

EDGE COMPUTING GAINS GROUND

Mesh
computing

EDGE
Computing

Remote
cloud
services

Self
healing
networks

Distributed
data
storage

Trending Topics summarizes news, information and perspective on matters affecting businesses and business leaders today. This insight is being provided to keep you up to date on the latest developments and trends influencing these topics. These views do not necessarily represent the views and opinions of PNC. For additional research on these topics, please consult the sources cited in this article.

As the internet of things (IoT) connects more machines and devices than ever before, the very structure of the internet is being challenged. Every device generates massive amounts of data, and routing that data to a corporate cloud or data center takes considerable bandwidth and time for processing and analysis.

Enter edge computing, a distributed approach where data is analyzed on or near the device that generates it, so data from connected devices can provide immediate information and insights based on real-time analytics.

It is projected that 20.4 billion devices will be connected to the internet by 2020.¹ The global edge computing market is expected to grow to \$6.7 billion by 2022.² Gartner Research Inc. estimates 40% of organizations will operate with an edge computing strategy by 2021.³

Several technology companies are betting on the success of edge computing and related services. Hewlett Packard Enterprise Company recently announced it is investing \$4 billion in edge computing technology and architecture.⁴

Edge computing enables data processing time to be cut significantly by eliminating transit time. In critical applications such as self-driving cars or high-rise building elevators, the time savings can mean the difference between life and death.

Many edge computing scenarios use gateway hardware located near machines or devices to gather information from sensors and analyze it. The gateway pushes data and insights to the corporate cloud when needed. In other setups, servers and software form a local edge cloud near the device itself.⁵

Edge computing enables mobile apps to provide real-time personalization. Hospitality industry providers such as hotels, resorts, cruise lines and amusement parks are using edge computing to offer guests immediate personalized information on activities and events.⁶

“Fog computing” is sometimes used interchangeably with the term “edge computing,” but they differ. Edge computing refers only to the data being processed near to where it is generated. Fog computing is a distributed network that includes edge computing, as well as the network connections to transmit data from edge devices to the cloud for further analysis and storage.⁷

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Edge computing offers companies several advantages:⁸

- Data can be stream processed as it is generated for greater agility and faster response time. This can be critical for medical devices, factory sensors, transportation vehicles and security devices.
- IoT devices can process data and interact with each other independent of the cloud. This direct interaction improves response time and flexibility.
- Not all data needs to be saved. Edge computing enables companies to analyze data at its source and decide what should be sent to the cloud for further analysis and retention.

- Companies can reduce their centralized processing load, saving time and money and enabling them to use their cloud capabilities for higher-level functions.
- Storing data is expensive, and, often, companies accumulate data without a clear plan for how they will use it. Edge computing enables them to reduce central data storage.

To discuss these topics in more detail, please contact your PNC Relationship Manager.

¹ "Citing New Era of Computing, HPE CEO Bets \$4 Billion on Internet's Edge," by Sara Castellanos, *The Wall Street Journal*, June 19, 2018. Available at: <https://blogs.wsj.com/cio/2018/06/19/citing-new-era-of-computing-hpe-ceo-bets-4-billion-on-internets-edge/>

² "Edge Computing Market by Component (Hardware, Platform, Solutions), Application (Smart Cities, Location Services, Analytics, Augmented Reality), Organization Size (SME, Large Enterprises), Vertical, and Region — Global Forecast to 2022," a research report by Marketsandmarkets, October 2017. Report available for purchase at: <https://www.marketsandmarkets.com/search.asp?search=Edge+Computing>

³ "Smart Elevators, Self-Driving Cars Require More Computing Power at Network's Edge," by Sara Castellanos, *The Wall Street Journal*, Jan. 2, 2018. Available at: <https://blogs.wsj.com/cio/2018/01/02/smart-elevators-self-driving-cars-require-more-computing-power-at-networks-edge/>

⁴ "Citing New Era of Computing, HPE CEO Bets \$4 Billion on Internet's Edge," by Sara Castellanos, *The Wall Street Journal*, June 19, 2018. Available at: <https://blogs.wsj.com/cio/2018/06/19/citing-new-era-of-computing-hpe-ceo-bets-4-billion-on-internets-edge/>

⁵ "Smart Elevators, Self-Driving Cars Require More Computing Power at Network's Edge," by Sara Castellanos, *The Wall Street Journal*, Jan. 2, 2018. Available at: <https://blogs.wsj.com/cio/2018/01/02/smart-elevators-self-driving-cars-require-more-computing-power-at-networks-edge/>

⁶ "Smart Elevators, Self-Driving Cars Require More Computing Power at Network's Edge," by Sara Castellanos, *The Wall Street Journal*, Jan. 2, 2018. Available at: <https://blogs.wsj.com/cio/2018/01/02/smart-elevators-self-driving-cars-require-more-computing-power-at-networks-edge/>

⁷ "What is fog computing? Connecting the cloud with things," by Brandon Butler, Network World blog, Jan. 17, 2018. Available at: <https://www.networkworld.com/article/3243111/internet-of-things/what-is-fog-computing-connecting-the-cloud-to-things.html>

⁸ Compiled from: "Expert Advice for Choosing Between Cloud Computing and Fog Computing," by Darrell Lopez, IoT Evolution blog, April 3, 2018. Available at: <http://www.iotevolutionworld.com/fog/articles/437664-expert-advice-choosing-between-cloud-computing-fog-computing.htm>; "Edge Computing Emerges As The Next Big Thing In Tech, And Taiwan Will Help Power It," by Ralph Jennings, *Forbes*, May 31, 2018. Available at: <https://www.forbes.com/sites/ralphjennings/2018/05/31/the-next-big-thing-in-asian-tech-is-edge-computing/#7c5321856802>

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