DIGITAL TRANSFORMATION

The vast development of the digital world, particularly in the 21st century, has led to the generation of a massive volume of data. Therefore, any company that wants to remain relevant today and the near future must learn how to handle a huge amount of data through a flexible, robust, and scalable platform. Is Apache Kafka suited for this? The answer is Yes!

Apache Kafka is an innovative streaming platform that allows the sending of messages from end to end and is the right tool to handle big data. It is also compatible with real-time data analysis tools, making it the go-to streaming platform of the new generation. In this article, you will get to know the many real-life use cases of Apache Kafka, particularly in the energy and banking sectors.

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HOW APACHE KAFKA IS SHAPING BANKING AND FINANCE

In this section, we will discuss the ways banks, fin-techs, and traditional financial institutions are utilising Apache Kafka to enhance their operations.

FRAUD DETECTION

Today, the banking sector has to deal with a high volume of frauds, illegal payments, and money laundering. This has constituted a great threat to the development and adoption by customers of online banking services as well as impacting on small businesses as they face financial loss when they fall victim to cyber-attacks or simply illegal payments. With Apache Kafka, banks and financial institutions can effectively detect frauds and therefore restore their integrity, ensuring the best security measures for their clients. The platform will make systems learn behavioural patterns independently by scanning through a huge volume of data. Once transactional trends are understood, it becomes easy to detect fraudulent (strange) transactions.

CUSTOMER SATISFACTION

Banks are on the lookout for an effective strategy to give their customers a seamless experience. Apache Kafka's concept is such that it can collect different forms of data and compile them to generate innovative strategies. For example, the platform can work to suit the requirements of each client, effectively customizing their experience. It can also integrate and handle messages in different languages without any hassle.

RISK MODELLING

The banking industry is going through a lot of paradigm shifts and it has become more crucial than ever to measure risks. No bank can afford to make a costly mistake. This is why banks embrace risk modelling. Meanwhile, to have a full-proof risk modelling structure, there is a need to analyse huge data. Apache Kafka can deliver seamless communication at a fast pace with rapid analysis of quantitative data and compute the value of risk in real-time.

PREDICTIVE ANALYTICS

For banks and financial institutions in this current state of digital evolution, getting real-time and predictive investments right is key. Through the use of Apache Kafka and other necessary tools, banks can get predictive data in real-time. This helps the institutions in making decisions about short and long-term investments.

TRADING

Trading is carried out every minute of the day. It generates big data, which needs terrific data analysis. Meanwhile, the industry is being undermined through different forms of manipulation. Financial institutions that handle trades can leverage stream analytics using Apache Kafka as a surveillance tool that can detect even the slightest bit of manipulation and immediately alert authorities to take action.

VALUE PREDICTION

It is always a difficult task for banks to keep all clients in forever profitable investments. Apache Kafka now makes it easier for banks to calculate the lifetime value of each customer. This further helps the banks and financial institutions to promote business-customer relationships.

EXAMPLES OF FINANCIAL INSTITUTIONS TAKING ADVANTAGE OF APACHE KAFKA

To put our point of discussion in perspective, here are two examples of financial institutions already leveraging Apache Kafka to achieve a competitive edge in the industry.

Rabobank

Rabobank is a Dutch multinational banking and financial services company with headquarters in Utrecht, Netherlands. The company is popular for its great digital initiatives. Rabobank used Apache Kafka for Rabo Alerts, which is one of its important services. The service notifies customers on issues like transactions on their account, suggestions on future investments based on their credit score, etc. These are push notifications. Rabobank used Apache Kafka for this service because the platform can robustly perform comprehensive data analysis.

Goldman Sachs

Goldman Sachs is famous in the financial services industry. The industry giant developed a platform called 'Core' to handle its data. The Core Platform makes use of Apache Kafka as a pub-sub messaging platform. The platform has helped Goldman Sachs to achieve a high data loss prevention rate, minimise outage time and get easier disaster recovery.

HOW APACHE KAFKA IS SHAPING THE ENERGY AND UTILITIES SECTOR

No doubt, developing the energy sector directly yields a multiplier effect as it enhances social and economic development. In fact, energy can be regarded as the major fuel for industrialisation. Unfortunately, organisations are now facing several challenges in energy consumption and management. Here is how Apache Kafka can help.

OUTAGE PREDICTION AND DETECTION

A power outage is perhaps the biggest issue faced by energy providers. This particular issue has eroded the credibility of energy firms. People have now seen power outage as normal in some countries and probably view blackouts as a result of the failure of the electric grids. The reality is that most of the blackouts are avoidable. Gone are the days when engineers used static models and algorithms rather than tools that provide real-time solutions. Today, power holding companies are utilising Apache Kafka and

other tools to build smart power outage communication systems. These systems are capable of predicting the influence of weather conditions on the power grid, identifying probable outages by smart meter events, recognising outage types and filtering outage inputs in real-time.

Every single power outage needs careful analysis to identify its root cause. This will then help in building a model for the prediction of a future outage. Apache Kafka has helped the energy sector by providing real-time outage statuses and this leads to an overall improvement in customer experience.

FAILURE PROBABILITY MODELLING

Failure probability modelling is very helpful for energy companies to effectively predict occasional failures and therefore reduce maintenance and increase performance. As you know, the energy firms make huge investments on proper functioning and maintenance of their machines. This means that any unforeseen failure in operation will lead to a big financial loss. Also, organisations and companies that depend on the energy provider will have their fingers burnt. Consequently, money is lost, reputation is damaged and the energy provider is no longer seen as a reliable firm.

This is a journey no company should experience. With Apache Kafka, you can build a seamless failure probability model that will be useful in the decision-making process of your company.

