



**FUTURE
AT HEART**

WHITE PAPER

PROFITING FROM CLOUD-FASTER

How banks can simplify and accelerate their journey to cloud

THE INEVITABILITY OF CLOUD

Retail banks have moved, and continue to move to the Cloud because they have to, yet doing so is not a fast or simple task. That's because only very large manufacturers have technology environments that are anything like as complex and long-established as the world's major banks.



THE PROBLEMS OF COMPLEXITY

IT systems have grown up by accretion and acquisition over many decades. Each new merger has added an extra layer of complexity to an already complex system, to the point where many traditional banking infrastructures almost defy understanding.

They contain a high proportion of proprietary and home-made applications and processes. Traditional banks once employed complete IT divisions, with thousands of application developers and systems engineers, and still struggled to cope with the demands of over-complex, obsolescent systems.



THE CHALLENGE OF MARKET CHANGE

Complex environments reflect an industry landscape in which retail banks were more or less immune to competitive pressures, with customer loyalty at extraordinarily high levels and a highly traditional range of products. All this began to change as the Internet opened up, when banking groups started to prioritise their trading operations, in which low-latency responses and corresponding IT agility became key to competitive performance. Added to that, we have seen the rise of challenger retail banks, digital natives that have no legacy technology debt and can move at high speed to develop attractive new offers to consumers, developed at speed in the cloud.



THE RISE OF PRIVATE CLOUD

Large banking groups have responded in different ways to these market changes. Some have launched their own standalone digital banks, others have attempted single step migration from their existing infrastructures, often with problematic results. A majority have built their own private clouds, hosted on premise, and transferred applications, end to end processes and support systems step by step to these new environments, hoping to avoid disruption while improving operational performance as they do so.

This is the story so far, in which major banking groups try to move as fast as they dare to unlock the cost, scalability and agility advantages of Cloud, without risking melt-down of services as they unpick and re-engineer the incredible complexity of their current banking platforms. These hybrid systems, still on-premise, still requiring heavy capital expenditure on server farms and engineering capabilities, represent a major improvement on the past, but this is not the final destination, just a first step to a transformational future. So what will that future look like? And how will large banks get there?

OPTIONS, OPPORTUNITIES AND CHALLENGES

Moving operations to cloud is a non-negotiable necessity for all major banking groups. The only question they need to answer now is this: can we move far enough and fast enough to avoid having our core business stolen by more agile competitors? The cloud offers potentially transformational advantages, although (as we shall see), actually “banking” the business benefits is not as easy as looks from the outside.

In any case, the only way that banking groups will completely match the speed and efficiency of true digital native (born on the web) companies is by committing completely to Cloud. This means becoming digital natives, as well, with everything from development, ecosystem working to sales and support being completely web-based and cloud-enabled.

That goal is still a long distance away for most large banking groups, yet this is the journey we believe they need to take. Here is our take on how this move to cloud can and should work.



Opportunities

Businesses in every sector generally target 4 major opportunities when they plan their move to cloud. These are:



Scalability. Working with any of the major hyperscale providers makes it possible to scale up and down almost without notice, ensuring capacity keeps pace with demand. Resources can be deployed immediately, both to manage new customers or to develop/launch new projects. Pay per use also means that no capacity has to be paid for upfront: payments out are in step with payments in, and the financial advantages are clear.



Cost Reduction. Public cloud is a shared resource, so no capital investment is needed. The environment used will be kept at best practice level by the provider, not the bank, which can divest itself of almost all in-house IT capabilities, from hardware to people. Cost of doing business should drop significantly.



Agility. In business terms, one of the most tempting of all Cloud advantages is the ability to change direction fast and at very little notice. Instead of long-term projects, requiring careful preparation and long lead times, banks can test new markets, new products, new services and do so at speed, with very little risk.



Ability to Innovate. This is implied in the section above: there is not much point in being agile unless you can also innovate. Launching new products and services fast, adapting to unexpected changes in the market: these are essential for businesses aiming to compete in a very different financial services environment. It's also not easy.

These potential benefits are all valid, but they do not just happen because you move to Cloud. The advantages of cloud exist, but there are challenges involved, as well.

