Cloud migration 2.0: shifting priorities for application modernization in 2019

Making sense of cloud transitions for financial and telecoms firms
Migration to the cloud is typically business demand led rather than based on underlying application suitability.

Over 50% of financial services firms have yet to develop an application class based approach to application migration.

We identify four measures to assess application cloud readiness (below, page 14).

Cloud migration is a top strategic priority for many banks, insurers and telecoms providers in North America and Europe. Following the lead of FinTech firms, almost all have this journey on their radar, but the benefits are yet to be captured.

In more than 50% of cases, CTOs do not apply an analysis led evaluation to support and facilitate the move to the cloud.

Most established firms have tried lift and shift, in hope of quickly realizing cost and scalability benefits, encountering many drawbacks along the road. Some have begun marginal rewrites of these applications to remediate critical shortcomings, as immediate problem solving.

In a world where legacy systems are thoroughly connected through APIs to modern systems of engagement, the risk to firms of an ill-conceived cloud strategy is high.

Adoption of differing private or public cloud arrangements for applications and data is more common than wise.

At some institutions, there is no top down mandate for cloud. A clear architectural plan for applications – at genesis, product and utility phase – is required.

Software leaders must decide why applications are being moved to the cloud.

Firms thinking about moving applications to cloud platforms such as AWS, Azure and GCP need to assess both the qualitative business impact and objective composition of their application portfolio. An assessment led approach increases the chance of a successful cloud migration.

Without objective as is assessments of current application performance and to be benefit measures for migrating to the cloud, software leaders at banks, insurers and telecoms providers will miss the true cloud opportunity.

Failure to adequately review, revise and where needed rewrite, particularly for newly designed applications, impacts cost, flexibility, liability and creates additional technical debt.

To avoid recreating technical debt, firms must increase their use of analysis led approaches to classify applications according to their ability to be replatformed, refactored or rebuilt.
When the business demands a shift to the cloud, admirable goals for scalability, cost and flexibility are agreed – and so the journey begins.

Software leaders grasp the initiative as an opportunity to lift and shift the low hanging fruit, often encountering challenges along the way.

Where many firms’ strategy lacking is in a diligent, analysis based assessment of the cloud readiness of the application stack.

Based on our observations, we have identified three best practices, set out on the next three pages. Software leaders must assess and apply these in context of their current application mix and future roadmap.
Best practice: cloud migration is often business demand led rather than based on app suitability

How do you assess the cloud readiness of your applications?

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Most firms fail to take an analysis led approach in assessing, prioritizing and organizing cloud migration.

**Over 50% of firms are primarily basing their decision to move applications to the cloud on gut instinct and ad hoc surveys with application owners.**

North American firms are more likely to take a survey based approach than firms in Europe. Insurers and FinTech firms are more reliant on surveys than average; banks by contrast favour tooling.

Answers from one in ten telecom providers did not necessarily meet expectations. For these operators, replacing legacy physical kit is the priority over assessing application readiness for the cloud.

The relative lack of application analysis presents two problems.

First, architectural issues, scalability and resource requirements may not be uncovered until firms are well into the migration.

Second, workstream organization for new build, refactor and quick and dirty lift and shift is inherently complex.

Though cloud is a catalyst, firms’ modernization efforts have not been directly connected to cloud as such.

Firms beginning – or strategically restarting discrete cloud modernization projects – must first review and revert to agreed architectural principles, then classify applications according to:

- relative cloud readiness
- investment required to modernize
- criticality of business function

Classifying, prioritising and centralising workstreams in this way will enable firms to increase their architectural maturity and align closer to original target benefits.

*Cloud is definitely not a technology issue, there are a lot of people and process changes required before modernization begins.*

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— Global Chief Architect, European Insurer

Compliance is actually one of the big problems for any cloud migration, it is not as technologically challenging as the compliance issues are.

— Director of Strategy Operations, North American FinTech
Best practice: software leaders usually target the low hanging fruit for initial cloud migrations

How did you begin the cloud journey?

