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SOLUTION BRIEF

Deploying Cloud Native 5G Core Technology for Standalone Networks

Accenture and Intel merge Telco and IT expertise and technology to maximize 5G value

- **Cloud-native 5G core network provides massive scalability benefits, low cost, and the ability to move 5G network infrastructure to the cloud.**
- **Accenture and Intel bring technology and years of experience to help communications service providers (CoSPs) in the planning, implementation and operation of 5G core deployments, including building an ecosystem of partners for success.**

5G offers groundbreaking services because it is the first-ever wireless technology with a combination of Gigabit throughput, massive connectivity, and low latency.

These features enable downloading movies in seconds, supporting thousands of internet of things (IoT) connected sensors, and connecting cars to infrastructure at highways speeds. Delivering these services—and more—requires a similar revolution in network infrastructure, which includes the radio access network (RAN) and the 5G core network.

Both the RAN and the 5G network core have evolved significantly from 4G networks. For example, both 5G RAN and 5G core support cloud native virtualization. This support enables the software to execute on commercial off-the-shelf (COTS) hardware based on Intel® architecture CPUs. This also provides the ability to run the 5G core in the public cloud or on edge cloud servers. Cloud native support offers a dramatic decrease in capital and operating costs and provides the ability to scale network capacity up and down.

What is the 5G Core?

5G core is the heart of a 5G mobile network. It establishes reliable, secure connectivity to the network for end users and provides access to services. The 5G core domain handles a wide variety of essential functions in the mobile network, such as connectivity and mobility management, authentication and authorization, subscriber data management and policy management, among others.

The main functionality of the 5G core architecture includes the user plane function (UPF), which facilitates packet transport through the network, and the control plane, which controls how data packets are forwarded and which services are necessary. After these two main components of the 5G core come a number of policy-based services that are applied to packets when called upon.

In Figure 1 the user equipment (UE) generates data that enters the network through the RAN and then to the UPF. Once data packets enter into the 5G core network they can be processed by the following services: Core Access and Mobility Management Function (AMF), Authentication Server Function (AUSF), Session Management Function (SMF), Network Slice Selection Function (NSSF), Network Exposure Function (NEF), NF Repository Function (NRF), Policy Control Function (PCF), Unified Data Management (UDM), and Application Function (AF).