Challenges

Each of the 4 opportunities comes with a corresponding challenge. No business will gain competitive advantage until it understands those challenges and knows how to overcome them. These are:



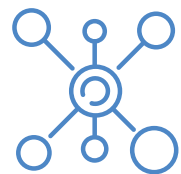
Applications Evolution. Banks will profit from greater agility and scalability only if their applications development processes are equally agile. At the moment this is not likely to be the case. They will need to redesign the processes and create a new applications architecture that is optimised for cloud. That will not be a simple or rapid activity.



Banking the Cost savings. The reality of Cloud transformation is that cost savings do not simply appear. In reality, costs are likely to be higher during the change period, because the bank will continue to support its legacy infrastructure while investing in the change process itself. The full cost benefits cannot be counted onto the bottom line until change is complete and the legacy infrastructure has been decommissioned.



Governance. Banks will need to develop new methods for managing security and compliance, once their data, assets and applications are no longer hosted within premises that they own and completely control. These new systems will cover everything from interoperability (between cloud and on-premise) to data sovereignty, regulatory compliance in different jurisdictions, and full oversight over what might be multiple cloud providers. This is not simple to achieve.



Complexity. The final and perhaps most difficult challenge of all is the need to manage complexity all the way through the journey to cloud. While a bank manages some operations still hosted in legacy environments, interconnecting and interacting with operations and data in the cloud, they will need to map points of connectivity and potential weakness, scrutinise in real-time, report in sufficient depth to satisfy both their own management and regulators, and do this continuously, without interruption or failure.

A lever for change

Balancing opportunities with challenges does not in any way undermine the unanswerable logic for moving to cloud. This remains as necessary and urgent as ever, but it is essential to be realistic about what is involved. The journey to cloud takes place by incremental steps, and the plan must include two vital components:

Ability to identify, capture and monetize benefits as early as possible. In this way, it is possible to reinforce the strategy, build confidence in the wider organisation, and start to recognise financial benefits that can be used to offset the costs of change.

Ability to test each step in advance through Proofs of Concept or Pilots before committing to major transformation programs. This makes it possible to adapt and amend strategies, if necessary, while minimising risk, learning lessons fast and raising the likelihood of each new step proving successful.

That is how NTT DATA approaches the cloud journey. We recognise this is likely to be the largest and most difficult change project an organisation has ever undertaken. For us, it is a major exercise in mobilisation, communication, motivation and, above all, project management, as well as systems engineering.

The move to cloud is a key factor in transformation of the wider organisation. It is NOT simply about IT, as the move to cloud will eventually change every aspect of the business, from attitudes to types of people employed; from in-house capabilities to agile ecosystem mobilisation; from command and control culture to a digital native approach.

Nothing will stay the same. The journey to cloud starts with change in mindset, and that is a key aspect of the entire programme.

PLANNING YOUR JOURNEY

First, we need to provide a simple health warning. All organisations are different and they all start at different stages of maturity and awareness. There is no “one size fits all” cloud process or journey. In the rest of this paper, we try to explain what we think is a “typical” approach, which has to be adapted and inhabited by each different business.



Toolkit

We all need ways to accelerate the change process, reduce risk and cost, and speed up time to profit from change. There are partners and capabilities available on the market today that have the potential to standardise some process stages, making the journey faster than could otherwise be the case. We want to highlight three options, separate from the major hyperscale providers, such as AWS, Google, Microsoft and IBM Cloud, whose help in selecting best practices will be essential:

- **Value Chain Partners.** These include major systems providers and software partners, which have already optimised their own services and products for hyperscale cloud. Essential systems of record, for example (ERP, CRM and others) are provided by global partners such as SAP, Oracle, Salesforce and Microsoft Dynamics. It is possible to start profiting from the move to cloud earlier by collaborating with these key software partners, as they already deliver from the cloud and can save time and effort by deploying standardised change methods for moving (for example) CRM on-premise to CRM on cloud. Of course, this also adds an extra dimension to the change processes involved, and banks need to be aware of that.

■ **Sector Partners.** An increasing number of both established providers and radical new entrants are now available in the market to provide “off the shelf” digital native banking products for adaptation and fast deployment. If handled with care and creativity, this can enable a bank to move certain products and processes from legacy to cloud-only deployment at high speed.

