Agile, Data-First Financial Services

Adopting a multi-cloud approach and deploying advanced analytics to drive transformation

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Today's financial services organizations face the challenge of handling more volume, variety and velocity of data than ever – and the challenge grows daily as more pours in by the terabyte. The scale of all this data may seem overwhelming but the good news is that its potential business value is even greater. The key to success is in enabling a united view of all the data across the business.

Within your customer databases, social media feeds, call center records and other data sources lies the potential to transform your business. These resources provide insights into everything from operational efficiencies, to customer behavior and preferences (beyond where and when they shop), to emerging risks and cyberattacks. Being able to harness this data, control and understand it is key to making you more competitive, agile and profitable. However, many financial services and insurance (FSI) organizations struggle to turn these new data-driven opportunities into business advantage using their existing tools. For example, over half of financial services companies have reported being dissatisfied with their current technology infrastructure in supporting speed of response to market demand[1].

Addressing this issue means bringing your data together into a cohesive whole on a flexible, scalable and secure cloud-based platform, and then interrogating it to bring out business-driving insights, through analytics. For example:

Combatting fraud: Spotting an anomaly in customer behavior can be the key to bringing down fraudulent activity. However, fraud techniques are becoming more sophisticated, meaning organizations need to build more models, create new dictionaries and perform new training more rapidly and on an almost ongoing basis in order to keep up. At the same time, the volume of fraud cases is also increasing, putting pressure on investigative teams. Analytics can help uncover these strange patterns or inconsistencies and identify their cause in real time, pinpointing malicious actors faster. Combined with the regulatory requirement to have AML controls in place, there is a strong case for banks to implement advanced analytics to protect their customers' data and money[2].

Customer experience: Customers want better experiences, new services, and better value from their banks. They have also become more willing to purchase services from a variety of providers, and no longer implicitly trust traditional financial services firms. They want a more personalized, always-on relationship with their banks, who must ensure they build a 360-degree profile of each individual to help improve marketing offers, increase customer loyalty and value per customer[3]. Once they have a greater understanding of the customer through analytics, they can also offer a more informed and responsive service. This can be achieved, for example, by improving the user experience of an online banking platform, by channeling more relevant content to the customer whenever and wherever they need it. A customer standing in an auto dealership, for instance, may

receive details on car financing or insurance offers when they open their banking app. Alternatively, call center operators may be provided with more relevant information based on the conversation they are having with a customer, in real-time.

Operational efficiency and cost saving: Minimizing costs is critical for all business, especially those operating in such a competitive industry. Seemingly minor operational improvements can make a big difference to the bottom line. For example, analytics can be used to analyze agreements like loans or mortgages to measure a bank's risk exposure, saving analysts from having to review routine cases, while flagging to them the documents that most require their expertise. Branch management can also be enhanced by monitoring devices like ATMs to predict when they are likely to need maintenance, before they fail. Video analysis can help detect suspicious activities within a branch or monitor customer traffic. Meanwhile, in the data center, where 72 percent of financial services companies have reported that their technology infrastructure is not cost effective[4], server logs can be collected to help support data center optimization or detect security threats. In the insurance industry, sensor analysis can detect how safely a customer drives, and proactively offer a discount to those that take care on the road.

Creating the right analytics combination

While some of these use cases may seem beyond the capabilities of your IT department today, the good news is that achieving them may be easier than you think. A number of cloud service providers (CSPs) offer ready-made analytics solutions that can help you carry out some of these use cases without having to invest time and money in developing them in-house. For example, speech-to-text algorithms that can help capture and record conversations in your call center can be combined with natural language processing (NLP) algorithms that understand what is being discussed and channel related materials and offers to the agent's screen.

By taking advantage of these off-the-shelf algorithms, you can provide your developers with the tools they need to speed time-to-market for your own applications; increase opportunities to monetize the data you already hold, and smooth and enhance collaboration with fintech providers.

The key thing to remember at this stage is to ensure you always take a data-first approach, as opposed to letting today's top project dictate processes and frameworks that may not be appropriate for your next initiative.

Service delivery with built in security via agile multi-cloud

As each CSP provides a different service, it's unlikely you'll find all you need with just one vendor, especially considering that a host of other cloud services – from HR management to CRM systems – can be added to the mix to help run core back-office activities cost effectively and with greater agility. In fact, 85 percent of all enterprises now report using more than one cloud service, while only nine percent use a single public cloud and another five percent use a single private cloud[5]. Finding new ways to better service customers while continuing to meet compliance and regulatory demands now and in the future demands a fundamental reshaping

of traditional IT infrastructure to create business agility. This can only come with a scalable, agile, and open cloud environment guided by a multi-cloud strategy.

