Mobile Edge Computing Platforms for Outdoor Telecom Applications



Extreme Outdoor Server

- Augmented Reality Content Delivery
- Video Analytics & Caching
- Distributed Content and DNS Caching

ADLINK TECHNOLOGY INC.

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Mobile Edge Computing - The Edge is the Future

There are over 5 million cell towers globally with the potential for deployment of 5 million Edge Servers to be placed outside in extreme outdoor elements.

By adding Edge Cloud Servers, operators can save up to ***35%*** on backhaul usage from the Radio Access Network to the existing application server. By 2018, it is estimated that 84% of all IP traffic in the US will be made up of gaming, video and streaming web content. Users will demand low latency and improved QoE. With Edge Cloud Architectures, it is estimated that latency will be reduced by ***50%***.

ADLINK announces the first Xeon-class, weather-proof, Extreme Outdoor Rugged Server for Edge Cloud Architectures (also known as MEC – Mobile Edge Computing) and Network Functions Virtualization (also known as NFV).

The MEC Architecture Key Elements can be built onto ADLINK's Extreme Outdoor Server

Mobile Edge Computing (or MEC) is an ETSI standards-based architecture enabling operators and ISP's to implement a greater mix of applications on the Mobile Edge or Radio Network environment.

The MEC Architecture is made up of 3 key elements:

- The MEC Hosting Infrastructure Management System which consists of the Extreme Outdoor Server Server, Virtualization Layer and the Virtualization Manager
- The MEC Application Platform Management System which provides Traffic Control RAN Information Services, Communication Services, and Service Registry
- The Application Management System: a Virtualized Machine for MEC

Reducing Backhaul and Transmission Costs by Optimising the Network with an MEC system

- Data Caching of video, gaming, web content, DNS caching peer-to-peer applications and user plane of S1 links
- Enabling proxy services at the edge for web proxies, transparent security and VPN proxies and content filtering proxies
- Filtering of URL web addresses for private enterprises being served by the Extreme Outdoor Server
- Data compression and IPSec at the edge to increase the data flow between the edge and the application server
- Implementing codecs and compression techniques at the edge to provide improved video optimization for broadcasters, cable providers and video applications

Improving the User Experience by Enhancing Application Responsiveness and Quality

- Utilization of Deep Packet Inspection to provide content aware quality of service by adjusting specific parameters as required by the application's Quality of Service
- Providing personalized advertising, coupons and merchandise offerings from business and venues in close-proximity to users. Geo-targeting of advertisements can offer improved revenue streams for both the operators and local businesses
- Providing additional data analytics for application providers including real-time monitoring and storage variables not impacting the backhaul

ADLINK :
Industry's first high performance Mobile-Edge computing (MEC) platform designed for extreme environments and outdoor telecom/ networking applications.

• Designed for Extreme Outdoor Environment • Server Grade Performance • Application-Ready Intelligent Platform

Server-grade performance with Intel® Xeon® Processor E5-2400 v2 series

2x 2.5" SATA drive bays (externally accessible)

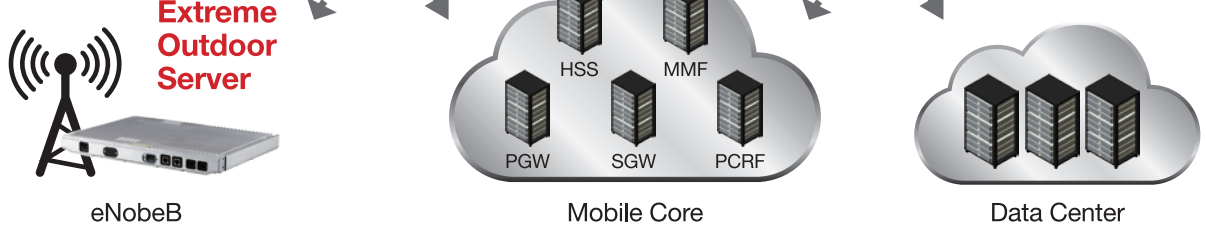
Packet processing acceleration with ADLINK PacketManager



