

CASwell MEC-6300 – the Highly Versatile Multi-Access, Multi-Wireless Intelligent Edge System

Flexible Edge Server based on new Intel Atom CPU (Denverton-NS Refresh) offering a variety of network connectivity & AI support



Establishing network edge servers is getting more common now as companies, service providers and governments are realizing the benefits of more computing power closer to the user base or connected devices instead of depending solely on cloud services.

Internet of things (IoT) devices, connected cars and smartphone are ubiquitous nowadays and getting Artificial Intelligence (AI) enhancements for features like smart predictions or visual optimization but processing power and storage is limited in the field. While machine learning needs big data to be effective and is better to be processed by cloud services, these still can not deliver real-time results and connections can be unreliable depending on location. Furthermore, users and companies are getting used to having information and results instantly without needing to wait. Uploading data from smart or IoT devices to the cloud is also often too too much too handle for the network because of the growing number of devices and the sheer size of collected data.

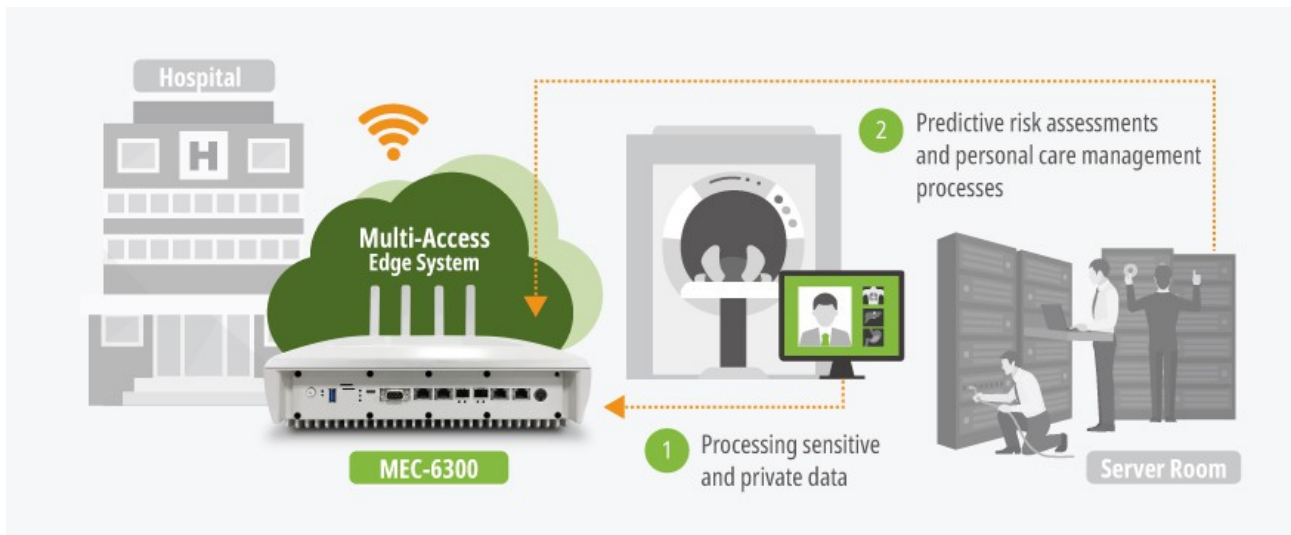
Intelligent edge devices can bring computing power closer to the devices that need these resources. Many IoT devices collecting data are not depending on real-time analysis, they can still use the cloud. But some IoT systems do and they can greatly benefit from more power at the network edge.

Edge computing can also bring AI to IoT as it simplifies networking, reduces response times to nearly real-time and lessens the burden on cloud resources.