With an effective multi-cloud approach, you can, for example, start by creating a modern private cloud to hold your more sensitive data and applications. Then, as business requirements evolve, you can add further, higher level services, as well as using whichever public CSP services you need to help you meet your business objectives.

The need for these different types of cloud within one organization stems from the many different ways in which data is used by different groups. For example, business users wanting to access services like Microsoft Office 365* would need a different type of cloud environment than data scientists handling the company's big data and analytics projects.

What is Multi-cloud?

Multi-cloud is a mix of public, private or hybrid cloud solutions that does not necessarily use different cloud types, to deliver services. For example, it may be made up of a mix of private clouds (which can be hosted on- or off-site), or it may use a number of different public clouds that are provided by more than one cloud service provider (CSP). Alternatively, it could use a combination of private and public cloud services. Beyond being simply a combination of clouds, multi-cloud allows intelligent and dynamic allocation of resources and workloads to meet business requirements and better support internal development and banking services.

Multi-cloud enabling digital transformation

A multi-cloud strategy is the foundation for any fully digital, data-driven business. Adopting such an approach can bring a number of benefits that help drive digital transformation:

Affordable innovation. With multi-cloud, you have the freedom to decide where to run each use case (or workload). You can use private cloud, public cloud or any combination that makes sense, without being locked into one vendor.

Standardization, centralization, and automation. A standard framework provides a common backbone for applications that can be centrally managed and updated, making it easy to integrate and streamline processes and applications.

Improved security and visibility of risk. Leading public cloud service providers invest heavily in the most advanced cybersecurity solutions available. Industry regulations also have clearly defined policies for each workload, meaning you can determine which should remain on-premises and which can move to a public cloud platform. For example, PCI-DSS provides this guidance around handling credit card data and transactions, while the Global Data Protection Regulation (GDPR) in Europe provides similar instruction for the handling of customer data. These regulations can also be embedded in the cloud platform.

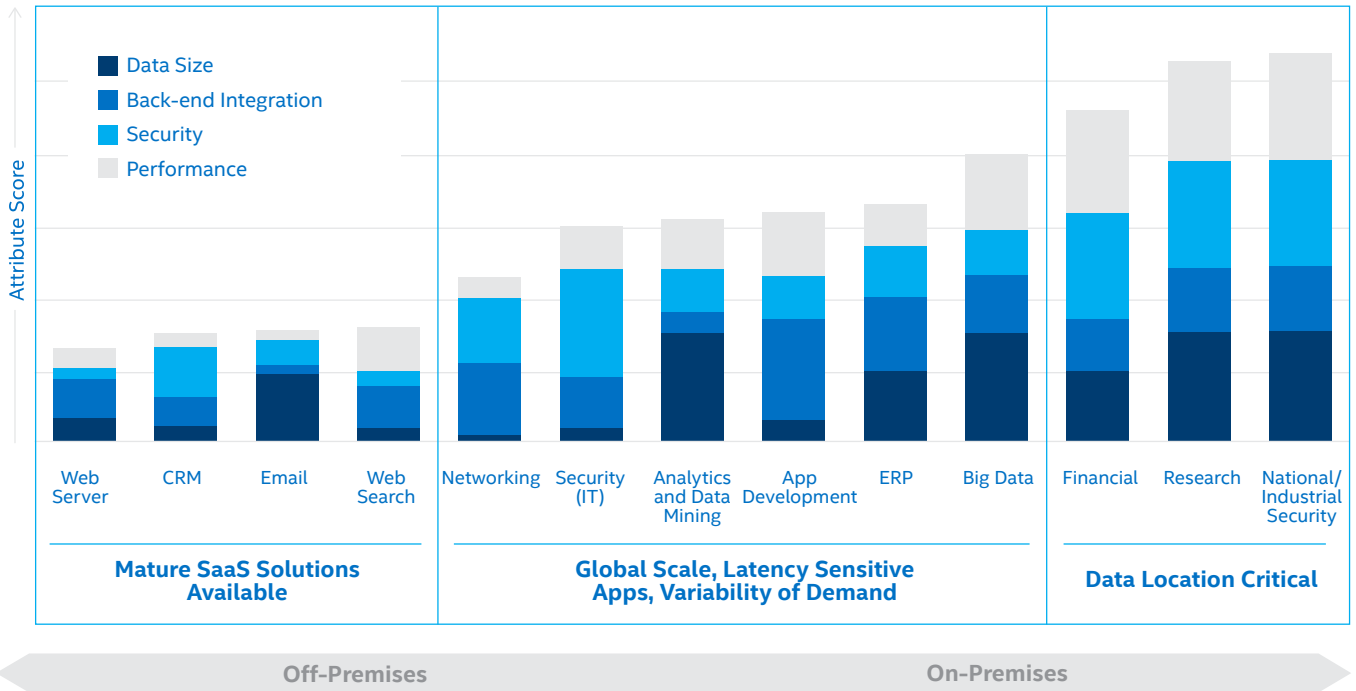## INTEL AFFINITY MODEL FOR WORKLOAD PLACEMENT

