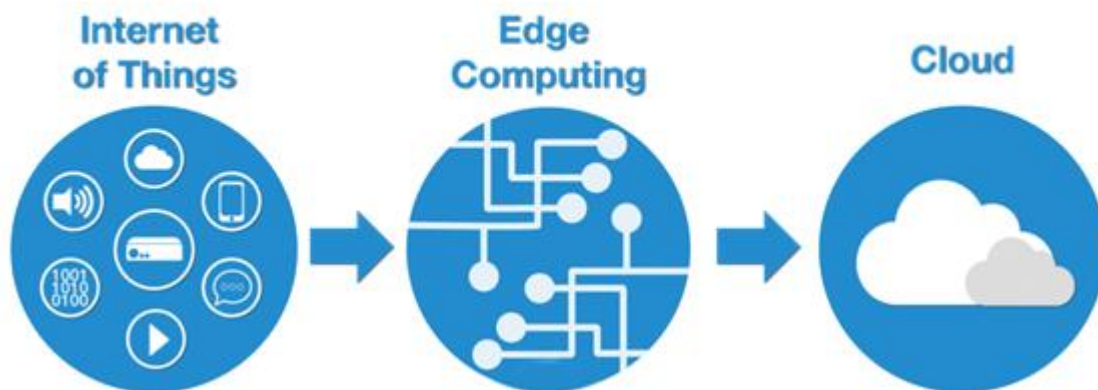# When Micro Data Center Meets Edge Computing Revolution

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What's Edge Computing?

For many years the trend for data centers has been to consolidate multiple sites into one or a few centralized, larger facilities. Much of that consolidation has shifted from the enterprise-owned and operated data center to the multi-tenant or colocation environment.

While it makes sense for many organizations to take this approach, the exponential growth of data and the Internet of Things (IoT) drives a need for local processing and storage IT in environments such as IDF closets, branch locations and remote sites.

While cloud computing has traditionally served as a reliable and cost effective means for connecting many of these devices to the internet, the continuous rise of IoT and mobile computing has put a strain on networking bandwidth.
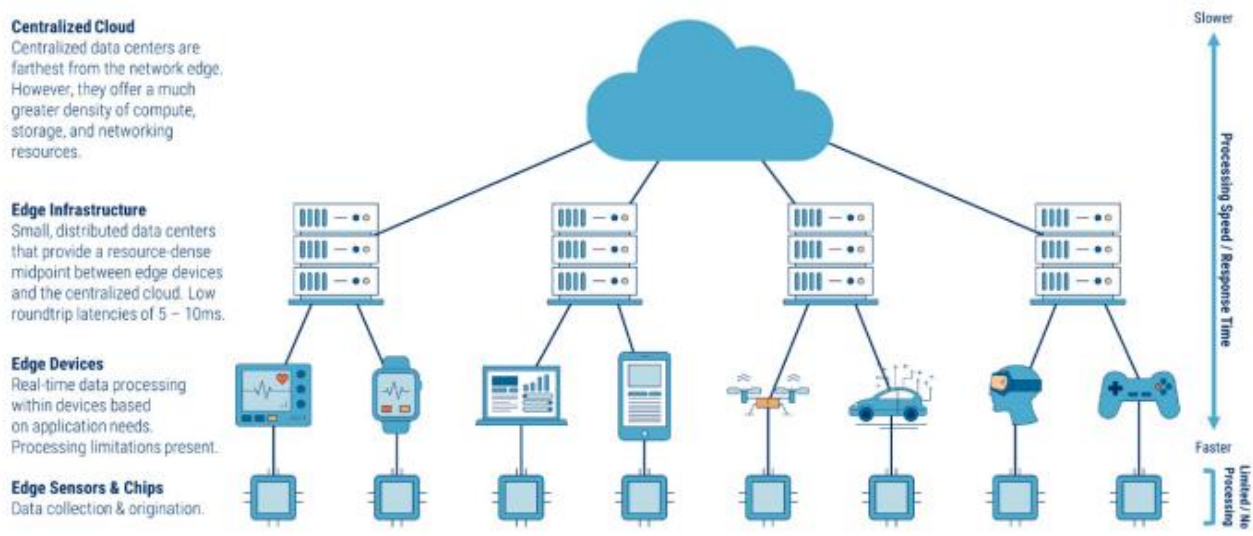
Wireless devices and sensors, lack the necessary compute capacity to process large streams of complex data directly. As a result, smaller, modular data centers are being deployed to provide hyper-local storage and processing capacity at the edge. They are typically the size of a self contained racks or shipping container and are placed at the base of cell towers, or close to industrial facilities.

