

Light Report

Creating Powerful Customer Experiences with AI and Edge

By Bob Emmerson and Robin Duke-Woolley, Beecham Research



As detailed in Beecham Research's Report IoT at the Edge: Enabling the Real Time Enterprise, IoT is now rapidly evolving from its roots in cloud monitoring and reporting to extensive processing at the network edge.

This recent development of using powerful, cost-effective resources at the network edge has enabled the deployment of edge-based products that function as micro data centers. This development is hugely significant: it enables data to be processed and analyzed in real time, thereby generating insightful real-time information for local management. This real-time analysis of data may only be valuable for a short period of time, but in that time it can drive completely new levels of customer experience. Volt Active Data is highly active and experienced in this area.

What's happening at the edge?

Beecham's report brings together a grouping of own and sourced research that shows just how quickly edge processing is now developing. For example, according to Linux Foundation's State of the Edge 2021 Report:

"The global IT power footprint for infrastructure edge deployments is conservatively forecasted to increase from 1GW (Gigawatt) in 2019 to over 40 GW by 2028 – a CAGR (Compound Annual Growth Rate) of 40%"

In fact, their more optimistic forecast is for about 130GW by 2028 – a more than 60% CAGR. As this indicates, growth in edge computing is set to be a major factor in the market over the next few years.

Looking at some survey results, research from the Eclipse Foundation included responses from 300 businesses from various sectors. The results show that IoT and edge are growing in importance, as well as adoption.

86% of companies surveyed are utilizing edge computing technologies or plan to deploy them; 30% of companies surveyed indicated project spending between \$100k and \$1 million in 2020—a two-fold increase over 2019. The size of these investments is all the more significant because over half of companies surveyed employ fewer than 100 people.

In addition, these edge investments are increasingly led by the business, not IT. 35% of organizations indicated that decisions were being driven by staff at the senior executive level, roughly double the rate from the previous year, and major decisions taken by IT personnel were reduced from 26% in 2019 to 21% in 2021.

Also in 2021, the IBM Institute for Business Value, in conjunction with Oxford Economics, published The Edge Computing Advantage, a survey of 1,500 executives across 22 industries and 21 countries. This report focuses on the 140 chemicals, petroleum, and industrial products respondents.

The survey found that leading companies are leveraging edge today. These edge disruptors are embracing complementary technologies such as IoT, cloud computing, and robotic process automation. As the technology matures, adoption is expected to broaden quickly: nearly all respondents said their organizations will implement edge computing in the next 5 years. In addition, expected ROI (Return on Investment) averages 23% within 3 years, compared with 3% average return for their peers on other investments.

More striking still is a recent survey by IDC looking at the value that edge is adding or expected to add to respondent organizations, as shown in Figure 3. Security Compliance and Operational Efficiency are the two most expected value adds, but of particular interest is the anticipated gains in Customer Experience.

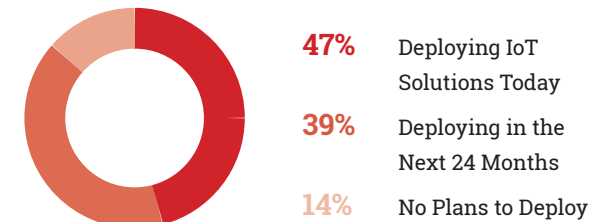


Figure 1:
86% of surveyed companies are already deploying IoT solutions today, or plan to in the next 24 months

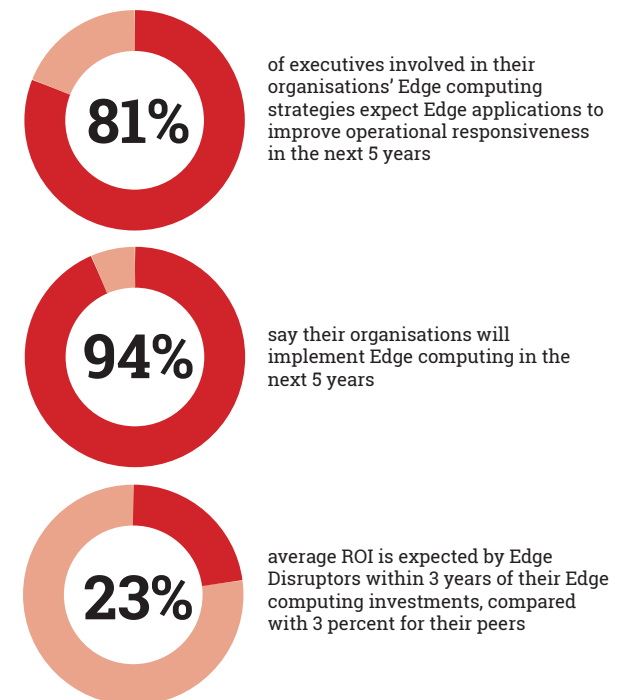


Figure 2:
IBM's survey shows the growing adoption and value of edge computing

A further interesting insight is then provided by the Eclipse Foundation, looking at adjunct software most likely to be utilized in an edge solution. This is shown in Figure 4 and it indicates just how close edge and AI are expected to become.