Risks can be contained, as the solution used will be tested and proven in action. By selecting individual product areas (certain classes of payments or loans, for example) it is possible to make the move to Cloud very fast and relatively painless. Specialist providers, such as Mambu, Murex, Calypso or Temenos, are bringing new concepts and capabilities to the market, and these are sources of potential added value. Of course, the issue of interoperability and governance remains, so there will be plenty of complexity involved.

■ **Technical Solutions.** NTT DATA, along with other IT specialists, has developed a rich and constantly evolving tool kit of solutions specifically designed to ease and simplify the move to Cloud. The NTT DATA offers include:



Platea, which is NTTD’s future-proof digital banking platform built on a composable, cloud-native architecture to help our clients accelerate the launch of new digital ventures as well as the modernization of their legacy platforms.



Dedalow for Open Banking, a low code solution that enables fast development over cloud banking architectures.



Eva, a conversational AI solution that enables faster, more satisfying interaction between banks and their customers.



Kliquin, which deploys a fully functional environment of the trading platform Murex MX.3 in cloud within minutes. This enables financial institutions to monitor infrastructure cost, easily run automated tests, shift to DevOps and reduce overall time to market.

Many other options, naturally enough, are available. This entire discussion reveals the largest “philosophical” change that banks must go through: in the world of cloud native operations, you cannot (in fact, you MUST not) invent everything for yourselves.

Working with innovators in an ecosystem makes it possible to develop and test faster, to adapt, individualise and update faster, and to back out fast if indicated. This is the hallmark of cloud working. Partnerships are the key to low risk, high speed transformation.

Key staging points

No institution, let alone those that may have roots going back a century or more, makes the leap to full cloud native status all at once. We suggest that successful transformation will always go through three principal stages:

01.

Planning and building the roadmap. This will need to include policies and strategies for digital talent (how do we become attractive to true digital natives?); dashboards (how do we monitor and measure accurately as we move forward?); Operating model (what needs to change in terms of culture and organisation? And how do we make those changes happen?).

02.

Creating a Hybrid Cloud platform. This will involve developing new architectural blueprints; creating a catalogue of standard cloud components that users are permitted to “mix and match” at will; and rebuilding core service components so that they are Cloud-enabled and Cloud-ready.

03.

Applications migration and modernisation. This is the longest and most challenging stage of all, as it could potentially involve many different approaches. Choosing the right options will depend on the specific IT combination of several different strategies, which can be executed in different phases.

Measurement and value capture

Nobody who has ever managed a major change programme will find anything surprising about the roadmap to Cloud. Unfortunately, most people have not and do not understand the complexity of this kind of activity, nor the risks involved.

We believe it is important to be pragmatic in designing change activities of this kind, seeking the best “quick wins” that will lead to cost reduction or even revenue gains, and the best ways to keep risks of failure at any stage as low as possible.



Financial benefits are achieved most quickly by moving applications with high license costs to cloud as a priority. This cuts out the need for a major upfront payment, while connecting future costs strictly to usage. It is obviously important to define which applications can be safely moved in this way, ensuring that risks are kept low and disruption can be avoided. Systems of record are natural candidates for moving early, with systems of differentiation and innovation following next. This helps the organisation to manage change effectively while learning lessons to be used when core banking components are moved. Financial savings can be banked early and this will build confidence and reinforce success.



C-level leadership is the key to monitoring and measuring change, and to ensuring that the entire process of moving to Cloud happens as easily as possible. No change process will or can succeed without Boardroom leadership. The CEO, CFO and COO need to be watching and evaluating the process at every step. They also need to be visible to those doing the work and taking the risks.



All transformational change is accompanied by risk and cost: that goes with the territory. We believe it is possible to mitigate risk through careful preparation and appropriate ecosystem working, and to capture benefits early, thereby reducing costs, as described below.



STEP BY STEP TO THE FUTURE

We have already given that inevitable- and necessary- health warning: that all organisations are different; they are all at different stages of maturity and have different priorities; so all journey to Cloud will be different and customised to the institution concerned.

Having noted and agreed to all of that, we still believe it is inevitable that all large banks moving to Cloud will need to pass through a number of change stages. In this final part of our introductory paper, we will highlight the most critically important steps within each of the eight stages of activity, mobilisation and investment that we believe are critical to ensuring a successful move to cloud native status.

