Synechron
Digital / Business Consulting / Technology

Accelerate digital,
unlock the power of the cloud

Our Value proposition

A unique approach to market differentiation in the financial services domain

Unlike other firms, Synechron's "Power of 3" approach and financial services expertise gives us a competitive edge to tackle our clients' problems from any vantage point with great depth. Synechron combines the "Power of 3" - business process knowledge, digital design and core technology delivery excellence - to drive transformative solutions. We have the unique ability to provide an end-to-end approach, from business consulting through technical development to digital enhancement. This empowers us to deliver solutions to some of the toughest business challenges.

Synechron is a leading Digital Transformation consulting firm focused on the financial services industry and is working to Accelerate Digital initiatives for banks, asset managers, and insurance companies around the world.

Synechron uniquely delivers these firms end-to-end Digital, Consulting and Technology capabilities with expertise in wholesale banking, wealth management and insurance as well as emerging technologies like Blockchain, AI, and Data Science.

Company facts

New York
Headquartered

$650M+
Privately Held and Self-funded

10,000+
Team Members Globally

22
Global Locations

200+
Marquee Clients

Vertical
Focused only on Financial Services

Power of 3
Digital, Business Consulting and Technology services

Specialists
Digital Innovation & Transformation

Technology

- Technology Consulting
- Application Development
- Automation
- Enterprise Architecture & Cloud
- Quality Assurance
- Systems Integration
- Data & Analytics
- IT and Database Support
- Microservices and API Development
- Business Process Management

Digital

- Experience Design
- Deployment and DevOps
- Emerging Technology Frameworks
  - Blockchain
  - AI Automation
  - InsurTech
  - RegTech
  - AI Data Science
  - Wealth Tech
  - Digital Ecosystems
  - InvestTech

Power of 3

Business Consulting

- Enterprise Strategy, Architecture and Transformation
- Client Experience and Lifecycle Management
- Data Science, Engineering and Governance
- Regulatory Change and Compliance
- Finance and Risk Transformation
- Innovation Management
- Program Management Services

A New Era of Cloud for Financial Services

Digital transformation in financial services is driving the demand for business and technology transformation like never before. FinTech is making significant in-roads with innovative and new digital technologies to achieve competitive advantage.

Applications, these all in fact, a recent survey by the Cloud Security Alliance found that 61% of the global financial industry is currently developing a cloud strategy. Yes, the cloud will help these firms dramatically reduce operating expense (OpEx) while simultaneously enhance the speed, security, and reliability of their infrastructure and applications, but even more so, it will unlock the ability to support innovation and support new business strategies.

As Financial Services firms step into a new era of cloud technology, software vendors will increasingly offer cloud- based -as-a-Service (XaaS), which includes Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS), and Infrastructure-as-a-Service (IaaS). This kind of offering provides organizations a unique opportunity to build solutions quickly and gain a significant time-to-market and infrastructure elasticity advantage. Moreover, new techniques in machine learning, the rise of new digital ledger technologies like blockchain, increased pressure to reduce infrastructure costs, and growing big data solutions will all amplify a desire to embrace the cloud.
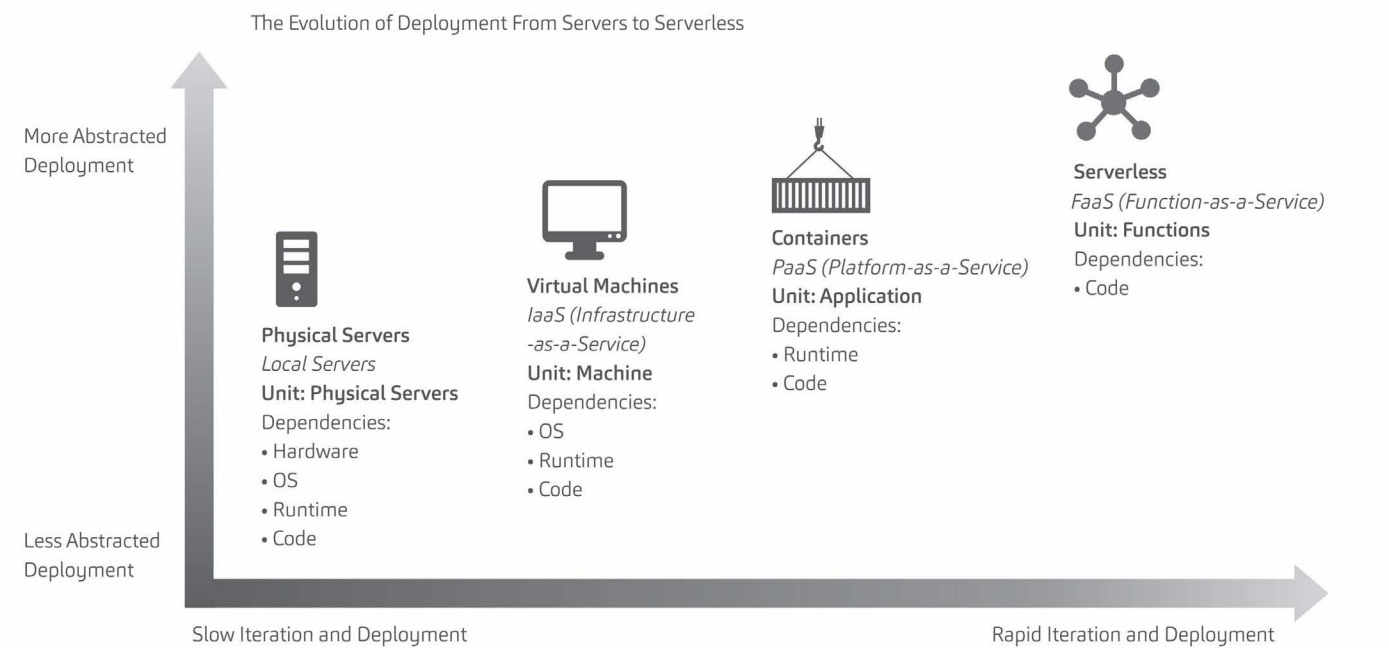
The numerous cost, storage, and scalability benefits of the Cloud have enabled DevOps and helped popularize emerging application architectures such as microservices, Application Programming Interfaces (API), and high-compute platforms. These models enable a shorter time-to-market and cost-reduction.