Many firms’ migration approach is led by non core apps, such as hosted CRM, HCM and collaboration solutions, but encounter unexpected problems.

Charged with delivering cloud migration, more than 80% of software leaders at banks, insurers and telecoms operators seek quick wins – migrating corporate and customer systems – to generate early momentum.

Journeys into the cloud are into the fourth year and beyond for established firms, whether in North America or Europe. FinTech firms take less than 18 months on average to build cloud native application portfolios.

In many cases, firms pursue packaged SaaS based corporate systems, aiming to quickly increase cloud maturity by adoption of these commercial off the shelf solutions.

Many firms’ migration approach is led by non core apps, such as hosted CRM, HCM and collaboration solutions, but encounter unexpected problems.

Standardised packages like these indicate some of the challenges to come with modernizing core systems. Lack of features, security constraints and lower performance are the most common.

Echoes of the initial battles – and efforts to modernize more complex migrations – still remain.

Even for FinTech firms – by far the most advanced segment in our study – over 50% express some reticence with these systems, often tasking internal teams to apply local configurations in order to meet functional demand.

Software leaders – already cataloguing the challenges moving low hanging fruit – must identify measurable benefits to guide the migration of core systems to public cloud.

Typical use case in moving to the cloud is email. But it has been a nightmare. The provider was unable to provide SLA or penalty management – in the end, we had to turn our back.

“– Head of Infrastructure, European Bank

Figure 2 – types of applications (or infrastructure) pursued for initial cloud migrations: on average, firms target customer and corporate application categories as quick wins.
Best practice: in most cases, lift and shift is high risk for mainframe applications

What percentage of your core applications are on the mainframe? Which will never move to the cloud?

Banks, insurers and telecoms providers struggle to define the most effective path forward for workloads running on the mainframe.

Mainframe apps are the critical engine for legacy process firms; more than 65% have concluded lift and shift to be uneconomic for these workloads.

Telecoms operators – as a risk management strategy – expect to retain a greater proportion of operations in legacy than banks or insurers. On average, insurers are targeting the greatest overall reductions, though start from a higher installed base. Legacy process firms in Europe are more aggressively targeting mainframe offload than comparative firms in North America.

Effective cloud migration demands increased data connectivity, performance and security.

Legacy process firms experience further complications when they locate data on a different cloud platform to the applications. This is also true for the connectivity back to the mainframe.

As these systems become increasingly exposed to the outside world via APIs, the threat surface and complexity increases.

Standing up replacement systems beside the mainframe will be the principal cloud migration option for large institutions.

As functionality goes live, the equivalent mainframe components can be retired. But for some, the cost profile of this approach is prohibitive.

For most, though mainframe modernization will be delivered late in the journey.

Planning must begin now – to enable this critical migration to ride on the coat tails of future lessons learned.

It's mostly duct tape and elbow grease at that level. I worry about stability – the architecture is seriously connecting everything to everything.

– Vice President of Architecture, North American Insurer

We are cloning the mainframe and modernizing pieces of those instances as we go. These systems are pretty core – there is a lot of fear about compliance.

– Head of Architecture CoE, European Bank
Armed with the battle scars of the past three to five years, software leaders at banks, insurers and telecoms operators are revisiting their near-term cloud migration plans.

Applying these lessons, firms have begun to identify the tactical approaches to disrupt their current journey and reorient their teams to achieve original target benefits.

We identify, over the following pages, three near term objectives to guide software leaders in the next phase of their journey.
Near term objective: classify and prioritise app modernization according to three criteria

How do you plan to apply lift and shift, cloud ready and cloud native in the next 12 months?

![Graph showing near-term strategies for cloud migration differ by segment.]

Overcome the challenges of lift and shift by assessing app readiness for cloud, return on investment and criticality.

More than 40% of software leaders are yet to define a class-based approach to application modernization.