Figure 1: Multi-cloud can improve business agility

Cost effectiveness. A multi-cloud strategy enables you to optimize the use of private cloud services and public cloud services to minimize costs and increase efficiencies.

Scalability. Cloud resources can be scaled up or down as needed, on demand, meaning you can respond to changes in customer demand or business strategy quickly, without needing to spend time and money creating, updating or maintaining applications yourself. Auto-scaling and self-healing capabilities within the cloud platform can also help you to meet Service Level Agreement (SLA) requirements.

Cloud considerations

With so many options available when it comes to cloud and analytics, it can be hard to know where to start. It's important to remember that there is no 'one size fits all' strategy so you will need to put in the time up front to work out what yours should be. Every situation will be different, and different companies will place different weightings on different elements, leading to different decisions about where workloads belong and what types of analytics should be used.

Start by ensuring that you have a clear understanding of what the cloud requirements are within your organization, taking into account business, ecosystem and technology considerations:

Business Considerations: What are your desired outcomes? What service level agreements (SLAs) with other business units and/or customers do you need to meet? What internal and external regulations and policies must you adhere to?

How will any proposed changes impact the company's reach, agility and time to market?

Technical Considerations: What requirements do you or your IT team have around the performance, elasticity or security of your cloud services? How will they integrate with the rest of your IT environment, and what arrangements need to be made to ensure they can handle your growing data volumes?

Ecosystem Considerations: How mature is the cloud solution you're considering? Has it been proven by others? Is there a risk of being tied to a single vendor moving forward? Will you have access to expertise and consultancy as well as technology from your vendor?

Other Considerations: Does your organization create and/or run its own applications? If so, are they traditional or cloud-native and how will you ensure they keep working smoothly as your cloud environment evolves? If you license apps from

Spanish bank **BBVA** has transformed the way it handles and shares its data. Previously each branch held its own data, but the bank has now implemented a multi-cloud platform that aggregates data from across and outside the business. This better supports the mobile and online banking services that are popular with its customers, while allowing branch staff to deliver a more comprehensive personalized service[6].

elsewhere, will you need to amend your licensing agreement to work with your new cloud environment?

Once you have conducted this initial analysis, you will be able to more confidently identify which workloads will work best in which type of cloud. However, remember that any analysis will also only be a snapshot in time, correct until any of the elements change significantly. It is critical to regularly review your decisions about workload placement, to reflect changing situational conditions.

> ## "One of the major challenges banks face today is data siloes."

—Parviz Peiravi
Intel Financial Services Industry, CTO

Building analytics on your multi-cloud infrastructure

With your multi-cloud environment in place, the next thing to consider is how to bring together data from across these multiple platforms and make it available to run the analytics that will create your transformational insights.

The first step is to create a centralized pool to hold all your data. Whether it comes from one of your siloed legacy databases, a CSP-provided application, social media feeds or your call center logs, it's important all data in all formats can be viewed and analyzed cohesively. A data lake is a centralized data platform that – dependent on security restrictions – enables you to view and access all data, from all sources, and in any format, whether it is structured or unstructured.

Next, think about data ingestion. You can stream data into your data lake in real-time, or you can import it in batches at specified intervals. Real-time ingestion may give you a more up-to-date picture but can also be more expensive, so you will need to consider the cost/benefit of ingestion for each data source based on how you plan to use it. Data ingestion software is available to help automate and speed up data ingestion, which can be especially useful when dealing with data in many different formats. You can use these solutions to help extract structured metadata from your unstructured data feeds – for example, how many people are there in the line captured on your branch surveillance camera – and then use machine learning to process and store it.

