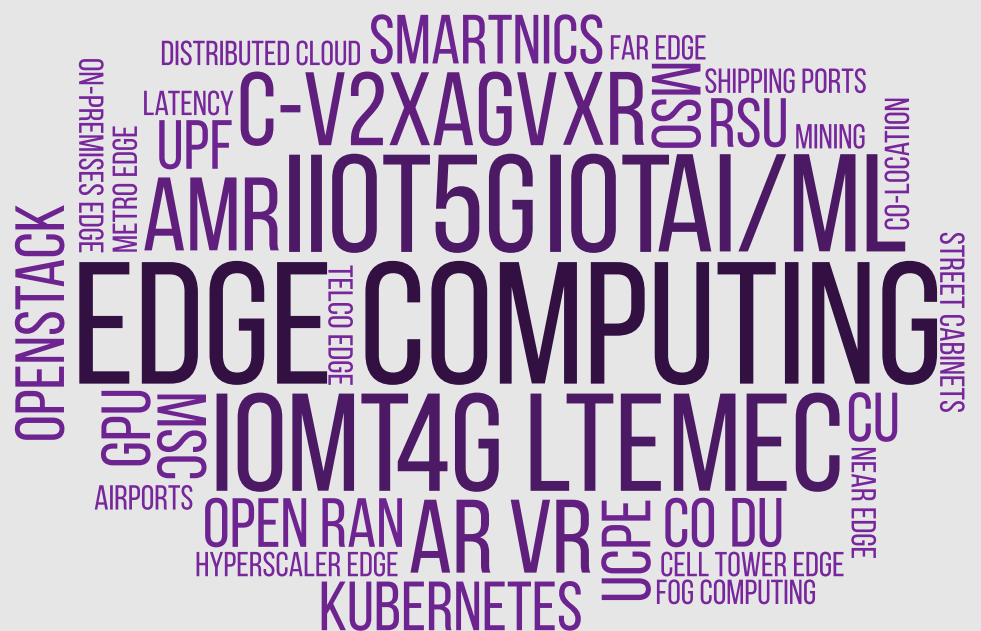


Edge Computing Enterprise Brief

An Exclusive by AvidThink for the ONUG Community

The AvidThink Enterprise Brief series provides easy-to-read short takeaways extracted from our **Research Briefs on infrastructure technologies**. For busy business and technology executives, we highlight key trends and important insights to help you understand their relevance and provide suggestions on the best way to evaluate and engage these new technologies.

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Edge Computing Key Takeaways

The rise of cloud computing has transformed how businesses operate IT infrastructure and how businesses and consumers alike interact with applications. As part of the evolution of cloud infrastructure, and accelerated by the arrival of 5G wireless, there has been increasing enterprise interest in edge computing, making it one of the hottest topics in IT today.

General Trends

- **Edge computing is a natural evolution** of cloud computing. However, some analysts believe that the edge will be bigger than the cloud market, and that a majority of cloud workloads will migrate to the edge. Thus, estimates of the edge market size vary wildly, going up to tens of billions by 2025, dependent on what is included in that estimate.
- **Data has been called the new oil**, but like oil, data is a raw material, useless until processed. Enterprises now face such a gusher of data that processing using only centralized data centers and cloud infrastructure is impracticable.
- **Enterprise demand** for real-time, low latency applications will require a shift in computing architecture. With the rise of IoT and digital transformation, enterprises will generate the vast majority of data at or near the edge.
- **Edge is distributed computing**: edge infrastructure does not displace centralized systems, but coexists with them. The edge typically refers to more localized data centers, co-location sites, and on-premises enterprise infrastructure that sit outside hyperscale regional clouds.
- **The edge is not dependent on 5G**, and is more than just wireless. However, 5G is dependent on the edge to achieve its full promise of ultra-reliable, low-latency networking.

