Expert Insights

Banking on open hybrid multicloud

Migrating to a new business architecture for financial services

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Experts on this topic

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Open hybrid multicloud is a logical solution for banks, offering flexibility and addressing security and cost concerns.

Key takeaways

Accelerated transformation

Accelerated digital adaptation and macroeconomic factors have driven structural changes in the banking industry. Banks are rethinking their business models and operations to remain competitive amid economic, industry, and consumer-related shifts. Part of this includes migrating to a new business architecture to better accommodate today's digital reality.

Balancing act

In building this new digitally agile architecture, banks are challenged to balance their infrastructure platform need for flexibility to support business model innovation and digital transformation with security and compliance requirements. An open hybrid multicloud environment that offers a mix of public cloud flexibility and private cloud customization is ideally suited for the financial services industry.

Getting there from here

While the benefits of moving to open hybrid multicloud are clear, the path—which workloads to move and when and where to move them—is a bit muddier. An industry-tailored approach designed to prioritize workflows according to both technical and business criteria can help clear the way with a map toward success.

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Banking's path to cloud

Banks have a long history of fulfilling an essential role in financial systems and economies. For generations, they've created value with core banking services and sustained healthy margins serving as critical facilitators of commerce and wealth creation. However, today's banking industry is in a state of flux, with the who, what, where, when, why, and how of financial services changing.

In addition to a challenging macroeconomic environment, banks face ever-evolving customer behaviors and expectations in an increasingly digital world. New types of competitors are catering to those expectations through innovative business models, reducing friction between industry value chains and spawning innovative ecosystems. At the same time, the continued proliferation of data, heightened compliance requirements, growing security threats, and changing workforce dynamics continue their impact on the financial services landscape.

In response, financial organizations have been transforming themselves, building new digital capabilities to compete in an era of platforms. Similar to other organizations experiencing the shift to market platforms, banks face technology challenges associated with infrastructure, applications, processes, data, and customer engagement. However, the banking industry also must contend with some of the most stringent industry security and compliance standards, adding further complexity.

Insight: Defining open hybrid multicloud

Open hybrid multicloud is a foundational environment enabling effective digital transformation that integrates traditional computing platforms with private, public, and managed cloud services. In essence, a hybrid cloud becomes a virtual computing environment that aligns workloads and interfaces with the most appropriate computing platform. All these services need to be managed as though they were designed to behave as a single unified environment.

For many years now, banking leaders have been looking at cloud to meet their infrastructure needs for both business flexibility and the rigors required for security and compliance. According to a 2020 report on cloud usage in the industry, 91 percent of financial institutions are actively using cloud services today or plan to use them in the next six to nine months—double the number four years ago.[1] However, very few mission-critical regulated banking workloads have shifted to a public cloud environment —only an average of 9 percent according to one report, which is lower than the average of other industries.[2]

The scalability and agility available through a cloud-based infrastructure can better equip an organization to rapidly make adjustments and respond to market changes, such as those associated with the pandemic. Pragmatic leaders are taking this lesson a step further with an open hybrid multicloud approach, embracing multiple interoperable platforms that offer the combined security features and flexibility required. A successful migration to an open hybrid multicloud environment requires examining, through the lens of the banking industry's unique requirements, which platform is appropriate for each application or service.

Traditional banking systems are not particularly flexible, making it expensive to adopt new technologies or deploy new functionality.