However, despite the investment, a 2018 RightScale Report on Cloud Initiatives shows that 30% of money spent on cloud infrastructure is wasted. As financial services CIOs continue on their cloud journey, cloud wastage is the problem to solve.

Synechron is working with financial services CIOs to guide them through this journey from Physical Servers to Virtual Machines to Containerization of applications and now to going Serverless. For those who are just starting their cloud journeys, there is a unique opportunity to leapfrog to Serverless.

To take full advantage of the potential of cloud technology, financial services firms need to look at it from a business standpoint, a technology standpoint, as well as with a deep understanding of digital transformation. Synechron provides financial firms with expertise in Digital, Business Consulting, and Technology. Our team is able to advise and guide the clients in their journey to adopt cloud which could be driven by the business and operational strategies. We o er a great depth in everything from application migration to developing complex applications on the Cloud.

> Financial Services CIOs are investing in the cloud. In fact, 10% of businesses with over 1,000 employees expect to spend $10M or more on cloud computing apps and infrastructure. This is a number expected to increase by 19.4% compounded annually through 2019.

The Evolution of Deployment From Servers to Serverless

More Abstracted Deployment

Serverless
FaaS (Function-as-a-Service)
Unit: Functions
Dependencies:
• Code

Containers
PaaS (Platform-as-a-Service)
Unit: Application
Dependencies:
• Runtime
• Code

Virtual Machines
IaaS (Infrastructure -as-a-Service)
Unit: Machine
Dependencies:
• OS
• Runtime
• Code

Physical Servers
Local Servers
Unit: Physical Servers
Dependencies:
• Hardware
• OS
• Runtime
• Code

Less Abstracted Deployment

Slow Iteration and Deployment   Rapid Iteration and Deployment
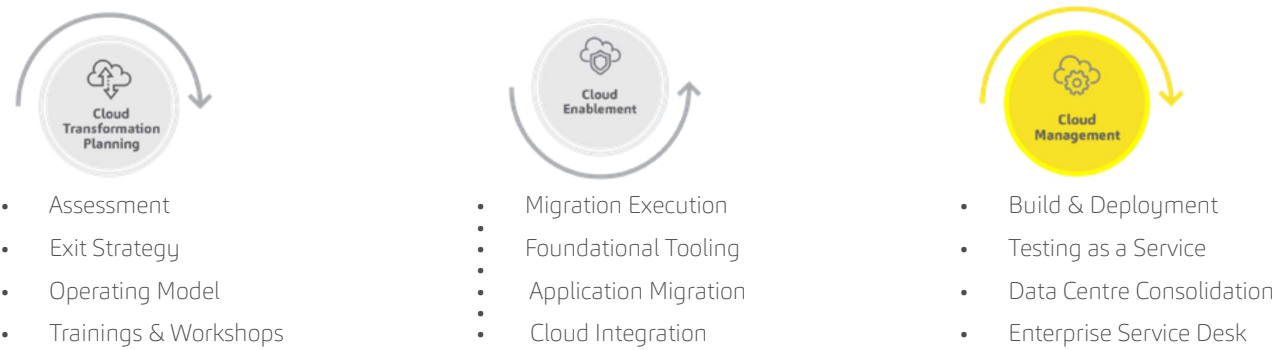
How to Approach a Cloud Project

There will be multiple business drivers that will require cloud adoption, but whether cloud is a solution to an initiative or the initiative itself, it is critical to approach adoption strategically and develop an enterprise view.

A full range of cloud services

We offer end-to-end cloud transformation through our Cloud Adoption Programme ("CAP"). Our three pillar framework facilitates subscribing to individual components as a service - let us guide you through your cloud journey.

Cloud Transformation Planning
- Assessment
- Exit Strategy
- Operating Model
- Trainings & Workshops

Cloud Enablement
- Migration Execution
- Foundational Tooling
- Application Migration
- Cloud Integration

Cloud Management
- Build & Deployment
- Testing as a Service
- Data Centre Consolidation
- Enterprise Service Desk

We are proud to partner with the industry leading Cloud providers to transform our clients

Google Cloud   aws   IBM Cloud   Microsoft Azure

Synechron has a proven methodology that addresses how to:

1   Align Cloud Strategy with Appropriate Business Drivers:

Identify your business objectives, assess your current processes, and define the use case. Are you looking to cut costs or enable technology innovation? Is there a business process that needs to be improved or a regulation that needs to be implemented? Every process must start by taking a step back to articulate the problem you are trying to solve. Financial services firms have a unique set of client, regulatory and competitive pressures that make business drivers more complex than most other industries. In and of itself, cloud is a transformative technology; however, it is more likely to be viewed as a core component of a greater business transformation process.

