

# Nokia\* Brings OCP to Enterprise, IT, and Communication Service Providers (CoSPs)

The Open Compute Project (OCP) helps organizations reduce energy consumption and maintenance costs in the data center.

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## NOKIA

Nokia\* addresses CoSPs-specific requirements with OCP

### Improving Data Center Efficiency

Back in 2009, Facebook\* tasked a group of engineers to design the world's most energy- and cost-efficient data center, which meant taking a fresh look at the requisite servers, racks, power supplies, cooling, etc.<sup>1</sup> They discovered that removing non-essential components, increasing chassis height, and simplifying server serviceability, among other innovative ideas, could significantly lower energy consumption and maintenance costs.

After proving out its designs, Facebook shared them with the public and launched the Open Compute Project (OCP), along with tech investor Andy Bechtolsheim, Intel, Goldman Sachs\*, and Rackspace\*.

A testimony to how OCP is revolutionizing data center hardware, Facebook posted it saved more than USD 2 billion in infrastructure costs (from around 2011 to 2015) from OCP and related efficiency work.<sup>2</sup>

### Nokia\* Adopts OCP

Building upon this success, Nokia offers OCP-based servers designed to meet the requirements in CoSPs, IT, and enterprise data centers. OCP is now incorporated into hardware components of the Nokia AirFrame\* Data Center Solution, including servers, switches, storage, and racks. Moreover, performance can be boosted with Nokia accelerator cards that speed up encryption, packet, and radio baseband processing.





Figure 1. Major OCP benefits.

Nokia AirFrame includes the necessary hardware, software, and services needed to support essentially any cloud-based application, ranging from common IT to highly-demanding CoSP applications, like 5G. This solution was designed for CoSPs and IT convergence, delivering the benefits from both the IT and open-source domains to create a scalable and distributed cloud-based architecture.

**OCP for Most Everyone**

Cloud computing has been transforming the IT industry over the last decade, driving down costs and improving business agility. Now, OCP is further bending the cost curve downward by reducing energy consumption and maintenance costs. This is good news for all types of cloud operators, including enterprise, IT, and CoSPs. In fact, most

cloud implementations can start with hardware based on the OCP specification and make enhancements from there, if needed.

- **Enterprise Cloud Applications**  
OCP lowers the CapEx and OpEx of bringing the latest data center technologies to the hundreds of thousands of enterprises worldwide. For organizations with very large data centers, like Amazon\* and Facebook\*, this can translate into enormous savings. Also benefiting are companies that expect to handle huge amounts of data and subscribers, like those promising to connect billions of people to billions of things with the Internet of Things (IoT).
- **IT Cloud Applications**  
Network operators need a highly-responsive cloud infrastructure to run IT

applications, such as charging systems that adapt to the needs of the target market, and data analytics that enable real-time network action and quality of service (QoS) optimization, as well as potentially life-saving messages to subscribers' mobile devices.

• **Communication Service Provider (CoSP) Cloud Applications**

Mobile operators are starting to move core network components and other CoSP applications to the cloud, where a high level of automation simplifies the delivery of services and network operations. However, cloud performance requirements in CoSP environments are considerably more stringent than those within the IT domain. Real-time responsiveness and strict latency constraints are key criteria for voice and video calling.

OCP-based infrastructure can also be used to implement Cloud Radio Access Networks (Cloud RAN), which are seen as a means to add efficiency and flexibility to 5G. Cloud RAN introduces centralized baseband processing that is automatically orchestrated with existing distributed baseband processing to support all kinds of traffic peaks wherever they happen. The Cloud RAN runs virtual network functions (VNFs) to further improve network operator agility and time to market for new services deployment.