Time for a change... in architecture

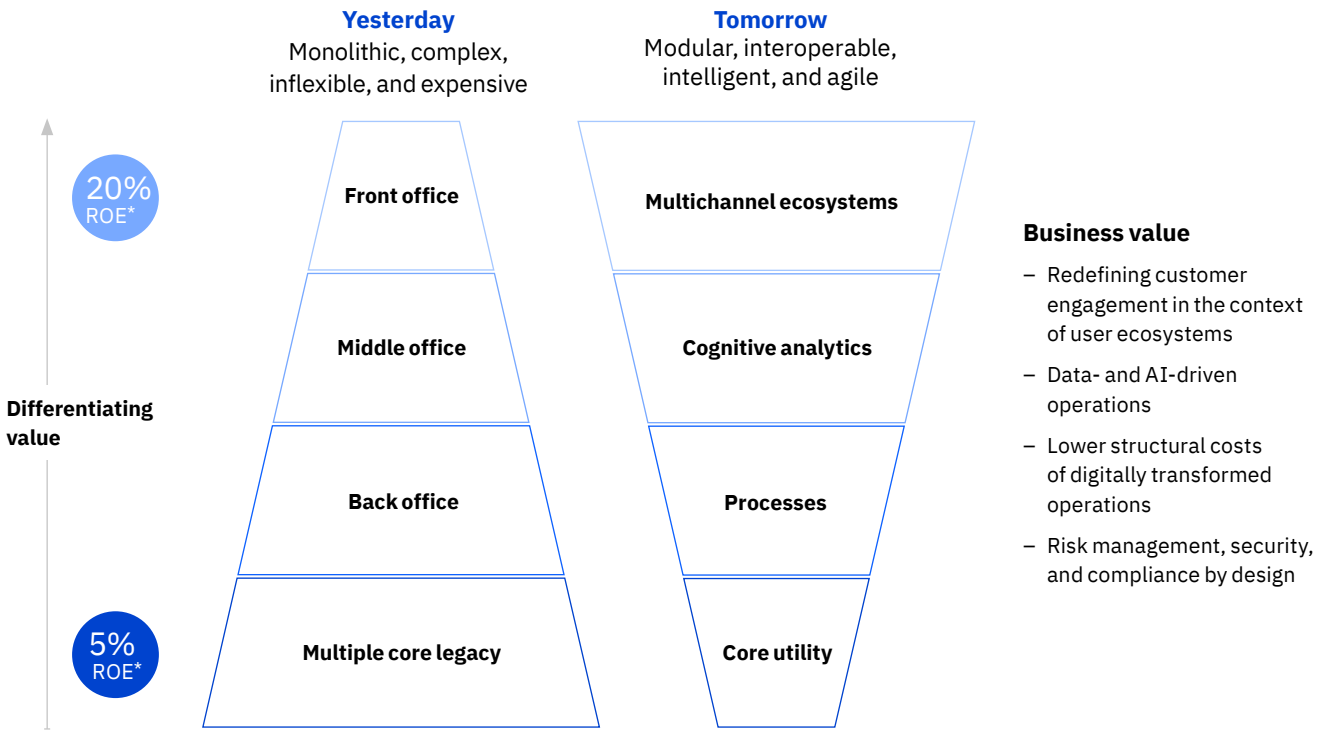
Today's banks are challenged to reshape the customer experience through new platform-driven business models while also lowering operating costs. Concurrently, they must remain agile to rapidly respond to changing market and customer insights. This need for flexibility requires operational transformation to support continuous iteration and business model calibration. At the same time, banks must continue their focus on optimizing risk management, compliance, and security strategies, embedding them throughout their operations.

Meeting these challenges requires a new business architecture. Traditional industry models are not well suited for today's digital reality, which is dominated by rapid innovation, customer centricity, and mobile-first interfaces.[3] Monolithic and complex in nature, traditional systems lack flexibility, making it expensive to adopt new technologies and deploy new functionality. In addition, they drive a disproportionate amount of focus and operating expense on middle- and back-office activities as opposed to those closer to the customer interface that deliver higher returns on equity.

Essentially, traditional banking systems don't support extended ecosystem engagement, AI-powered systems and processes, and intelligent workflows. Banks need to build new modular, interoperable, intelligent operating environments that embed risk management, security, and compliance in their core (see Figure 1).

Figure 1

Migrating to a new business architecture



ROE based on data from "Remaking the bank for an ecosystem world." McKinsey & Company. October 25, 2017.

An open hybrid multicloud approach allows a bank to extend into cloud services without restricting it to a single solution or provider.