2   Define Your Requirements:

Ask yourself, is cloud the solution, or just one component of the solution? Establishing a controlled project is a critical step to maximize your resource expenditures and lay a strong foundation for your project roadmap. For some, cloud adoption is best implemented through a series of manageable, controlled POCs, delivering benefits and creating a roadmap to scale. Migrating to the cloud might incorporate other existing projects such as data normalization or fulfilling regulatory requirements. For many organizations where on premises infrastructure is the norm, cloud can be a large infrastructure shift, one that could expand beyond your initial business problem. Determine if there are additional technologies or business requirements necessary to solve your problem; usually, this is the case. Experience from a trusted partner can help limit risk and increase success potential.

3   Determine the Technology:

Once the scope and objectives are fully formed, the technology components of the solution need to be defined.
Phase 1: Determine Your Technology Ecosystem - Determine what will be hosted on-premises as opposed to in a public cloud. Decide if multiple IaaS vendors and solution sets will be involved. An evaluation may determine that a hybrid cloud approach as well as a hybrid vendor approach, will create an ecosystem best-equipped to deliver your cloud requirements. Additionally, these decisions could be influenced by regulatory requirements regarding on-site infrastructure, in-country client data storage, and outsourcing and offshoring arrangements.
Phase 2: Determine Your Technology Portfolio - With the core ecosystem in place, map out the solutions architecture. Identify which vendor toolsets and components are best and how they will interact. Consider how the project teams will be structured and what expertise is needed for each of the solution areas.

4   Run a Cost-Benefit Analysis:

Performing a systematic and thorough evaluation of the solution benefits and associated costs is a critical step. However, when initiating a large-scale paradigm shift, it can become exceedingly complex. Without instituting measures for ongoing cost-benefit management, the initial vision can be missed and the benefits lost amid escalating costs. Transitioning from on-premises hardware to the ultimate flexibility of a public cloud provider can create a complicated (albeit often desirable) shift in reclassifying business expenses from Capital Expenditures (CapEx) to Operating Expenses (OpEx). Striking a strategic balance while considering the complexity of the business and technology factors requires deep expertise. Synechron can assist with weighing and assessing each aspect associated with your project, calculating the right CapEx/OpEx ratio to determine the true cost-benefit of your cloud project and working with you to yield the greatest net value.

5   Create an Implementation Strategy:

As you evaluate your use case and develop an implementation strategy, there are important considerations to be made regarding infrastructure, deployment, and delivery. Identify the right mix of technologies for your strategy early, as they will directly influence your evaluation of technology needs and play a significant part in your deployment strategy. Determining your cloud hosting strategy will be largely dictated by identifying the primary service category for your applications.

- **Infrastructure as a Service (IaaS):** The hardware and software that powers your cloud. Hosting options include both Public and Private Cloud options; however, there are benefits of taking a Hybrid Cloud approach, which is the preferred solution for firms looking to both cut costs while retaining maximum visibility into their more protected assets.

- **Platform as a Service (PaaS):** A cloud-based platform environment for developing, testing, sandboxing, managing and deploying applications where applications can be hosted either on a Public or Private Cloud (which can be hosted locally or by a 3rd party), depending on your firm's security requirements and priority placed on cost-cutting.

- **Software as a Service (SaaS):** Applications designed for end-users, delivered over the web without requiring download. These are typically hosted on a Public Cloud.

The next phase will dive deeper into to the technological considerations necessary for the implementation/migration stage and involve using best practices to ensure that the project hits the ground running.

Technology Capabilities

The industry is witnessing a transformation in terms of computing power, database storage, rapid application development, and disruptive technologies. With cloud being a key enabler for these, Synechron has developed the required technology excellence to deliver these solutions.

We can provide an end-to-end partnership for the cloud onboarding journey, deliver the necessary technology solutions, enable the IT Service Management (ITSM) processes, and establish a DevOps culture.

Technology Solutions

Rapid Application Development using SaaS and PaaS

Organizations can take quick advantage of the cloud by migrating their ITSM, Customer Relationship Manager (CRM) and other Operational Systems to SaaS-based solutions. Our experience includes Vertical SaaS, Horizontal SaaS, Open API Integration, and Data Migration.

Additionally, there are significant benefits to be had by simplifying IT operations. Organizations can achieve this by relying on cloud-provided managed services and delegating the operational management tasks, instead focusing efforts on building business capabilities. PaaS solutions provide ready-to-use applications which can be used to quickly build enterprise-scale applications which allow for customizations to tailor the solution as per business needs. We have experience across multiple application management platforms, database services, API management solutions, and cloud-based contact center platforms.

Infrastructure Services

Infrastructure services include several short-term and long-term solutions that the Enterprise could benefit from: DevOps and SysOps being the focal of Infrastructure solutions.

There is an array of DevOps tools available to implement automation at various levels of the life cycle. It is important for organizations to impress these tools and platforms in the culture and the day-to-day life cycle to get maximum adoption and benefits. Our experience with DevOps and SysOps can help accelerate the decision-making on the tools suitable to the ecosystem and help maximize the adoption and continuous improvement.

Some of the other Infrastructure solutions include Disaster Recovery & Containerization. While cloud-based DR can help enterprises realize cost-benefits, Containerization can help migrate legacy applications without having to invest in re-engineering.

Application Migration

In order to maximize the benefit of migrating applications to the cloud, enterprises need to evaluate between "Lift and Shift" and "Shift and Adopt".