The message from the research is clear – edge is having a profound effect and edge and AI together are seen as driving significant new value add, especially in the area of Customer Experience.

The Volt effect

Volt Active Data, a leading real-time data platform built to enable 5G data, is integrally involved in helping enterprises make this move to the edge. The company has raised the real-time performance and functionality bar by developing a data platform that performs data ingest to action in single-digit milliseconds, without sacrificing accuracy or consistency. This breakthrough technology is now powering next-generation customer experience-oriented applications that need to act quickly and intelligently at the edge. These applications vary widely, from hyper-personalization – which enables customer-centric, data-driven marketing to reach individual customers in new, innovative ways – to fraud detection to telco policy and charging for business support systems (BSS) used for millions of concurrent mobile phone users.

What makes Volt different?

A core component of Volt's data platform is the in-memory database, which has been designed from the ground up to be the best solution for high performance, business-critical applications. But the secret sauce of the Volt Active Data Platform is its active data layer, which combines the various processing layers found in a traditional data platform, which themselves are made up of various component technologies, or relational database architecture into a single step. This layer maximizes throughput (i.e. data processing speed) by avoiding the necessity to perform time-consuming tasks such as locking, latching, and log maintenance.

What value is Edge adding or expected to add to your organisation?

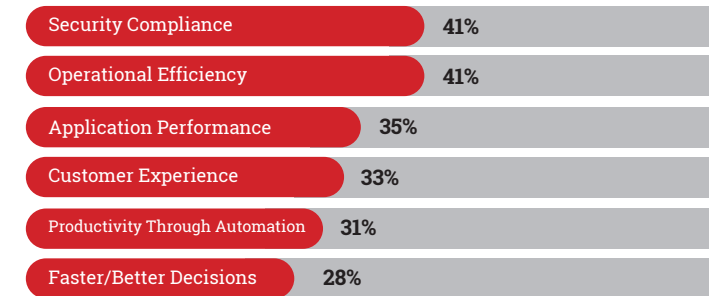


Figure 3:
Adding value with Edge processing
(Source: IDC)

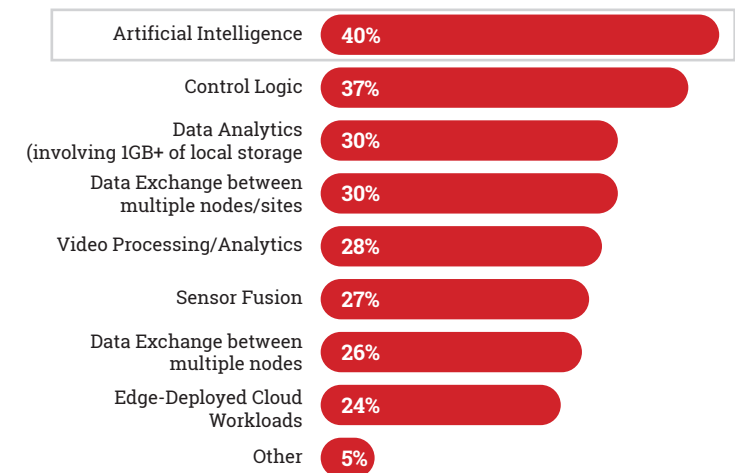


Figure 4:
Adjunct software utilized in a solution
(Source: Eclipse Foundation)

A traditional database automatically stores data, then processes it and comes back with an answer or result. This might involve accessing different technologies on different servers, which takes time. In contrast, the Volt Active Data Platform only stores data when it needs to making Volt an “always process, sometimes store” data platform, as

opposed to an “always store, sometimes process” data platform. Volt is able to do this while staying ACID compliant to ensure the highest possible data reliability and integrity and make sure data never falls into an inconsistent state because of an operation that is only partially completed.

How is the Volt platform being used?

Hyper-personalization. FT.com, the website for the Financial Times, wanted to influence customer behavior in real time by tailoring web content to user behavior. For this, they needed a data platform that enabled deep personalization and real-time decision-making. Previously, they had used an AWS stack. However, this stack was incapable of meeting their needs. By providing fast access to user’s behavioral data, FT.com was able to alter each user’s experience.

