3things

The 3 things you need to know about...

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Financial Services

Technology Sector

The intersection of cloud computing, regulations and financial services - have we arrived?

Summary

#1 - Relative to other sectors, the Financial Services[1] (FS) industry has been slow to adopt cloud computing for core operations. This is not surprising given the vast and uncertain regulatory landscape. Firms need to secure sensitive intellectual property, consumer data and transaction data that travels globally. They also face legacy information technology system challenges, among others.

#2 - Regulators across the globe are advancing the cloud dialogue. In several regions, regulators have issued draft rules and guidance that may influence how cloud service providers and FS companies develop and deliver products to their customers.

#3 - As regulators work to keep pace with cloud technologies, FS firms and cloud service providers should help shape policies that govern but do not stifle innovation. Companies should also recognize the advantages of cloud technology solutions to create a proactive and automated approach to compliance.

The Three Things

#1 - Relative to other sectors, the Financial Services (FS) industry has been slow to adopt cloud computing for core operations. This is not surprising given the vast and uncertain regulatory landscape. Firms need to secure sensitive intellectual property, consumer data and transaction data that travels globally. They also face legacy information technology system challenges, among others.

[1] For this paper, we define "Financial Services" as firms that provide banking, insurance, accountancy, and investment services (including investment management and hedge funds).

In an industry that is faced with regulatory scrutiny, FS companies have built information technology infrastructure to support complex, global operations. Following the 2008 financial crisis -- as noted in our FS Viewpoint: Clouds in the Forecast piece -- the FS sector experienced a series of mergers and acquisitions. FS companies looked to private cloud computing to achieve IT efficiencies, regulatory compliance, and cost reduction associated with overlapping data center assets. While this crisis triggered IT transformation, causing FS firms to seek cloud-inclusive strategies, FS firms have lagged relative to other sectors in implementing other cloud infrastructure models, and for core operations.

Globally, FS and cloud service provider (CSP) firms face a myriad of regulations and standards. In a 2015 survey, the Cloud Security Alliance found that, "71 percent of financial companies consider compliance as a reason to keep controls in-house and not migrate data to public cloud services". [1] Given an array of data protection requirements like the EU's General Data Protection Regulation (GDPR) and the US' Gramm-Leach-Bliley Act (GLBA), adoption of new public and private computing technologies has been gradual in the FS sector. Companies are also addressing a swath of evolving data protection laws which vary by country and locality.

In addition, FS firms have expressed concern regarding crafting outsourcing agreements with CSPs to meet data protection requirements. The British Bankers Association recently noted challenges in cloud adoption citing inconsistency in regulatory approaches and interpretation. [2] Because of ever-present privacy and security challenges -- and the introduction of cross-border data flow and localization requirements -- firms will need to demonstrate a clear understanding of how policies and regulations influence the development and execution of cloud contracts and service level agreements. Firms need to have a clear understanding of the risk exposure under which they are operating. Roles and responsibilities for data protection should also be well defined as regulations evolve with cloud utilization.

As the global regulatory compliance landscape evolves, cloud service providers are demonstrating increased regulatory maturity. Leading CSPs now offer services to help clients meet compliance obligations related to the Basel, Payment Card Industry Data Security Standard (PCI-DSS), GLBA, Sarbanes Oxley, and EU model clauses, to name a few. In addition, as data protection rules evolve, data localization requirements become more complex, and cybersecurity becomes a CxO focal point, CSPs offer proven security when compared to on-premises data center operations.[3]

In our Financial Services Technology 2020 and Beyond piece, we note the successes of firms using cloud for non-core activities like CRM, HR and financial accounting. But, by 2020, "core service infrastructures in areas such as consumer payments, credit scoring, and statements and billings for asset managers' basic current account functions will be well on the way to becoming utilities." Moreover, while private cloud models have typically been the "go-to" for FS firms, we believe public cloud will become the dominant infrastructure model in 2020. Public cloud enables firms to harness the agility, flexibility, and scalability needed to compete in today's market while keeping pace with FinTech innovation.

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Over the last several years, regulators have embraced use of innovative technology for governance. The Consolidated Audit Trail (CAT), for example, will leverage the cloud to help manage and audit trading data. The Securities and Exchange Commission, in turn, will have deeper and more holistic market visibility to support its regulatory oversight.

