



White Paper  
Intel® Network Edge Virtualization

# OPENNESS: ENABLING SERVICES AND APPLICATIONS ON THE NETWORK AND ON-PREMISE EDGE

The Network and On-Premise Edge is being embraced by service providers and enterprises as a new and innovative way to deliver content and services to end users.

**While mobile data gave way to the digital service economy that fueled the growth of the public cloud, 5G and the Internet of Things (IOT) promises to unleash a similar disruption at the edge.**

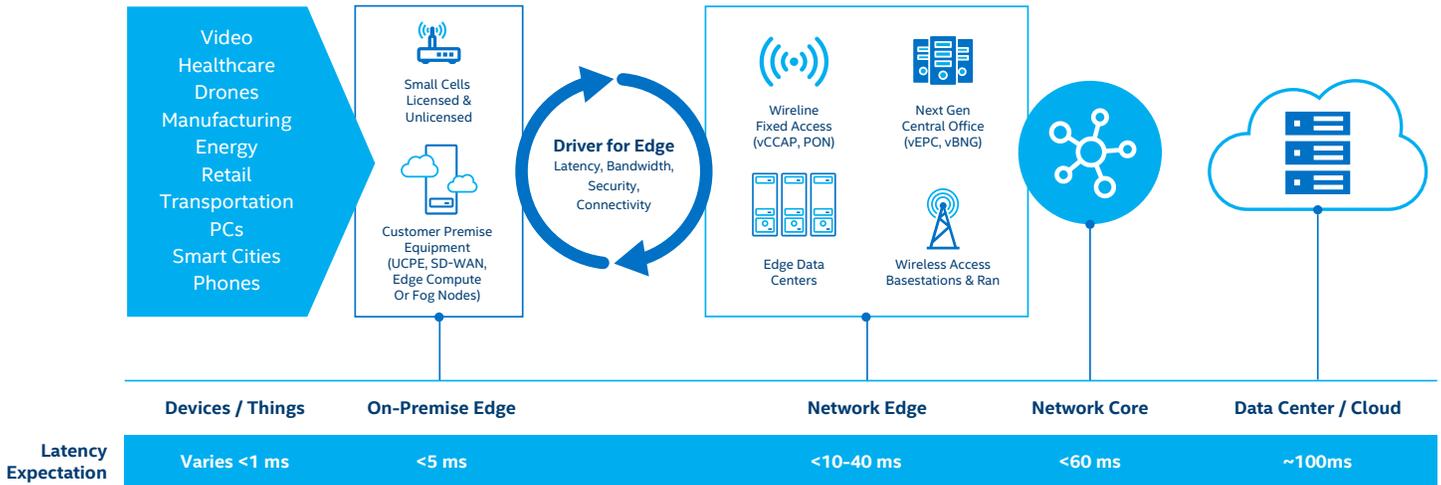
OpenNESS offers cloud and IOT developers an easy-to-use reference software toolkit to create and deploy applications at the on-premise and network edge locations. By simplifying complex networking technology, OpenNESS exposes standards-based APIs from 3GPP and ETSI to application developers. Within the toolkit, applications can steer data traffic intended for the edge at 5G latencies and provide connectors to analytics and cloud service provider frameworks. With this open source toolkit, application developers can port applications created for the cloud to the edge, and run the applications at any edge location.

The Network and On-Premise Edge is being embraced by service providers and enterprises as a new and innovative way to deliver content and services to

end users. Fueled by delivery of edge services with revenue streams, edge deployments are supported by service providers and enterprises featuring data center-grade network, compute and storage capability. Typically, subscriber applications are deployed in the service provider's data center or as cloud applications. These Edge Services change this model to allow applications to run on general purpose processor (GPP) based servers paired with workload accelerators at the edge of the network.

Running applications at the edge of the network significantly reduces application response times, and delivers an improved Quality of Experience (QoE) to the mobile subscriber. In parallel, it lowers both the volume and the peak traffic levels on the backhaul links, which allows service providers to add additional RF and baseband resources to meet the growing demand for Cloud and IoT data without upgrading their backhaul links. It also allows new services innovation, for example Immersive media, AR/VR, Edge Gaming, Industrial IOT, Retail, Smart City and many more.