A Lift and Shift strategy is most logical for legacy applications with low ROI on re-engineering but high ROI for infrastructure, maintenance, and support. Our experience with DevOps, SysOps, and Containerization can accelerate the process of such migrations.

A Shift and Adopt implementation requires a high degree of re-engineering and is best implemented in a phased manner. This would also involve careful consideration for Hybrid solutions and data exchange with other enterprise systems.

- **Phase 1:**
  Configure the applications to use the cloud Infrastructure for "burst" scenarios.

- **Phase 2:**
  Identify isolated components in the application architecture and replace with cloud Services (ex: Data Security, 3rd Party Integration APIs).

- **Phase 3:**
  Migrate the User Interface.

- **Phase 4:**
  Migration of business logic and data. If adopting a hybrid solution, security and performance considerations will dictate what business logic and data gets migrated.

Our experience with multiple cloud providers, UI frameworks, Microservices and data integration can help organizations with the end-to-end journey and manage risks at an early stage of the project.

Enterprise Cloud Migration

Migrating Entire Bank Systems to the Cloud for a Global Tier-1 Bank

The Project

Synechron was selected by a global, tier-one investment bank to facilitate an Enterprise Cloud Migration of entire bank applications to a private cloud delivered as a Platform-as-a-Service (PaaS). The migration was motivated by three primary objectives – cost-cutting, enterprise-wide technical upgrades, and Safety and Soundness.

The bank wanted to migrate to pay-as-you-go servers off-premises, to drastically reduce data center overhead and maintenance costs associated with high-capacity 24/7 business and enable dynamic provisioning and resource pooling. This would allow them to pay for resources as expended as opposed to continuously running servers to handle peak loads, significantly lowering operational costs across the infrastructure and future applications.

In order to achieve an enterprise-wide technology upgrade, the company then would need to migrate a significant number of applications onto the cloud through a strategic and phased delivery approach to fit the broad needs of the bank's many financial units while delivering an enterprise-wide upgrade.

Finally, improved security was a key criterion. The cloud which would need to bring together out-of-the-box security features as well as re-enforced security measures like data encryption. Safety and Soundness would need to be performed across all applications, requiring a deep understanding of financial services business operations, compliance risks, and potential security threats.

The Process

Cloud Provider Vendor Analysis

Before any significant project mapping could begin, we needed to select the cloud provider best-suited for the unique demands of the financial services industry and the project's requirements. We selected Microsoft Azure for three primary reasons:

1. **PaaS:**
   At the time of the analysis, Microsoft Azure immediately stood out as the best platform fit, with .net being a natural fit for the PaaS model

2. **Compliance:**
   Azure has a number of built-in compliance offerings to address a growing list of financial regulations and a commitment to the General Data Protection Regulation (GDPR) that when combined with our client's proprietary security and compliance measures, would create a stronger overall infrastructure

3. **Service:**
   Microsoft Azure offered greater assurances that it would provide reliable, continued service, continued development of the cloud technology, and most importantly, could be entrusted to securely host our client's data

Application Analysis

We then needed to develop application analysis protocol including a thorough review of each application, beginning with a high-level code analysis, then drilling down to a line-by-line code analysis in order to identify the remediation point. Using Microsoft's NDepend, the code was then assessed for quality and maximum compatibility. Lastly, the application was assigned a classification of either PaaS or IaaS. It was during this process that these applications underwent a Safety and Soundness examination unsupported components were upgraded to cloud-tech, and applications were encrypted for maximum security.

We then analyzed and mapped internal and external dependencies, third-party services, unmanaged code, external libraries and an exhaustive list of all other variables. Once completed, we developed our migration plan.

Three Phases of Migration

Phase 1:
To initiate the migration, we worked with our client to select ten low-risk, non-business essential apps. This was treated as a testing phase to establish the process. After these ten apps were successfully migrated and our process was tuned, we then proceeded to migrate the remaining non-business essential applications.

Phase 2:
The second stage of migration consisted of more complex apps that may handle more confidential data and require higher security measures. With our processes in place, an aggressive migration goal of 200 apps-per-quarter was established.

Phase 3:
Our final stage will consist of the more technically complex, business-critical applications. With these apps, reliability is paramount and testing before activation is crucial. Due to the pay-as-you-go cost structure and dynamic provisioning inherent to the cloud, we will be able to extensively test these apps without having to divert resources from other apps and without having to procure additional hardware. When the migration is complete, we will have seamlessly transitioned of an entire bank system to the cloud, without interrupting service.

