How edge computing could help telecoms reduce network congestion, while better competing in the IoT platform market

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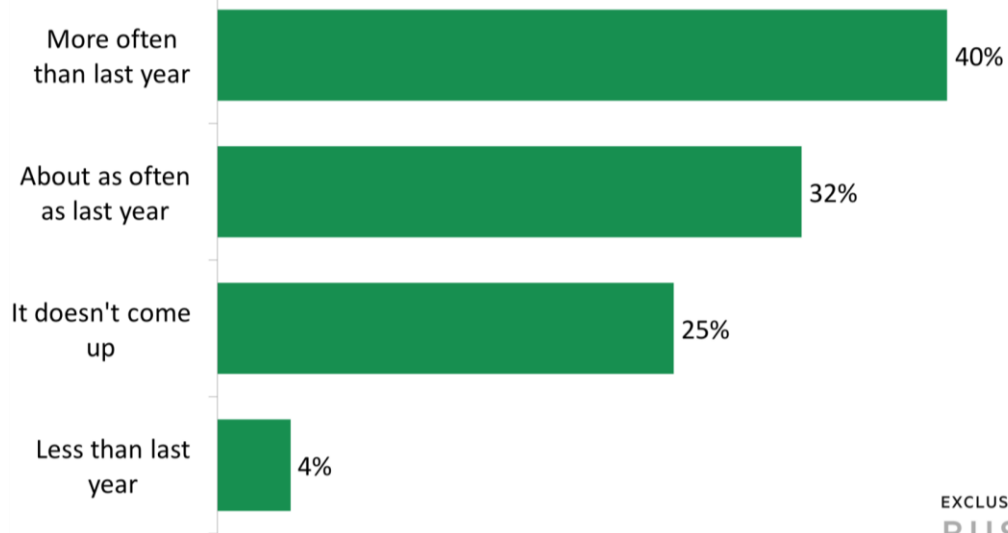
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INTRODUCTION

Edge computing — also known as fog computing — is a data processing model that uses sensors and connected devices transmit data to a nearby computing device for processing, instead of sending it back to the cloud or a remote data center. This model can offer users an alternative to cloud-based IoT data management, but it can also work in tandem with such systems, allowing users to reduce data transmission and cloud storage costs. And it's becoming a more sought-after part of the wider IoT ecosystem — 40% of companies that provide IoT solutions reported that edge computing came up more in discussion with customers in 2017 than it did the year before, according to Business Insider Intelligence's 2017 Global IoT Executive Survey.

In a series of three notes, Business Insider Intelligence examines how edge computing is improving data collection and processing for companies across industries. In the first installment, we focused on the healthcare industry, where providers are turning to edge computing solutions to secure and and more efficiently process the growing troves data they generate. In this second note, we delve into the seemingly paradoxical interest that telecommunications companies have in edge computing solutions and the steps they're taking to bolster offerings. Finally, the third note will focus on the role of edge computing solutions in vehicles, and how these systems will be crucial in reducing logistics costs and enabling autonomous cars.

Edge Computing Becoming A More Sought-After Part Of IoT Solutions

Q: Does edge computing — processing data from devices where it's created rather than in the cloud — come up more with your customers than it did last year?

Category	Percentage
More often than last year	40%
About as often as last year	32%
It doesn't come up	25%
Less than last year	4%

Source: Business Insider Global IoT Executive Survey, n=85 IoT providers, 2017

TELECOMS ARE MAKING A PLAY FOR THE IoT – BUT HURDLES REMAIN

As the smartphone market approaches saturation, competition among telecoms is growing incredibly fierce. Essentially all consumers are now existing subscribers somewhere, which means these companies' only hope to win more users is to get them to switch carriers.

One way they're competing with each other — especially in the US market — is by offering unlimited data plans to consumers at lower costs. They're also including perks like zero-rating specific video streaming services through partnerships that don't count against a user's monthly data allowance. As a result, consumers are using more data than in prior years, and that's making telecoms desperate to reduce data loads on their networks and avoid congestion issues like AT&T encountered with the release of the iPhone.

However, they're also searching for new revenue streams, and for this, many telecoms have turned to the IoT. Verizon, for example, has spent billions of dollars acquiring companies in the vehicle fleet management and drone markets to expand its footprint and establish relationships with companies utilizing those services. Others, like Vodafone, are offering enterprise and consumer IoT services, on their own as well as through partnerships. These services offer additional revenue, but they also add to network congestion.

