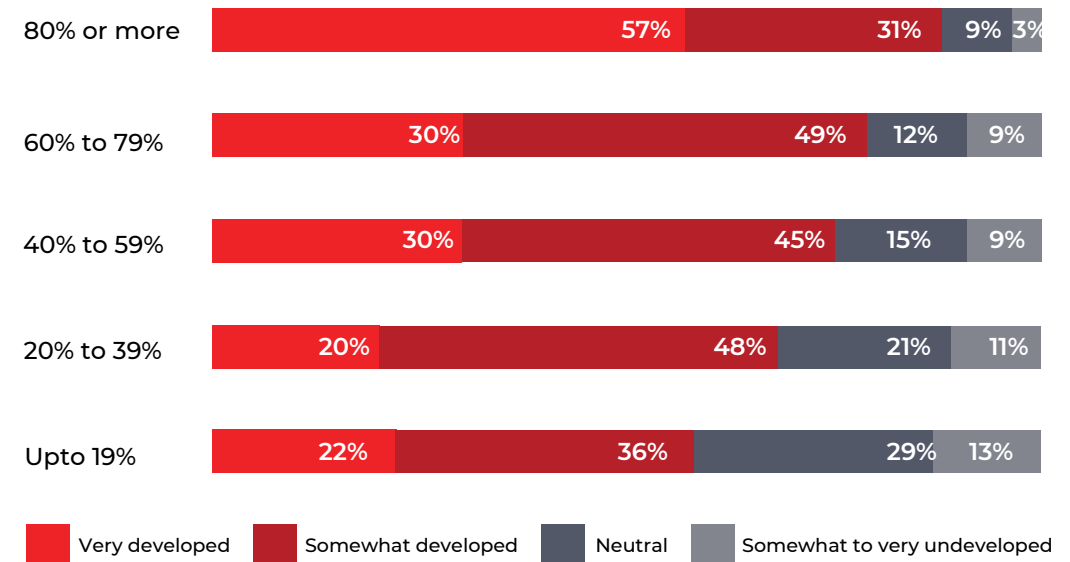
# The multiplier effect

Synergetic intersection of modern technologies is amplifying their impact

Cloud enables the success of other modern technologies. For example, it provides the large computing power needed for AI and blockchain implementations. Cloud storage and processing platforms provide a foundation so AI models can unleash the value of big data analytics. Further, cloud enables banks of all sizes to access the latest AI tools through pay per use/subscription-based models.

The possibilities of combining blockchain technology with cloud computing are endless. While cloud can mitigate the cost, scalability, and performance issues of blockchain – as indicated by the emergence of blockchain-as-a-service, blockchain can help solve the privacy and security challenges in cloud, more so in the space of edge computing.

## Confidence in the ability to unlock value from data and AI makes a quantum leap with 80% or more business functions in the cloud.



Source: Infosys Cloud Radar Report, 2021



# The need for speed

Speed, agility, and time-to-market are key to staying competitive

As banks fight competition from several sources – incumbents, challenger banks, neo banks and digital businesses – time-to-market is one of the few defensible advantages they have left. Cloud helps banks to maintain it by crashing the technology resourcing timeline from months to days, even hours.

To reap the gains, banks are looking to evolve their architecture to support agile application development and streamlined delivery. In this journey, DevOps has become a critical tool for bringing new synergies to software development by shortening release cycles and enabling faster, automated deployments and upgrades.

Average universal bank vs a leading digital-only bank – An agility comparison

	No. of monthly updates/releases	Time to market	% of workforce dedicated to technology
<b>Average universal bank</b>	50-100	30-60 days	5-20%
<b>WeBank China</b>	1000	10-11 days	60%

Source: McKinsey Global Banking Annual Review 2021

# The cost consideration

## Cloud investments reduce total cost of ownership

Reducing TCO remains an important reason why banks should prioritize cloud adoption. They can save operational and indirect costs at various stages in their cloud journey, besides reducing capital expenditure upfront by using infrastructure as a service instead of spending on a data center.

Leveraging managed cloud services on public cloud reduces the operational cost related to people, license, support, and maintenance. Full-stack managed services allow IT teams to focus on more important business activities. Further, with the true SaaS (Software-as-a-service) approach, banks can subscribe to and consume technology as required. This assures continuous monitoring and preventive maintenance of applications and delivers high application availability and performance. In fact, this brings additional savings associated with the cost of installation, upgrades, and maintenance.

