INTEL NEWS FACT SHEET

New Intel® Products Accelerate Network Transformation for the 5G Future

New Offerings Empower Communications Service Providers to Prepare for 5G with Powerful, New Infrastructure

Feb. 21, 2017 — With the advent of 5G, society is entering a new era in which data computing will be distributed across the entire network from client to cloud, delivering more personalized and immersive experiences. To prepare for this fundamental shift, it is critical that communications service providers (CoSPs) transform their networks to meet the diverse speed, latency, energy and scale requirements in order to connect billions of smart devices in everything from autonomous cars to wearables to cities.

A key step in this transformation is implementing the right infrastructure, which is why Intel is introducing a new suite of products specifically designed to prepare networks for 5G, including new versions of the Intel® Atom™ processor C3000 product family and Intel® Xeon® processor D-1500 product family, a 25 GbE Intel® Ethernet adapter, and new versions of the Intel® QuickAssist technology adapter. Innovation on the core network is crucial to support not only the increased data traffic, but also the diverse delivery needs of the myriad new uses 5G will enable.

Intel has continually made investments in cloud and access, edge and core networks, radio technologies and compute platforms, and is the right partner to bring leading 5G connectivity technologies and solutions to market, from trial platforms and reference architectures to new modem technologies. The company is also providing optimized software critical to ensure end-to-end compatibility, interoperability and optimization for greater speed and reduced latency.

Table of Contents

The New Intel® Atom™ Processor C3000 Product Family

Performance in an Integrated, Low-Power System-on-Chip (SoC)

Designed to provide performance in dense, low-power network, storage, and Internet of Things products, the new Intel® Atom™ processor C3000 product family provides up to 16 compute cores for an up to 2.3x[1] increase in compute performance versus the previous-generation Intel Atom processor C2750, operates as low as 8.5 watts, and provides up to 19 Mpps of Layer 3 forwarding.[2]

Unique features for the intelligent network edge in segments such as radio access, customer premise equipment (CPE) and security appliances give communications service providers (CoSPs) the ability to take advantage of deploying services at the network edge with software-defined network (SDN) and network functions virtualization (NFV). The processors will feature integrated Intel® QuickAssist technology, enabling CoSP's to help securely process and compress data at the network edge at up to 20 Gbps.

Low thermal design points (TDPs) down to 8.5 watts and extended temperature ratings support passive cooled designs that can work in extreme cold to extreme hot environments. Error-correcting code (ECC) memory delivers accurate data results in environments such as manufacturing floors.

Key Features

- **Thermal design points** down to 8.5 watts to enable maximum energy efficiency.
- **Enhanced performance** from 2 to 16 cores and frequencies from 1.5 Ghz to 2.2 Ghz.
- **Built-in hardware virtualization** to enable dynamic provisioning of services as communication service providers extend network functions virtualization to the network edge. Now including Intel® VT-d.
- **Intel x86 64-bit software support** for scalable performance and broad application compatibility.
- **Integrated Intel QuickAssist technology** with up to 20 Gbps of compression/encryption throughput.
- **4 x 10 GbE integrated Intel® Ethernet** to enable high-speed connectivity to the network.
- **Error-correcting code (ECC) memory** for data integrity and system reliability through automatic data correction.
- **Flexible I/O lanes** providing up to 16 SATA 3.0, 16 PCIE3, and 4 USB 3.0.
- **Extended temperature range and long-life support** for dense network, storage, industrial IoT and autonomous driving environments.
- **DPDK (Data Plane Development Kit)** helps to develop efficient applications for networking workloads.
- **SPDK (Storage Performance Development Kit)** helps to develop efficient applications for storage workloads.

Availability

The Intel Atom processor C3000 product family is currently sampling in the first half of 2017 and will move into production by mid-2017.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. Refer to "Configuration Summary: Network" for detailed configurations. **For complete information,** visit http://www.intel.com/performance.

Intel® Xeon® Processor D-1500 Product Family, Network Series

Advanced Intelligence and Performance in a Dense, Lower-Power System-on-Chip (SoC)

The network series for the Intel® Xeon® processor D-1500 product family offers new options for infrastructure optimization by bringing the performance and advanced intelligence of Intel Xeon processors into a dense, lower-power system-on-chip. Launched in Q4'15, the Intel Xeon processor D family is Intel's third-generation 64-bit system-on-chip and the first SoC based on Intel Xeon processor technology. The new network series products within the Intel Xeon processor D-1500 product family expand on the existing product family. It can be deployed for a variety of workloads including midrange network routing, wireless base stations, warm storage, industrial Internet of Things (IoT), and more.

The new network series integrates Intel® QuickAssist technology and offers two additional ports of 10 gigabit Ethernet connectivity. The integrated Intel QuickAssist technology delivers up to 40 Gbps encryption/compression throughput. The network series can also deliver up to 90 Mpps of Layer 3 forwarding.[3]

Key Features

- **Built-in hardware virtualization** to enable dynamic provisioning of services as communication service providers extend network functions virtualization (NFV) to the network edge.
- **Intel x86 64-bit software support** for scalable performance and broad application compatibility.
- **Enhanced reliability, availability, and serviceability (RAS) features**, including support for error-correcting code (ECC) memory and platform-level error management and resilience.
- **Intel® platform storage extensions** to enable smarter and more cost-effective storage solutions through integrated technologies that accelerate data movement, protect data and simplify data management.
- **Fast encryption and decryption** through Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI) to accelerate data encryption and decryption for security-enabled websites.
- **DPDK (Data Plane Development Kit)** helps to develop efficient applications for networking workloads.
- **SPDK (Storage Performance Development Kit)** to develop efficient applications for storage workloads.