As telecoms wade further into the IoT to provide services and platforms, they are being forced to figure out how to manage all of the data these devices collect. Today, these needs are met by transmitting data to the cloud where it's processed, analyzed, and stored, and insights are sent back to the site of the IoT solution. However, a reliance on cloud processing typically results in a number of problems. Below we take a look at how three common issues manifest in the telecom market.

- **Security issues.** As telecoms attempt to cater to companies leveraging IoT devices, many are starting to offer managed IoT services through a central platform that can house data and perform analysis. One of the most important things a telecom needs to do to get customers onto such a platform is ensure that they offer a secure experience. However, every time data is transmitted to the cloud, it is temporarily vulnerable to interception, making it difficult to provide this assurance.

- **Access issues.** Companies don't always set up IoT projects in areas where there's reliable cellular service — oil and gas extraction is a prime example. This means that, while a company can work with an IoT partner to gather data from devices and have it sent to the cloud for analysis, there is no way to get real-time insights or automate procedures based on that data, since it has to travel to the cloud and back. A telecom that's looking to provide an IoT platform doesn't want to be locked out of such projects and needs solutions that let it compete for IoT business in those types of segments.

- **Transmission efficiency.** IoT devices create massive volumes of data, but not all of that data is useful. With rising video data volumes, in particular, enterprise IoT customers are being forced to send more data to the cloud than is actually necessary to derive actionable insights. For telecoms, this means they're sending data over their networks that is discarded almost immediately after cursory analysis.

WHY EDGE COMPUTING CAN HELP

Telecoms are among the most prominent proponents of edge computing, paradoxically, as they provide the networks that transmit data from IoT devices to cloud platforms. Below we examine how this model can mitigate difficulties in each of the three problem areas: security, access, and transmission efficiency.

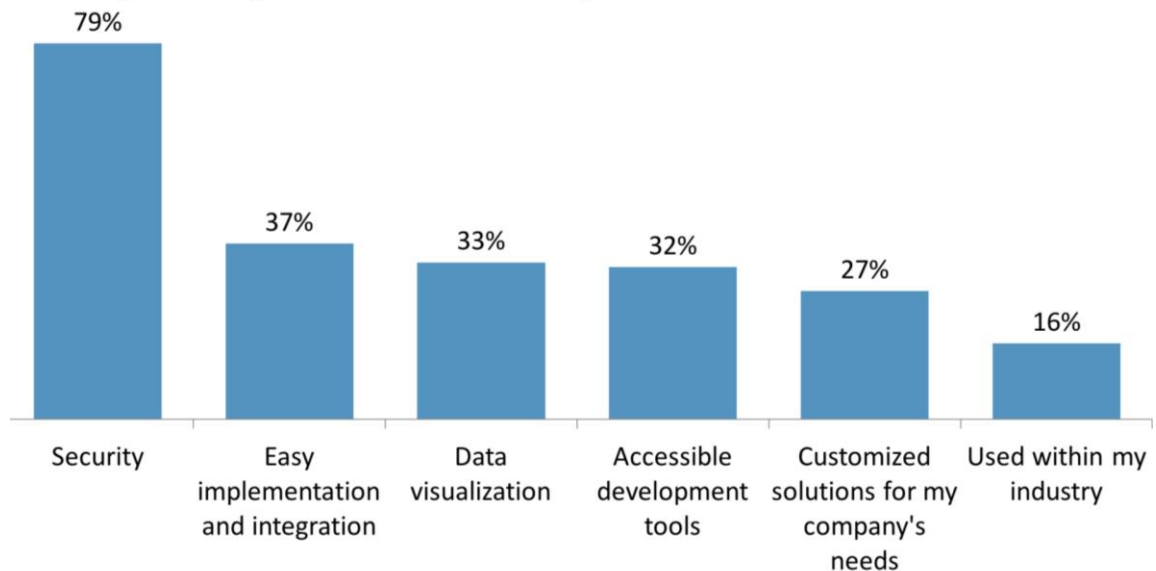The Cloud Computing Model / The Edge Computing Model
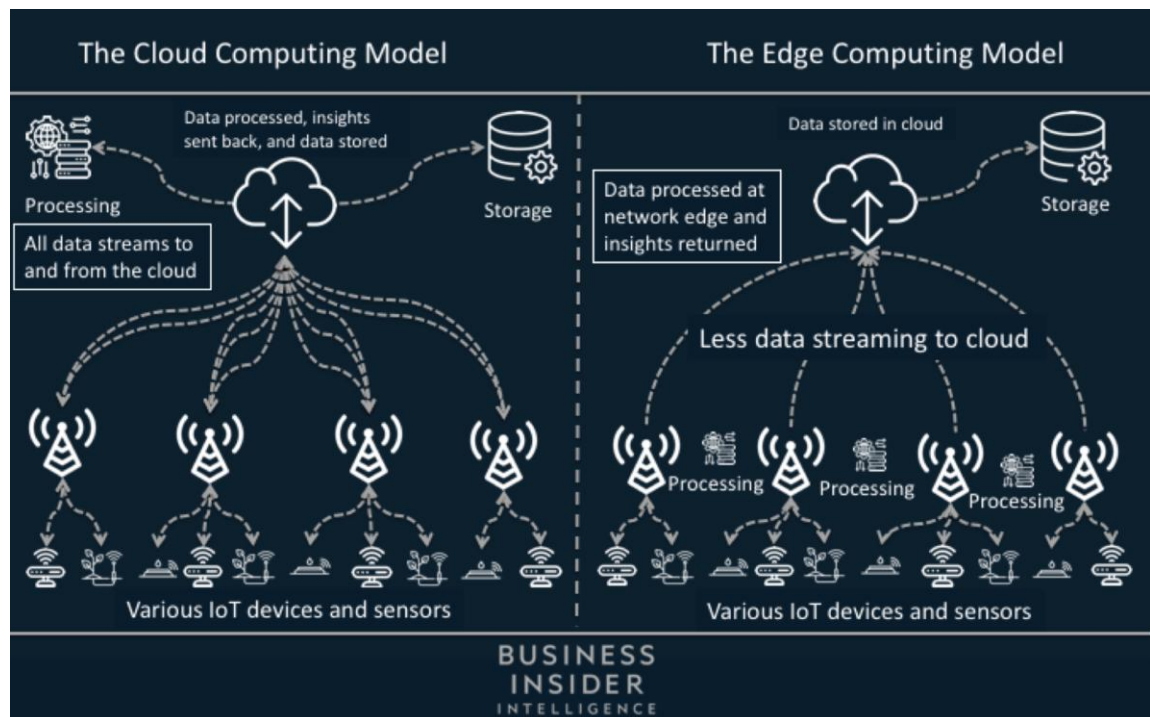
Security