The Results

While the project is ongoing, early returns indicate considerable ROI. The Safety and Soundness initiative has successfully upgraded security and enhanced application compliance. With a strong strategy in place, we've reliably hit our 200 apps-per-quarter goal and all the target KPIs, including:
- Reduction of on-site hardware and processing demands
- Enhanced security
- Improved performance and efficiency from cloud-based apps
- Compliance enabled
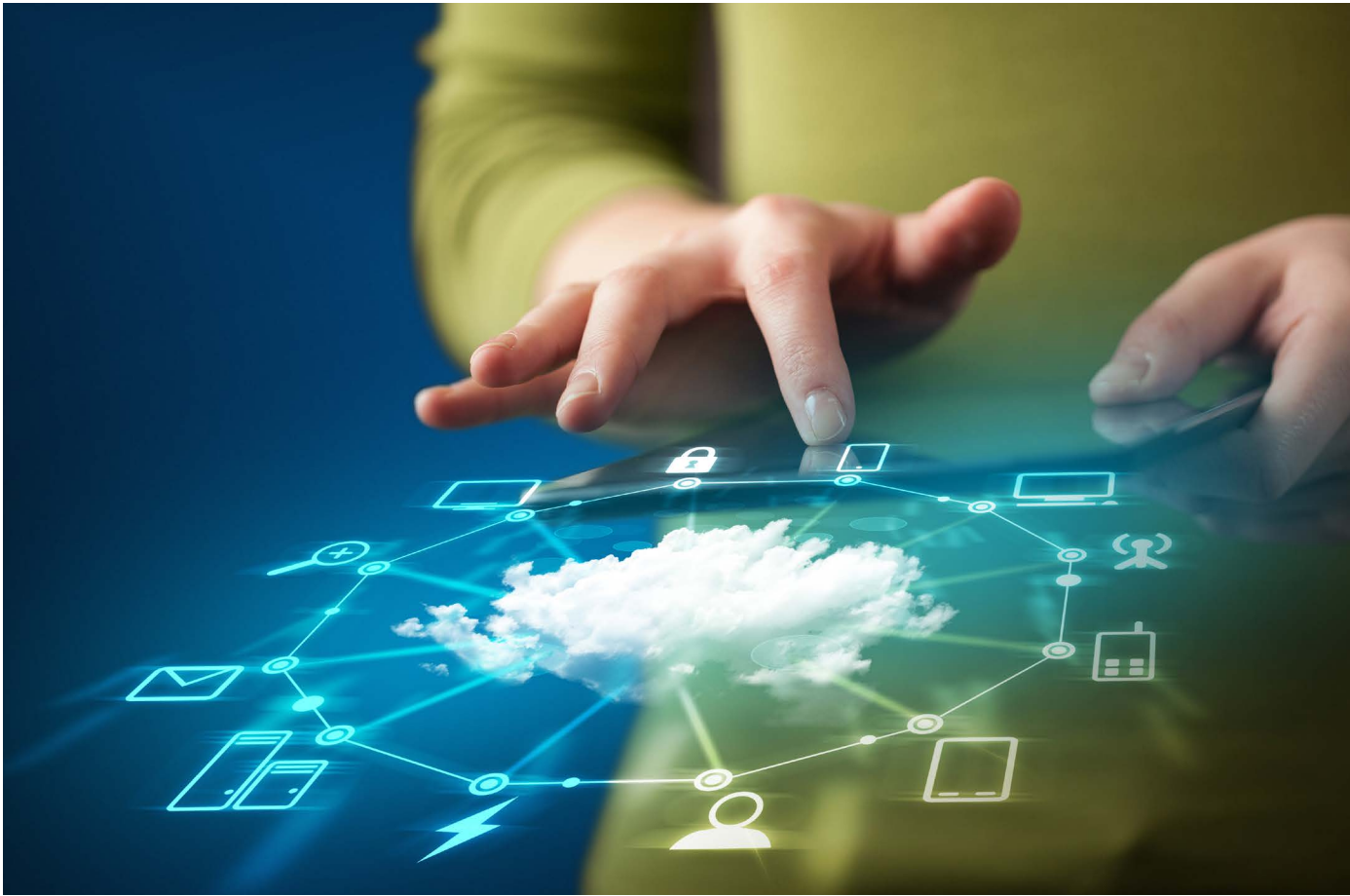
Omni-channel API Strategy using Microservices

The Project

The explosion of connected devices and changing expectations from millennials are driving a demand for Omni-channel applications that move beyond traditional store, web, and voice channels to give customers what they want, when they want it. Recognizing this, Synechron was approached by a leading insurance provider to create an Omni-channel Customer Experience. Its existing systems were monolithic and lacked the foundation and flexibility to support its Omni-channel vision.

Synechron and the client defined eight architectural challenges this Omni-channel needed to meet:

1. **Consistent Experience:**
   Provide the same set of features, functionality, and operational controls irrespective of the engagement channel.

2. **Context Preservation:**
   Maintain the user context as the customer moves between channels.

3. **360 Degree Visibility:**
   Record and recognize all customer interactions across channels and learn preferences and habits.

4. **Personalization:**
   Tailor channel-specific interactions to suit customer needs.

5. **Agility:**
   Roll out incremental improvements quickly and often with minimal impacts.

6. **Speed:**
   Build solutions for different devices and platforms quickly by reusing existing capabilities and without having to tear down entire infrastructures or completely re-platformcompletely to reduce time-to-market.

7. **Elastic Scalability:**
   Rapidly scale specific application components instead of the entire application for maximum cost-efficiency and elasticity.