Edge computing technology is now emerging to offer an alternative solution to place computing resources closer to where data originates (i.e. motors, pumps, generators, or other sensors) — or the "edge." This reduces the need to transfer data back and forth between centralized computing locations, such as the cloud.
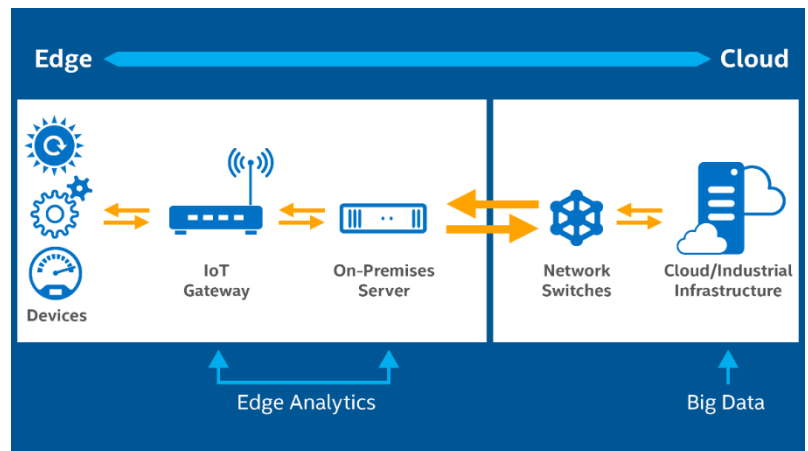
What's the Benefits of Edge Computing?

Edge computing describes a data center topology in which information processing and content collection and delivery are placed closer to the sources of this information. The goals are **to reduce latency, reduce unnecessary traffic and establish a hub** for interconnection between interested peers and for data thinning of complex media types or computational loads.

Centralized Cloud
Centralized data centers are farthest from the network edge. However, they offer a much greater density of compute, storage, and networking resources.

Edge Infrastructure
Small, distributed data centers that provide a resource-dense midpoint between edge devices and the centralized cloud. Low roundtrip latencies of 5 – 10ms.

Edge Devices
Real-time data processing within devices based on application needs. Processing limitations present.

Edge Sensors & Chips
Data collection & origination.

Slower

Processing Speed / Response Time

Faster

Limited / No Processing

These modular edge data centers are being used in industries such as manufacturing, agriculture, transportation and healthcare, as well as energy & utilities. They are also helping mobile network operators (MNOs) deliver content faster to mobile subscribers. And many tech companies leverage these systems to store (or cache) content closer to their end users.

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Why Edge Computing Needs Micro Data Center?

For many services, however, placing micro data centers on the edge is not just a matter of convenience, but necessity. Self-driving cars, smart industrial IoT, medical devices, traffic management tools, and a host of other applications depend on real-time access to both information and analytics results. Without direct access to nearby compute and storage resources, these functions will see their performance degrade by multiple orders of magnitude, sometimes even with life-threatening consequences.

