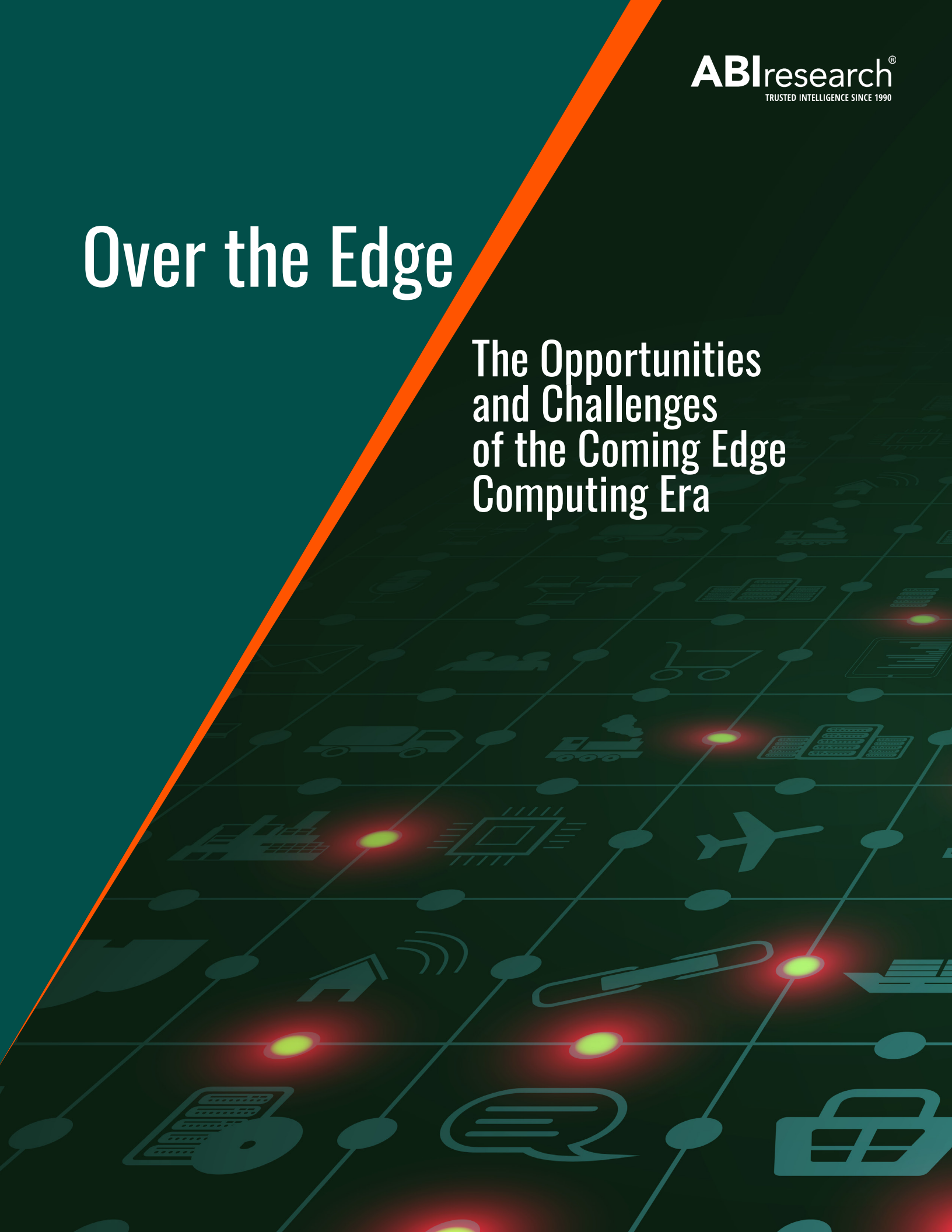


Over the Edge

The Opportunities
and Challenges
of the Coming Edge
Computing Era



“While 10% of data is processed outside of the datacenter today, 75% of data will be processed outside of a traditional datacenter, or cloud, by 2025.”

- Michael Dell





A few weeks ago, Michael Dell gave the keynote address at Dell Technology World 2021. During that speech, he said that “While 10% of data is processed outside of the datacenter today, 75% of data will be processed outside of a traditional datacenter, or cloud, by 2025.”

