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Intel Expands 5G Network Infrastructure Offerings in a $25B Market

Oct. 1, 2020 – Intel today announced an expanded lineup of hardware, software and solutions for network infrastructure, including enhancements to Intel's software reference architecture, FlexRAN; Intel® virtualized radio access network (vRAN) dedicated accelerator; next generation Intel® Xeon® Scalable and D processors (code-named "Ice Lake"); and upgraded Intel Select Solutions for NFVI.

MORE: Intel Expands 5G Network Infrastructure Offerings in a $25B Market (News Byte) | Intel has 15,000 deployments in Edge

FlexRAN Soars to Nearly 100 Licensees

This software reference architecture provides a blueprint to quicken development of vRAN solutions.

Amdocs, a licensee, today announced FlexRAN integration with its SmartRAN analytics to improve network quality of service, enabling them to support testing use cases that are established by the O-RAN Alliance, starting with the massive multi-antenna.

Key FlexRAN features include:

- New optimizations for massive MIMO Midband pipeline to increase bandwidth.
- Added support for Ultra-Reliable Low-Latency Communication (URLLC) aligned to the 3GPP Release 16. URLLC incorporates one of the most anticipated 5G features that supports guaranteed levels of reliability and latency.
- Scalable platform design for various RAN deployments, including macro and indoor, distributed RAN and rural.
- Flexible support for a range of Intel processors, Ethernet adapters, Intel FPGAs and dedicated acceleration cards.
- Broad support and adoption across operators, standards bodies (ORAN Alliance and TIP) and ecosystem solution providers.
- Network slicing framework and platform services, cloud native and virtualized NFVi, test infrastructure, and reference PHY pipeline for LTE, 5G Sub6, and 5G mmWave.

Launching Intel vRAN Dedicated Accelerator ACC100

With the launch of the Intel® vRAN Dedicated Accelerator based on Intel eASIC technology, customers can now offload and accelerate the compute-intensive process of Forward Error Correction, freeing up more processing power within the Intel Xeon processor for increased channel capacity and edge-based services and applications. The ACC100 is sampling to customers now.

Key features include:

- Low-cost, low-power and, and high-performance dedicated accelerator for 4G and 5G vRAN solutions in deployments ranging from cloud to macro, enterprise and rural.
- Seamless integration with FlexRAN software reference architecture and with O-RAN Alliance community solutions with BBDev API support.
- Broad adoption by an ecosystem of partners including Altiostar, ASTRI, Baicells, Comba, H3C, HPE, Mavenir, Nokia, QCT, Radisys, Ruijie, Silicom, Supermicro, ZT Systems.

For customers seeking maximum programmability, the Intel® FPGA Programmable Acceleration Card (Intel® FPGA PAC) N3000 is a highly customizable SmartNIC platform for multi-workload networking infrastructure and application acceleration. It is the leading FPGA solution for vRAN high physical layer (FEC, fronthaul I/O) adoption and is in deployments with partners like Nokia, Altiostar, HCL, and others. It has the right memory mixture designed for network functions, with an integrated network interface card (NIC) in a small form factor that enables high throughput, low latency, low power/bit for a custom networking pipeline.

Next Generation Intel Xeon Processors for Network Infrastructure

Next Generation Intel Xeon processors for network infrastructure offer customers a common architecture that can scale across the network for various performance requirements.

Updates include:

- 3rd Generation Intel Xeon Scalable processors (code named "Ice Lake-SP") will include enhanced I/O, security and Intel® Deep Learning Boost with built-in artificial intelligence features. Intel will deliver network optimized SKUs that are designed for infrastructure use cases that require higher performance per watt, including wireless core, wireless access and network edge workloads, and security appliances. 3rd Generation Intel Xeon Scalable processors will ship to customers end of year.
- Next Generation Intel Xeon D processors (code named "Ice Lake-D") will offer greater levels of integration like built-in networking IP and are designed for form factor constrained environments at the edge, including vRAN, security appliances, enterprise cloud networking, switches and routers, multi-access edge computing, universal CPE, and edge caching. Intel expects to start shipping these processors to customers in mid-2021.

Unmatched Intel Interconnect Technologies

Intel® Select Solutions for NFVI and NFVI Forwarding Platform now support the Intel® Ethernet 800 Series Network Adapter, Intel's latest Ethernet offering. Intel Select Solutions are verified, reliable, infrastructure configurations that accelerate the deployment of virtualized solutions into the network.