A micro data center is modular or containerized and smaller than a computer room — typically multiple racks or less. All required IT functionalities are contained in the micro data center, designed to handle your specific needs at distributed locations and typically managed from a larger data center.
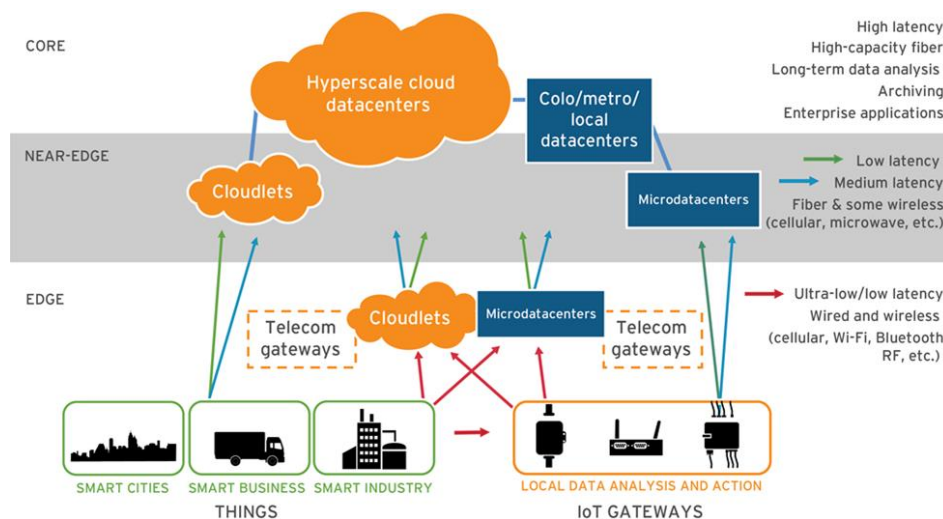
Micro Data Center which is capable of being deployed as close as possible to the edge of the network, in comparison to traditional centralized data centers. Capable of performing the same functions as centralized data centers although at smaller scale individually. Because of the unique constraints created by highly-distributed physical locations, edge data centers often adopt autonomic operation, multi-tenancy, distributed and local resiliency and open standards. For some companies, having a data center just feet away rather than miles away can actually reduce latency. When milliseconds matter in applications that depend on critically low latency, an Micro Data Center can be the answer.

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The Benefits of Micro Data Center

An Micro Data Center at first glance looks like most any other equipment cabinet. It is typically a **pre-fabricated unit equipped with climate controls, power protection and distribution, network connectivity, physical security features, fire suppression, interference protection, and shock-resistant design**.

The Micro Data Centers are much more highly engineered than your usual equipment closet or server room, which makes sense given the **higher level of performance** that is expected of them. Because they are **pre-built**, and because the vendor typically does all the **component integration and testing**, an Micro Data Center can be **deployed quickly**, with a **minimum of site work** needed. For some companies, that's a big plus, since they can be assured that their data center has **been tested and locked down in a factory environment**, then safely shipped to a site and deployed. That helps to **reduce the possibility of security risks or other potential hazards**.

Micro Data Centers are eminently scalable for the needs of their nearby users. A single cabinet unit that provides file caching might serve the branch office of an enterprise, while an engineering organization could opt for a multi-rack system in order to provide a high performance computing cluster. **The modular design of these units lends itself to scalability and a custom fit for any specific enterprise need**.