Dell is one of the largest technology companies in the world, and is committed to providing companies with the technology to transform its business. So, when Michael Dell, founder, Chief Executive Officer (CEO), and chairman of Dell Technology, highlights this shift in processing location, it points to huge expected growth in edge computing and the edge in general.

Importantly, in a follow up interview, Michael Dell stated that the growth is being accelerated by 5G technologies and by the fact that the cost of making any device intelligent has dropped dramatically.

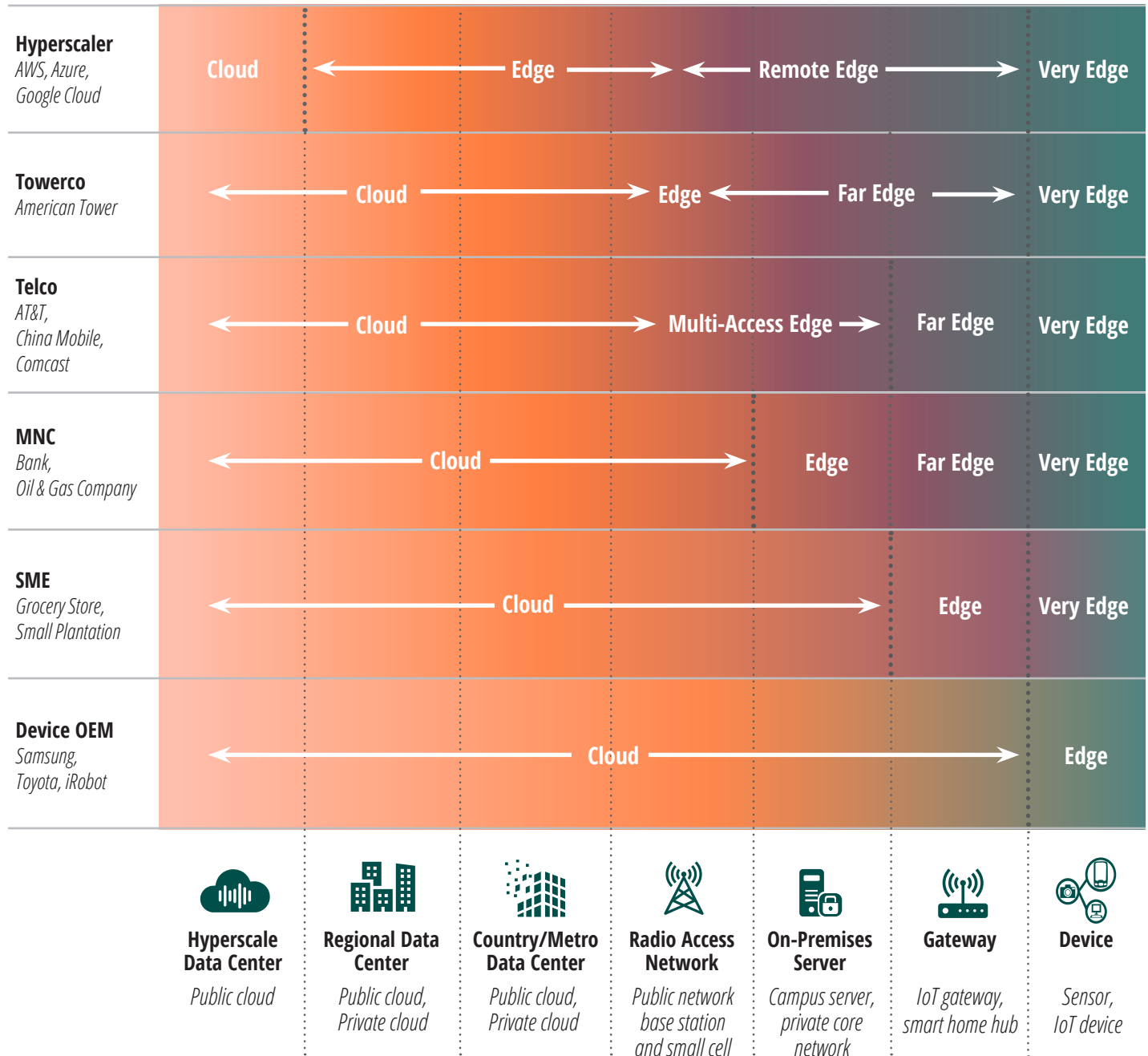
These observations highlight the complexity of the edge ecosystem and how its expected growth is dependent on many different technology sectors innovating interdependently, from towercos, network operators, infrastructure manufacturers, and systems integrators to the hyperscalers.