Heavily legacy process firms – particularly those in North America – tend to lift and shift, achieving fewer benefits than FinTech firms.

Cloud journeys have thus far focused principally on rehosting and the immediate, marginal rewrites that result.

Cloud native strategies are emerging for net new functionality, yet the strategy for applications straddling the product and utility phase is less clear.

Organising cloud workstream efforts must be based on parallel streams for rehosting or replatforming, refactoring and rebuilding.

Rehosting has greatest benefit for applications nearing the end of the utility phase, with up to three years before end of life.

Existing, actively evolving applications in the product phase should be first replatformed, then continuously refactored until the application enters utility phase.

Cloud native approaches apply for any new build – and light the path forward for more complex applications.

As firms pursue these strategies, lessons learned for legacy interconnects, resiliency and efficiencies issues should be fed into the central core driving overall cloud workstream efforts, in preparation for a cloud native future.

"We don't want to keep on building something that is going to get monolithic in its own nature and as a result have a modern legacy."

– Vice President of Architecture, North American Insurer

"Cloud migration is only really a problem if you're moving workloads without changing the way they are shaped."

– Chief Digital Architect, European Insurer
Near term objective: align platform strategy to app readiness, chosen architecture and DevOps maturity

Who was your principal cloud provider two years ago? Who are they today?

Software leaders must create a multi cloud strategy aligned to the cloud readiness of their app portfolio.

AWS were the pioneers in this space, enabling early adopters to pursue the initial phase of their cloud journey. Today, over 30% have some of their workloads on either Azure or GCP.

Competitive pressures are rising for the cloud platform providers: advantage mature financial firms. FinTech firms and North American institutions are adopting alternative cloud providers faster than legacy process institutions and firms in Europe, on average.

As the new native emerges, so too do Azure and Google Cloud Platform (GCP). Few discern any superficial difference between these three firms today.

But a sign of future trajectory is emerging: some firms express the business focus of Microsoft and innovative approach of Google counterbalance the muscle power of Amazon.

Add in the increasing presence – of telecom operators, as value added resellers – financial firms now have a raft of options from which to enable their chosen path to cloud maturity.

Depending on their relative maturity for DevOps – and how micro the microservices become – the path forward for legacy process firms is becoming clear:

• leverage commodity cloud for apps at genesis and utility stage
• consult cloud providers to evolve strategies for the mainframe

When we started our journey, it was a no brainer to go with AWS. Now the features that are offered both by GCP by Azure can easily compete with what we have with AWS.

– Head of Cloud Services, North American Insurer

AWS’ offering was more mature when we made our original selection, but there is not much difference between Google, Microsoft and Amazon now.

– Head of Engineering, European FinTech
Near term objective: select the most appropriate architectural model to avoid unnecessary complexity

Choose the most effective migration plan and architecture approach per application.

Approximately 65% of firms expressed economic inhibitors to microservice adoption – for app granularity that may be excessive.

Grappling with the microservices versus miniservices question is a struggle for most firms, regardless of region, particularly for legacy process firms.

Setting the right architectural model is critical to avoid creating additional technical debt. Resiliency suffers in monolithic, though heading too far down the microservices path creates dependency and deployment risks.

In most cases, a microservices architecture is an unnecessary step too far.

In simple terms, a microservice is a specific function in a business process rewritten as to stand alone; a miniservice describes a small group of functions in a business process broken out as a standalone application, typically from a legacy application.

We are constantly finding where to draw the line, pushing it back and forth. Splitting too far increases latency and complexity – we try to split down the line of business logic.

– Head of System Reliability Engineering, North American FinTech

In assessing the need for and journey to microservices, firms must evaluate the:

- effectiveness of their release machinery
- coupling to single business threads
- expected flux in user base and feature set

Microservices are ideal for rapidly evolving applications serving a diverse user base; miniservices enable a quick path to value.

Refactoring – and grasping the relative opportunity for modernization in virtualised environments – is the battle to be won.