An open hybrid multicloud approach that includes a mix of public cloud flexibility and private cloud and on-premise security features can provide the needed competitive advantage. It allows a bank the freedom to extend beyond its data centers and into cloud services without restricting it to a single technical solution platform or provider. This can help structurally reduce cost of operations, as well as balance ownership and flexibility with regulatory adherence. And by allowing workloads to run on multiple platforms in multiple interoperable environments, an open hybrid multicloud architecture enables portability of workflows and data accessibility.

Successful migration to an open hybrid multicloud environment requires in-depth knowledge about the functional requirements of many industry workloads and the capabilities of different infrastructure platforms. These include on-premise and off-premise configurations, such traditional computing centers, infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS). (See Figure 2.)

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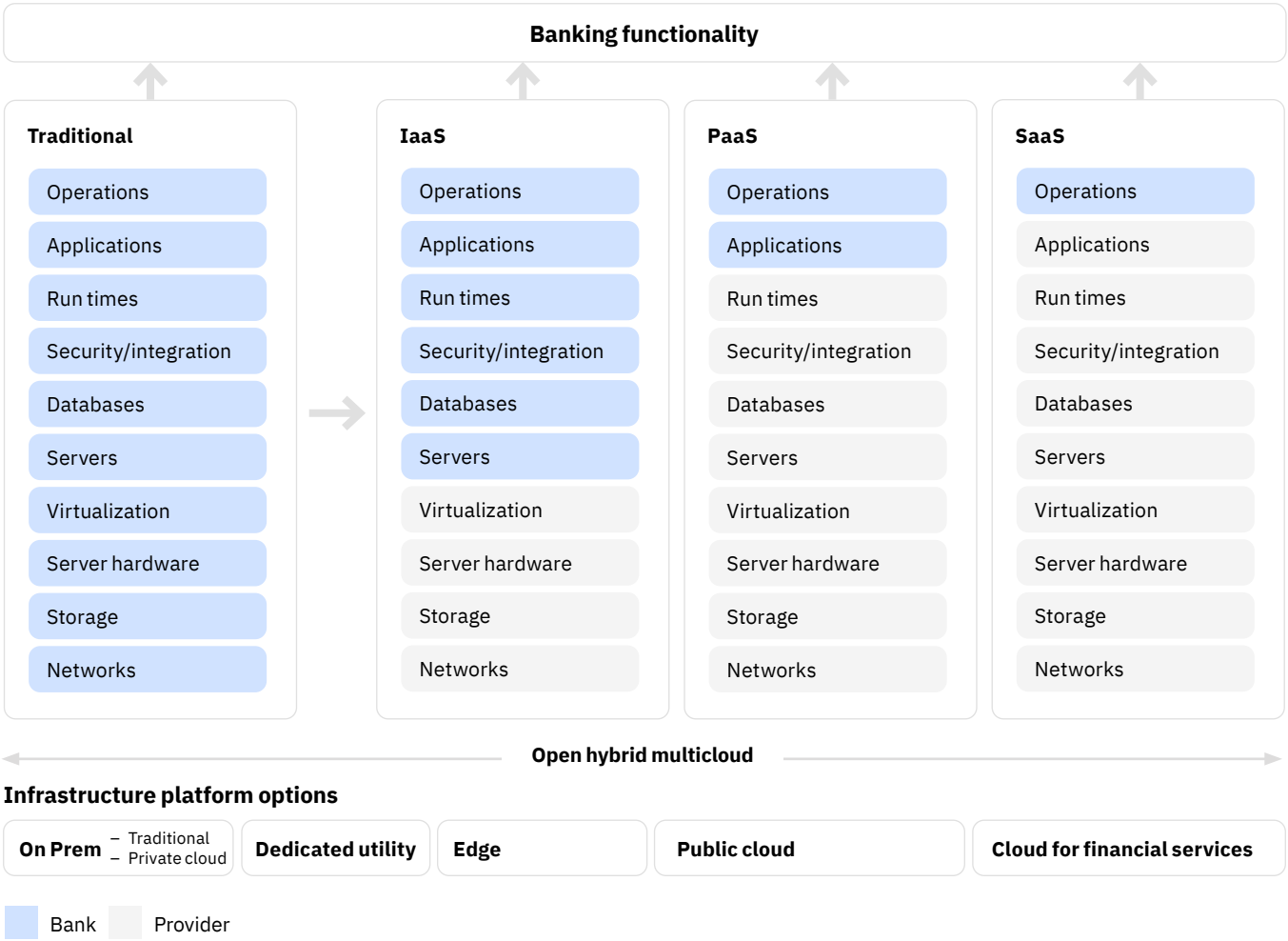
Figure 2

