

Edge Computing: Supporting Digital Transformation in Financial Services

→ Imagine a world where you can choose self-contained pieces of code and make them run anywhere you want at the push of a button. Where you can remotely control the code that is executing on twenty iPhones in customer's pockets, thirty servers in a building, and ten computers in the office, all at the same time. Technology that allows you move processing close to where data is generated and separate streams of information from end applications that use them is brought to life by **"Edge Computing"**.

1. WHAT IS EDGE COMPUTING?

Edge computing extends cloud computing to the edge of an enterprise's network to perform computation, storage, and networking services locally. Operated directly on edge devices known as Edge Compute Network or ECN instead of relying exclusively on data centers, providing resiliency, fault tolerance, security, and low-latency connections between edge devices, delivering the scaling properties necessary for large deployments. In layman term "Edge computing refers to the decentralization of computing that moves data processing from the core infrastructure, where computing processing traditionally occurs, closer to the person or item creating the data".

The global edge computing market size was valued at USD 11.24 billion in 2022 and is expected to expand at a compound annual growth rate (CAGR) of 37.9% from 2023 to 2030.

2. HOW EDGE COMPUTING IS HELPING DIGITAL TRANSFORMATION

EDGE DEPLOYMENTS ENABLE FAST, DATA-DRIVEN BUSINESS OUTCOMES:

Many organizations are looking for ways to reduce the time needed to collect and analyze data. One of the multiple advantages of placing compute power at edge sites is the ability to circumvent the latency and bandwidth limitations of the centralized computing model. Analyzing data at source can also reduce the time companies need to make critical decisions.

Consider organizations, who must ensure strict quality control on items built on the factory floor. Deploying real-time video sensor applications on the production line can help organizations monitor and spot issues the moment they occur. Minimizing quality errors at source not only helps deliver more production yields but also help improve profitability by ensuring an optimal customer experience.

BETTER END-USER EXPERIENCES AND PERSONALIZED CUSTOMER SERVICES

Edge computing also makes it simpler for businesses to strengthen connections with customers. For example, applications deployed at stores located at edge locations can add the ability to analyze consumer

behavior and use trained algorithms or decision trees to change digital signage in real time. Having this type of responsive capability allows businesses to serve their target audiences with personalized offers or customized upsell opportunities that reflect exactly the information each audience needs to see.

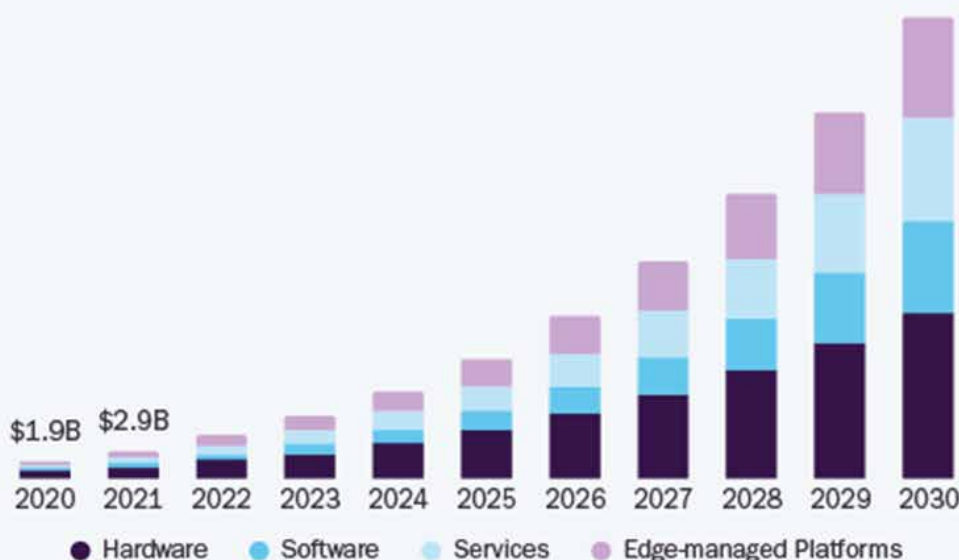
ACHIEVING GREATER RESILIENCE WITH DISTRIBUTED EDGE NETWORKS

Some Financial organizations may have facilities that are more at risk for occasional connectivity interruptions due to their remote locations or heightened security protocols. Any such organization can suddenly find itself facing connectivity failures due to bad weather, natural disasters, or unexpected issues with third-party providers. Even in case of disconnection scenarios, edge computing can help companies improve their infrastructure resilience and application availability by ensuring continuity of operations for staff and customers until proper connections can be restored.

BOOSTING REGULATORY COMPLIANCE ACROSS EDGE AND TRADITIONAL NETWORKS

U.S. Edge Computing Market

size, by component, 2020 - 2030 (USD Billion)



GRAND VIEW RESEARCH

32.3%

U.S. Market CAGR,
2023 - 2030

Source:
www.grandviewresearch.com

Modern organizations face ever-increasing levels of complexity when navigating compliance and security rules that dictate how customer data can be stored or moved. With the right IT platforms and management solutions, edge computing can help them meet their obligations more efficiently. In the financial sector, storing and analyzing data at the edge allows organizations to gather detailed behavioral data on customers at the local level while also ensuring that this information undergoes proper due diligence. Then, that information can be shared more broadly across the organization, maintaining compliance with industry or government regulations. This level of control and visibility gives compliance teams confidence, knowing that sensitive information will not cross international borders in violation of governance policies or regulations.

