How Industry is Using Cloud, Edge, and Fog Computing Today

Comparing 2021 survey data on industrial cloud, edge, and fog computing use to a similar 2019 survey shows how the pandemic is transforming industry's use of these technologies.

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Quick hits:

- 62% of companies are currently using cloud technologies as part of their digital transformation roadmaps compared to 51% in 2019.
- Edge applications related to capacity or OEE were cited by more than 60% of respondents in the 2021 survey compared to only 20% in 2019.
- Fog computing—a cluster of edge computing resources that can create a small cloud-like computing infrastructure on site—jumped to 25% in 2021 from 20% in 2019.
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- Take Five Video: The Industrial Edge-to-Cloud Strategy
- Feature Article: Pandemic Accelerates Edge-to-Cloud Digital Transformation

Welcome to Take Five with Automation World. I'm David Greenfield, Director of Content, and in this episode we'll be looking at how the pandemic has affected industrial companies' use of cloud and edge computing.

Now, for reference's sake, the data we're comparing here comes from two surveys of Automation World readers—one taken in 2019 and the other conducted during the summer of 2021. So comparing the results from these surveys gives us a pretty good glimpse of the before and during pandemic effects.

So let's look at some of the data. According to our 2021 survey, 62% of companies are currently using cloud technologies as part of their digital transformation roadmaps. This represents a significant bump over the 51% that said this in 2019.

Now, adoption of edge and fog computing technologies also increased during this period, with the 2021 survey showing edge computing deployments jumping to 55% of respondents compared to 43% in 2019. And fog computing—which is a cluster of edge computing resources that can create a small cloud-like computing infrastructure on site—increased from 20% in 2019 to 25% in 2021.

nd while our survey showed that the global pandemic was not a major factor in the increased use of edge computing, it was a significant reason for the increased use of fog computing, primarily to accommodate remote management applications.

Likewise, twenty-five percent of manufacturers said they stepped up their use of cloud technologies during the pandemic to deliver real-time remote monitoring capabilities when they had to limit the number of workers physically allowed on site.

Our survey also found use of edge computing for data analysis applications grew by 11 points to 63% in 2021. And edge applications related to capacity or overall equipment effectiveness, often referred to as OEE, were cited by more than 60% of respondents to this year's survey compared to only 20% in 2019.

In our study, manufacturers reported several benefits associated with cloud, edge and fog technologies. For example, cloud computing was cited for improvements to profitability by 50% of respondents; while edge and fog computing were closely associated with boosting production output, as noted by 54% and 38% of respondents, respectively.

And taking a quick look at some real world applications of these technologies during the pandemic shows us, for example, that Core Technology Molding Corporation, a manufacturer of highly engineered plastic products and tooling designs, says its investment in the cloud-based DelmiaWorks ERP system, which features a real-time process monitoring capability, was critical to its ability to keeping operations running when employees routinely had to work from home. Geoff Foster, Core Technology's CEO and president, said: "The cloud enabled our work to go on seamlessly and we produced just as many parts and got new customers because of those capabilities. He said this set the company apart from competitors and helped them triple their business in the past year.

Meanwhile, automation technology supplier Emerson said its customers ramped up investment in the use of sensors combined with edge gateways to augment manual inspections with data and analytics to measure equipment health and reliability.

Peter Zornio, chief technology officer at Emerson, said: "Previously, people were looking into automating some manual inspection with sensors and edge gateways but held back because they thought it was too expensive. But suddenly, without enough people on site to do inspections, the technology presented them with a way to move forward.

Siemens also reported an acceleration of projects across both edge and cloud platforms. Bernd Raithel, director of product marketing and deployment of new technologies at Siemens Factory Automation said: Customers leveraged edge computing and cloud simulation technologies to do virtual commissioning of machines before they were built and deployed in the field, as well as to allow machine builders to remotely monitor equipment and send guidance to operators.

And Litmus, an edge-to-cloud industrial Internet of Things platform supplier, says its customers are using edge technology to create key performance indicators for machine operators and plant floor managers to monitor asset utilization and OEE. Their customers are also using edge technology to create rules-based alerts to indicate machine downtime.

So, I hope you enjoyed this Take Five with Automation World episode. And please keep watching this space for new episodes to help keep you on top of what's happening in the world of industrial automation.