Where there is expected growth and where the innovation cycle is still in its early stages, there is an opportunity for new collaborations and for market disruption to take place. The market disruption is not limited to startups: the lines delimiting the roles and responsibilities of the established technology sectors at the edge are not yet fixed; rather, they are blurry at best.



The Edge Compute Continuum

According to Industrial Players



The Five Core Stakeholders Must Play Nice in the Sandbox



For rapid growth at the edge to take place, all the architectural components need to be delivered, and they need to interact with each other effectively. What is not yet clear is which technologies will be important in drawing those components together. What is better understood is the technology affinity of the key architectural components:

- **Towercos** manage the cell towers and compounds.
- **Network operators** manage the fiber network and communications technology.
- **Infrastructure manufacturers** build the networking and compute hardware.
- **Systems integrators** layer hardware and software components to realize operational and functional efficiencies.
- **Hyperscalers** provide the back-end ecosystem in which the analytics and compute take place.

All of those stakeholders will also produce edge devices; a connected device that gathers, generates, transfers, or consumes data at the edge, which, in turn, reduces the amount of data that flows back to compute-centric locations. All these devices will need to connect meaningfully with each other and with a management layer that keeps them secure and up to date, so smooth integration is key.

The cloud-based digital transformation that has taken place in recent years has been driven largely by hyperscalers, because when they meet a challenge, they innovate themselves, rather than rely on other companies to do it for them. For example, when Amazon wanted a more cost-effective Central Processing Unit (CPU) to push the price performance ratio for customers using Amazon Web Services (AWS), and the traditional supply chain did not meet its criteria, it developed and deployed the Arm-based Graviton2. But the edge ecosystem is still fluid and the technical and physical area it is spread over is vast. That is not to say that any company with the vision, drive, innovative desire, and financial backing cannot aim to implement a holistic, integrated product offering in this space, but would that be healthy in these early stages? Also, would a corporation want to have that much exposure, to be spread so thin in an emerging landscape?





Five Keys to Edge Success

If no player steps forward and claims the edge, then what is the best strategy to capitalize from the projected growth in operations at the edge? Certainly, innovation will be key—connective, open innovation, for such a diverse spread of applications and devices to connect at a global scale with new capabilities will be required. Devices will need to be managed and secured. Companies will need to draw on their core business strengths and embrace innovation that makes their technology accessible to everyone who wants to operate at the edge. Also, protective practices could prove very limiting without killer features, so, what features will be important for success at the edge?



5G Integration: The role of 5G technologies at the edge cannot be underplayed, as it is the key enabling technology; without it, the sheer volume of data could not be transferred for meaningful analysis. Does this mean that the network carriers and towercos that have the real estate and technology needed to roll out 5G stand to gain the most? They are not behaving that way, at least not outwardly. Perhaps applying the traditional consumer subscription models to the investment required to roll out 5G technology is preventing them from seeing the role they could be playing, or perhaps that is stretching them enough for now.





Collaboration: In the initial adoption phase, there will be too much specialized knowledge required in too many areas for companies to operate independently. We are already seeing major hyperscalers, carriers, and systems integrators working together. One well-known example is the collaboration between Verizon and AWS at Corning's Hickory manufacturing plant where Verizon's 5G Edge has been deployed with AWS Outposts to deliver a private Mobile-Access Edge Computing (MEC) environment to explore self-guided vehicles and enhance innovation.