Cloud-native applications support rapid, containerized deployments. They enable high portability and interoperability when working across heterogenous environments. This saves banks the indirect costs attributed to system outage, downtime, and non-compliance.

With Finacle on Cloud, **Übank**, the digital only subsidiary of the leading Indonesian bank VP Bank, was able to reduce costs and maximize speed of innovation with cloud-based digital operations.

**With Cloud, Übank was able to achieve -**



Reduction in TCO



Increase in speed to market



Reduction in cost of operations





## Switching to the fast lane

Cloud adoption is gathering  
pace in banking - accelerated  
by several factors

# Banks are making slow and steady progress

As demonstrated by findings from our recent global cloud research

As recently as three or four years ago, our cloud conversations with bankers circled around their inability to adopt cloud because of security, compliance or skilling issues – concerns, which while valid, distracted them from the urgency of adoption. But things changed dramatically and quickly as the major ecosystem players, including regulators, moved forward in their understanding of cloud; as the hyperscalers and regional players spread their data centers around the world to meet data residency requirements; and as the value proposition of cloud became stronger and stronger. Further momentum came from a totally unexpected source, the pandemic, which accelerated digital adoption and increased the urgency of migrating to cloud.

That being said, cloud has progressed beyond dynamic infrastructure provisioning or IT modernization to the stage of business transformation. It is no longer just a technology lever of efficiency, resilience, and scale but a strong catalyst of ecosystem innovation, time-to-market, and business value creation. We knew this from experience, and recently, we validated it through a survey, Infosys Cloud Radar 2021, covering 2,500 business and IT executives from 12 industries and 5 countries.

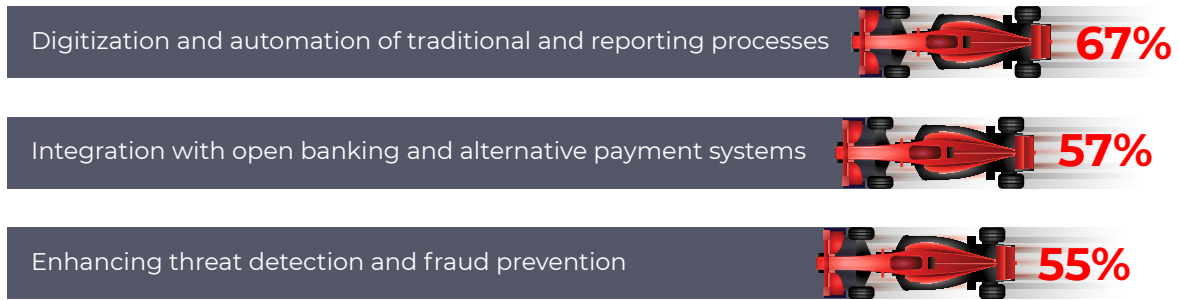
## 41%

of banks use private cloud to host most of their systems, followed by hybrid cloud (31%) and public cloud (29%)

## 16.2%

CAGR of public cloud spending by banks between 2019-2024. This is **3.5X** of banks' overall IT spending growth in this period

### Three most sought after use cases of cloud in banking



Source: Infosys Cloud Radar Research 2021





## The road ahead

5 laps to win  
the cloud grand prix

# The five key considerations for getting the cloud journeys right



## #1 Scale cloud maturity by moving along the cloud continuum

A bank's cloud transformation journey typically progresses along a continuum, from Infrastructure as Service (IaaS) to Platform as a Service (PaaS) to Software as a Service (SaaS). To scale, banks must progressively move mission critical applications across this continuum, on priority.



## #2 Adopt multi-pronged transformation approaches for application migration

A host of transformation approaches are available, such as rehosting, refactoring, re-platforming, and more. A bank must choose an approach based on factors such as application size, customization needs and the level of transformation skills.



## #3 Play the hybrid game

With a promise of agility, flexibility and control, hybrid cloud offers the best of both worlds. The key is to strike the right balance between on-premise, private and public cloud options depending on the use cases.