Unless close coupling between business services and business logic is required, firms should pursue miniservices to lay the foundations for eventual mainframe modernization.

Each microservice has its own SDLC, the number of dependencies is astonishing. A continuous delivery pipeline is required for each microservice.

– Chief Digital Architect, European Insurer

What mix of monolithic, miniservices and microservices architectures are you targeting?

Choose the most effective migration plan and architecture approach per application.

Figure 6 – near term architecture objectives per segment.
Near term cloud migration objectives in hand, software leaders at leading banks, insurance and telecoms firms are ready to map out the journey ahead.

We set out three cloud migration priorities on the next three pages to help firms assess, build and track progress for the coming twelve to eighteen months.
Cloud migration priority: prove assessment led migration patterns through a central core

How do you operationalise cloud migration?

Centralisation of cloud migration activities drives progress.

Identify application readiness, prioritise modernization activities and industrialise cloud migration through a centre of excellence

Over 70% of firms report that cloud migration is driven inconsistently across application silos.

Centralising cloud migration activities tends to lead to faster progress, illustrated by the comparison of FinTech firms to legacy process institutions.

To overcome the difficulties of siloed, business led migrations, telecom operators, banks and insurers must centralise cloud migration journeys.

Without a central cloud migration core, opportunities to synchronize the firm’s modernization efforts, investment priorities and benefits (target and captured) are lost.

Evolving to a cloud centre of excellence (CoE) approach will enable firms to evaluate architectural styles and migration paths per application and domain.

Firms can realise better workstream organisation, prioritisation and capitalise on lessons learned through the CoE.

As the single source of truth for cloud readiness, the CoE – leveraging our app readiness assessment described later – continuously assesses and optimises the overall migration against target benefits.

Ultimately, the cloud CoE incrementally and disruptively builds the foundation for mainframe modernization.

We expect to gain a bigger bang for our buck by centralising modernisation activities across our corporate IT systems.

“We are running a PoC to prove that we can develop a set of tools and architecture patterns, to provide a menu of options to development teams.”

– Head of Enterprise Architecture, North American Insurer

Figure 7 – centralisation of cloud migration activities drives progress.
Cloud migration priority: develop an app domain and reliability based cloud readiness assessment

How ready for the cloud are your applications?

Assessing the best migration strategy per application class and user segment is based on four criteria.

Fewer than 35% are using analysis tools to assess the underlying application readiness for cloud migration.

Mature institutions must develop an app readiness (and effort) assessment to identify and prioritise modernization activities.

Firms should base their assessment on required:
1. interconnectivity
2. reliability
3. effort to remediate
4. frequency of drops

Measurements like these enable established firms to assign relative app readiness to rehost or replatform, refactor and rebuild.

Foundationally, these measurements enable the centre of excellence (CoE) to identify architectural milestones across the app maturity lifecycle. Though most firms should target miniservices for new build, continuous evolution along the monolithic, miniservice and microservice spectrum is required.

Ultimately, an assessment led approach enables the CoE to develop its long term plan for mainframe modernization and continuously reassess target and actual benefits.

Going back to first principles, we take a pattern-based approach and determine how to create a fully immutable, containerized pipeline. We standardize our architecture around a limited set of patterns, reducing the risk of increasing technical debt.

– Head of Cloud Services, North American Insurer

We measure cloud readiness by judging underlying access to legacy systems, any recoupling required and volume of transactions. The ability to have stateless applications creates the best chance to move to cloud native architecture.

– Head of Infrastructure, European Bank

Figure 8 – measure required: interconnectivity; reliability; effort to remediate and release frequency to determine whether to rehost or replatform, refactor or rebuild.
What benefits do you hope to achieve through cloud migration?

What benefits have you actually achieved to date?

Cloud migration priority: continuously assess and revise firm wide target benefits

Cloud journeys often begin as an effort to reduce cost, improve reliability and get closer to the customer; outcomes tend to fall short.