Edge scenarios

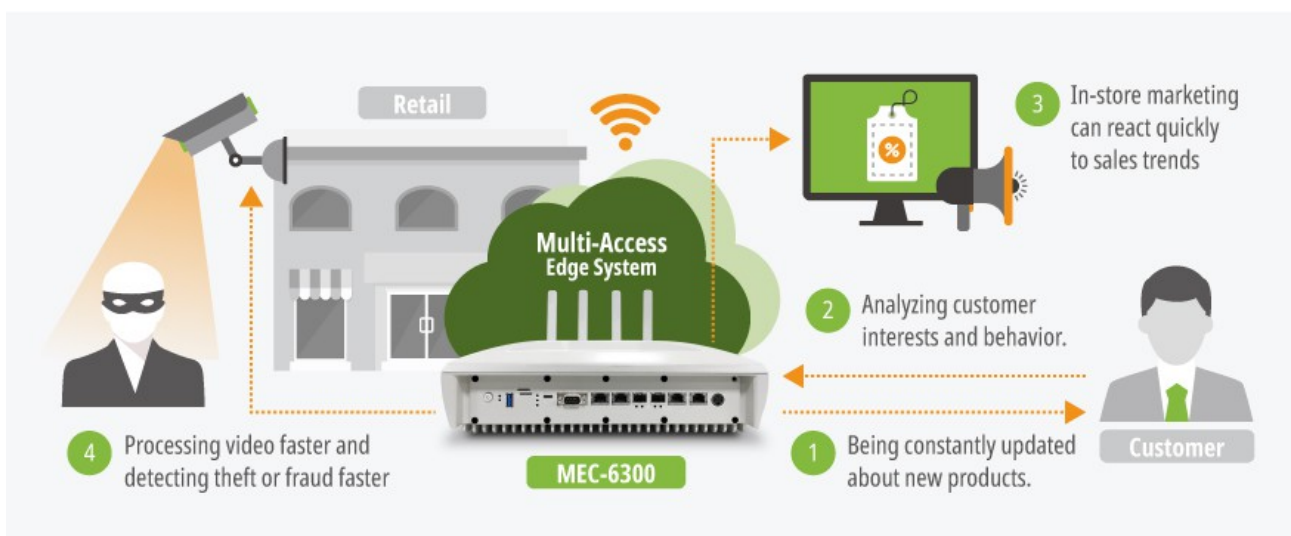
Health care

Doctors, physicians and patients can use the local processing power for predictive risk assessments and personal care management processes for better decision making. And as information about human health is widely regarded as sensitive and very private, processing this data in the cloud is often unwanted.



Retail

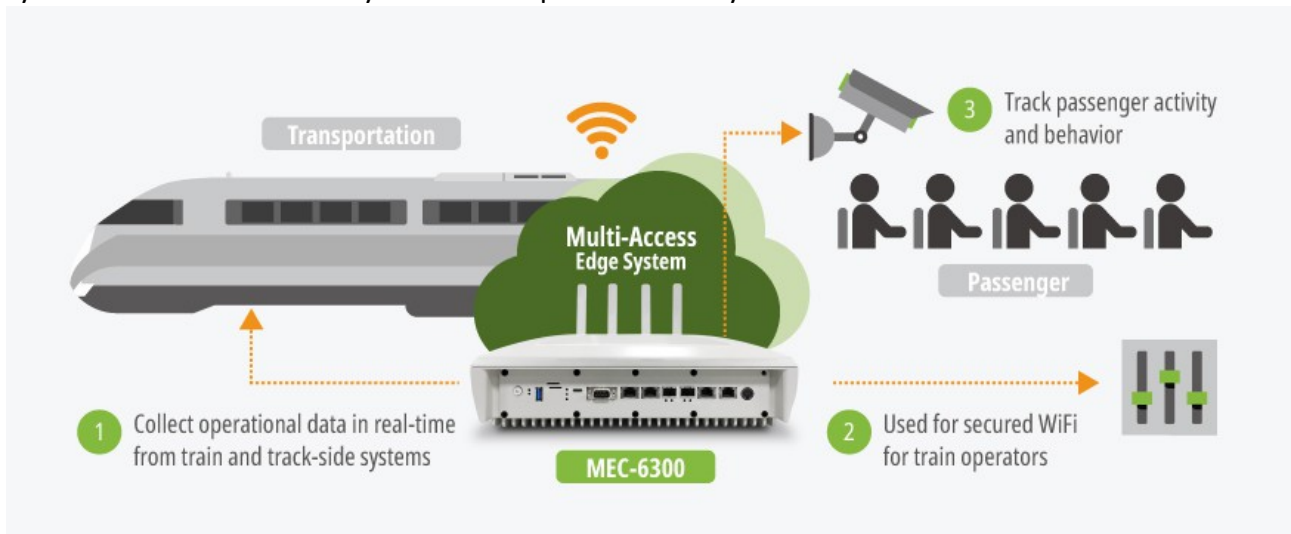
Thanks to powerful edge systems customers and vendors can get data in real-time for match-making while being constantly updated about new products. Security systems can process videos and data faster on the edge to immediately detect theft or fraud. In-store marketing like audio and displays can react quickly to sales trends, new products and specials. Wireless edge computing can also provide WiFi to customers while analyzing their interests and behavior.