01.PLANNING AND BUILDING

Roadmap

In a sense this entire paper is about developing and then executing a roadmap for the cloud journey. Yet building the roadmap is in itself a complex undertaking and requires a great deal of collaborative work across all relevant departments (which means pretty much ALL departments in the business). This will require:

Detailed analysis of the As-Is state, including areas of particular risk and weakness, together with priorities for rapid change.

Overview of To-Be state, including new roles, new capabilities and talents needed, together with dashboard creation and commencement of training activities.

The roadmap will show the path to cloud, with performance indicators, evaluation points and action gateways, together with day-by-day measurement and reporting built in. As stated before, this is a large-scale, complex change programme and all of the actions you would expect to see for a major technology migration should be included here, in the roadmap.

Engineers will work from the most detailed content, senior executives will review key indicators on their dashboards. The level of detail may be different, therefore, but everyone will essentially be looking at the same indicators throughout.

License cost optimisation

We have already seen that reducing software license costs is the fastest way to start monetizing the move to cloud, and this can be achieved quite early in the change process. It is extremely important to demonstrate some cost benefits early, as there are stages along the way that will be costly and disruptive. The more successes we deliver, the easier it will be to persuade colleagues to keep following the right path. Change options include:

- Seek to retire basic licensed software and replace with open source applications wherever possible.
- Build a true statement of current costs and usage levels, identifying under-used software and applications for which you currently have too many licenses.
- Negotiate with vendors for usage-based prices, and cancel licenses where possible and also where vendors will not agree to a more rational cost profile.
- Identify options for Bring Your Own License (BYOL) where there is no security risk involved.
- Prepare a strategy for cloud optimisation, which will involve a large-scale move from existing applications to lower cost, pay per use options.

A combination of rationalisation, tougher negotiating stance (backed by commitment to cloud) and ability to use payment-based options will lead to progressive cost savings, with some of these at least being banked early in the process.



02. CREATING A HYBRID CLOUD PLATFORM

Evolve corporate architecture

Early along the roadmap, we expect to start the process of evolving and in some cases redeveloping the corporate IT and operations architecture. The key goal is to enable corporate applications to operate successfully in a hybrid environment, in which some legacy hosting elements will still be operational, while movement to cloud hosting is accelerated as much as possible. There will normally be three workstreams involved in this process:

Legacy Evolution. Updating and transforming systems of record to make them cloud ready; moving integration systems to public cloud, enabling smooth and seamless interconnectivity between product and market-facing platforms.

Cloud Native. Implementing platforms that support secure operations on public cloud platforms, such as AWS, Azure or Google; developing an applications environment to accelerate time to market and rapid product evolution.

Low Code Environment. Developing and implementing an environment that permits rapid onboarding and product development using component configuration, without the need for traditional development work.

This shows that, even comparatively early in the transformation journey, work can begin on creating the cloud native environments that will enable faster product development, entry to new markets and easier client interaction. This will need to coexist with the “old world” systems that cannot yet be closed down.

03. APPLICATIONS MIGRATION AND MODERNISATION

Migration and Modernization Strategies

The single most complex part of the transformation plan will be modernisation of existing systems and applications. We believe the best approach is to combine several strategies (Replace, Rehost, Replatform, Rebuild, Retire and Retain), applying the one that minimises risk for each use case, validating ROI and technical feasibility through limited initiatives before scaling up/executing more complex transformation programmes. Activity in this part of the roadmap will include:

- **Analysis of the total applications portfolio**, with clear decisions about those that can be closed; replaced; lifted and shifted without major change; retained as they are; or re-engineered for the new platform.
- **Develop strategies for long-term development**, based on those applications that are business value drivers and those that can be prioritised for cost reduction. Ensure that the right blend of resources has been allocated, while eliminating risks to business continuity.
- **Establish a clear applications blueprint** for the future cloud platform, with systems of record, differentiation and innovation delineated and managed appropriately.

Moving the applications portfolio to cloud will normally be the most complex and sensitive activity in the entire change programme. It is also where risks are high and yet potential rewards (in cost savings and innovation) are also very high. Meticulous planning is required, together with continuous monitoring of progress.

Mainframe modernisation

The journey to cloud involves moving from the current (As-Is) platform to a very different Target Operating Model (TOM). As with the applications portfolio, this process requires careful analysis of the As-Is environment, which will highlight everything from very low risk items (dead or redundant code) through to the most sensitive (data hosting, 3rd party utilities, applications...).