## #4 Embrace the multi-cloud paradigm

Banks must adopt a hybrid multi-cloud strategy to unlock value and take a best-of-breed approach for choosing the most suitable cloud provider for different workloads and requirements.



## #5 Go the full distance and unlock true value

Measures of cloud tokenism do not work anymore. Banks must move a critical mass of at least 60 percent of their workloads to cloud to achieve optimal results.



## 1

# Scale cloud maturity by moving along the cloud continuum

## Driving the right shift

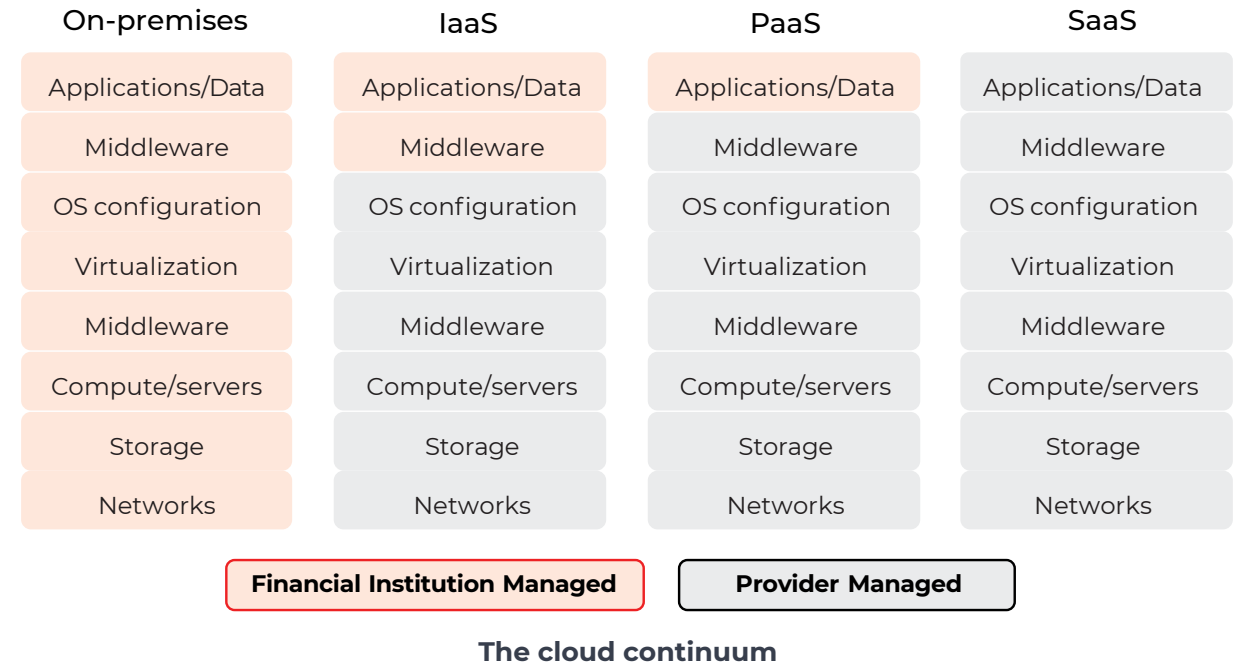
One of the foundational objectives of cloud transformation is to free bank staff from the tedium of managing technology infrastructure so they can focus on higher value tasks.

Banks can scale the cloud maturity curve by journeying along a continuum that has on-premise deployment at one end and Software as a Service at the other, with Infrastructure as a Service and Platform as a Service in between.

For most banks, the cloud journey starts with an IaaS model that frees them from buying and maintaining own hardware. Contemporary offerings from cloud service providers such as Outpost (AWS) and Anthos (GCP) enable banks to avail IaaS benefits on prem.

However, many banks are now realizing the compounding value as they move to the right of the continuum. In fact, it is not essential to go on a linear journey from on-premise to IaaS to PaaS, before arriving at a Software as a Service-based operating model; banks can go directly from hosting infrastructure within their premises to subscribing to software as a service on cloud, which is where the greatest value lies.

Many banks have seen this non-linear approach work well in areas such as CRM and marketing automation. What's more, many of today's banking software packages are ready for true SaaS propositions, helping banks move in the right direction. To scale the journey, its time banks shift mission critical applications along the continuum, rapidly.