8. **Operational Flexibility:**
   Write once, deploy anywhere.
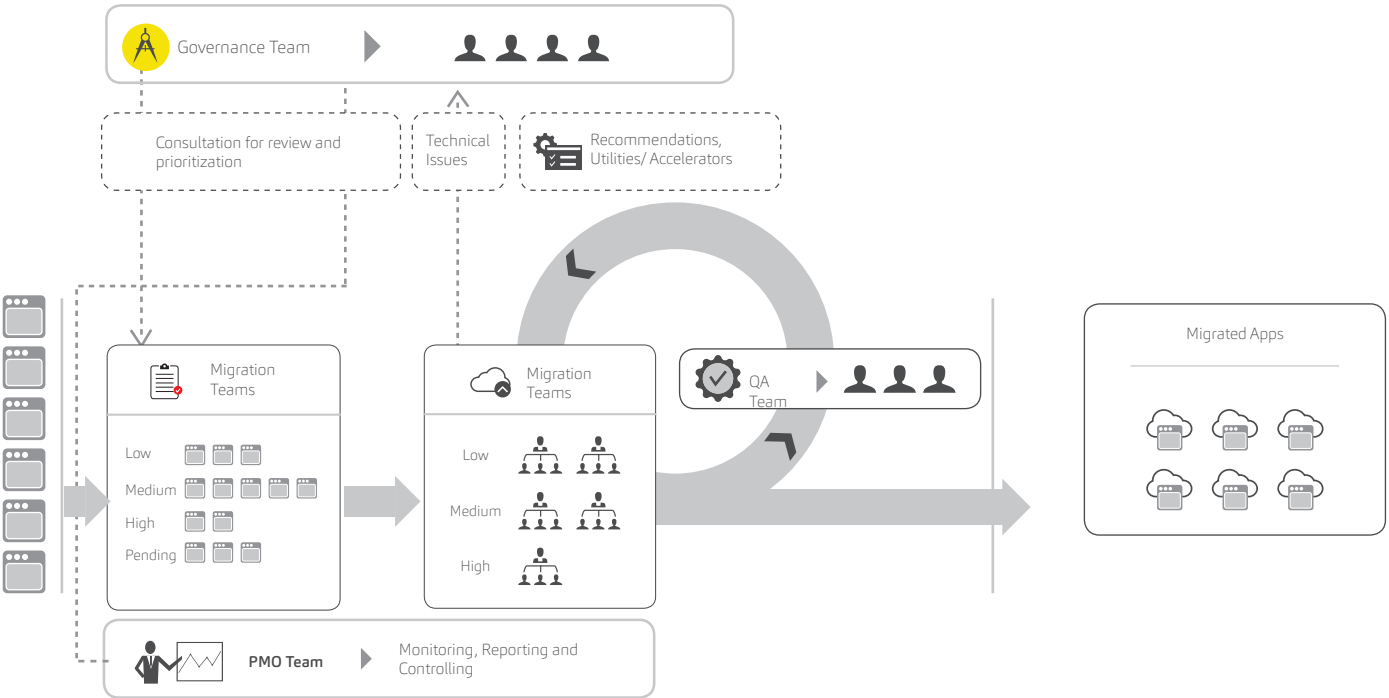
The Process

Synechron determined that to develop an effective Omni-channel Customer Experience, the solution would require integrating three primary technologies, Microservices Architecture, Containerization and Cloud Computing.

Microservices is an architectural style which decomposes large, complex software applications into many, small, isolated services called "Microservices." The decentralized architecture gives freedom from a unified schema, allowing components to evolve independently of the overarching system and be free to use the best tools/platforms to solve their specific responsibility. Transitioning to Microservices enabled our client to an engage in mature Agile development and lent itself to Application Program Interface (API)-first design.

Containerization offers an operating system-level virtualization method for deploying and running distributed applications without launching an entire virtual machine (VM) for each application. It provides:

- **Portability:**
  Container images are consistent, immutable, and support a range of physical, virtual, and cloud platforms.

- **Flexibility:**
  Containerization encourages decomposing applications into independent, fine-grained components, which makes it a perfect fit for microservices architectures.

- **Efficiency:**
  Containers allow explicit specification of resource requirements (CPU, RAM) and allow multiple containers to be supported on the same host, significantly improving resource usage.

- **Speed:**
  Containers are well-defined, reusable units with characteristics such as immutability, explicit versioning, fine granularity, and isolation. These characteristics help to significantly increase developer productivity and operational efficiency.

Cloud Computing provides the on-demand infrastructure and application services to efficiently provision, monitor, manage, and scale the distributed components of the Microservices Architecture. By hosting many of the applications/microservices on the cloud, it significantly improves cost management, particularly as the scope of the Omni-channel offerings grows.

Technology Solution

For containerization, Synechron selected Docker due to its maturity, open source flexibility, and widely available Docker registries in most major cloud provider toolkits.

When selecting cloud hosting platforms, Synechron selected Amazon Web Services (AWS) due to its large portfolio of managed services that would directly address the primary microservices challenge and enable teams to build faster with less operational complexity. Key AWS components include:

- **API Gateway:**
  Exposes the public interface to the backend service, implements authentication & authorization, protocol transformation, response caching and throttling controls.

- **Application Load Balancer:**
  Load balances incoming requests to backend services, performs periodic health checks to ensure service availability.

- **AWS ECS:**
  Amazon EC2 Container Service provides a highly scalable, high-performancecontainer management service that supports Docker containers.

- **AWS RDS:**
  Amazon Relational Database Service provides a managed relational DB service in the cloud which is highly available with no administrative overheads.

The Results

- **Consistency:**
  Key business capabilities are exposed as APIs to all channels providing a consistent experience.

- **Speed and Agility:**
  Independent teams can focus on developing and maintaining their services as applications are resource-isolated with no cross-dependencies.

- **Salability:**
  Fine-grained, decoupled services can be scaled horizontally and independently based on application load and usage patterns.

- **Ownership:**
  Microservices architecture fosters an organization of small independent teams that take complete ownership of their services from development to production establishing a DevOps culture.

- **Technology Diversity:**
  No one-size-fits-all solution, teams are empowered to pick the right tool for solving business problems. Containerization provides the same consistent deployment experience irrespective of the tools used.

