SOLUTION BRIEF

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Creating Far Edge Networks for Emerging Ultra-Low Latency Services

Accenture and Intel develop business case, ecosystem and technology solution for communications service providers (CoSPs) to build out far edge networks

- Far edge or on-premises deployments enable ultra-low latency use cases including IoT devices in manufacturing, new commerce, gaming, remote, autonomous transportation and entertainment applications in shopping malls, stadiums, and airports.
- Accenture and Intel can aid CoSPs in the planning, implementation and operation of far edge deployments, including building an ecosystem of partners for success.

Emerging Applications Need Low Latency for Success

Ultra-low latency networks (< 5 millisecond response time) are enabling a wide range of new business and consumer services for communications service providers (CoSPs). For example, Internet of Things (IoT) technology lets a wide range of industries access and analyze data. This gives them the ability to automate operations in a more efficient manner. On manufacturing floors, IoT sensors can improve operational efficiency by syncing robot and human activities.

But other low-latency applications are also emerging. At shopping malls, consumer experience can be enhanced through augmented reality services or gamification activities. In stadiums, real-time statistics can be displayed on mobile devices during events. At travel hubs and airports, augmented reality or virtual reality can be used for face recognition and video surveillance systems to identify objects, people, and irregular situations.

Having compute, networking and storage resources at the very edge of the network to run these emerging use cases can cut down dramatically on transport latency to meet the ultra-low latency requirements.

IoT Improves Car Quality

A European automotive manufacturer is leveraging a far edge server network to enable IoT sensors that identify errors in welding, one of the main quality issues in automotive manufacturing.

With sensors on welding equipment, quality data can be fed to an on-premises cloud solution, allowing the automotive manufacturer to analyze the data for quality checks to ensure the welding process is working flawlessly.

This reduces errors and substantially increases margin.

Overall industrial IoT connections worldwide are expected to grow to **36.8 billion in 2025**, with smart manufacturing expected to account for **22 billion** of those connections.[1]
47% of businesses plan to increase their investments in IoT.[2]

1 https://www.juniperresearch.com/press/industrial-iot-iiot-connections-smart-factories
2 https://www.gartner.com/en/newsroom/press-releases/2020-10-29-gartner-survey-reveals-47-percent-of-organizations-will-increase-investments-in-iot-despite-the-impact-of-covid-19-

The Solution

Accenture, as an Intel® Network Builders partner, can aid CoSPs in the implementation and operation of far edge deployments, including building an ecosystem of partners needed to facilitate far edge solutions that provide centralized control and decentralized execution.

What Is the Far Edge Network?

Edge computing enables data processing as close as possible to the customer premises to deliver high bandwidth, enable intelligent workload placement, low latency, scalability, and responsiveness – and reduces backhaul.

There are different types of edge computing each named for their proximity to a telecom central office (CO) or switching center (see Figure 1). Near edge computing, for example, is the closest to the CO and hosts services such as content delivery network (CDN) caches and fog computing infrastructure.

Far edge deployments, though, are deployed closest to the users in order to service applications that require ultra-low latency, high scalability, and high throughput. The far edge is suited to enable applications that require less than 5 ms latency. The far edge is either on-premises at an enterprise or is deployed in a point of presence (PoP) in a street cabinet or wireless base station as close as possible to the system consuming or creating the data.

How the Solution Works

Multi-access edge computing (MEC) is the leading open standard for far edge deployments and enables a powerful cloud at the edge of the network. MEC deployments require three enabling technologies to be implemented: network function virtualization (NFV) or cloud-native containerization, software-defined networks (SDN) and edge cloud hardware. The flexibility of NFV, SDN and VNF allow for environments that can be adapted, re-adapted and changed continuously based on future needs. Upon this foundation are the virtual network functions (VNFs) that enable services and orchestration, billing and operating support systems (B/OSS), and other essential management functions.

Orchestration is a critical piece of the solution because it enables remote management of the deployment and migration of services within the network. This enables the administration of massive MEC networks as well as new service deployments in a way that minimizes the need for onsite maintenance visits.

MEC hardware needs to be able to fit within the form factor and power requirements of the remote locations and still provide processing performance, storage, networking capabilities, and availability like a data center server.