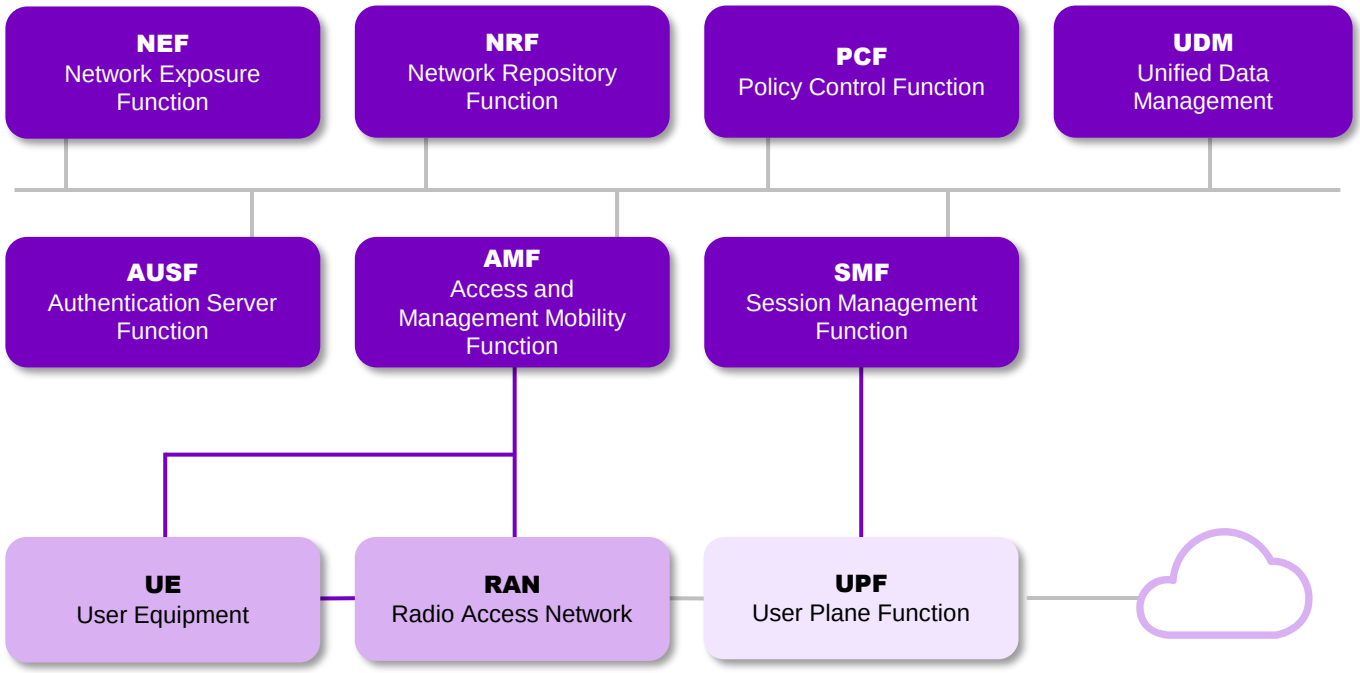

Figure 1. Main functionality of the 5G core (shown in dark purple boxes).

How Does Cloud Native Benefit the 5G Core?

Cloud native is an approach to building and updating apps quickly, while improving quality and reducing risk. More specifically, it's a way to build and run responsive, scalable, and fault-tolerant apps anywhere.

The applications are designed for the cloud and leverage cloud speed and agility. The server is virtualized using "containerization," which packages together the software code with all its necessary operating components to provide all the resources needed for the application. Cloud native introduces the concept of microservices, essentially small software instantiations that can be combined to offer scalability.

Isolated containers have significant portability. Because the containerization software is independent of the compute environment and operating system, that container can be moved and run consistently in any environment and on any infrastructure.

Independently linked 5G core applications are more resilient and manageable, enabling organizations to build and scale quickly and efficiently. The use of microservices can be deployed to scale up certain services that are in high demand.

Fast Growing Cloud Native

By 2022, IDC predicts **70%[1] of enterprises will integrate cloud management applications**, and by 2023, over 500 million digital apps and services will be developed and deployed using cloud-native approaches.

[1] https://www.idc.com/research/viewtoc.jsp?containerId=US45599219

Why Accenture

Accenture is the largest system integrator in the world, serving both enterprise and CoSP customers. This expertise enables Accenture to be an experienced resource for CoSPs building 5G core implementations that use IT systems to deliver telecom services. Accenture's business process expertise is honed from a long history of managing cloud transitions. Engagements start with 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 the 5G core deployment. The company can also operate the network, managing first-level and second-level service and support. The open and disintermediated nature of a 5G network means technology partnerships are critical to success. These deployments require many partners. Accenture helps the CoSP identify the appropriate vendors for success.

Why Intel

Intel provides key semiconductors for servers, networking, and other technologies that deliver the performance needed for 5G core deployments, including the following:

• Intel® Xeon® Scalable CPUs are the server foundation: With built-in AI inference acceleration and network-optimized CPUs, 3rd generation Intel® Xeon® Scalable processors provide high-performance, agile and power-optimized foundation for trusted edge performance that scales.

• Intel® Ethernet Technology: Intel provides a full range of Ethernet products, including the Intel® Ethernet 800 Series with support for up to 100Gbps bandwidth and optimization for CoSP networks

• Intel® Optane™ Persistent Memory (PMem): Intel Optane PMem enables larger memory capacity that is cost effective with data persistence and crypto for data at rest.

• Intel® Agilex™ FPGA and SoC: These devices leverage heterogeneous 3D system-in-package (SiP) technology to deliver very high performance or significant power savings.

• Intel® Select Solutions: These solutions offer a fast and efficient deployment path for verified, reliable infrastructure configurations that support virtual network enhancements and help meet emerging customer workload demands in network communications.

Intel offers CoSPs the silicon, software, and tools they need to bring the full performance and value of 5G to life.

Why Accenture and Intel

Accenture and Intel work together closely to bring the expertise and the right technology to every 5G core deployment. The companies are united in their goals of developing solutions that benefit customers, providing a complete 5G core solution—from technology to business plan to marketing to operation.

The companies' combined strengths and experience enable them to accelerate the adoption of new 5G core technology and services. Next-generation, standalone 5G networks are a huge new opportunity for CoSPs. Together, Accenture and Intel can guide CoSPs to success in embracing cloud native 5G core deployments.

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