A secure experience is paramount for any company choosing an IoT platform provider. In our 2017 Global IoT Executive Survey, 79% of companies using IoT solutions called security an "extremely important" factor in an IoT platform.

Most Important Factors And Capabilities In An IoT Platform
Percentage selecting each choice as "Extremely important"

Security	Easy implementation and integration	Data visualization	Accessible development tools	Customized solutions for my company's needs	Used within my industry
79%	37%	33%	32%	27%	16%

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Note: Values do not total to 100% because respondents could choose multiple answers.
Source: Business Insider Global IoT Executive Survey, n=75 IoT users, 2017

An edge solution reduces the amount of data sent to the cloud, thus limiting exposure. Consider a supply chain solution that's used to track the location and movement of goods within a warehouse — if a traditional model is employed, all of that data is put at risk of interception during transmission to the cloud and back again. With an edge-based platform, an on-site system gathers this data and analyzes it, offering workers and management key insights in real time, without creating those points of vulnerability.

In an edge model, data may be transmitted to the cloud for storage, but in smaller amounts and with less detail. That means that, if a hacker were to breach the system, they wouldn't get access to particularly sensitive information. Edge computing solutions allow for a multilayered security approach that combines hardware, network, and cloud security measures, according to AT&T VP of Intelligent Edge Josh Goodell. Because of this ability to increase security, edge solutions are likely to be very attractive to potential customers, and therefore make sense as an offering for telecoms looking to carve out a piece of the IoT platform market.

Access

While telecoms generally offer broad network coverage, there are still areas where they're unable to broadcast a signal for clients. That's particularly true in industries like offshore oil and gas extraction and mining, where worksites are typically remote. Telecoms have struggled to provide consistent IoT services to companies in these sectors, due to a lack of internet connectivity to leverage on the ground. By offering an edge computing solution that doesn't rely on external connectivity, telecoms like Orange or Vodafone can offer real-time insights to customers operating in hard-to-cover areas.

An edge platform would enable an oil company to link multiple systems to a gateway that combines factors like temperature data, pressure readings, and other indicators to predict malfunctions or determine when to try a different drilling approach. That gateway could take the results and, using local AI and machine learning capabilities, provide intelligent automation based on real-time inputs. This kind of setup is only possible via an edge model, meaning that telecoms will need to offer such platforms to effectively serve companies in oil and gas or similar industries. Otherwise, these sectors will remain out of reach.