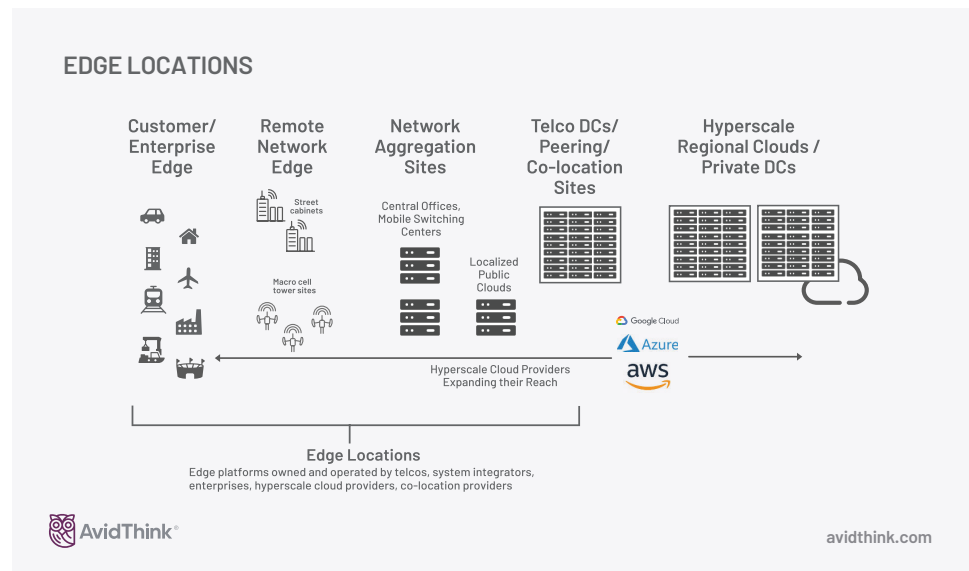
Edge Computing: Enterprise Landscape

- Enterprises in the digitization era are simultaneously consolidating resources in a few central data centers and cloud facilities, distributing infrastructure to locations that require local, real-time processing and analysis of data with low-latency application response.
- There are two edge areas of relevance to the enterprise:
 - The telco/cloud edge, or the last mile or near last-mile edge close to the enterprise.
 - On-premises edge, the infrastructure equipment located within an enterprise site but managed and operated by a third-party (cloud provider, carrier, system integrator, or other managed service provider).
 - This includes racks or half-racks of computing and storage, customer premises equipment (CPE) in the form of universal CPE (uCPE) for SD-WAN deployments, or remote office/branch office (ROBO) or industrial manufacturing or warehouse servers.

For more in-depth analysis, read the full report.



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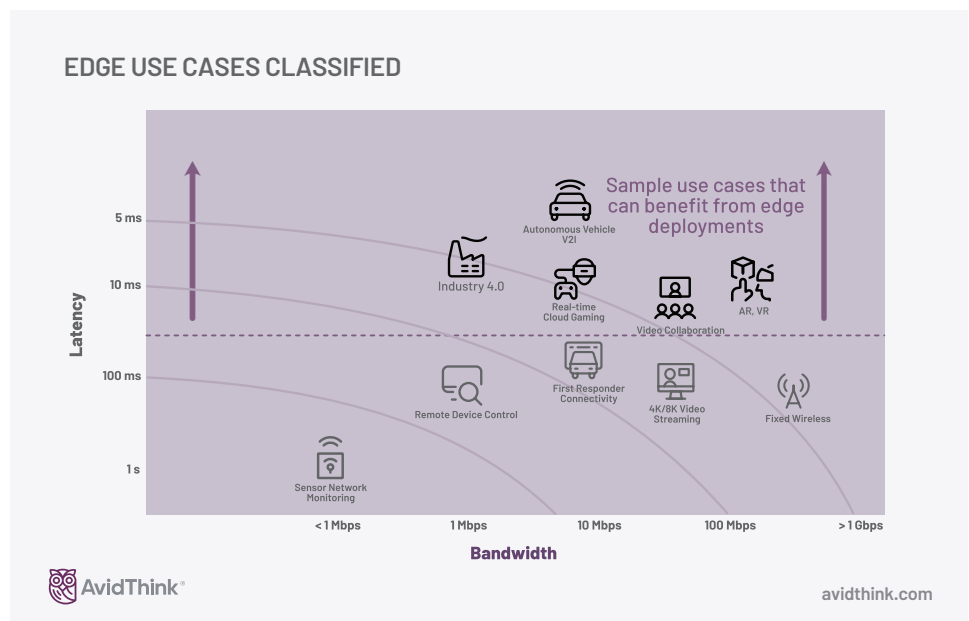