The Industries Adopting Micro Data Centers
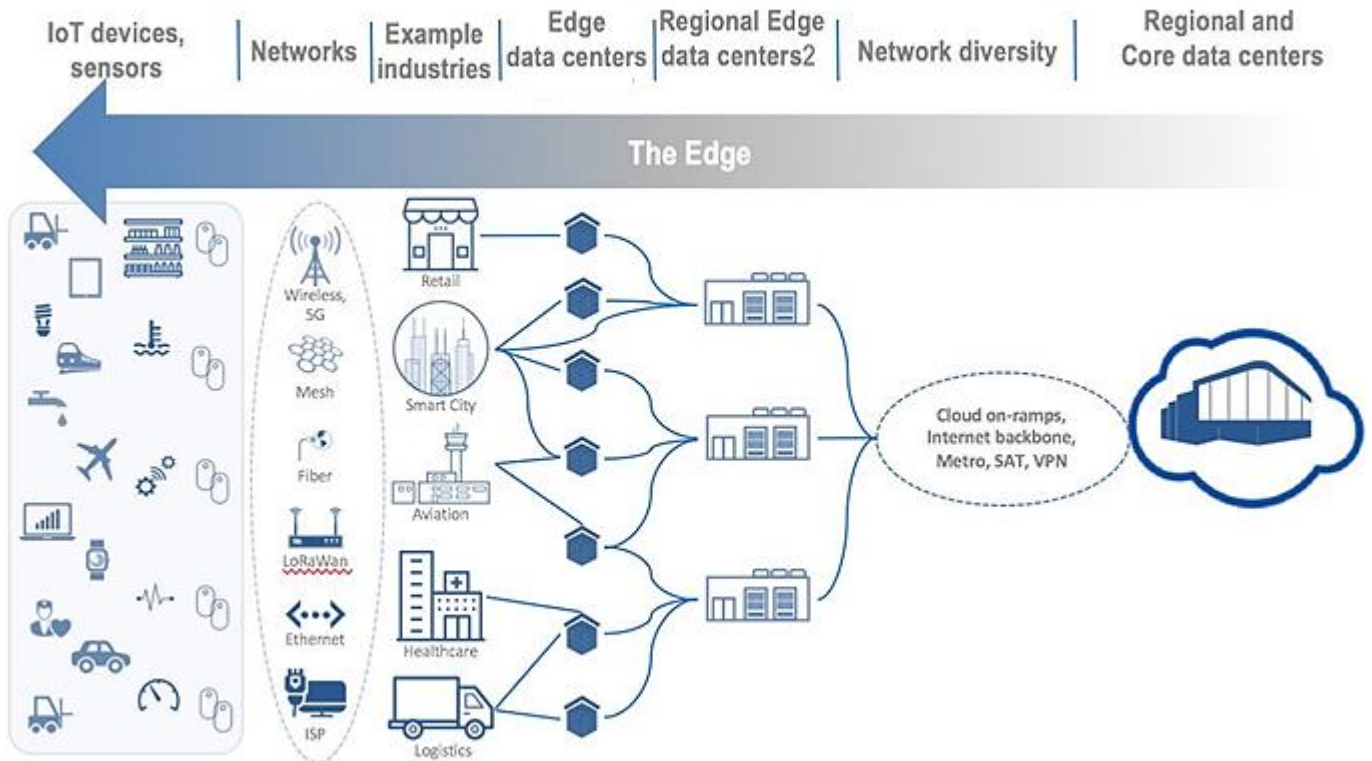
More and more companies are moving to Micro Data Center solution as they decentralize their IT strategy and find that their existing distributed capacity just won't meet their needs.

In some environments, such as manufacturing, companies want local storage and processing power to help them take full advantage of the smart systems they have installed.

For companies in the content business, an Micro Data Center can provide an edge computing solution that is located close to the source of the demand.

Enterprises of IoT, artificial intelligence, machine learning and other applications all have the potential to drive sizable demand for Micro Data Centers as a means of bringing more processing and storage power to the network's edge.

Service providers are also likely to embrace them enthusiastically as part of the move to 5G, where the need for more network functionality and an enhanced ability to manage networks at the edges will get increasingly critical.

The huge upside potential of the Micro Data Center, not because it creates something completely new, but because it will help address challenges and it will meet demand for highly distributed capacity.

Attom Micro Data Center Solution

Attom Technology is dedicated to design and deliver the Micro Modular Data Center Product Platform, with the No.1 Flexible and Versatile options, to simplify Edge Data Centers deployment and management.
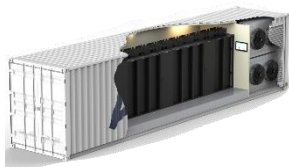
Indoor Cabinet Type

Indoor Row Type

Outdoor Cabinet Type

Outdoor Container Type

- Cloudlet/On-premise infrastructure
- Remote/Branch office environments
- Smart Retail
- Finance & banking sector
- Warehouse/Logistics Hubs
- Oil/Gas/Mining
- National and Local Government
- Small and medium enterprises
- Network rooms
- Office communication rooms
- Smart manufacturing
- Process automation in harsh environments
- Military
- Government/Education
- IAAS (Infrastructure as a service) component

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