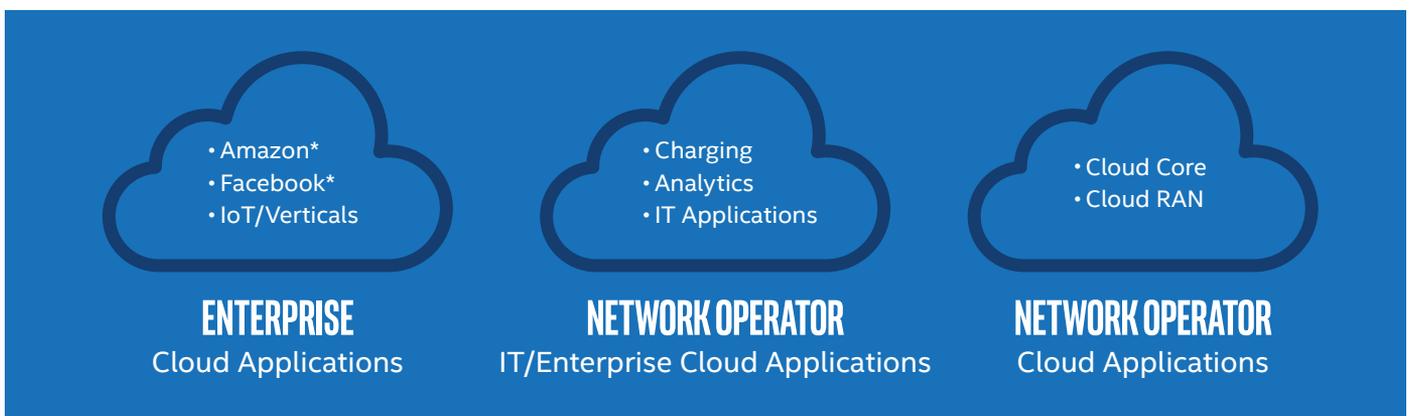


Figure 2. OCP can server various types of cloud operators.

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## Communication Service Provider (CoSP) –Grade OCP-based Cloud

Nokia incorporated OCP designs into its AirFrame\* Data Center Portfolio to offer greater efficiency, density, cooling, and power usage effectiveness. These characteristics will significantly lower the cost of operations and enable enhanced serviceability while delivering carrier-grade quality on an open IT platform.

Nokia Networks' AirFrame Data Center Solution provides unparalleled performance for CoSP cloud applications on all domains, including core, radio, operations support system (OSS), and customer experience management (CEM). Nokia AirFrame servers, based on Intel® Xeon® processors, implement acceleration techniques that are built for mobile broadband applications. These enhancements boost packet processing capabilities for today's CoSP applications and future 5G networks that place ever-increasing data demands on the CoSP world.

Nokia currently offers several accelerator cards, including:

- **Encryption**

Acceleration cards for IP security (IPSec) workloads offload the CPU using the Intel® Communications Chipset 89xx Series. These cards offer up to 100 percent higher encryption performance.<sup>3</sup>

- **Packet processing**

Network interface cards (NICs), along with CPUs running the Intel-developed Data Plane Development Kit (DPDK), deliver much higher packet throughput than conventional alternatives. AirFrame servers can be equipped with packet acceleration that will deliver over 10 percent more processing capacity and up to 50 percent lower packet latency.<sup>3</sup>

- **Radio baseband**

These cards greatly speed up radio signal processing by baseband units (BBUs).

Nokia AirFrame OCP takes into account the specific needs of the CoSP domain, such as regulatory requirements, electromagnetic (EMI) shielding, and

direct current (-48V DC). These products also satisfy industry requirements for CoSP-grade reliability and ultra-low latency networking.

## Nokia AirFrame\* OCP and Demanding Workloads

OCP-based infrastructure is expected to have a profound impact on cloud and data center environments by reducing energy and operations cost while still incorporating the latest CPU technology. Taking AirFrame OCP one step further, Intel and Nokia are making enhancements to ensure data centers can handle the most demanding of workloads, especially in the CoSP industry.

For more information about Nokia Networks' AirFrame Data Center Solution, visit <http://networks.nokia.com/portfolio/solutions/telco-cloud/nokia-airframe-data-center-solution>.

For more information for Intel solutions for network infrastructure, [www.intel.com/content/www/us/en/communications/communications-overview.html](http://www.intel.com/content/www/us/en/communications/communications-overview.html).



To learn more about Intel® Network Builder partners for Nokia and the Open Compute Project for enterprise, visit <https://networkbuilders.intel.com/solutionscatalog>.

Footnote:

<sup>1</sup> [www.opencompute.org/about](http://www.opencompute.org/about)

<sup>2</sup> Erin Green, Facebook post, "Open Compute Project U.S. Summit 2015 – Facebook News Recap," March 10, 2015, <https://code.facebook.com/posts/1538145769783718/open-compute-project-u-s-summit-2015-facebook-news-recap>

<sup>3</sup> Nokia AirFrame portfolio enhanced for hyperscale data center deployments #MWC16, January 27, 2016, <http://company.nokia.com/en/news/press-releases/2016/01/27/nokia-airframe-portfolio-enhanced-for-hyperscale-data-center-deployments-mwc16>

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