Transmission Efficiency

Because edge computing solutions process data locally, companies can choose to send only meaningful insights to the cloud, thereby reducing data loads on telecom networks. In the current cloud model, enterprises are effectively paying telecoms to clog up wireless networks and transmit data for analysis that doesn't need to be retained. Using an edge solution, on the other hand, limits the likelihood that data transmitted to the cloud will eventually be rendered obsolete and deleted. In particular, edge computing could greatly improve efficiency when processing the growing volumes of data-rich video from security cameras and other camera-based monitoring solutions — Business Insider Intelligence forecasts that smart city systems, which include connected cameras, will generate nearly 180 billion terabytes of data a year by 2023.

Annual Smart City Data Generated
Global, billions of terabytes
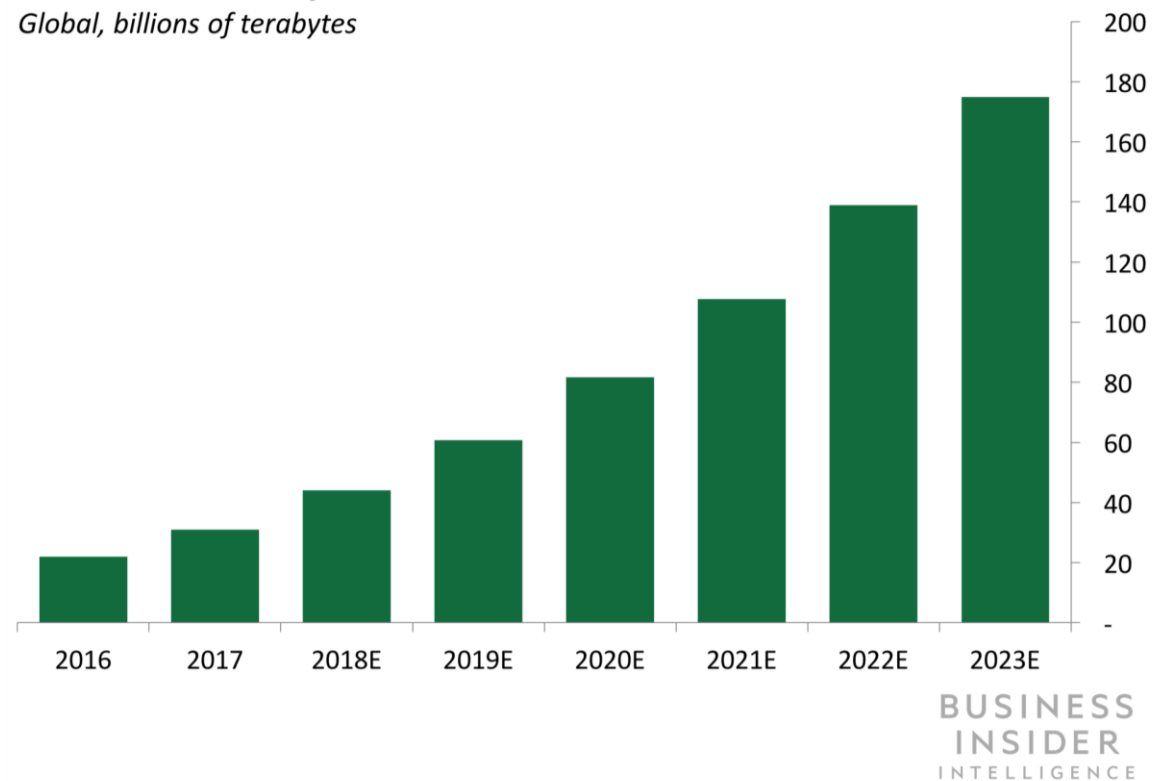
Source: Business Insider Intelligence estimates, 2018; Cisco, 2018

AT&T Labs, for example, is working with hardware partners to develop computing systems that can be deployed at the edge of a cellular network, where it could then perform analysis for enterprise and municipal clients. The telecom could intercept and process video data from connected cameras locally at the cellular tower site, instead of transmitting large data files to the cloud. Verizon is also testing a service for smart cities that uses connected cameras with built-in deep learning to analyze video footage as it's recorded.

Edge computing solutions will process about half of all enterprise-generated data by 2022, up from just 10% today, according to Gartner. This represents an enormous opportunity for telecoms, as building and promoting such solutions will enable these companies to better compete in the IoT platform market, while reducing the strain on their own networks.

Download the charts and associated data in Excel »

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