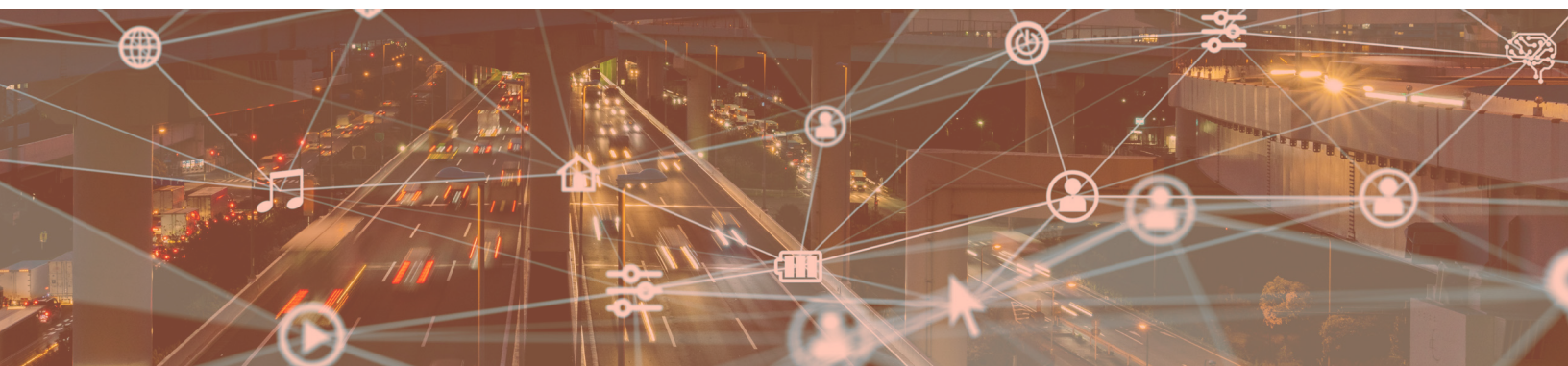
Global Consistency: Operating effectively on the global stage will be important. For example, Lenovo's 5G-enabled devices are globally certified, so they will work in every country with all major carriers and the operational overhead of carrying multiple devices for different geographic regions will be large, making Lenovo's focus on global certification certainly justifiable.



Open, Flexible Connectivity: The sheer variety of connected devices will be a unique technical challenge, as edge devices will vary from simple connected sensors that measure temperatures and pressures, to Autonomous Mobile Robots (AMRs) that perform real-time environmental analysis and collision avoidance. All of these devices will communicate using different protocols—both transmission control protocol (TCP)-based and non-TCP based—and many devices will use non-standard industrial protocols. The solution that connects all devices no matter what protocols they use will be the one with the lowest operational overhead.



Security: The remote nature of edge devices and the fact that they are connected (loosely or otherwise) to the corporate network is of increasing concern to the industry sector. While edge computing makes some personal and sensitive data transient, the ability to secure edge devices so that they cannot act as an entry point to the corporate network is crucial. Keeping the devices secure and enforcing configurations remotely will become an operational overhead that the enterprise will seek to minimize.



Get Your Edge

Michael Dell is correct: once the high-cost barrier to entry with respect to producing and running intelligent devices for use at the edge is gone, processing data at the edge will become commonplace.

The specialized, high-cost, high-value, and pioneering edge deployments are underway, and the technology is beginning to permeate down to the general use layer, so new use cases will start to grow exponentially. With that growth will come the demand for the technology to operate in that environment and the ability to securely manage that technology.

Territory is there to be claimed and how much turf each technology sector or company grabs will be set by the actions they take now.

If you are looking to take advantage of the growing edge ecosystem and market, ABI Research can help. Our Distributed & Edge Computing Research Service focuses on the distribution of processing payloads between the public, private, edge, and on-premises domains, while assessing different stakeholder strategies and commercial opportunities across the entire supply chain. To learn more, contact us today.

[CONTACT US](#)

ABIresearch[®]
TRUSTED INTELLIGENCE SINCE 1990

Published July 2021
157 Columbus Avenue 4th Floor
New York, NY 10023
516.624.2500
www.abiresearch.com
©2021 ABI Research

About ABI Research

ABI Research provides actionable research and strategic guidance to technology leaders, innovators, and decision makers around the world that focuses on transformative technologies that are dramatically reshaping industries, economies, and workforces today. ABI Research's global team of analysts publish groundbreaking studies often years ahead of other technology advisory firms, empowering clients to stay ahead of their markets and their competitors.