The goal is to move by logical and incremental steps to avoid potential disruption to business systems, starting with non-production environments to test assumptions and methods, moving to the most sensitive environments later in the process.

Treasury and Capital Markets: change the game

The capital markets industry is facing new challenges driven by Digitalisation and COVID-19. Current context demands a different approach to operating trading solutions aimed at improving speed to market, gaining flexibility and efficiency, reducing costs and being more adaptive to change. The switch from traditional tailor-made infrastructure to a modern and flexible cloud solution is becoming increasingly important.

NTT DATA works with its banking clients to move core Treasury and Capital Markets functions to the Cloud, developing a migration strategy that delivers the customer bank's priorities as fast as possible, but with the lowest achievable risk. There are four major options for change, ranging from low-risk, relatively low-cost initiatives to major changes, with higher costs and potential for disruption.



A logical starting point is migration of **development and test environments to Cloud**. This enables financial institutions to run different projects in parallel to increase speed to market: a practice that used to be prohibitively costly using on-premise platforms.



Cloud also enables faster **batch processing**, enabling a quick response to increasingly tight regulatory requirements for detailed reports on complex transactions, often every day. Cloud's rapid scaling capability makes it easier and less costly to ramp-up resourcing as needed without upfront capital investment.



Grid computing uses low latency connectivity (increasingly enabled by 5G) and high levels of automation to carry out rapid transactions for client trades. This opens up new lines of business that were extremely costly when using a conventional IT environment.



A more disruptive option would be migration of **production environments** to Cloud. This is a major change activity but, once operational continuity is assured, it becomes possible to adopt an "as a Service" model and even use a BPO approach to reduce costs, maximising the key capabilities of the cloud provider.

Priorities will normally depend on current status (where do you stand today?), urgency (which change do you need to make first?) and opportunity (how can you monetize the move to Cloud most quickly?). Each change strategy is customised to the exact needs of the institution concerned.

Build data analytics capability in cloud

One of the greatest potential benefits of the move to cloud is the way it permits companies to explore the data they already gather as a matter of course (for regulatory use, as an example) faster and more easily. Analytics platforms require the ability to generate and securely manage data lakes, with streams of data from many different sources, and the ability to apply specific use cases to the data in order to extract usable insights.

Within the limits of regulatory requirements, it is possible to analyse client proprietary data faster than before (for example, to provide real data on carbon emissions and sustainability issues for CSR use), and to use anonymised data within shared data lakes to extract trends and other forms of business intelligence.

Public cloud implies access to a shared yet secure environment. The scope of the data held in that environment is extremely large and opens new use cases and opportunities for offering additional services to clients.

One of the greatest potential benefits of the move to cloud is the way it permits companies to explore the data they already gather as a matter of course (for regulatory use, as an example) faster and more easily.

Rebuild business applications in cloud

By now, systems of record will be operational in the cloud, applications will have been fully rationalised and the scalability and scope of cloud will be utilised to enable faster, parallel development and testing, together with a new and more productive approach to data analytics. This will generate competitive advantage across the business, as long as the migration has been managed correctly.

The final stage we recognise in this process of change is the use of shared productivity applications and platforms to drive better collaborative working and higher levels of operational efficiency. The most common examples of such platforms are Microsoft Office 365 and Dynamics, which bring combined smart communications, data sharing, basic ERP and CRM onto the desks of all employees and partners, wherever they are.

This drives work from any office location, home, on the move, with automated updating and full scope of capability always available, anywhere and on any platform. This is essential for enhancing the productivity of everyone within the full business environment, and is key to efficient collaborative working in a future in which disaggregated systems and distributed locations mean the entire working environment will be virtual.

SOME LAST THOUGHTS

For any large bank, moving to the cloud will represent a large scale and potentially high-risk change project. We believe that there is no longer any alternative to taking this journey, but it must be done with eyes open and full awareness of exactly how complex the migration will be and also the need to be realistic about banking the benefits.

NTT DATA has built its comprehensive roadmap to cloud based on long-term, trust-based business relationships with several of the world's largest and most advanced banking groups. The process is designed to cover every aspect of migration, covering technology, people, organisation and strategy.

The right time to accelerate your change process is now. And the first step is to find the right partner in change. Let's talk.