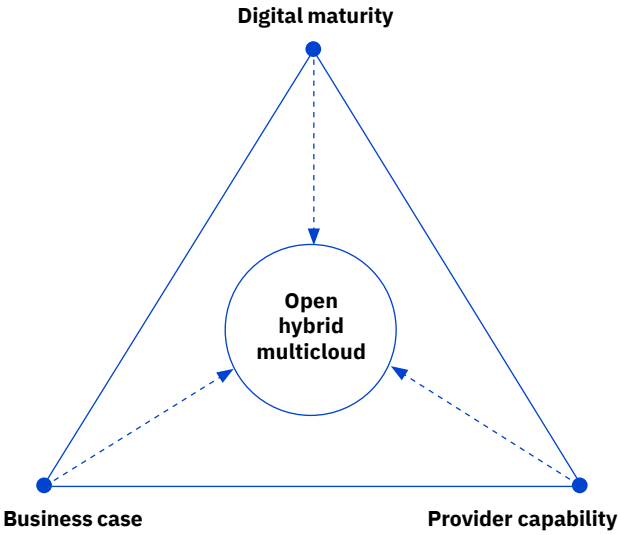
Migrating workloads to alternative cloud environments



Scaling migration hurdles

Part of building a successful digital transformation and workload migration strategy involves evaluating three key areas: business case, digital maturity, and provider capability (see Figure 3).

Figure 3:
Migration considerations



Business case

Banks are challenged to strike a balance as they consider the needs of business against the capabilities and constraints of IT. On one hand, there is a need to transform core banking processes and reduce costs, risks, and complexities. On the other, there is an equally important need for flexibility to support business model innovation, ecosystem engagement, and rapid response. A key part of developing a migration strategy involves weighing the costs and benefits of a new platform against existing legacy investments and costs to migrate.

Digital maturity

Financial institutions have to determine if they are truly ready for open hybrid multicloud. They have to evaluate whether they have the necessary application architecture and identify which workloads are candidates for decoupling. A high level of digital maturity typically corresponds with workload clarity and simplicity, making it feasible to decouple workloads into subcomponents and microservices that can run off different yet interoperable environments.

Provider capability

As banks consider migrating workloads to public cloud, a key hurdle involves finding providers that can deliver the necessary operational requirements related to resiliency, responsiveness, security, privacy, and compliance. Banks have to identify providers that can offer an enhanced public cloud environment that is tailored to meet their industry-specific—and workload-specific—requirements.

An open hybrid multicloud environment can help boost the performance of other exponential technologies.

Open hybrid multicloud for banking: A logical solution

The business logic behind an open hybrid multicloud approach centers around improving business performance while balancing business needs with IT requirements and cost constraints. Migrating to an open hybrid multicloud environment helps mitigate future costs to move (featuring high interoperability of cloud-native applications and workflows), while helping reduce new costs to build (leveraging security and banking compliance by design) and managing costs to run.

In addition to balancing short-term economics with long-term value and operational costs with business and regulatory needs, an open hybrid multicloud approach also reduces dependency on any single provider or technology preference. Instead of being restricted to running all workloads on a single platform, financial institutions can improve performance with various workloads on multiple platforms—that are all interoperable.