Transportation

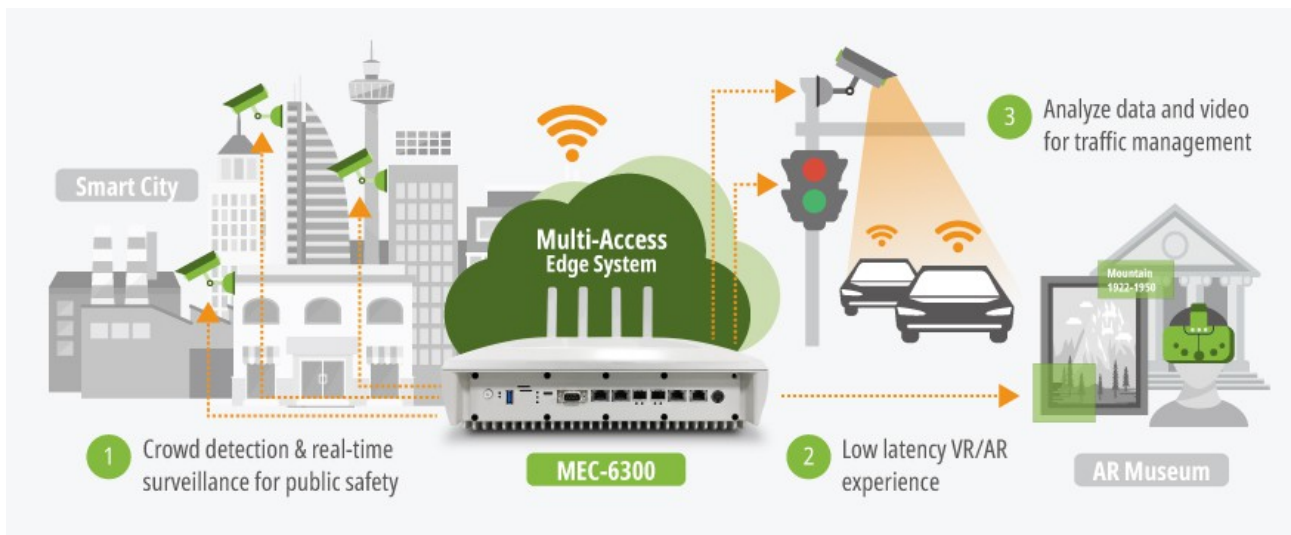
intelligent edge nodes in trains can not only provide local WiFi for travelers but also deliver travel updates and specialized and targeted content. it can track passenger activity and behavior for marketing or security purposes. It can also be used for secured WiFi for train operators without

installing Ethernet cabling in older trains as these usually have long operational times of many years. Edge systems can collect operational data in real-time from the train and even track-side systems for immediate analysis and to improve reliability.