- Enterprise edge infrastructure is most commonly deployed at:
 - Branch locations to run a virtual network and hybrid cloud services like SD-WAN, SASE, enterprise security, and general VM or container platforms.
 - Manufacturing, logistics, and resource extraction sites that target the same network and hybrid cloud services plus data storage and industrial IoT telemetry analysis.
 - Logistics, distribution, and transportation hubs with a workload profile similar to manufacturing sites.
 - Retail and hospitality locations for network services, point-of-sale, video surveillance, IoT workloads.
- Digital natives that primarily provide digital goods and services face the same scaling problems as cloud providers. Indeed, video streaming and online gaming sites are most susceptible to performance degradation from consolidating cloud infrastructure workloads.

Enterprise Edge Use Cases

- The edge, in combination with the central clouds, represents a distributed computing platform. A large proportion of edge applications originating in the enterprise are expected to be extensions of central-cloud-hosted applications.
- One of the key value propositions for on-prem (and potentially near-prem) edge is as a host for running a private network core (both for 4G LTE and 5G).
- Hybrid cloud architecture and the need to balance control, data privacy, and performance in enterprise cloud infrastructure designs and where edge infrastructure provides a hybrid deployment option tuned for low-latency applications and Industry 4.0 manufacturing and logistical processes.

- Low latency application and network services including CDNs, real-time data analysis, deep learning applications, online gaming, and video streaming. The intense competition among online services puts pressure to differentiate based on performance and reliability, both of which can be addressed by scale-out edge infrastructure.
- IoT data analysis where edge infrastructure enables enterprises to use data from intelligent sensors, retail POS terminals, location tracking systems, and other IoT devices to gain competitive advantage by analyzing and acting upon data at its source and in real-time.
- Edge computing and IoT are also the basis for smart city infrastructure, public and private video surveillance systems, and emerging V2X communication and AV systems.



Vendor Landscape

- Efforts at standardizing the edge and frameworks for building applications at the edge continue today as seen by the GSMA's recent Operator Platform project, Akraio from Linux Foundation, StarlingX from OpenStack, and commercial alternatives from MobileEdgeX and F5/Volterra.
- Solutions to manage and orchestrate edge platforms, many based on Kubernetes, abound, and include Red Hat's OpenShift, VMware's Telco Cloud Platform, Google's Anthos, and Mutable.io's unique approach that rounds-up idle servers across carriers, MSOs, and hosting companies into a federated edge cloud.

Call to Action

- **Identify enterprise applications** that might benefit from one or more of the attributes of running at the edge, such as latency, security, and privacy, and bandwidth savings.
- Determine if there are any **regulatory and compliance requirements** that impact the application and data being considered for the edge.
- Catalogue and understand the **nature of the application and its components**, as well as where data is generated, processed, consumed, and stored.
- Understand the **underlying topology of locations** involved in data generation, transport, and consumption and map out appropriate edge locations.
- Investigate **available edge platforms** available to the enterprise and determine the best partners in the enterprise's edge strategy.
- Understand the **underlying edge software platforms** and software services the edge platforms provide.
- Economies of scale matter: Work **out all the costs** involved in running parts of an application at the edge, calculate the ROI, and determine if the overall performance improvements are worthwhile.
- Enterprises **should not focus on latency** as the only important metric for considering the edge. The edge also provides improved isolation and security, enabling regulatory or corporate compliance; improved jitter (consistency in latency); reduced uplink costs; and resilience against intermittent connectivity.

Read the full report
for additional in-depth
analysis on edge
computing.



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