Open hybrid multicloud is the logical configuration for financial institutions. This exponential technology offers the flexibility necessary for business innovation and improved customer experience, while also addressing security and cost concerns (see *Insight: Open hybrid multicloud strategy benefits for banks*). Open hybrid multicloud can serve as the necessary foundation for a modern banking architecture by enabling internal and external data accessibility, workload flexible portability, and effective interoperability of analytics.[4]

An open hybrid multicloud environment can help banks boost the performance of other exponential technologies to support business-critical functions:

- *Robotic process automation (RPA)*—automating repetitive tasks inside standardized back-office operations.
- *Artificial intelligence (AI) for customers*—improving relationships based on chat assistants, voice assistants, and automated advisors.
- *AI for workforce*—improving work efficiency with sales assistants, client insights, and knowledge centers.
- *AI for controls*—facilitating compliance to improve know your customer (KYC), prescriptive security, and policy and regulatory gap assessments.
- *Application programming interface (API) platforms*—enabling distribution and servicing of financial products and offers across third parties and non-banking ecosystems.
- *Quantum computing*—elevating cryptographic standards and breaking analytics barriers in high-frequency trading and risk analysis.
- *Blockchain*—rebuilding infrastructures with trust-based digital interactions.
- *Internet of Things (IoT)*—building a network of physical objects embedded with analytics connectors to streamline shipping, trading, and finance operations.
- *Augmented reality (AR)* —allowing customers and bank employees to engage within the context of their current environments.

– *Fully homomorphic encryption*—allowing banks to perform encrypted calculations on encrypted data without decrypting it first, enhancing the level of efficiency and interoperability of secured processes on open hybrid multicloud.
– *5G for workforce*—allowing bank employees to work efficiently from home and run automated processes across multiple locations without deteriorating performance.
– *Edge computing*—enabling banks to process data closer to where it's stored, which can reduce response time and latency issues while enabling more immediate insights from connected devices and systems.

Achieving an open hybrid multicloud environment requires cutting through barriers to move workloads—whether infrastructure or software processes—from a traditional construct to cloud constructs. The issue is less one of "why" banks should aim for an open hybrid multicloud environment than "how" they achieve it. How do you break through the barriers? How do you determine which workloads to move selectively? And then how do you know on which cloud platform they should operate?

Insight: Open hybrid multicloud strategy benefits for banks

– Cost reduction. Banks are better able to scale their data needs in real time, avoiding the expenses associated with maintaining a great deal of unused digital capacity.
– Customer experience. Banks can quickly move digital resources where they are most needed, allowing for swift response to shifting customer demands.
– Business innovation. Open hybrid multicloud enables consistency and portability of business-critical analytics, applications, and processes that can be used to design, mix, test, and deploy new solutions according to client segments and geographical demands – where and when they are needed.
– Security at core. Security threats change constantly, and an open hybrid multicloud infrastructure can provide access to AI-powered defense tools specifically designed for financial services.

Bank of America: Embracing a financial services-tailored public cloud[5]

Bank of America has a proprietary, private cloud that currently operates the bulk of its technology workloads. However, the bank sought to create an equally reliable third-party cloud—a financial services-ready solution offering the same level of security and economics as its private cloud with enhanced scalability.

Bank of America has partnered with IBM to create an industry-first, third-party cloud that puts data resiliency, privacy, and customer information safety needs at the forefront of decision making. A set of cloud security and compliance control requirements form the basis of a policy framework that will allow financial institutions to confidently host key applications and workloads.

This set of controls will enable Bank of America—and other banks including BNP Paribas—to operate more securely with bank-sensitive data in the public cloud. The collaboration marks the next step in Bank of America's cloud journey and creates an opportunity to address the unique regulatory and compliance requirements of the financial services industry.

Roadmap to open hybrid multicloud

For many banks, the journey to cloud has been a stairstep decision-making process. First, they built private cloud environments to lift and shift on-premise workflows within secured, compliant, and fully owned technical frameworks. The digital revolution then progressively revealed how operating on public cloud could reduce operational costs and increase access to external ecosystems. However, banks had security, latency, and compliance concerns about environments that were not tailored to the industry.

Today, the shift to platform economies requires banks to rapidly interact with an ecosystem of providers, such as fintechs, ISVs, and data and other functionality providers. The challenge has become how to benefit from ecosystem innovation without having to closely approve, trace, and remediate third-party interactions with their clients.

The solution can be found through an enhanced public cloud—tailored for financial services—that is interoperable with other platforms. This can enable rapid development of new revenue streams and lessen security and compliance concerns. In addition, the interoperability features allow for more selectivity in digitizing business critical processes and more choices in allocating workloads. This flexibility helps drive agility, reduce operational risks, and improve resiliency.