Fewer than 40% have achieved their target cost, resiliency and customer experience benefits.

A diligent cost benefit analysis should include a review of priorities for:

- end customer impact
- time and quality to market
- efficiency
- innovation and culture

Deciding whether to prioritise code reusability, QA effort and remediation, scalability and reliability will enable firms to build upon gains to date and close the gap between aspiration and reality for resiliency.

Ultimately, this will enable mature institutions to deliver on the promise of mainframe modernization.

Lift and shift was never a good idea – we can’t carve out dedicated capital and resource to that type of migration for six months. Moving only the applications – not the data – created connectivity challenges.

— Head of Architecture, North American Telco

If you are not measuring efficiency, security or higher levels of automation, then cloud migration is not only a technology problem, it is a lack of IT as a Service culture.

— Head of Infrastructure, European Bank

Figure 9 – average target and actual benefits for cloud across banking, insurance, FinTech and telecoms segments.
In the following three pages, we set out our recommendations, research methodology, details of our firm and the project sponsor.
Recommendations

Successful cloud migration relies on reviewing and reverting to agreed architectural principles, classifying the cloud readiness of applications and identifying the long term plan for mainframe modernisation.

Platform choice is evolving: firms should choose the most effective arrangement of commodity and bespoke cloud offerings appropriate to their application and architectural mix.

Though familiarity with microservices is evolving, in many cases it is an unnecessary step too far.

As a foundation for eventual mainframe modernization, miniservices should be the priority for most firms.

Accelerating the journey through a central core is the quickest path to value for legacy process and FinTech firms alike.

Firms must assess applications along four key criteria to determine whether to rehost or replatform, refactor or rebuild.

To close the gap between cloud aspiration and reality, firms should develop a prioritised scorecard for customer experience, time and quality to market, efficiency, innovation and culture.

Cloud migration is often business demand led. Software leaders should:

- classify and prioritise app modernization according to three criteria
- prove assessment led migration patterns through a central core

Firms usually target the low hanging fruit for initial cloud migrations. Software leaders should:

- align platform strategy to app readiness, chosen architecture and DevOps maturity
- develop an app domain and reliability based cloud readiness assessment

In most cases, lift and shift is high risk for mainframe applications. Software leaders should:

- set the most appropriate architectural model to avoid unnecessary complexity
- continuously assess and revise firm wide target benefits
Methodology and respondent demographics

Analysts for QA Media spoke to 25 technology leaders during June and July 2019 at major banks, insurers, FinTech firms and telecommunications providers in the UK, USA, France, Canada, Germany, Mexico, Italy and The Netherlands.

Our discussions with these senior executives encompassed overall software modernization plans, cloud migration objectives, pragmatic concerns and lessons learned.

We spoke with functional leaders across architecture, cloud platform, DevOps, product and strategy roles. The majority of our respondents hold director level responsibility and above, including those at the C level.

Based on these conversations, we applied our QA Vector® methodology to identify the key insights that will enable software leaders at financial and telecoms firms to pursue the next phase of their cloud migration.
QA Media was established in 2015. We provide the only specialist information services platform serving senior software decision makers in quality assurance, DevOps and operational risk management at financial institutions.

We produce research insights, conferences, webinars and news crafted to address the specific needs in our domain. Our insights investigate critical issues as firms transition from waterfall to DevOps and from manual to automation, exploiting technologies such as AI and the cloud.

Our audience trusts us for information that helps make the right decisions, today. Our research team has over 40 years experience of conducting research into the issues affecting leaders at the intersection of technology and financial services.

CAST was founded more than 25 years ago to make the invisible visible. Built around the idea that even the best analytics on the market still leave blind spots for technical teams looking to deliver better software and prevent outages, CAST provides the software intelligence that matters most.

Every day, CAST works around the clock to make the intangible world of software understandable to even the least trained eyes. Today, CAST is the market leader in Software Intelligence, achieving for software what MRI has for medicine: unprecedented visibility.