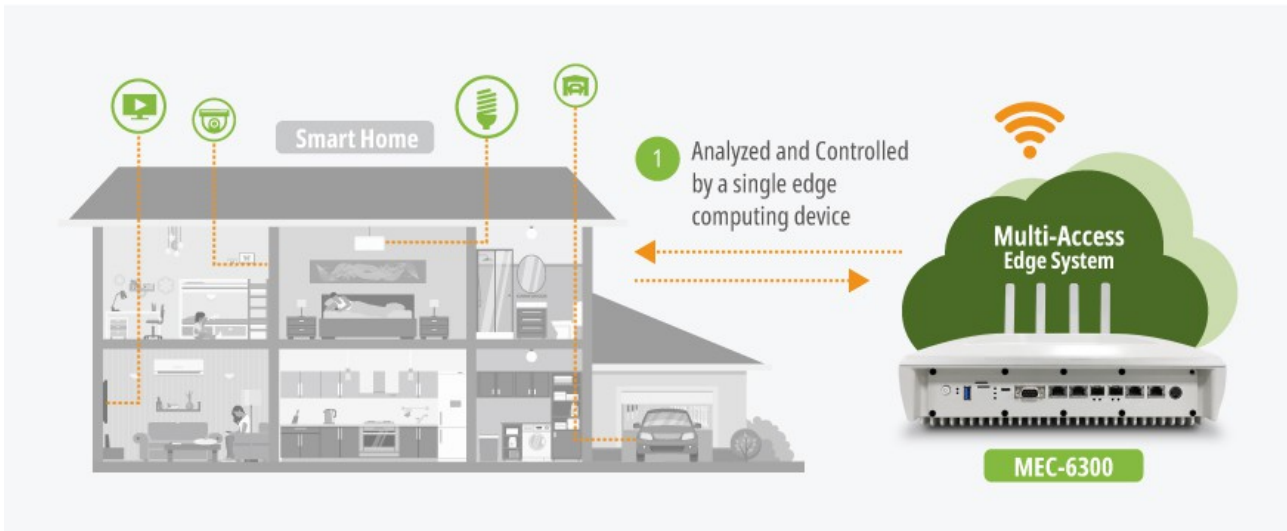
Smart city

Letting cloud services analyze data and video for traffic management and security might be too late in some urgent cases. Real-time and low latency is needed by intelligent edge devices for example for traffic routing, semi-autonomous vehicles, security camera analysis or virtual reality applications. Edge systems can also collect and analyze massive sensor feedback for example for energy usage of refuse disposal.



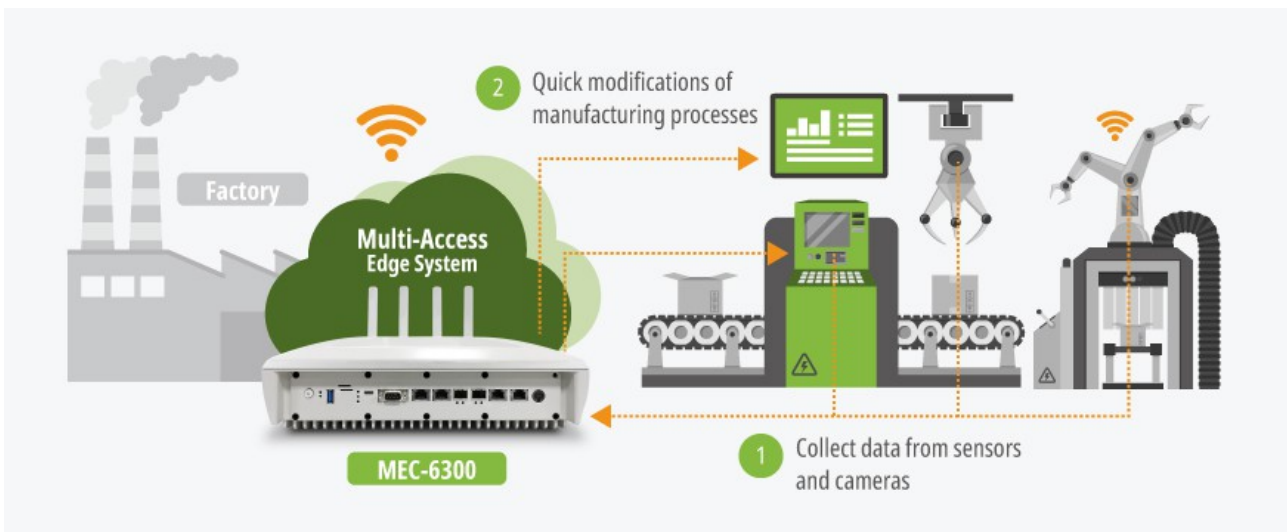
Smart home

Modern households feature more than just a few intelligent devices and these can be combined, analyzed and controlled by a single edge computing device while also providing multiple forms of network access.