Source: Celent report 'Public Cloud Adoption in Banking', 2020

## 2

# Adopt multi-pronged transformation approaches for application migration

Gartner estimates that 85%<sup>1</sup> of the existing enterprises' core IT applications – such as legacy mainframe, midrange, ERP, UNIX-based applications – are not built for cloud.

When banks embark on cloud transformation, they must also modernize their application landscape for cloud-based operations. They can choose from a number of well-understood transformation approaches – Rehosting, Refactoring, Re-platforming, Replacing, Recomposing, and Rebuilding – each with their own strengths and limitations.

The goal should be to pick out the best one among these and apply it throughout the application landscape. Depending on the size and customization of their applications, and the level of transformation skills (internal as well as partners') banks should draw up an appropriate roadmap, whose priorities are based on business value, criticality and risk of application transformation.

One of the popular strategies includes implementing the strangulator pattern to phase out existing legacy applications with services from cloud native applications. These services can co-exist on cloud while legacy applications run on premise. Gradual proliferation of cloud native services will replace existing legacy application services with minimal disruption to banks.

## Direction of applications in the cloud<sup>2</sup>

Mean Calculation

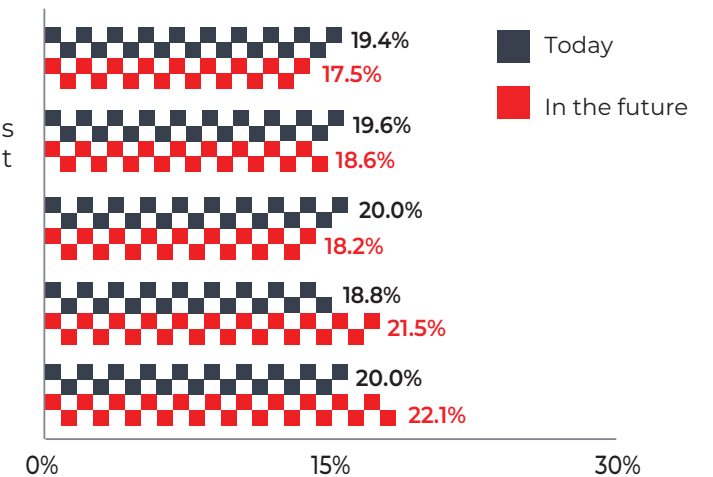
Lift and Shift: Traditional, Noncloud Applications Running Unmodified in a Cloud Environment

Lift and Optimize: Traditional, Noncloud Applications Running With Modifications in a Cloud Environment

Refactor: Traditional, Noncloud Applications Utilizing Cloud APIs and Middleware

Replace: New Applications Replacing Traditional Noncloud Applications

Build or Buy: Brand New Applications



**n = 366 use public cloud infrastructure; excluding don't know/not sure**

D2. What is your organization's plan for public cloud application today/in the next two years?

Source: (1) Gartner report 'Break Down 3 Barriers to Cloud Migration', 2021 (2) 2020 Gartner Cloud End-User Buying Behavior Survey