Key technologies and solutions include:

- The Intel Ethernet 800 Series Network Adapter improves application efficiency and network performance with innovative and versatile capabilities that optimize 100Gbps high-performance network workloads including NFV and hybrid cloud.
- Intel Select Solutions for NFVI Red Hat, NFVI Ubuntu, and NFVI Forwarding Platform have been upgraded to support the new Intel Ethernet 800 series delivering increased performance, enhanced Dynamic Device Personalization (DDP) and Ethernet Port Configuration tool (EPCT). DDP delivers customizable packet classification resulting in highly efficient packet processing for NFV workloads. Using EPCT, the Intel Ethernet 800 series can be programmed to act as many different physical network adapters, with a maximum throughput of 100Gbps.
- Intel also offers the Tofino series of P4-programmable Ethernet switch ASICs which are used in switch platforms built by our OEM partners including Arista and Cisco. These offerings help network infrastructure owners build flexible, scalable, and co-optimized fabrics for 25/50/100/200 and 400 GbE compute connectivity while providing real-time, end-to-end visibility with In-band Network Telemetry technology.

Intel Atom P5900

As announced earlier this year with the launch of the Intel Atom P5900 processor (code-named "Snow Ridge"), Intel expects to be the leading silicon provider in base stations by 2021. The Intel Atom P5900 is designed to meet critical 5G network needs including high bandwidth and low latency to delivers what's required for 5G base stations today and in the future.

- **Telstra**: a key industry leader, is working with Intel to deliver the P5900 as part of their differentiated RAN solutions in market.
- **Vodafone**: a major proponent of more open and interoperable solutions and has deployed award-winning 5G networks across Europe. These deployments are supported by Intel through a strong partnership and enabled with its Intel Atom P5900 processor.

Optimized Software and Tools

With an enormous market opportunity of $65B in edge silicon by 2024, industries including industrial to retail, healthcare, education and others will benefit from new AI-based edge services to drive better business outcomes. Working with our partners, we have more than 15,000 end customer edge deployments across nearly every industry, including retail, education, healthcare and more. Combining feature-rich hardware technologies with software and tools like OpenNESS, blueprints such as the Converged Edge Reference Architecture, as well as the Intel Smart Edge multi-access edge computing solution, helps developers and communications service providers get to market faster with transformative edge solutions.

Key software and tools include:

- OpenNESS simplifies the orchestration of edge services across diverse network platforms and access technologies to deploy cloud native network edges faster.
- Intel® Distribution of OpenVINO™ Toolkit streamlines deep learning inference across Intel platforms.
- Intel® Smart Edge is a multi-access edge computing platform for on-premises private LTE and 5G networks that simplifies application deployment.

A Series of Recent Successes

Rakuten Mobile: Rakuten's 5G mobile network, launched September 30th, is architected with a breadth of Intel technology. It has served as a blueprint for building a virtualized, flexible architecture. Intel technology enables the cloud-based automation that underpins Rakuten's innovative approach and includes FlexRAN, Intel processors, FPGAs, Ethernet adapters and SSDs across its networks, as well as the OpenNESS toolkit.

SK Telecom: SK Telecom announced a formal collaboration with Hewlett Packard Enterprise (HPE), Intel and Samsung Electronics to accelerate adoption of new technologies in 5G network development. By reducing the time required to validate and integrate technologies from vendors, as well as verify them within the network, the new approach results in more rapid introduction of new hardware and software technologies, like the upcoming 3rd generation Intel Xeon Scalable processors (code-named "Ice Lake-SP"), into SK Telecom's network. This gives SK Telecom a more agile way to deliver new services that enhance the end-user experience. It also provides an industry blueprint for accelerating adoption of new industry technologies.

Verizon: Verizon successfully completed the world's first [fully virtualized end-to-end 5G data session](#) in a commercial network through close coordination with Intel, Samsung and Wind River. Integrating several Intel products – CPUs, FPGA-based accelerators, Ethernet adapters with new precision time protocol and FlexRAN software reference architecture – allowed Verizon to virtualize its radio access network to rapidly respond to customers' latency and computing needs.

About Intel
Intel (Nasdaq: INTC) is an industry leader, creating world-changing technology that enables global progress and enriches lives. Inspired by Moore's Law, we continuously work to advance the design and manufacturing of semiconductors to help address our customers' greatest challenges. By embedding intelligence in the cloud, network, edge and every kind of computing device, we unleash the potential of data to transform business and society for the better. To learn more about Intel's innovations, go to [newsroom.intel.com](#) and [intel.com](#).