ENERGY FRAUD DETECTION

When energy thefts occur, they are usually one of the most expensive in the globe. As a result, energy companies must put measures in place to prevent thefts from happening.

To effectively predict and prevent energy theft, energy providers can monitor energy flows such that whenever a suspicious (strange) case arises, it can be easily identified. Apache Kafka provides companies with the ability to react in real-time to fraudulent signals using geo-spatial data, client information, and sensor data.

DYNAMIC ENERGY MANAGEMENT

Dynamic energy management involves the principles of traditional energy management regarding demand and distributed energy sources as well as modern energy issues like temporary load, demand reduction, and energy saving. For this, there is a need to build capabilities to combine distributed energy sources, advanced communication, and smart energy management systems. With Apache Kafka, you will have the capacity to utilise real-time, pre-processed data in your firm's operational analytics solutions. This enables you to monitor networks in real-time thereby giving you the ability to adjust load and give energy conservation recommendations.

In other words, dynamic energy management systems are capable of processing a vast amount of data and they apply streaming analytics using Kafka to provide smart recommendations and performance estimation for energy management.

SMART METER DATA PROCESSING AND CUSTOMER BILLING

Every business should be interested in improving customer service to boost customer satisfaction. Energy companies are no exception to this fundamental axiom. Energy providers are striving to improve on payment and billing operations, provide quality, and get rid of delays.

New smart meters are being introduced into the industry. They allow customers to maintain close monitoring of energy usage and the cost associated with it. It also enables energy firms to automate the billing process. Apache Kafka and Streams API help in real-time aggregations to process different types of data streams. This allows companies to effectively deal with an increased volume of meter readings.

It simply means that with Apache Kafka, transactions can be tracked in real-time and immediate actions can be taken in regards to communication services, prepaid and postpaid services, and billing.

PREVENTIVE EQUIPMENT MAINTENANCE

This involves monitoring the performance level of equipment under normal operating conditions. With this, it is easy to avoid equipment failure by using specific metrics to predict probable failure occurrence. With sensors, trackers, and Apache Kafka's smart streaming data capabilities, companies can obtain defined metrics, process, and analyse data. Overall, this helps companies to maximise return on investments and optimise usage of equipment thereby ensuring that the machines reach the peak of their efficiency.

DEMAND RESPONSE MANAGEMENT

In the pursuit of renewable energy sources, the need for the world to start embracing smart energy management and efficient use of energy is critical. Meanwhile, achieving successful energy management lies in the balance between supply and demand. Low and high demand rates usually cause problems for energy consumers and providers. Therefore, it is essential to build an efficient demand response strategy. In combination with other tools, Apache Kafka can be used to build real-time management solutions and applications to monitor metrics of energy use, and change energy flow to the live demand rate.

OPTIMISING ASSET MANAGEMENT AND PERFORMANCE

In the energy sector, all probable delays and failures in energy supply and unanticipated service interruption lead to inefficiency. Such inefficiency is avoidable. It can be brought under control with close monitoring of performance and assets. Apache Kafka can be used for real-time detection of abnormal behaviour of operating assets, like, power plants. This helps to reduce asset downtime and optimise operational performance. It further leads to the enhancement of the reliability and availability of those assets.

ENERGY TRADING

Apache Kafka can be used by energy providers for real-time detection of market changes through collection, analysis, and modelling of price, demand and supply data. Ultimately, this leads to better and more informed decisions effectively helping energy firms to respond faster to market changes.
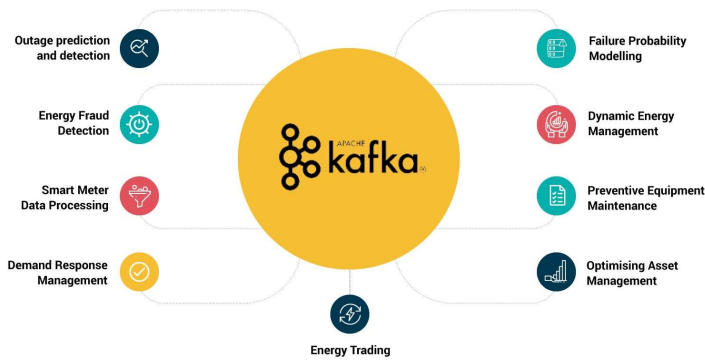
USE OF APACHE KAFKA IN OTHER SECTORS

In this article, you have seen that Apache Kafka is extremely useful in the banking, financial services, energy, and utilities sectors. However, that's not all: the platform can be used in several other sectors as well. Apache Kafka can be used in transportation and logistics, healthcare, entertainment, e-commerce, hospitality, and security sectors among many others.

Let's look at two examples. First, in healthcare, patients' expectations have increased drastically. They demand prompt feedback and more personalised care. To meet this expectation, healthcare providers are taking a data-driven approach using Apache Kafka. This enables them to make a real-time decision with patients' health data streams. Second, in the transportation sector, Uber used Apache Kafka to develop its driver injury protection programme in over two hundred cities. The programme has recorded tremendous success based on the unblocked batch processing method which allows steady throughput. Also, the programme's multiple retry capability enabled Uber to work on segmentation of messages to actualise flexibility and real-time process updates.

Indeed, the usefulness of Apache Kafka can be seen in the number and calibre of companies using it. From Uber to Netflix, Pinterest to Spotify, Coursera to Slack, Oracle to LinkedIn, Twitter to Shopify; they all use Apache Kafka.

CONCLUSION

Having read this article up to this point, you are now acquainted with the ingenious use cases of Apache Kafka in different sectors, particularly the banking and energy sectors. You can also leverage on Apache Kafka to provide quality data analysis, boost customer satisfaction and maintain a competitive advantage. And if Apache Kafka is a fantastic engine, Axual is the supercar that can make the most out of it. So, if you are ready, let's get started.

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