3. CHALLENGES IN EDGE COMPUTING

Just as the benefits of edge computing can be broadly categorized, so can the associated obstacles. Few Challenges in Edge Computing are:

OVERCOMING COMPLEXITY AND INTEGRATING LEGACY APPS

When adopting edge computing, one of the biggest obstacles companies will face is complexity. Many organizations rely on a mix of heterogeneous hardware and industry-specific applications assembled over decades at their edge sites. These environments may not be well integrated and will often rely on a sizable amount of do-it-yourself code. In a survey, “2021 Trends to Watch in Cloud Computing,” OMDIA found that 72% of survey respondents cited “manageability” as the biggest obstacle in adopting edge computing.

SECURITY AND COMPLIANCE CHALLENGES

Edge computing can give organizations the flexibility to consider IT implementations in locations that are challenging to serve, either due to their location or complex security needs. Often, these locations are unlikely to have adequate IT staff to address issues as they arise. According to Gartner®, internet-connected devices on enterprise networks can be hacked in as little as three minutes, and breaches may take six months or more to discover. To enhance security, Companies will need the ability to set policy that ensures that software is updated properly and that data security measures are put in place to prevent vulnerabilities.

INTERRUPTIONS CAUSED BY INTERMITTENT CONNECTIVITY

As Edge computing can give organizations the flexibility to consider IT implementations in locations that are challenging to serve, this may arise to a new challenge of interruptions caused by intermittent connectivity.

Organizations edge sites may face ongoing issues with intermittent connectivity due to specific security and regulatory constraints. Any remote locations or sites that are based in areas prone to hurricanes, earthquakes, flooding, or other natural disasters face issue in the event of disruption.

4. USE CASE OF EDGE COMPUTING IN FINANCIAL INDUSTRY

Early iterations of edge computing have been used by financial institutions for many years, most notably through mobile banking apps, which have become an important part of the global banking ecosystem. By incorporating elements of edge computing within an edge device (such as a smartphone or gateway device) that collects data from other endpoints and applies real-time processing and analytics, mobile banking apps have made banking

more accessible, inclusive and faster to an increasingly global audience as well as providing an enhanced customer experience through personalization. Edge computing can be utilized to help banks leverage data analytics to create a more memorable customer experience by creating personalized and relevant content delivered through their preferred digital channels. For example, by leveraging anonymized location services data and technology, banks can understand areas of interest to their customers and partner with these businesses (e.g., restaurants, hotels, retails etc.) to provide exclusive offers to their customers. This can be done through in-app push notifications when their customers are in the close vicinity of participating businesses, informing them of special offers they can take advantage of.

Few other examples where “Edge Computing” helps Financial Organizations and add value to the business are:

CATERING TO CUSTOMER DEMANDS

Traditional customer engagement programs in retail banking are often extremely inefficient. Within a bank’s physical locations, static advertisements/offers are displayed without basic analysis of customer segments. In Digitalization Era, Financial Institutions want to leverage the flexibility of cloud (e.g., rapid and flexible updates to advertising materials) while also retaining benefits of more local compute (e.g., real-time changes to personalize the advertising).

Edge computing plays a pivotal role by enabling faster data processing and reducing latency, Financial institutions can deploy edge servers near customer banking applications that help by providing highly personalized customer engagement down to the individual level and

allowing for real-time processing of transactions, account updates, and other operations.

ENHANCING SECURITY

Banks handle vast amounts of sensitive customer data, making them attractive targets for cybercriminals. To combat this constant threat, banks are leveraging edge computing for real-time and proactive fraud detection. With edge servers deployed across various touchpoints, such as ATMs, point-of-sale systems, and online platforms, banks can monitor transactions in real time, detect anomalies, and identify potentially fraudulent activities. By analyzing data at the edge, banks can respond swiftly to security threats, prevent financial losses, and ensure the safety of their customer's funds and personal information.

ENFORCING REGULATORY COMPLIANCE

Edge computing help in maintain regulatory compliance by facilitating the processing of sensitive data within national borders and significantly reducing the amount of data being sent to the cloud. Alongside this, edge computing solutions allow for real-time monitoring of the bank's financial health and compliance to the various capital and leverage ratios required by law.

CUSTOMER RETENTION

Understanding customer needs and preferences is essential for banks to deliver personalized offerings and enhance customer satisfaction. Edge computing enables banks to collect and process data from various customer touchpoints, including ATMs, online platforms, and mobile applications. By analyzing this data at the edge, banks can gain valuable insights into customer behavior, spending patterns, and preferences. These insights can then be used to develop targeted marketing

campaigns, personalized product recommendations, and tailor-made financial solutions. With edge computing, banks can provide a unique and personalized banking experience to each customer, fostering customer loyalty and driving business growth.

CONCLUSION:

With increasing interest in new use cases and services like smart banking, augmented and virtual reality, there is a clear need for edge computing. However, the edge is not a standalone product or an offering but an enabler for use-cases requiring security, resilience, and low latency in combination with other technical solutions like modernize infrastructure.

Edge computing is a game-changer for industries that require real-time data processing and reduced latency. However, it comes with its challenges, and companies need to carefully evaluate its pros and cons before implementing it. With the right expertise and planning, edge computing can help companies achieve significant benefits and compete effectively in today's data-driven world.