## 3

## Play the hybrid game

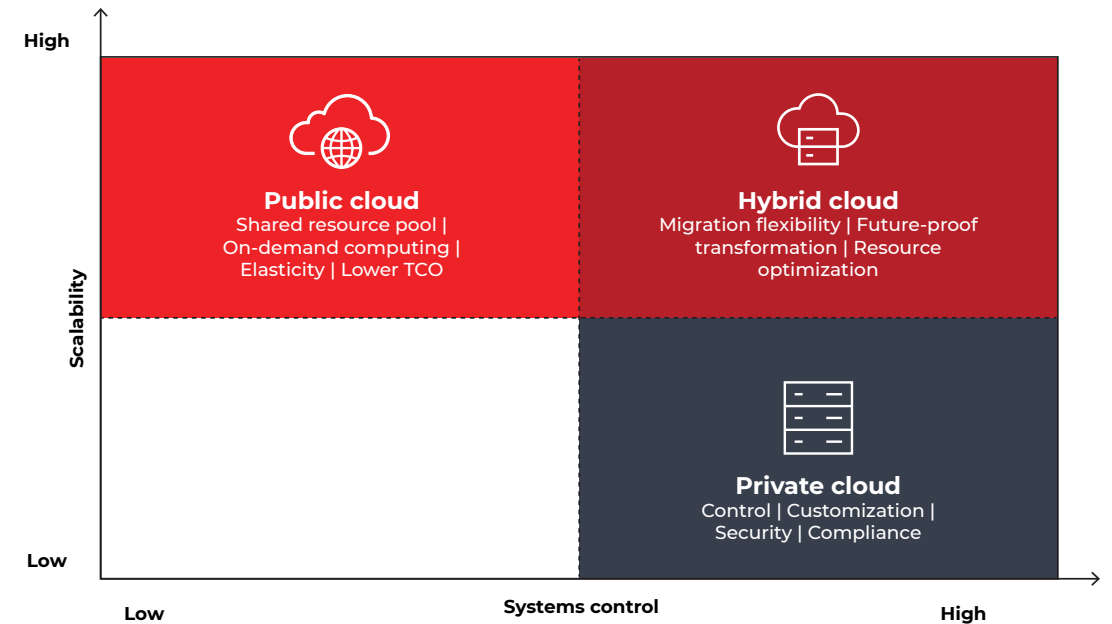
The present and near-future is hybrid

When one considers the various alternatives in cloud migration – risk versus return, public versus private cloud, scale versus security – hybrid cloud emerges as the most viable option. The only question is, what is the best configuration or mix?

Traditionally, large and mid-sized financial institutions favored private cloud as it offered them more control; now, they are experimenting with public cloud for applications that are not mission critical. In our recent research on cloud adoption, 41% of the banks covered had chosen private cloud, 28% had gone with a public cloud, and the remaining 31% were using a bit of both.

As more organizations switch to hybrid cloud, the challenge for their technology leadership will be to strike the right balance between on-premise, private and public cloud options based on use cases.

Contrary to popular perception, public cloud is not always the best option; there are many situations where the limitations of public cloud, such as latency, governance, compliance issues and performance, rule it out, and private cloud is what works. The other reality is that banks still have many legacy applications that are not cloud-ready and therefore need to be maintained on the premises. Hybrid is the way forward, at least for the foreseeable future.



With the right approach, hybrid cloud can deliver the best of both worlds

## 4

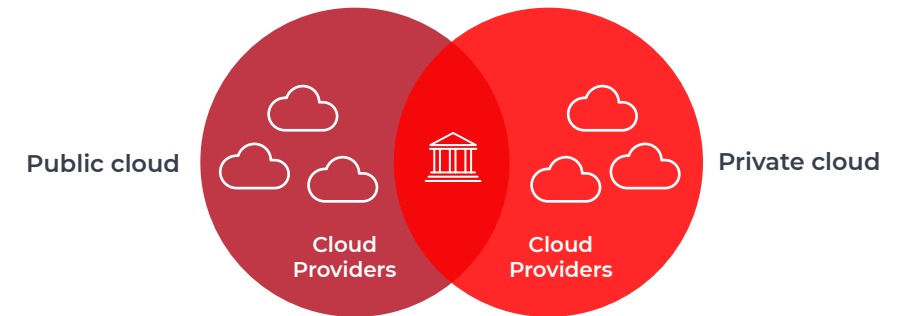
# Embrace the multi-cloud paradigm

## Host of opportunities and challenges ahead

As the cloud landscape matures, more and more cloud service providers are differentiating themselves beyond computation and storage capability, on the basis of managed services and niche innovation enablers. Some are going further to offer industry-specific cloud platforms which provide tailor-made security, standards, and controls for the industry.

Multi-cloud exposure allows banks to choose the best-of-breed cloud provider for each workload. Banks can avoid vendor lock-in, and negotiate the best terms with providers, the advent of many more of whom is imminent. Not only that, data residency and other regulations may also require banks to distribute their workloads across two or more clouds (vendors). One way or the other, most banks will end up working with several cloud partners.

A hybrid multi-cloud environment where applications and data reside in the private and public clouds of different cloud providers requires banks to adopt new ways of working; this poses several challenges, the foremost being an increase in operational complexity and heterogeneity. Also, the initial lack of standardization in integration management and processes will raise some security concerns and require specific skill sets. Moving applications across cloud landscapes will become complex, and containerized deployments will become table stakes.