As regulators adopt new technologies, they are also formulating guidance for industry. Below are a few examples of how regulators are approaching cloud computing.

Country + Regulator	Regulations & Guidance[2]
United States *Federal Financial Institutions Examination Council (FFIEC)*	The FFIEC published guidance titled, "Outsourced cloud computing". The FFIEC recognizes the benefits of utilizing the cloud, but reaffirms the financial institution's obligation to applicable laws and regulations. (2012)
United Kingdom *Financial Conduct Authority (FCA)*	The FCA published their "Guidance for firms outsourcing to the 'cloud' and other third-party IT service[s]". Here, the FCA provides their perspective on how FS companies can utilize the cloud while still managing their compliance obligations. The guidance encourages FS companies to use the cloud as long as the necessary controls are in place. (2016)
Saudi Arabia *Communications and Information Technology Commission (CITC)*	The CITC published draft guidance for cloud computing that highlights the emerging -- and broad -- guidance for sensitive business and personal information. The draft regulation also highlights data localization requirements. (2016)
European Union *European Commission*	The EU's General Data Protection Regulation (GDPR) provides a consistent and unified legal basis for data protection and enforcement. FS and cloud providers with operations in the EU are bound by GDPR compliance obligations. (2012)
China *Ministry of Industry and Information Technology (MIIT*)	The MIIT enacted a new cybersecurity law, requiring data localization of "critical information infrastructure" within Chinese borders. The scope of this restriction is debated, but it is anticipated that global FS firms will be impacted. Firms must implement necessary controls by late-2018. (2017) The MIIT has also issued a draft "Notice on Regulating Cloud Services Market Activities" which could impact the way CSPs enter and operate within the Chinese market. (2016)
Brazil *Ministry of Justice (MIJ)*	The MIJ has drafted a bill, the Law for the Protection of Personal Data, currently under consideration in Congress. If passed, the bill would introduce new regulation concerning consent, security and cross-border transfer of data. In particular, the introduction of cross-border transfer restrictions could create logistical challenges for global FS firms and CSPs. (2017)

As cloud technologies continue to evolve, we expect regulators to refine their guidance, centered around security and privacy -- and, FS and CSPs are responding. According to our 2017 Global State of Information Security Survey, cloud computing has been instrumental in security and privacy programs -- 60% of financial

[2] Regulations listed here are not exhaustive.

firms use managed security services for authentication, real-time monitoring and analytics. As more firms leverage the cloud, regulators are likely to adapt their rules and policies for cloud usage and data.

#3 - As regulators work to keep pace with cloud technologies, FS firms and cloud service providers should help shape policies that govern but do not stifle innovation. Companies should also recognize the advantages of cloud technology solutions to create a proactive and automated approach to compliance.

As we outline in Figure 1 below, "Trends Driving Cloud Adoption in Financial Services," we are observing key drivers of cloud utilization today -- modernization, time-to-market, and consumer expectation -- which have overtaken cost savings as the long-standing primary driver. In addition, cloud computing will underpin technological advances like artificial intelligence and robotic process automation. Coupled with a deregulatory posture in the United States (including the potential scale back of Dodd-Frank), greater collaboration among FS, CSPs, and regulators will be needed. In turn, regulators will need to strike the right balance between governing and allowing innovation to flourish. To help navigate these uncertain but opportunistic times, companies should consider the following two concepts.

- *Strengthening interactions with policymakers and regulators*

Technology innovation is shaping how companies engage lawmakers. FS firms and CSPs need to adapt their regulatory interaction strategy to help shape the policy discussion. In 2015, the Cloud Security Alliance found that 31% of survey respondents engaged regulators in "requirements discussions for the financial services sector". [1] Given the rapid pace of technology innovation, companies need to consider how educating policymakers can help work towards smart regulation: those policies and rules that encourage innovation. It's not just about new regulations. Firms should also take into account how they advise policymakers on the impact of rolling back regulations on the industry. In turn, companies understand the impact of forthcoming policy guidance -- or lack thereof -- on their operations, technologies, and compliance programs.