- **Operational Efficiency:**
  Amazon ECS handles everything from cluster management to container orchestration and no extra time is spent on infrastructure engineering.
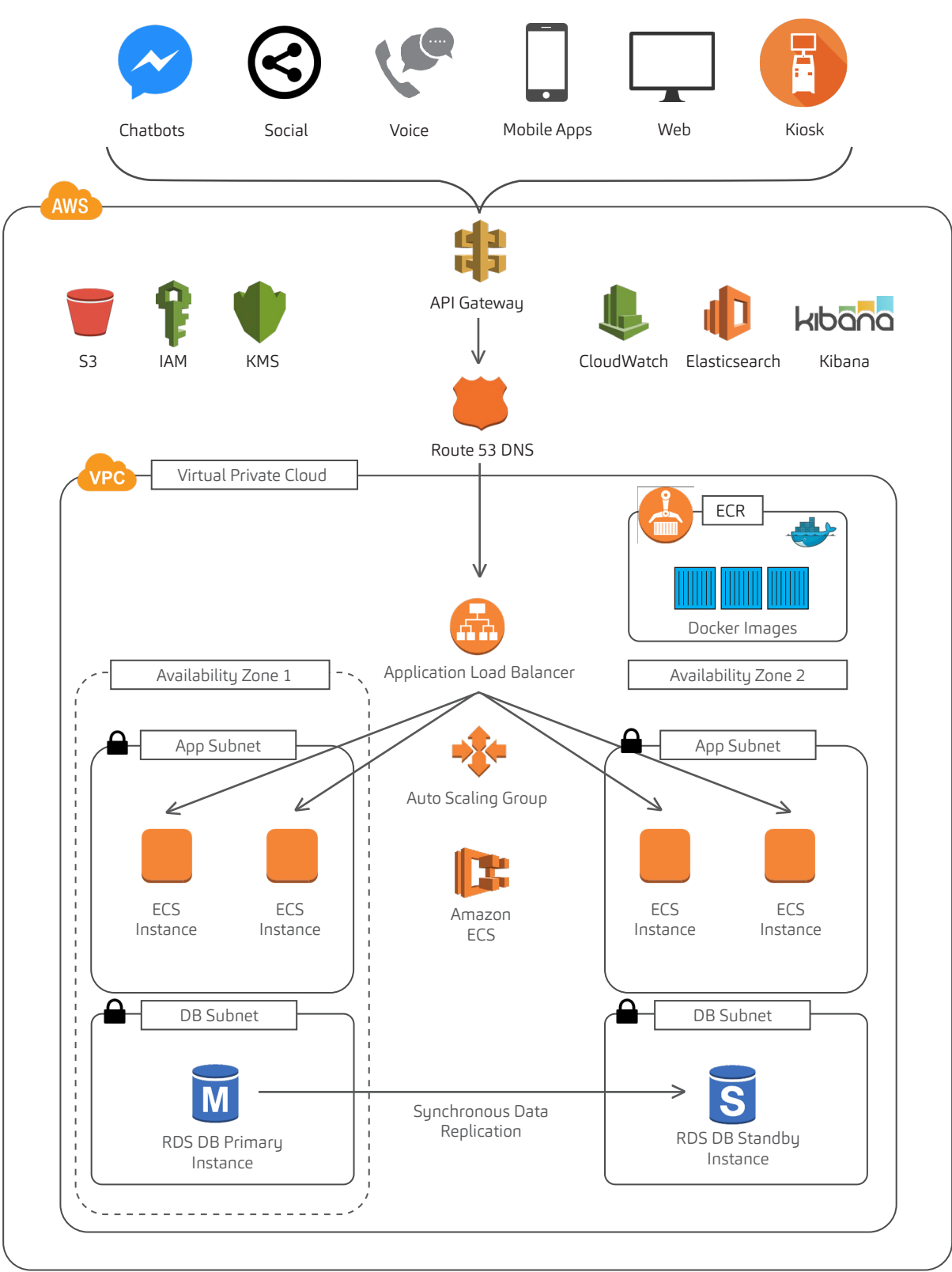
Case Study 3

Azure Corporate Site Migration

The Project

A major index provider approached Synechron to modernize its corporate website, which was falling behind current business and customer requirements. Despite successfully processing large, daily volumes of equities data, the existing website lacked the availability and fault tolerance users have come to expect. The client planned to enhance these capabilities by replicating and clustering their components across all tiers and deploying them across redundant physical locations. However, this would require a significant infrastructure investment and would cause a considerable amount of cross-talk communication incompatible with the existing network design, causing harmful interference with other services.

Synechron determined that through a cloud deployment, the client could resolve its performance issues, establish a growth foundation, keep costs down, and avoid any harmful interference. Additionally, the following objectives were established:

1. **Improved Performance:**
   Heighten user experience with quick-loading content

2. **Targeted Localization:**
   Localize by continent or country

3. **Effective Search Functions:**
   Improve content search capabilities

4. **Content Publication:**
   Develop and control content publication and enable faster content deployments

5. **Reliability and High Availability:**
   Offer a consistent 24/7/365 service to clients

6. **More Frequent App Updates:**
   Dedicate greater support to agile software development and continuous improvement

7. **Lower Maintenance Costs:**
   Reduce the excessive maintenance costs and simplify troubleshooting

8. **Easier System Monitoring:**
   Enhance system monitoring by improving resolution process and turnaround time

The Process

Synechron selected Microsoft Azure as the cloud service provider due to its complete development and deployment environment, affordable web and application servers, and storage capabilities. In addition, Azure provides an build-and-deploy that fit the project requirements. For larger scale migration, automated build-and-deploy is critical to maximizing personnel efficiency, re-prioritizing manual work to business value-added activity, and reducing errors all while lowering overall operational costs.