All these complexities can be overcome easily with cloud-native, cloud-agnostic architecture. One way to create the right conditions for multi-cloud is by following Cloud Native Compute Foundation's recommendations on designing cloud-native, cloud-agnostic applications. Importantly, multi-cloud centric processes, design, and security should be planned in advance and not as an afterthought. This helps to build a multi-cloud mindset and eases adoption.



## 5

# Go the full distance and unlock true value

Half measures will no longer work

One of the most lingering questions in cloud transformations has been - how long will it be before banks see a decent ROI. The answer to that is - as long as it takes them to go the full distance.

Our research and experience unequivocally shows that cloud tokenism does not produce optimal results. It is only when cloud adoption achieves critical mass - at least 60 percent of the workload has migrated - that meaningful results start to flow. This is true for all types of cloud deployments - private, public, hybrid and multi-cloud. Also, the value increases with the adoption of SaaS models, when business operations run on the latest versions to maximize value from technology investments.

However, an overwhelming majority of banks (86%)<sup>1</sup> are still far away from achieving critical mass. Banks need to go the full distance in their cloud journey to get anywhere. When they do that, the benefits of cloud expand beyond defensive values such as cost, access, and resilience; banks can unlock the true value of their cloud investments, and also become more competitive by improving speed of innovation and acquiring digital capabilities such as AI, analytics, blockchain and more.

## <14%

banks have achieved critical mass in cloud adoption by moving 60% of applications to cloud<sup>1</sup>

Banks' cloud objectives are shifting from being defensive to offensive, with the 2020 pandemic being an inflection point

Source: (1) Infosys Cloud Radar Report, 2021





## Let Finacle's cloud crew assist you

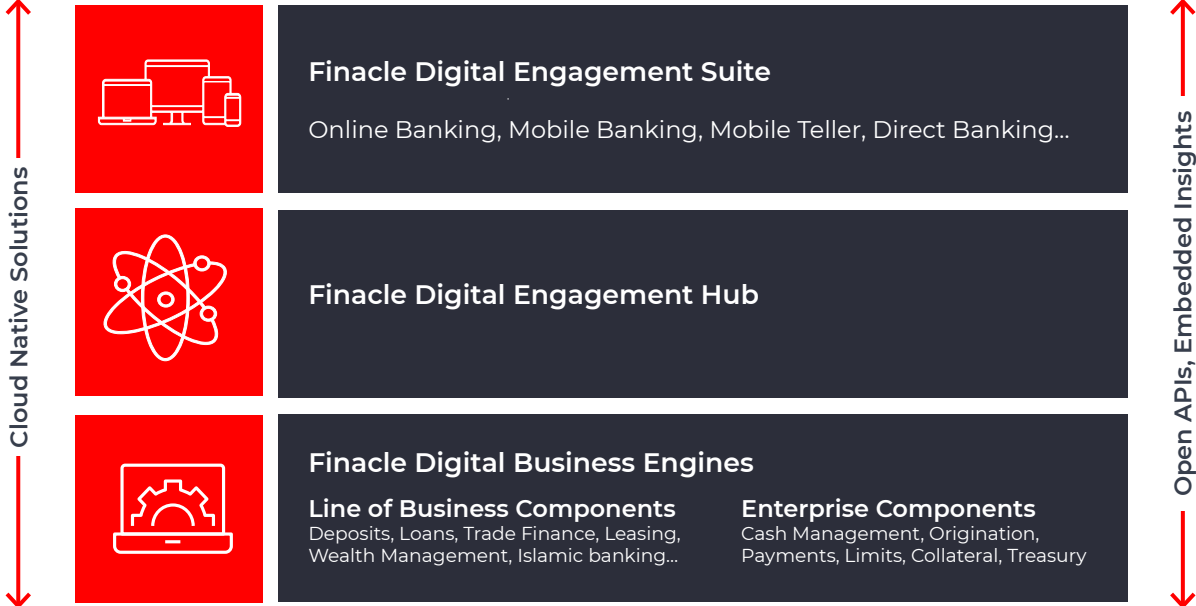
Our digital engine can get you across the checkered flag

# An industry leader in digital banking solutions

Finacle is an industry leader in digital banking solutions. We are a unit of EdgeVerve Systems, a wholly-owned product subsidiary of Infosys (NYSE: INFY), a global technology leader with over USD 15 billion annual revenues. We partner with emerging and established financial institutions to inspire better banking. Our cloud-native solution suite and SaaS services help banks engage, innovate, operate, and transform better to scale digital transformation with confidence.