When you have populated your data lake, you can begin to plug in analytics tools to interrogate it and start to create real-time insights. As described above, you may choose to use capabilities provided by a CSP, but you may also wish to develop your own analytics tools to address specific business requirements.

Lastly, you may choose to make any functionality that your team develops available for others to re-use (called Function-as-a-Service, or FaaS). For example, if one of your data scientists develops an application that calculates the credit risk of a particular customer, you could make that 'calculate risk' capability available to others wishing to use it to calculate risks in other applications or processes. This

A leading insurer is using Intel® Saffron™ Cognitive Solution to help it spot and stop fraud rings sooner. In less than a month, the solution examined over 100,000 claims from one year in one US state, uncovering three potential fraud rings[7].

saves time and money as developers do not need to start from scratch when creating your next app.

Once you have discussed all these considerations with your IT team and your business stakeholders, you can start actioning them. At Intel, we recommend a 'start small, then scale' approach. Pick a single use case where the potential business value of transitioning to multi-cloud and analytics is clear. Run a proof-of-concept (PoC) project that has clearly defined parameters and success criteria, and that can be executed quickly, with minimal upfront investment, using the capabilities you already have in house. When you have demonstrated value to the business with a low-risk project in this way, you will be in a stronger position to secure budget and support for further innovation and expansion.

A leading Spanish financial group in retail banking and insurance, CaixaBank* collects more data than most as it's an international leader in mobile finance apps. As its millennial customer base grows, mobile transactions are rising steadily – up 23 percent in a year between 2015 and 2016. It needed to draw insights from this data so that it could better identify customer needs and provide more personalized products[8].

To realize this, it needed a system that could capture data from numerous disparate channels, ranging from client interaction and app metadata to hot topics at call centers and sentiments expressed on social media, and then perform analytics on this information regardless of data format or location.

The bank chose a big data solution from Oracle* consisting of Big Data Appliance, Exalytics and Exadata and powered by Intel® Xeon® processors. This enables CaixaBank to pull data from a variety of sources to gain insights on customers and to repackage them for sharing internally throughout the company.

Now armed with the capacity for intensive big data analysis, the analytical models at CaixaBank are swiftly evolving. This performance immediacy is critical. It's no longer enough to get data at the end of the day or at the end of the month as the enterprise needs to capture information online on what is happening every hour or every minute.
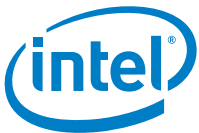
Align for success

As a player in an industry going through significant digital transformation, your data is your most valuable asset. The better you are equipped to make use of it, the greater the value it will add to your business, and this is where a solid multi-cloud and analytics strategy is so important. Analytics can unlock the potential of your data for business transformation, while cloud can democratize and scale these capabilities.

It is therefore essential that you work closely with your IT team to consider your cloud and analytics strategies together and ensure you are collecting, managing, governing and analyzing your data in the most appropriate way to support business objectives. Together, they can empower your organization to become more agile, more innovative and ultimately, more successful.

To find out more, visit: intel.com/financialservices

Or read more about cloud and analytics innovation for your industry:

- Planning Guide: Getting Started with Advanced Analytics

- Reference Architecture: Multi-Cloud Strategy Drives Financial Services Digital Transformation

[1] https://www.enisa.europa.eu/publications/cloud-security-guide-for-smes

[2] https://www.intel.co.uk/content/www/uk/en/financial-services-it/solutions/detecting-reducing-fraud-rings-case-study.html

[3] https://www.intel.co.uk/content/www/uk/en/financial-services-it/customer-empowerment-through-predictive-analytics.html?cache=true456

[4] https://www.enisa.europa.eu/publications/cloud-security-guide-for-smes

[5] RightScale 2016 State of the Cloud Report, www.rightscale.com/press-releases/rightscale-2016-state-of-the-cloud-report

[6] https://www.intel.co.uk/content/www/uk/en/cloud-computing/bbva-customer-testimonial-video.html

[7] https://www.intel.co.uk/content/www/uk/en/financial-services-it/solutions/detecting-reducing-fraud-rings-case-study.html

[8] https://www.intel.com/content/www/us/en/big-data/caixabank-analytics-in-banking-video.html