Key Feature Additions to New Network Series

- **4 x 10 GbE integrated Intel® Ethernet** with double the amount of 10 GbE ports versus the current product family (four ports versus two ports previously).
- **Integrated Intel QuickAssist technology** with up to 40 Gbps of compression/encryption throughput.
- **Reduced design footprint** with integrated Intel QuickAssist technology versus using a discrete Intel QuickAssist technology chipset on current Intel Xeon processor D-1500 product designs. Integration of Intel QuickAssist technology delivers high-performance while at the same time eliminating discrete components to lower power consumption and reduce physical space.

Availability

The Intel Xeon processor D-1500 product family, network series is currently sampling in the first half of 2017 and will move into production by mid-2017. More details on product features will be provided when the products are available in production.

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Intel® Ethernet Network Adapter XXV710 Product Family

Delivering 25 Gigabit Bandwidth and Usability Enhancements for Network Functions Virtualization (NFV) and Cloud Workloads

Driven by the higher bandwidth requirements of public and private cloud data centers and network infrastructure services, 25 GbE is the next higher Ethernet speed that will be widely adopted by the industry. 25 GbE delivers the same bandwidth at lower capital expense when compared with 10GbE. For example, two 25 GbE ports versus five 10 GbE ports to deliver 50 Gb bandwidth. With 25 Gb backward compatibility to 10 Gb, it provides a natural upgrade migration path for those customers who need more bandwidth. To meet customer requirements, Intel is adding the 25 GbE Intel® Ethernet Network Adapter XXV710 product family to its 700 series of network adapters.

Intel is adding the Intel Ethernet Network Adapter XXV710 to Intel's broadly adopted 10 GbE and 40 GbE 700 Series network adapters. Intel Ethernet Network Adapter XXV710 product family will support SFP28 connectors enabling customers to have network connections via either direct attach Twinax copper cables, or SR and LR optical modules. The Intel Ethernet Network Adapter XXV710 product family brings all the server and network virtualization capabilities that are available in the shipping 700 Series but at 25 GbE speed.

Designed to be used in server, network and storage platforms in cloud, communications, storage and enterprise market segments, the Intel Ethernet Network Adapter XXV710 product family is expected to be adopted by key systems OEMs, ODMs and system integrators serving those segments.

Key Product Features

- Single-port and dual-port 10 GbE/25 GbE support
- PCI Express* (PCIe) 3.0, x8
- Support both PCI Express and Open Compute Project (OCP) form factors
- IEEE 802.3by spec and 25GEthernet.org spec compliance
- Network virtualization offloads including VXLAN, NVGRE, GENEVE, VXLAN-GPE with Network Service Headers (NSH), and Multi-Protocol Label Switching (MPLS)
- Intel® Ethernet Flow Director (Intel® Ethernet FD) for hardware-based application traffic steering
- DPDK (Data Plane Development Kit) helps to develop efficient applications for networking workloads
- Excellent small packet performance for network appliances and Network Functions Virtualization (NFV)
- Intelligent offloads to enable high performance with Intel® Xeon® processor-based servers
- I/O virtualization innovations for maximum performance in a virtualized server
- Adaptive link establishment enables interoperability with other 25 GbE capable switches and host controllers

Availability

The Intel Ethernet Network Adapter XXV710 product family samples are available now. The adapters will go into production in the first quarter of 2017.

Intel® QuickAssist Technology Adapter

Providing Crypto and Compression Acceleration

Intel® QuickAssist technology provides hardware acceleration to assist with the performance demands of securing and routing internet traffic and other workloads, such as compression and wireless 3G and 4G LTE algorithm offload, thereby reserving processor cycles for application and control processing. The Intel QuickAssist technology adapter family are PCIe add-in cards that provide customers with a scalable, flexible and extendable way to offer Intel QuickAssist technology crypto acceleration and compression capabilities to their existing product lines.

Key Product Feature

Integrated Intel QuickAssist technology with up to 100 Gbps of compression/encryption throughput.

Availability

The Intel QuickAssist technology adapter is currently sampling in the first half of 2017 and will move into production by mid-2017. More details on the features of this product will be available when available in production.

[1] Baseline: 1-Node, 1 x Intel Atom processor C2750 on Edisonville with 32 GB Total Memory on Red Hat Enterprise Linux* 7.0 kernel 3.10.0-123 using (No Software). Data Source: Request Number: 149, Benchmark: SPECint*_rate_base2006, Score: 103 Higher is better. New Configuration: New Intel Atom C3000 Processor using Ubuntu Linux 16.04 LTS. Data Source: Request Number: 2485, Estimated Score: 246.

[2] L3 Packet forwarding performance based off internal Intel measurement for Intel Atom processor C3000.

[2] L3 Packet forwarding performance based off internal Intel measurement for Intel Xeon processor D-1500, network series.

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Intel technologies’ features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at intel.com.

Cost reduction scenarios described are intended as examples of how a given Intel-based product, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Intel does not guarantee any costs or cost reduction.