Fanless, -40℃ to +55℃ operation, NEBS shock & vibration resistant

IPMC remote management thru 10/100/1000BASE-T RJ-45 or 10GbE SFP+ ports

IP65 water & dust proof



- Acts as a cache server/CDN to optimize local network performance
- Caching /distributed architecture within small cells
- Provides access to real time radio & network information to offer context-related services/apps development

More Ideas for Mobile Edge Computing Applications ···



Augmented Reality Content Delivery

- Augmented Reality (AR) application on a smart-phone or tablet overlays AR content onto objects viewed on the device camera.
- Applications on the Mobile Edge Computing (MEC) server can provide local object tracking and local AR content caching.
- Minimizes round trip time and maximizes throughput for optimum quality of experience.
- Offers consumer or enterprise propositions, such as tourist information, sporting event information, advertisements etc.



Video Analytics & Caching

- The video management application transcodes and stores captured video streams from cameras received on the LTE uplink.
- The video analytics application processes the video data to detect and notify specific configurable events e.g. object movement, lost child, abandoned luggage, etc. safety, public security to smart cities.
- Using video analytics can not just save up to 50% of the backhaul for video but also improves latency up to 35%.
- Reserved PCIe extension for video transcoding acceleration.



Distributed Content and DNS Caching

- Provide backhaul and transport savings and improved QoE.
- Content caching has the potential to reduce backhaul capacity requirements by up to 35%.
- Local Domain Name System (DNS) caching can reduce web page download time by 20%.



Extreme Outdoor Server with Intel® Xeon® Processor E5-2400 v2 Series

Specifications

CPU / Chipset /Memory	
CPU	Single/Dual Intel® Xeon® E5-2418L v2 (6C/12T) 2.0GHz
	Single/Dual Intel® Xeon® E5-2428L v2 (8C/16T) 1.8GHz
	Single/Dual Intel® Xeon® E5-2448L v2 (10C/20T) 1.8GHz
Chipset	Intel® C604 Chipset
Memory	Six DDR3-1600/1866 240-pin VLP RDIMM sockets, up to 96 GB (up to 48GB for single CPU SKUs)
BIOS	
Chip	AMI BIOS on SPI flash memory
I/O Interfaces	
Ethernet Dual	10/100/1000BASE-T RJ-45 port
	Dual 10G SFP+ interface
Storage	Onboard bootable 32 GB SATA flash (optional up to 256GB)
	Two 2.5” SATA SSD drive bays (external access)
USB	Two USB 2.0 ports on front panel
Front Panel I/O	2x USB port, 2x LAN, 2x SFP+,
	1x COM port (RJ-45)
Power Input	DC 36-72V power input, supports DC-48V for Telcom
IPMI	
Chip	Smart Fusion A2F500
IPMI	IPMI v2.0 based intelligent system manager & power manager. Supports temperature management for platform power manager: cold start heating, overheating, lower performance, shutdown& auto recover, self & remotediagnostic capability.
Other Features	
Expansion	Mini PCIe socket onboard; PCIe x16 signals via proprietary onboard connector (max. 15W)
Packet Processing Acceleration	Intel® Communications Chipset 8920 (optional)
Operating System	Linux 6.x
Mechanical and Environmental	
Form Factor	Fanless with aluminum conduction cooling enclosure
Dimension	340 mm x 440 mm x 44 mm (L x W x H)
Weight	10 kg
Operating Temp.	-40˚C to +55˚C
Storage Temp.	-40˚C to +70˚C
Humidity	5% to 95%, non-condensed
Shock	20G peak-to-peak, 11ms duration, non-operation
Vibration	Non-operation: 1.88Grms, 5-500Hz each axis
	Operation: 0.5Grms, 5-500Hz each axis
Power Consumption	400~500W
IP rating	IP65
Certification	FCC, CE, UL, NEBS Level 3 (design)

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