Another good example of enhanced customer experiences is the myFT feature, which allows users to curate their own version of the FT to include topics that they’re most interested in. By storing user page views in the database, the myFT team used the data to make recommendations of what topics users might want to follow based on the articles they’ve been reading.

Using Volt technology, FT.com can now personally engage (and retain) hundreds of thousands of subscribers with highly customized content and messaging.

Another company that uses Volt technology for

hyper-personalization is Flytxt, which is the trusted technology partner of 80+ digital enterprises across more than 50 countries. The company uses AI-powered solutions to help some of the world’s biggest brands maximize customer lifetime value through a deeper understanding of their customers. Flytxt uses Volt for real-time streaming analysis of mobile CSP data, enabling their customers to extract actionable intelligence from billions of events streaming each day from more than 200 million mobile subscribers.

Predictive fraud detection and prevention. According to Onfido, a global leader in AI for identity verification and authentication, identity fraud has risen 44% since 2019. And according to Onfido’s “Identity Fraud Report 2022”, ID fraud has not returned to pre-pandemic levels. As cyber criminals’ tactics become more sophisticated, their attacks become harder to detect and fend off before damage is done. Volt Active Data’s use of user-defined functions on Apache Kafka data streams enables financial organizations to deploy new fraud prevention algorithms, thereby improving the accuracy, intelligence, and effectiveness of fraud detection logic.

Contextual Decision Intelligence



Act on events in the best way possible, according to your unique business needs and KPIs

Durable Scalability



Scale horizontally and vertically without compromising on latency

Stream Integration



Process, store, analyse, and act on data streams in real time

High Availability



Ensure business continuity in the face of hardware failures

Real-Time Aggregation



Make complex decisions using both historical and near-recent records

Lossless Replication



Provide geographically distributed resiliency to support 5G-grade quality of service

Figure 5.
Volt Active Data Platform’s differentiators.

Volt customer Huawei needed a system that could perform thousands of queries per financial transaction with low latency and high throughput. The company needed to be able to perform real-time fraud analysis on these transactions by applying user-provided logic and rules to gigabytes or terabytes of recent history, blacklists, and other state-based data.

Huawei tried many different data platforms but was having trouble finding one that could support millions of non-trivial queries per second and generate decision scores in single-digit milliseconds. Huawei chose Volt not only for its ability to dramatically reduce fraud detection latencies but also to automate real-time, in-event fraud detection and prevent millions of dollars in losses in doing so. Using Volt, Huawei was able to log an 83% reduction in fraudulent transactions and significantly increase its processing capacity.

DDoS attack mitigation. One in three US businesses have experienced distributed denial-of-service (DDoS) attacks. A single attack typically costs between \$2.3 million and \$4 million and results in a median downtime of 7 to 12 hours. Cybersecurity experts logged over 10 million DDoS attacks in 2020, or more than 27,000 a day.



83%

reduction in fraudulent transactions
Huawei

Volt customer SAKURA Internet, one of Japan's largest data centers, offers website and email hosting, virtual private networks, elastic cloud, data center solutions, and business continuity planning. Like other operators, they are regularly targeted with DDoS attacks that flood the targeted customers with fraudulent traffic and keep them offline.

To minimize downtime and deliver secure, high-speed, and highly available internet and data services, SAKURA leveraged the Volt Active Data Platform and developed an innovative attack mitigation solution to complement traditional security measures such as firewalls and intrusion prevention systems. The system learns what normal application and service traffic looks like and uses situational awareness to detect and respond to threats within single-digit milliseconds, drastically mitigating the negative effects of cyber-attacks and saving SAKURA's customers millions of dollars.

Real-time BSS. When leading CSP software and services provider Amdocs acquired real-time business support system (BSS) specialist Openet in August 2022, the company obtained access to Volt's game-changing real-time contextual intelligent decisioning technology. With Volt powering its BSS applications, Amdocs was able to significantly up its 5G game, achieving a 30% reduction in network traffic and a 42% reduction in CapEx.



42%

reduction in Capex
Amdocs

Final thoughts

Data is only useful if it is driving decisions and actions that drive revenue and improve business processes. The actual decision, and the subsequent action it drives, typically require data generated from many sources and events, some of which have already happened and some of which are happening right now. This requires the ability to ingest and process raw event data the moment it is created and aggregate it with past events to enable decisions to be made in real time without compromising on data accuracy or consistency.

Volt Active Data Platform is the only data platform capable of doing this at speed and scale. It is the go-to technology for any company seeking to take full advantage of today's edge-focused business applications to maximize revenue gain and minimize revenue loss.

Learn more visit: www.voltactivedata.com