To start, Synechron developed a Proof of Concept (PoC) for one business application (the client index site) to evaluate the feasibility of shifting a business-critical system entirely to the cloud. Five key components were established to evaluate success.

- Can the application be successfully containerized via Docker and run in the Azure environment?
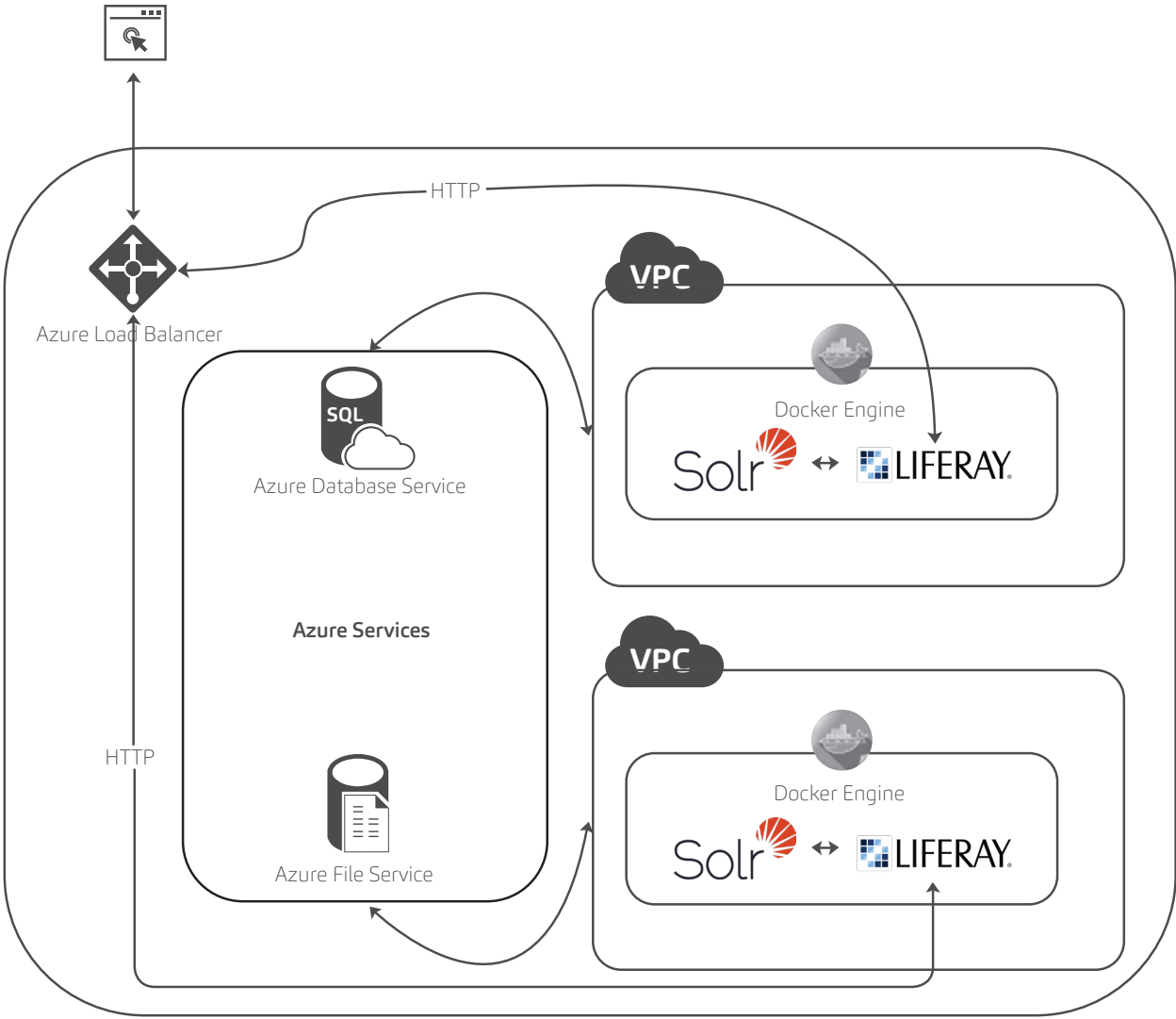
- How cost-effective effective is hosting this application on the cloud?

- How effective are the search capabilities? Will the Azure File Service search function suffice, or will another vendor be required?

- Does the application integrate smoothly with Azure Database?

- Can everything run under a Virtual Machine on Azure?

The single-application PoC concluded the firm could effectively migrate its business-critical applications to the cloud at a lower cost while simultaneously achieving heightened performance. However, a highly-accurate search was identified as a key objective from the start, and while Azure Search was strong in scalability and availability when it came to searching documents and document loading, the vendor Solr was found to have the required accuracy.

The Results

The Azure migration achieved each of the eight project objectives. By migrating from an outdated infrastructure to the cloud, the client achieved a website with high performance, increased efficiency, and vastly improved user experience - all at a lower cost. Among the key benefits of the migration were:

- Client-certified environment management, security, and performance hardening

- Private, client-optimized, scalable cloud infrastructure

- Reduced capital and operational costs

- Increased availability

- Improved monitoring using Azure Platform Monitoring standard set of tools

- Enhanced risk mitigation and security

- Improved business continuity and disaster recovery

Global Footprint

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