As organizations consider an open hybrid multicloud approach, the key question then becomes, "How do I determine what functions sit on which platforms?" The goal, obviously, is for each of the various environments to handle what it does best, with each workload in the right place for reduced risk, increased agility, etc.

This requires not only looking at the puzzle from a technical point of view, but also considering the business objectives. An organization has to make decisions about which workloads to prioritize for public cloud, which ones to prioritize for private cloud, and which to leave on a more traditional platform. They also need to separate what can be done—in terms of ease and feasibility—from what should be done from a strategic standpoint.

Aligning workloads with platforms

Making these decisions requires an industry-tailored approach and framework to evaluate workflows and determine the appropriate operating environment. By evaluating workloads according to industry-specific benchmarks, a bank can align and prioritize each workload with an optimal platform—traditional, private cloud, public cloud, or public cloud designed to support a workload's unique requirements. Both operational and business criteria should be considered in workload evaluation: resiliency; responsiveness; digital maturity; risk, security, and compliance; and business case application.

The first step in evaluating workloads is actually defining the industry activities and processes that drive application workloads. While every financial institution will have some customization and organization of operations, we find significant consistency across the industry. There are many industry frameworks, open and proprietary, that could be leveraged as proxies for industry workloads and serve as a starting point for a financial institution's specific workloads.

One framework example is from the Banking Industry Architecture Network (BIAN). Its services domain framework groups 300+ services into areas: business development, distribution, production, operations, business infrastructure, and financial and risk management.

Once workloads have been identified, a robust multicriteria evaluation framework can help determine the optimal platform for each workload. This entails evaluating each workload's requirements related to five critical elements:

- *Resiliency.* Evaluate the volume, stability, and business criticality of the data and transactions involved.
- *Responsiveness.* Consider the latency, response, and service requirements associated with the workloads.
- *Digital maturity.* Evaluate the evolution of the financial institution's digital transformation from monolithic operations to modular services. Workloads more easily decoupled from other workloads without loss of interoperability are candidates for migration.
- *Risk, security, and compliance.* Gauge the regulatory requirements and security features associated with a workload. These can vary significantly depending on a financial institution's security posture and geographic and segment regulatory regime.
- *Business case.* Examine expected investment requirements, cost and revenue benefits, and potential impacts on competitive advantage and disruption.

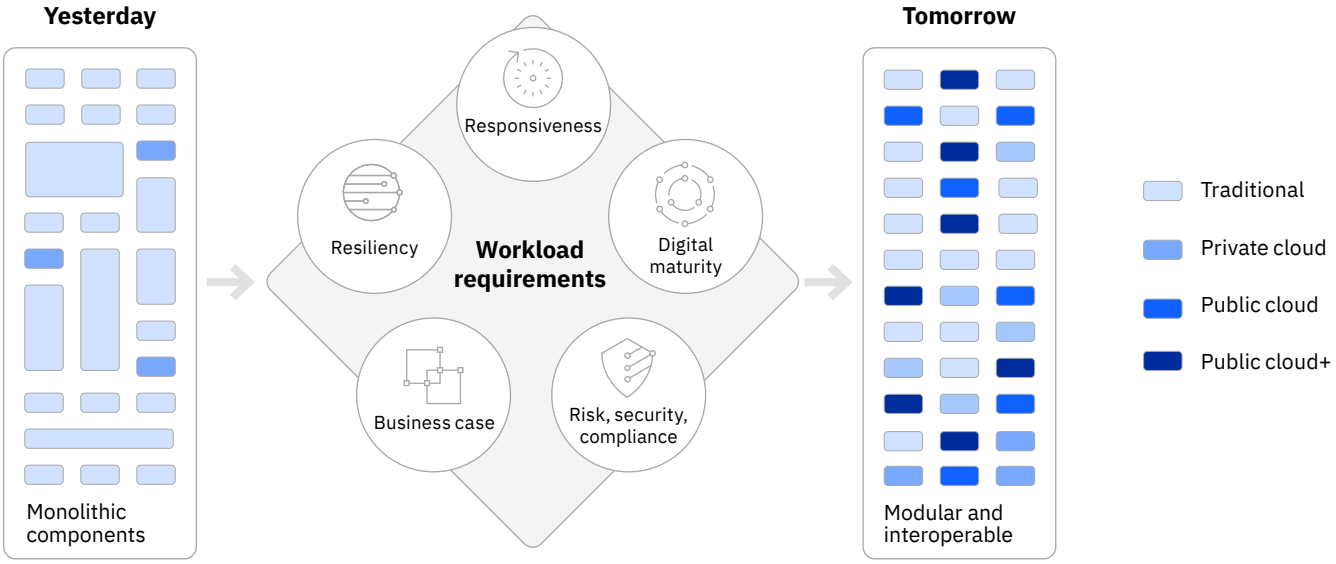
Every financial institution organizes itself differently so the specific number of workloads will vary, but most banks will face decisions on several hundred workloads. Using the appropriate operational and business criteria, they can determine the most appropriate platform based on each workload's requirements (see Figure 4). The end result is a map defining which type of environment is appropriate for each workload or decoupled workload component.

