Managing Data at the Edge

Smart technology powers our lives, from wearable tech to traffic control and smart factories. Data analytics promise safer travel, more efficient energy consumption and increased productivity. At the same time, the explosion of data has created new challenges. Increasingly, experts look to the benefits of managing data at the edge to address those challenges.

Simply put, edge computing refers to processing data closer to where the data is created or consumed. For example, sensitive factory machinery generates vast amounts of data. Processing that data at the source saves bandwidth. Additionally, access to real-time analysis means that the machinery can adjust on the fly, avoiding costly downtime and accidents.

Benefits of Edge Computing

While the cloud has transformed daily life and business, in the realm of the IoT, sending data back and forth to remote data centers presents challenges. To begin with, a single device can generate vast amounts of data every day. Hundreds of smart devices continually sending data to the cloud quickly eats up costly bandwidth.

In addition to bandwidth congestion, the centralization of data means that information travels from the smart device through several "hops" to remote data centers. The response then travels back along the same path back to the device. This delay, or latency, can cause problems.

Enter edge computing. When processing happens at or close to the source, machinery and applications respond with greater speed and efficiency. And, since much of the processing occurs locally, only a subset of the data needs to travel across bandwidth.

The benefits of managing data at the edge cross multiple industries. Retail and gaming benefit from consumer apps that respond instantly, improving user experience. And for the much-anticipated autonomous vehicles, analyzing data at the source will prove essential. Edge computing also lays the framework for future developments in the IoT and artificial intelligence.

Addressing the Challenges of Managing Data at the Edge

Like any emerging technology, managing data at the edge presents its own challenges. For instance, decentralizing data storage and processing adds complexity. Multiple, smaller data centers require management and monitoring. And network design will need to adjust to accommodate processing of data at the edge.

Complex architecture adds complexities to data security, as well. Securing a server room is much easier than securing numerous remote sites, for example. Consequently, data encryption and access control play a significant role in ensuring security. Organizations also need to address data governance with updated policies to regulate information storage and use.

In most cases, organizations will pursue a hybrid approach, with a mix of cloud and edge computing. This will require a clear picture of data flow among edge devices, networks, and the cloud. Organizations will also need to make decisions about how data will be used. This affects what data processing occurs on the edge, what data travels to the cloud and a variety of data security and governance questions.

Navigate the New Environment with Confidence

As with any emerging technology, organizations will need to make adjustments in order to get the most out of edge computing. That will involve assessing current data usage trends and preparing for future data needs as influenced by increased dependence on the IoT and AI. This may require adapting networks and security configurations, as well as data governance policies.

Messaging Architects can help you manage the complexities of managing data on the edge. We can also help you determine the optimal mix of cloud and edge computing and manage your technology infrastructure accordingly. With deep expertise in network design, cyber security and information governance, we provide the data governance expertise you need.