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Predictions 2020: Edge Computing

New Form Factors, Partnership Strategies, And The Promise Of 5G Will Converge To Catapult Edge Toward Mainstream

by Abhijit Sunil, Dan Bieler, Naveen Chhabra, Brian Hopkins, Andre Kindness, Michele Pelino, Jeff Pollard, and James Staten
November 4, 2019

Why Read This Report

Edge computing has been among the most important trends associated with cloud computing and has enabled a multitude of use cases, beyond IoT and embedded systems, for infrastructure and operations (I&O) professionals. The components of edge computing have been steadily maturing, and so has the industry definition of it. This report looks at five Forrester predictions for 2020 in the edge computing space.

Key Takeaways

It's Time To Step Up Investment In Edge Computing
Enablers for edge computing are evolving at a rapid pace. 5G and enhanced communications will aid the connectivity ecosystem. Maturing cloud models will aid in the maturity of edge use cases; customer experience remains among the key drivers. AI, the internet of things (IoT), and smart ecosystems are a few examples of use cases that are at the forefront and will see more application in the coming months.

2020 Will See Evolved Infrastructure Form Factors And Business Models For Edge
Edge computing won't replace cloud or data centers but will instead extend the ecosystem. Thus, we'll see similar maturity cycles for the edge, starting with standardized compute, storage, and networking product offerings, along with mature business models.

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Customer Experience Is The Key For Edge Computing

Edge computing brings computing close to the customer, so all the use cases that enable and influence customer behavior will be the first motivations for edge. IoT will heavily drive use cases, but edge computing will go beyond these, from addressing on-demand compute to enabling real-time app engagements. Edge computing will augment cloud and on-premises to enable new customer experiences.[1] And 54% of global mobility decision makers whose firms are implementing edge computing believe that the flexibility to handle present and future AI demands will be among the biggest edge computing benefits.[2] While edge is admittedly tied more to connectivity requirements than cloud is, the economics of cloud will come into play at the edge. This indicates the vast potential that edge presents to a range of players, from traditional telcos to major public cloud firms.[3] These players have a huge opportunity to clarify what edge can do for customers and get on the bandwagon early. Forrester expects 2020 to be a breakout year for edge computing.

› **Fit, form, and function will drive development of custom form factors.** So far, hardware vendors have relied on existing form factors to serve the compute, storage, and network requirements at the edge. Edge computing is characterized by the variety in applicable use cases in multiple industries. The unique requirements put forth by operating conditions like space, temperature, vibrations, connectivity, and resiliency will mandate that hardware vendors develop custom form factors to deliver infrastructure needs at edge locations. For example, running a standard rack, tower, or blade server, storage in an autonomous car isn't possible, and the compute and storage requirements for the aerospace industry will be vastly different from those of a hospital network. Non-x86 processor architectures (e.g., ARM or Tensor) will begin to feature prominently in 2020, when we'll see all infrastructure vendors launch programs to develop custom form factors that serve specific scenarios.

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› **Emerging 5G deployments will require firms to reassess and align edge strategies.** In 2020, 5G network coverage will finally increase significantly in developed markets to connect products, sensors, and data across key industrial use cases, including enabling autonomous robots and drones, creating 3D space maps to enhance worker productivity, and using video cameras or industrial wearable devices to rapidly process critical environmental data or enhance quality assurance processes. Edge infrastructure often plays a critical role in connecting, processing, and analyzing data from these 5G use cases as close as possible to the location of the connected product, user, or device. Outside these developed metros, 5G won't yet be a reality. Network infrastructure stakeholders must assess their firm's requirements for, and availability of, critical 5G applications and align their edge architecture with existing cloud capabilities and these 5G use case requirements.[4]

› **Telcos will acquire CDNs and colocation vendors to extend value.** Missing out on cloud still stings carriers, which are now clawing at edge in the hope of not missing out on the next big thing. While carriers will have an extensive role to play in edge computing, especially as 5G and edge computing use cases continue to entangle, there's very little that carriers can offer compared with others that have more familiarity in distributed computing architectures. Cloud vendors, infrastructure OEMs, IoT independent software vendors, big data, and AI startups are rushing to enable more data processing, analytics, and event-driven edge automation outside traditional cloud and data center environments. This rush to the edge will create acquisition opportunities for large, well-funded firms as vendors seek competitive advantage. Several major telecommunication companies will look to expand their global edge footprint by acquiring content delivery network (CDN) or colocation vendors — again. Telcos will integrate the acquired edge infrastructure to expand their distributed edge compute management offerings as customers begin piloting customer engagement and IoT automation solutions that exploit submillisecond response times. Only a few will succeed.

› **Companies will choose multivendor packaged solutions over single vendors.** As companies deal with bandwidth and connectivity limitations throughout the world, businesses will soon realize that edge compute platforms and connectivity are too complex and costly to design, maintain, or connect. Companies will work with edge compute integrators for a particular market to support their edge solutions instead of building and deploying their own. This will give rise to new ecosystem partnerships between telcos, customer experience consultancies, vertically focused software, billing platforms, and IT and business customers. In 2020, tech leaders must learn to design hierarchical orchestration across network elements, including network operating systems, cross-stratum orchestration, lifecycle services, and software-defined networking.

› **The edge cloud service market will grow by at least 50%.** Public megacloud providers such as Amazon Web Services (AWS) and Microsoft; telecommunication companies such as AT&T, Telstra, and Vodafone Group; platform software providers such as Red Hat and VMware; CDNs such as Akamai Technologies; and data center colocation providers such as Digital Realty are innovating to provide basic infrastructure-as-a-service (IaaS) and advanced cloud-native programming services

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on distributed edge computing infrastructure. Telecommunication companies are contributing to edge open source projects like Akraino, and colocation vendors like Equinix are investing in software abstraction layers that run on their distributed infrastructure. The goal of these vendors is to offer IaaS and platform-as-a-service (PaaS) services that run independently of or with only intermittent connectivity to public cloud and data center assets. In 2020, this nascent market will begin to see explosive growth as startups partner with enterprises and large vendors to explore possible business models that depend on near real-time responsiveness for customer empowerment.

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Endnotes

[1] See the Forrester report "Edge Computing Will Radically Alter Your Infrastructure Strategy."

[2] Source: Forrester Analytics Global Business Technographics® Mobility Survey, 2019.

[3] Our data shows that 16% of global mobility decision makers are planning to implement edge computing within the next 12 months and 10% have already implemented it. Source: Forrester Analytics Business Technographics Mobility Survey, 2019.

[4] See the Forrester report "Check The 5G Pulse Of Your Communications Service Provider."

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