



CLOUD-NATIVE CREDIT DECISION SYSTEMS IN BANKING AND CARDS

Launch new products faster with less risk
and optimal pricing

THE CASE FOR CLOUD-NATIVE DECISION SYSTEMS

There are many reasons more and more financial institutions are moving to the cloud including increased flexibility and the ability to rapidly bring new products to market. Banks are expected to increase their cloud spending by 15% through 2024, compared to a 4.5% increase in overall IT budgets during that same time period¹. How they move their applications to the cloud can have significant impact on whether or not they achieve their expected business results.

Often, the move to the cloud has been done by simply lifting and shifting existing on-premise solutions, as is. However, this approach has drawbacks and can fall short of expectations. This is especially true for customer-related decision applications such as credit approvals and collections.

The problem is that traditional on-premise solutions struggle to accommodate the growing volumes and types of data that banks need to use in order to support these decisions. Bringing a new data source into the mix typically takes months. By lifting and shifting their on-premise decision applications to the cloud, banks are simply carrying those shortcomings to a new platform. Those delays in putting data to work can translate to missed opportunities to reach new customers and improve service to existing customers.



As a result, financial institutions are now looking for ways to re-architect their existing decision applications as cloud-native applications. As they do so, they have an opportunity to rethink the way those applications work—to fundamentally change the way data that drives their applications is stored and moved to become more effective at using today's wealth of dynamic data.

With a cloud-native approach, financial services companies will be better able to take advantage of artificial intelligence (AI) and machine learning (ML) and to tap into a growing universe of data. This will help them increase speed and reduce risk when offering auto loans, mortgages, and credit cards. These new capabilities will also help them compete more effectively in newer areas such as buy-now, pay-later loans. In the end, the right approach to managing data in cloud-native decision systems has the potential to help companies bring new value to customers, market new products, and ultimately increase revenue.

Rather than simply lifting and shifting existing applications, a cloud-native approach allows financial services companies to enhance the functionalities of their decision solutions by applying AI and ML solutions to a growing universe of data.



¹ IDC, "Banking on the Cloud: Results from the 2021 CloudPathSurvey," 2021.

THE GROWING BURDEN ON DECISION SYSTEMS

In recent years, decision systems focusing on the customer—from loan origination to account management, collections, and fraud detection—have become more powerful and sophisticated. While systems may vary, they typically aggregate data from various sources, feed that data into AI and ML models to create internal scores for individual customers, and use these scores to make customer-related decisions such as approving a loan or increasing a credit limit.

At the same time, the universe of data that is available for use in these systems has expanded in both volume and type. Today, financial services institutions can draw on far more than traditional credit bureau data with the emergence of a growing array of data providers such as Clarity (rent, payday loans), Prism Data (bank account and credit card transactions), Finicity, (bank account history and transactions), and Zelle and Venmo (payment transfers). They can access data from social media, phone-based apps, and a range of other non-traditional data sources. Using a broad variety of data is especially important in efforts to understand and serve the unbanked and underbanked who constitute a large and attractive pool of potential customers.

In short, being able to quickly access more data from a wide array of data sources is key to continually honing customer insights and driving ever-greater predictability of customer behavior and risk.

However, traditional databases make this difficult since they were designed years ago to handle relatively stable data from a limited number of sources and not to satisfy today's constantly expanding appetite for data. The data is typically stored in multiple columns within tables associated with each entity such as applicant or product. A given table might have dozens of columns of interrelated data. The addition of new data sources requires changes to the table structure. Each component of the decision solution, from the database through the application to the user interface, needs to have its own definition of the new data in order to use it. (See Figure 1.)