Manufacturing

Edge systems can collect and analyze IIoT (Industrial IoT) data from sensors and cameras for quick modifications of manufacturing processes and preventing failures, damaged products or lower quality than intended – much faster than waiting for a deep analysis by a cloud service while money gets lost due to sub-optimal production.



Even if analyzing must be done in a data center due to data size, intelligent edge devices can analyze and sort some information first to reduce the amount of data to be sent to cloud services to save cost and time. In this case, edge systems are practically another layer of AI support for IIoT.

The solution

One versatile and multi-functional solution for all of the above mentioned scenarios is the new CASwell MEC-6300.

The MEC-6300 is based on the Intel Atom Processor C3558R (Denverton-NS Refresh) with four cores running up to 2.4 GHz at only 17 watt thermal design power (TDP). Compared to the previous generation, the Atom 3558, the 3558R reaches higher frequencies while keeping almost

the same TDP, supports faster memory like DDR4-2400 instead of DDR4-2133 and provides 20 instead of 12 PCI Express 3.0 lanes for enhanced connectivity and bandwidth.

Important for many industries is the support of Intel Quick Assist Technology (QAT) by the Intel Atom C3000 series because collecting data at the network edge and sending to the cloud requires encryption to keep the information protected from unauthorized access when operated outside corporate firewalls. Devices supporting QAT like the CASwell MEC-6300 can process encryption and decryption more than ten times faster than without QAT.

For connectivity the MEC-6300 offers a variety of different networking options: Six Ethernet ports with up to 10 Gigabit, WiFi (5 GHz and 2.4 GHz) and cellular (mobile) networking with LTE and 5G. Wireless connectivity is supported by four outside antennas for 5G (sub6) and 18 inside antennas for LTE and WiFi.

Internally the MEC-6300 offers one M.2 slot for expansion for 5G, LTE, SATA, storage, WiFi, DSL, Bluetooth and ZigBee but also for AI. Here, the system could be equipped with an Intel Movidius Myriad X Vision Processing Unit that uses artificial intelligence methods like neural networks for facial recognition in retail or for license plate examination at gas stations to accelerate the edge system with a balance of power efficiency and compute performance. The Intel Movidius Myriad X VPU features the Neural Compute Engine – a dedicated hardware accelerator for deep neural network inference – and is programmable with the Intel OpenVINO toolkit to provide the optimal solution for edge features that can benefit from AI or the underlying inference engine.

Another reason for choosing the MEC-6300 is the support of OpenNESS. This open source software toolkit is inspired by the edge computing architecture and enables easy orchestration, network functions and access technologies. OpenNESS leverages major industry edge orchestration frameworks, such as Kubernetes and OpenStack, and provides an architecture that operates with 5G, LTE, WiFi, and wired networks – perfect for a multi-access, multi-wireless edge system like the CASwell MEC-6300.

Overall the CASwell MEC-6300 is the optimal edge networking system for many use cases found throughout different industries due to its versatility and flexibility, numerous different connectivity options and its effective and efficient processing power in a rather compact form factor.



The CASwell MEC-6300 will be offered in two versions – one for using indoors and one for outdoor



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deployment and wider temperature range. Please contact your local CASwell representative or sales for any questions.

More information about the CASwell MEC-6300 can be found here:

<https://www.cas-well.com/products/edge-fog-computing/sd-wan-ucpe-vcpe/mec6300.html>

Please find out more about the Intel Atom processors and the Intel Movidius VPU here:

<https://www.intel.com/content/www/us/en/products/processors/atom/c-series.html>

<https://www.intel.com/content/www/us/en/products/processors/movidius-vpu.html>

About CASwell

CASwell, Inc. was founded in 2007 by a group of engineers with a desire to create dynamic system solutions for embedded applications. While CASwell is a young company, it has proved itself to its customers with advanced technology, professional service and superior design and manufacturing capability by delivering a great portfolio of solutions based on Linux®. In 2014, the well-known IPC manufacturer Ennoconn Corporation (subsidiary of Foxconn Technology Group) decided to invest in CASwell, becoming the largest shareholder. CASwell has since become the subsidiary of Ennoconn, a member of Foxconn Technology Group. CASwell is dedicated to providing its customers with an unparalleled one-stop shopping experience for their network security and management needs. Find out more on the official website: <https://www.cas-well.com/>