# Data Workloads Drive Edge Computing



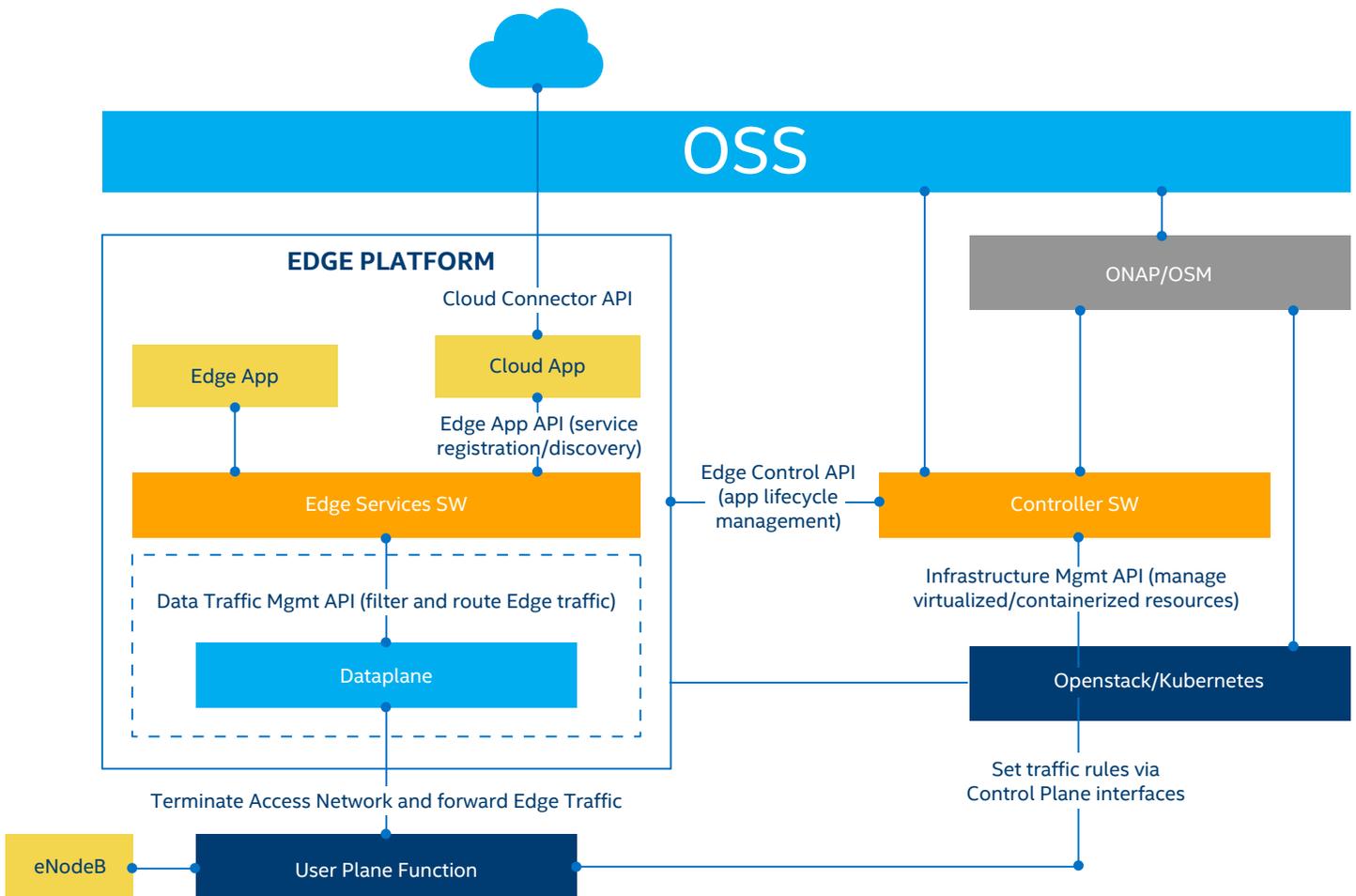
Edge Services on different types of Edge Platforms → On-Premise and In-Network (uCPE, vRAN, NGCO, Edge Compute Nodes, and others)

**Figure 1.** Data workloads drive edge computing

Edge Services also represents a new revenue opportunity for application developers to deliver solutions to the growing cloud and IoT marketplace. The deployment of general purpose computing platforms at the edge enables application developers to optimize their existing software engineering investment and expertise. Implementing applications at the network edge allows application developers to build new and innovative contextualized services that use location services, adapt to local conditions, and are tailored to individual needs and preferences.

OpenNESS is an open source reference toolkit that is designed to assist application developers in taking advantage of the opportunity enabled by the network and on-premise edge:

- Simplifies the complexity of the network to cloud developers
- Enables secure on-boarding and management of applications
- Enables functionalities such as access termination, traffic steering, multi-tenancy for services, service registry, service authentication, telemetry, application toolkits, appliance discovery and control, and includes a web-based GUI for easy application onboarding
- Built on top of consistent and standardized APIs (such as 3GPP, ETSI-MEC) exposed to the developers



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