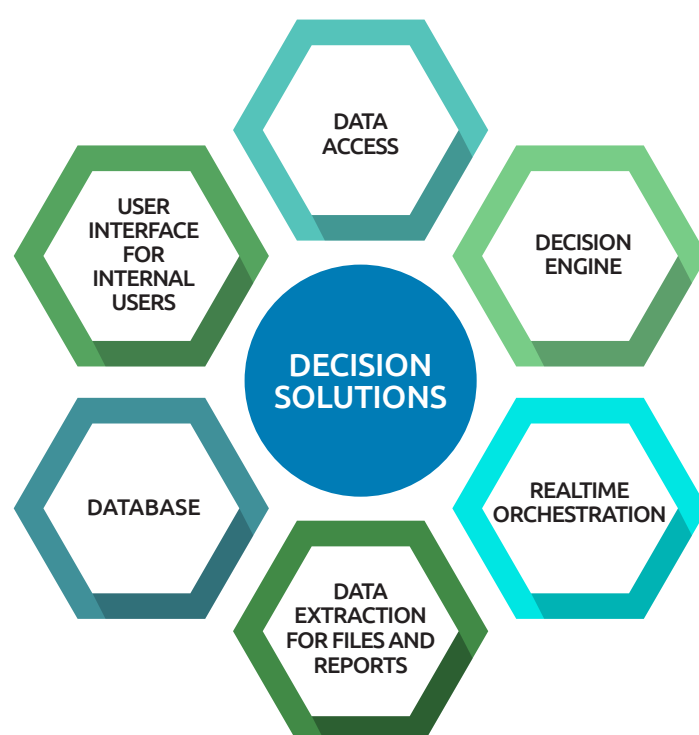


Figure 1 – Components of Typical Decision Solutions

Making changes to the database—even small ones—can be complicated and time consuming requiring the creation of new columns and fields. Adding a new data source may take five months or longer. Such delays make it difficult to bring new data into business solutions in a timely manner, quickly try out new data sources to see if they add value, and deploy new data-driven insights in the business. This often leads to many companies falling behind in the competitive race to gain and serve customers.



Incorporating new data sources into traditional databases can be difficult and time consuming.

RETHINKING THE DATA ARCHITECTURE

Financial services companies can address these problems by creating cloud-native solutions that change how data is stored and moved for decision applications. This new approach replaces the traditional structured database with a hybrid, semi-structured database that does not require separate columns in the table structure for all data attributes.

The result is a less-rigid structure for a majority of the data. New data can be placed in a field within a data sources column. This eliminates the need to change the database or create new tables and columns each time a new source is added.

Data from this new source can be stored in an industry-standard format—such as JavaScript Object Notation (JSON)—that can be read at high processing speeds by all the components of the decision solution using readily available software packages. This allows the data to be used across the components in the same format in which it is stored with just one single data definition, JSON,

working across all components. (See Figure 2.) This would significantly reduce the changes needed across an application when adding or changing data fields.

Some important high-level data will still need to be captured in its own column to support real-time decisioning applications and present data to decision makers. This includes the foreign keys used to link data across tables and the time stamps that track when data was pulled from the source.

Replacing a traditional structured database with a hybrid, semi-structured database can dramatically reduce the time required to incorporate new data sources.