> *"The companies that are most effective in addressing these issues (privacy, security) will be those that are not only strengthening their IT security, risk and governance strategies, but also* ***collaborating with government*** *(for example, to* ***create the right regulatory environment for public clouds****, which can offer better end-to-end security and privacy management) and engaging with stakeholders".* - PwC's 2017 CEO Survey

- *Take advantage of cloud technology to create a proactive and automated approach to compliance*

Cloud has increased the rate of technology change. Where a single mainframe might have occupied a data center for a decade, virtual servers in the cloud are created and destroyed multiple times per minute. This means additional challenges for FS technology and risk teams, who are tasked with ensuring the compliance of a dynamic environment that can shift and rearrange at the touch of a button.

Most compliance today is reactive -- it happens after the fact, when issues are discovered by the organization or its regulators. Typically, these manual and reactive processes are difficult to implement in the cloud because they aren't fast enough to keep up with a changing environment. Maintaining a process-heavy approach in the cloud can result in the loss of key benefits (like business agility and time to market), and is likely to increase cost -- more changes can result in potential compliance issues.

> *"These regulatory hurdles (GDPR, Basel, Dodd-Frank, etc.) can cost the world's largest banks up to **US$4 bn per annum**, as many of the processes to address them are still manual".* - PwC's 2017 Global FinTech report

The cloud also provides an opportunity to address these challenges. While it's changing faster, the pieces that make up a cloud are more standardized. Instead of installing hardware from ten different vendors in a data center, organizations can launch everything from a common platform. And, because this process all happens through software, it's easier to view the technology you've created and the types of activities and data it's using. As a result, FS organizations can build a consistent set of compliance processes across business units and functions.

Because these processes are consistent, they can be automated. We see forward-looking FS organizations using scripting and automation to build-in a series of "checks" that inspect the technology environment and evaluate compliance in real time. Instead of addressing regulatory issues months after they happen or waiting on findings from a regulator, organizations can take a proactive approach by automatically reassessing compliance every time technology is added or changed. This approach can even prevent compliance issues before they occur, by not allowing IT teams to create or change things that would violate compliance rules.

Taking advantage of another emerging technology in big data and analytics, organizations can leverage technologies like machine learning to identify patterns in their data that lead to compliance challenges and predict and remediate issues in real time. In PwC's, "Changing Landscape: How to use RegTech and make regulatory compliance your strategic advantage" , we note that machine learning is allowing systems to automatically reassess and refine processes in reaction to input from users, replacing firms' more complex high volume and repeatable regulatory tasks.

While we note that FS firms have been slower in adopting cloud, they are making strides. They've arrived at a key intersection point where they face an uncertain regulatory environment and increasing opportunities presented by the cloud. Today, both FS firms and CSPs are in a unique position to influence how regulators understand, embrace, and govern cloud technologies. Concurrently, firms need to adapt their compliance mindset in a way that takes advantage of cloud technologies to drive a competitive advantage -- using cloud-based tools to generate cost savings while helping global compliance teams anticipate and manage

regulatory change. This approach has the potential to become a key differentiator, by providing a way of addressing compliance that does not compromise the businesses' ability to anticipate, react and adapt quickly in the marketplace.

Endnotes

1. https://downloads.cloudsecurityalliance.org/initiatives/surveys/financial-services/Cloud_Adoption_In_The_Financial_Services_Sector_Survey_March2015_FINAL.pdf
2. https://www.bba.org.uk/wp-content/uploads/2017/02/BBA01-470474-v1-BBA_PM_-_Banking_on_Cloud.pdf
3. http://www.gartner.com/newsroom/id/2889217

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3things is a publication of PwC's TMT Advisory Risk and Regulatory practice and is intended to highlight 3 key takeaways from evolving risk and regulatory issues impacting the Technology, Media, and Telecommunications sectors. Companies in these rapidly evolving industries face increasing market and competitive risks, as well as other internal and financial risks from the challenges of managing their complex - and often global - businesses. They are also facing an uncertain regulatory environment, as regulators across the globe grapple with how to effectively implement their policy objectives in an era of unprecedented technological change. The TMT Risk and Regulatory team brings a combination of deep industry expertise and an understanding of the evolving regulatory environment to help our clients in these sectors navigate the risk and regulatory complexities of running their business and executing on their strategies.