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IST 615

Essay 2

Imagine you are part of an organization that excels at being connected to customers, employees, suppliers, and partners. This fluid connectivity allows you to be data driven. And aides you in developing cutting edge products and services. To truly harness the power of your organizations data it is necessary to harness data from all sources and analyze it for actionable insights to aid your organization. How can you effectively do this? You will find the answers in Edge computing. The preceding sections will discuss what is Edge computing, what companies are competing in the Edge computing space, and who are the early adopters.

The problems that edge computing can solve are related to latency, security, real-time data, cost, and governance. Latency is defined as lag in communication between network devices. Edge computing solves latency issues by creating a more distributed network, ensuring there is no disconnect in information processing which creates a more reliable network. In the case of a potential outage the edge architecture would limit the outage to the edge computing device and local applications on the device. Edge computing sites send real-time data and alerts, leveraging an efficient monitoring system that prevents and corrects issues quickly. Edge computing limits capital spending and operating expenses. Edge computing easily integrates with existing hardware and software and can be configured to scale. Additionally, it allows an organization to easily build a culture of information technology that adheres to industry standards, while complying with data regulations.

(“5 Big Challenges That Edge Computing Can Resolve”)

Edge computing works by capturing and processing information as close to the source of the data or sought-after event as possible. Edge computing utilizes sensors, computing devices and machinery to collect data and feed it to edge servers or the cloud. Depending on the users end goal, the data might feed analytics and machine learning systems, deliver automation or offer visibility into the current state of a device, system, or product. As of today, most data calculations take place in the cloud or datacenter. However, as organizations migrate to an edge model, there is a need to deploy edge servers, gateway devices, and other devices that reduce the time and distance required for computing tasks and connect to infrastructure. As part of this infrastructure smaller edge data centers located in secondary cities, and sometimes rural areas, or cloud containers that can be moved across clouds and systems as needed may be included.

(“Edge Computing 101: How Does It Work & What Are the Benefits?”)

When developing a business case for edge computing it is necessary to consider the technical considerations as well as the overall business drivers and benefits. At the base level, the business decision around where to place application workloads is a result of whether your organization can effectively cost deliver the application experience your users expect. Satisfying user experience demands largely depends on two key factors, application responsiveness, and availability. Responsiveness is largely a function of latency. As discussed earlier, latency is how long it takes for data to transfer from one point on a network to another. Accounting for users’ latency is one of the largest factors to consider when deploying an application to the edge. The more geographically disperse your user base is the more important this becomes. Unfortunately, any given network will at some point go down. This will lead to an abundance of headlines about major cloud outages and complaints by frustrated users. To prevent this, it is important to build in redundancy and resiliency for application workloads. Centralized cloud deployments have limited resiliency, as they are dependent on that cloud provider. When the cloud providers network experiences an outage, so do the dependent applications.

(“The Business Case for an Edge Deployment.”)

Edge computing easily fits into an organization without disrupting existing business processes. To properly integrate edge computing an organization must first evaluate edge needs, resources, and objectives. Organizations must first define their intended audience. Knowledge of customer requirements like global geographic locations, concentrated service region, or content deliver speeds will drive decision making around edge investment. Edge computing companies are vendors offering organizations the hardware, networking machinery, processors, colocation data center centers contracts, and edge technologies needed to establish an edge network. Enterprise organizations with existing global infrastructure and networks will have an easier time adding edge devices and transforming legacy networks to serve end users. This is a result of them having a generally understanding of where their users are located, as well as the networking requirements of the area.

(“Edge Network: How to Build an Edge Computing Network.”)

Several high-profile companies are competing in the edge computing space. These include Amazon Web Services (AWS), Clear Blade, and Dell. AWS offers a cloud-edge hybrid model that supports a consistent experience on both the edge and cloud. AWS packages IoT, AI, ML, robotics, analytics, compute, and storage capabilities. AWS targets the industrial and commercial markets. Clear Blade has an edge native intelligent asset application. This application allows edge maintainers to connect IoT devices, define asset types, and build alert systems all without requiring any coding. Clear Blade targets the mining, facilities, oil and gas, rail, logistics, healthcare, energy, and public sector markets. Dell has invested heavily in edge computing. Through OpenManage Mobile, Dell EMC offers edge computing management and orchestration capabilities. Dell EMC divides an organizations edge computing hardware into three categories. These include the Mobile Edge portfolio, the Enterprise Edge portfolio, and the IoT Edge portfolio, which offers Edge Gateways for manufacturers, retailers, and digital cities.

(“Top Edge Computing Companies for 2022.”)

Most organizations are still in the learning phase of edge computing; however, this does not mean that there are no early adopters. The early adopters of edge computing include network operators who appear to have the most deployed use cases, including virtualized radio access networks and content delivery. Early adopters are utilizing edge computing to enable remote monitoring and predictive maintenance. Edge infrastructure enables smart factory floors that generate massive streams of data. As a result, manufacturing and warehousing sectors are common early adopters, with use cases spanning preventive maintenance and augmented reality/virtual reality remote assistance applications. Additionally, early adopters are using edge computing to improve application performance and user experience. Content delivery networks improve customers web experiences by bringing web content closer to consumers. And finally, early adopters are using edge computing to allow a more distributed approach to application logic and business logic. The logic moves out to the edge rather than a centralized location like a traditional data center or cloud. This approach can bolster security. By moving authorization and access control logic to the edge, organizations can standardize authorization logic across applications while offloading this logic from specific applications.

(Edge Computing: 3 Ways, You Can Use It Now.”)

Edge computing can assist by bringing computation and storage closer to the sources that generate data. This empowers users to obtain real-time market insights efficiently from multiple sources.  Edge computing works by moving workloads closer to digital interactions. This improves user experience, boosts application performance, lowers costs and minimizes risks. Edge computing supplies the capability to store data efficiently, securely and aides in delivering applications that meet IT operational requirements. Edge computing develops data “base camps” in network where data can support effective on-demand actions. Edge computing can be implemented in various infrastructure choices and services that allow your organization to address initiatives such as governance, security, and economic efficiencies.

Edge computing is growing in popularity by the day, with use cases increasing exponentially. After reading the above we now understand what Edge computing is, what companies are competing in the Edge computing space, and who are the early adopters. Edge computing will continue to be a hot topic for years to come.

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