Finacle solutions address the core banking, lending, digital engagement, payments, cash management, wealth management, treasury, analytics, AI, and blockchain requirements of financial institutions globally. Finacle's componentized structure allows banks to deploy and upgrade solutions flexibly as per their business priorities. Our solutions run in a containerized environment orchestrated by Kubernetes and can be deployed on a private, public, or hybrid cloud.

We are differentiated by our functionally-rich solution suite, composable architecture, culture and entrepreneurial spirit of a start-up. We are also known for an impeccable track record of helping financial institutions of all sizes drive digital transformation at speed and scale. This has enabled Finacle to be consistently rated as a leader across core banking, digital engagement, corporate banking, and payments spaces by major industry analysts. Today, banks in more than 100 countries rely on Finacle to help more than a billion people and millions of businesses to save, pay, borrow, and invest better.



A full-stack, composable digital banking suite

# The Finacle cloud-native approach

Key elements driving business agility, resilience and innovation



## Microservices architecture

Higher agility and scalability, selective deployments/upgrades



## Stateless processes

Independently scalable apps



## Containerization

Efficiency and reliability across virtualized environments



## Orchestration

Kubernetes led orchestration, easy management and upgrade



## Distributed DB and storage

Multiple data storage technologies



## Declarative APIs and RESTful APIs

Drives outcomes-based execution, instead of action-based execution



## CI/CD

A CI / CD pipeline and set of tools for automation



## Service mesh

Istio driven insights and operational control over microservices



## Observability and analysis

Events emitted as logs for better observability and analysis



## Container registry and run times

Single interface for docker image management, vulnerability analysis, and access controls



## Streaming and messaging

Enables asynchronous push-based communications model for microservices

# Fastracking cloud journeys with Finacle

A cloud-native, cloud-agnostic solution suite

Finacle offers a cloud-native, cloud-agnostic digital banking suite that can be deployed flexibly – on a private, public, or hybrid cloud – to suit your bank's requirements.

Our applications are built on a cloud-native framework based on Cloud Native Computing Foundation (CNCF) standards and follow the Twelve-factor App Methodology. This cloud-native approach prevents vendor lock-in and ensures delivery and support across managed cloud services, for private, public and hybrid cloud.

The applications run in a containerized environment orchestrated by Kubernetes, which is supported in all cloud environments.

We have partnerships with all major global and regional cloud providers, including AWS, Microsoft Azure, Google Cloud, IBM, RedHat, and Oracle. Finacle's componentized structure allows you to choose any combination of solutions matching your bank's specific business priorities and modernization strategy. Whether your bank is looking to transition entirely to the cloud or do it progressively in phases, Finacle provides the necessary flexibility and support.



**Private cloud deployment**

.....  
Deployment in the client managed private cloud environment



**Client managed public cloud**

.....  
Deployment in the bank managed public cloud environment



**Software as a service – Single tenant model**

.....  
Solutions offered as a service by Finacle or partner, full opex model



**Software as a service – Multi-tenancy model**

.....  
Multi-tenant service offered by Finacle or partner, full opex model

**Flexible deployment options**



# Banks are transforming their cloud propositions with Finacle

Success stories across regions, sizes and institution types

A tier-1 global bank leveraged Finacle on public cloud to launch multi-country challenger bank operations



A leading African multilateral trade finance institution deployed Finacle on AWS to power its digital transformation



A large Vietnamese bank is converting from on-premise to Finacle Digital Banking SaaS to accelerate growth

An Australian neo non-bank adopted Finacle SaaS to accelerate its growth plans



A leading Asian financial institution banked on the Finacle Digital Suite on cloud to power its international expansion







## Ready to get started?

The digital banking revolution is on, and cloud plays a critical role in it. Keeping pace with the changing market dynamics requires banks and FIs to accelerate cloud-adoption by embracing a modern cloud-native, cloud-agnostic technology platform.

Join the global community of banking leaders who are innovating and transforming on cloud with Finacle.

Start your cloud journey, today.

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