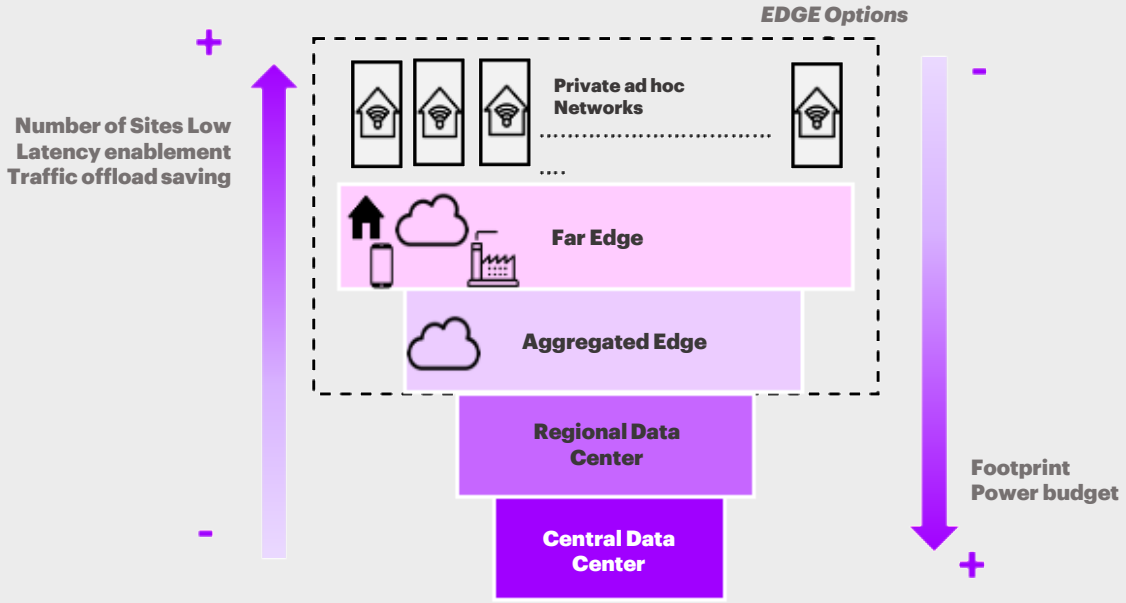

Figure 1. Edge network hierarchy.

Why Accenture

As the largest systems integrator in the world, Accenture's expertise in building a far edge network starts with developing a business case that is unique for each CoSP. Accenture's business process expertise for far edge customers includes establishing key performance indicators (KPIs), identifying and monetizing use cases with a go-to-market strategy and helping with sales and marketing.

Accenture provides the full design and development of a far edge deployment. The company can also operate the network, managing first-level and second-level service and support.

The open and disintermediated nature of a far edge network means technology partnerships are critical to success. Far edge deployments require many partners. Accenture helps the CoSP identify appropriate vendors for successful deployments.

Why Intel

Intel provides key technologies that are important in MEC deployments, including the following:

• Intel® Xeon® Scalable CPUs as the edge foundation: With built-in AI inference acceleration and network-optimized CPUs, 2nd and 3rd generation Intel® Xeon® Scalable processors provide an agile and robust edge foundation for trusted performance that scales.

• Intel® Distribution of Open Network Edge Services Software (OpenNESS): OpenNESS is an edge computing software toolkit that enables highly optimized and performant edge platforms to on-board and manage applications and network functions with cloud-like agility across any type of network. It simplifies the complex orchestration and management of edge services across diverse network platforms and access technologies.

• Intel® Distribution of Open Visual Inferencing and Neural Network Optimization (OpenVINO™) toolkit: The OpenVINO toolkit is open-source software that streamlines deep learning (DL) inference deployment. OpenVINO optimizes DL deployment across multiple Intel® platforms, with scripts and a workbench profiler to visualize important model performance metrics.

Why Accenture and Intel

Accenture and Intel share a single-minded focus—working together for the benefit of our customers. With our combined strengths and experience, the companies can accelerate the adoption of new technology and services. Ultra-low latency applications present a huge new opportunity for CoSPs. Together, Accenture and Intel can guide CoSPs to success in building out a far edge network deployment to take advantage of these new services.

Contacts

Justin Chostner
Network Tower Lead,
Accenture
justin.k.chostner@accenture.com

Dean Johnson
Network Tower Lead,
Intel
dean.johnson@intel.com

Resources

Accenture Technology Consulting
Intel® Network Builders
Intel® Xeon® Scalable Processors
OpenNESS
Intel Edge Computing Website