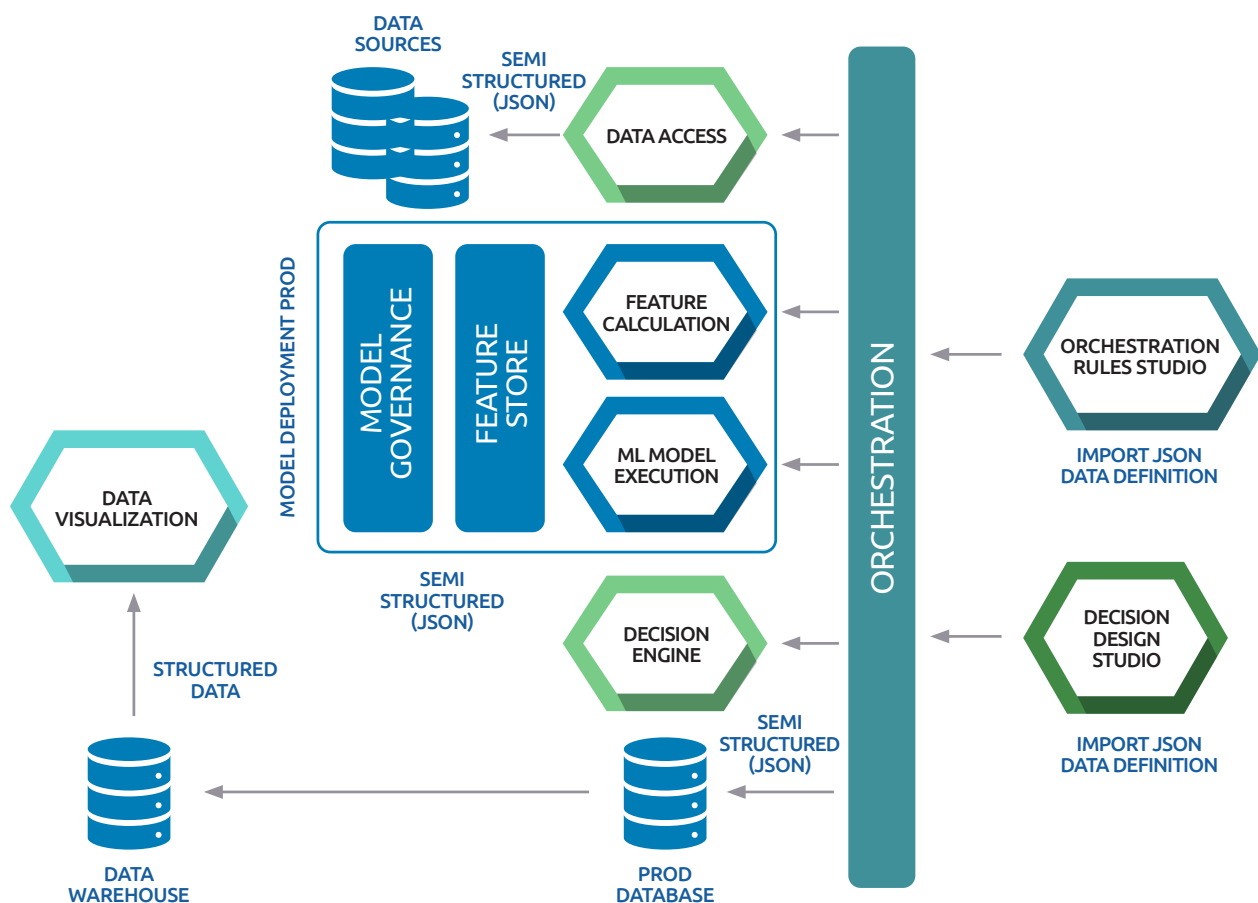


Figure 2. Proposed Schematic Component Architecture Diagram for Dynamic Data Capability

ADJUSTING TO THE NEW DATABASE

In this type of cloud-native application, the various components of decision solutions would need to be modified to enable them to import JSON data and create data definitions in one place rather than throughout the components. This could be easily done by importing data structures, such as JSON, within editors.

Semi-structured data would be used in all three key steps in the decision solution:

- Data aggregation and storage
- Execution of AI/ML models
- Running of the decision engine

However, when moved to a data warehouse for analytics-based reporting and visualization, semi-structured data would need to be converted to structured data. This step could be performed later and thus would not delay or interfere with the use of semi-structured data in the decision system.



This reimagining of data structures would lead to some important considerations. Many cloud-native decision applications—such as collection and fraud applications—require personally identifiable information (PII). That PII will need to be depersonalized for the building and training of analytics models. Thus, these applications would require a set of data tools for performing one-way depersonalization while converting semi-structured to structured data. A number of emerging proprietary accelerators will help streamline the building of these cloud-native applications.



Cloud-native applications enable more agility with data-driven insights that increase speed and reduce risk in offering auto loans, mortgages, and credit cards.

THE CASE FOR CLOUD-NATIVE APPLICATIONS WITH A DYNAMIC-DATA APPROACH



With this new cloud-native architecture, financial services companies will be able to take better advantage of the cloud with their decision systems, gain access to tremendous amounts of data, and scale up quickly to handle changing workloads. They are likely to see faster processing speeds due to the reduced number of foreign keys and data entities that have to be saved to the database with this semi-structured approach. All of this will yield a better return on their investments in the cloud, AI, and ML.

More importantly, this approach to cloud-native applications will dramatically speed up the process of bringing new data sources into decision solutions—reducing the time required from several months to a few weeks. This means that financial services companies can quickly try out new data, algorithms, and concepts to discover what works and what doesn't, adjust decision solutions to meet changing business needs, and quickly take advantage of new approaches that provide value. In the end, this increased agility, along with deeper data-driven insights, will help companies reach broader markets and provide more value to customers.

As financial services organizations plan and allocate their cloud budgets, they should weigh the enormous value that cloud-native applications can provide. A cloud-native approach can take critical decision systems to the next level providing the substantially higher levels of agility, depth, and speed needed to compete successfully for customers.

Cloud-native applications can allow financial services companies to become more agile in using data-driven insights to meet changing business needs and deliver value to customers.



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