Each bank has to make its own individual decisions about how to configure and manage the sub-components of its operations and how much flexibility is built into the open hybrid multicloud set up it deems most advantageous. The evaluation criteria can help guide these decisions, identifying and mitigating real and perceived hurdles.

Clearly, cloud computing is more than just a technical infrastructure. The symbiotic combination of workload complexity, modernized applications, and cost-effective managed services enables digital transformation and security-rich platforms, while still enabling ecosystem engagement.

Figure 4

Evaluating workloads for migration to open hybrid multicloud



Forging ahead

Most banking organizations are well aware of the flexibility, agility, integration, and scalability benefits of an open hybrid multicloud approach. Discussions surrounding open hybrid multicloud for banking are shifting their focus from "why" to the more complicated issue of "how."

As they accelerate their journey to cloud, banks are challenged to balance the costs and benefits associated with a new platform against the cost to migrate and existing legacy investments. They also have to ask themselves if they are ready from a digital maturity standpoint as they consider which workloads are mature enough to decouple. And they have to find cloud providers that can deliver on industry-specific operational requirements and allow for interoperable platforms.

The road from recognizing the need for a new business architecture to successfully executing an infrastructure migration can appear bumpy. However, with the right roadmap, banks can make the necessary move to open hybrid multicloud, transforming themselves into agile organizations fueled by data, guided by AI insights, and built for change.

Action guide

Banking on open hybrid multicloud

Part of an open hybrid multicloud approach's appeal is the resulting flexibility, agility, and ability to scale. And because one size does not fill all, open hybrid multicloud enables a bank to embrace cloud services without restricting it to a single technical solution platform or provider. Below are key steps to develop a strategy that balances flexibility with your security and compliance requirements.

Consider a "big picture" view of the considerations related to a large-scale migration to alternative cloud environments.

- *Examine the business case.* Start scoping a strategy by weighing your potential benefits, such as improved agility and flexibility, against your legacy investments and migration costs.
- *Evaluate your organization's digital maturity.* Based on your findings, identify what is possible, what is practical, and what is prudent from a technology standpoint.
- *Investigate provider capabilities.* Identify providers that can deliver the capabilities required through an enhanced industry-tailored cloud environment.

Determine which workloads to prioritize for public cloud, which ones to prioritize for private cloud, and which to leave on a more traditional platform.

- *Define industry activities and processes.* Identify the operations—several hundred—that drive application workloads.
- *Build a framework.* Group each application or service into the appropriate area: business development, distribution, production, operations, business infrastructure, or financial and risk management.
- *Evaluate workloads.* Determine the optimal platform —or operating environment—for each workload using business and operational evaluation criteria: resiliency; responsiveness; digital maturity; risk, security, and compliance; and business case.
- *Map each workload to its optimal platform.* Based on the evaluation criteria, determine the right environment for each workload for reduced risk, increased agility, etc.

Notes and sources

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