May 10, 2022

Intel Announces New Cloud-to-Edge Technologies to Solve Challenges of Today and Tomorrow

At Intel Vision 2022, the company showcases how education, finance, manufacturing, medicine, transportation and defense industries are transformed through Intel silicon, software and services.

NEWS HIGHLIGHTS

- Argonne National Laboratories, Blue White Robotics, Bosch, Dell, Federated Wireless, Lenovo, and Nourish + Bloom Market are among the customers and partners highlighting how Intel technology helps fuel digital transformation.
- New product announcements include launch of Intel's Habana® Gaudi®2 AI processor for training data center workloads and 12th Gen Intel® Core™ HX processors that are perfect for hybrid work. Intel also adds details on its data center GPU (code-named Arctic Sound-M, ATS-M), 4th Gen Intel® Xeon® Scalable processor (code-named Sapphire Rapids) and Intel's infrastructure processing unit (IPU) roadmap.
- New software and services include Project Apollo for smoother enterprise AI deployments, plus Project Endgame and Intel® On Demand for compute on demand and the flexibility to meet the needs of evolving workloads.

GRAPEVINE, Texas--(BUSINESS WIRE)--

Today at its inaugural Intel Vision event, Intel announced advancements across silicon, software and services, showcasing how it brings together technologies and the ecosystem to unlock business value for customers today and in the future. Among the benefits highlighted across real-world examples are improved business results and insights, reduced total cost of ownership, accelerated time to market and value, and positive global impact.

This press release features multimedia. View the full release here: https://www.businesswire.com/news/home/20220510005669/en/

At its inaugural Intel Vision event on May 10, 2022, Intel announced advancements across silicon, software and services, showcasing how it brings together technologies and the ecosystem to unlock business value for customers today and in the future. (Credit: Intel Corporation)

More: Intel Vision 2022 (Press Kit) | Intel Vision 2022 Keynote (Livestream/Replay) | Intel Vision 2022: Day 1 Keynote (Live Blog) | Intel's Habana Labs Launches Second-Generation AI Processors for Training and Inferencing (News)

"We are in the most dynamic global market of our lifetime. The challenges organizations face today are complex and interconnected, and success depends on their ability to quickly

adopt and maximize leading-edge technologies and infrastructure," said Intel CEO Pat Gelsinger. "Today, we are excited to share how we are applying our scale, resources and the magic of silicon, software and services to help customers and partners accelerate digital transformations in this complex environment."

New Silicon, Software and Services to Fuel Digital Transformations

The technology superpowers of artificial intelligence, ubiquitous computing, pervasive connectivity and cloud-to-edge infrastructure are fueling unprecedented demand for semiconductors and opening the door to infinite possibilities, from a truly hybrid workforce to entirely new immersive experiences. At the same time, businesses face growing pressures around supply chain, security, sustainability and the ability to adapt to the complexity of new workloads. Intel is working to help address these challenges with the introduction of new hardware, software and services from cloud to edge to client.

Today's announcements include:

- **A major leap in deep learning processing with Habana Gaudi2:** Gaudi processors are used for the highest end deep learning AI training and are known for their ability to enable customers to train more and pay less. Launching today, Habana Gaudi2 and Greco AI accelerators are built on a single software stack, Synapse AI, that easily supports different architectures, enabling end-users to take advantage of the processors' performance and efficiency. In addition, Gaudi2 delivers two times better AI training performance compared with current in-market A100-based offerings for key vision and NLP workloads[1].
- **4th Gen Intel Xeon Scalable sets a new standard for modern performance:** Intel is shipping initial SKUs of 4th Gen Intel Xeon Scalable processors (code-named Sapphire Rapids) today. These are the first of many SKUs, with more due to ramp throughout the remainder of the year. The 4th Gen Intel Xeon Scalable processors deliver exceptional overall performance, will support DDR5, PCIe Gen5 and CXL 1.1, and are equipped with new integrated accelerators that deliver up to 30x performance versus the prior generation through software and hardware optimizations for AI workloads[2]. For telco networks it also has new capabilities that deliver up to two times[3] capacity gains for virtual radio access network (vRAN) deployments. In high performance computing, Intel Xeon processors, code-named Sapphire Rapids with high bandwidth memory (HBM), will dramatically boost memory bandwidth available to the processor, super-charging high-performance computing.
- **AI made more accessible for enterprises through Project Apollo:** In partnership with Accenture, Intel kicked off Project Apollo, a program that will provide enterprises with more than 30 open-source AI solutions kits that are optimally designed to make AI more accessible to customers in on-prem, cloud and edge environments. The first Project Apollo kits will be released in the next few months.
- **Preparing for the data center of the future with IPUs:** Intel unveiled its IPU roadmap extending through 2026, featuring new FPGA + Intel architecture platforms (code-named Hot Springs Canyon) and the Mount Morgan (MMG) ASIC, as well as next-generation 800GB products. IPUs are dedicated products with hardened acceleration for infrastructure compute needs, allowing businesses to accomplish tasks quicker and solve problems faster.
- **Single GPU solution for media transcode, visual graphics and inference in the**

cloud: Intel's data center GPU, code-named Arctic Sound-M (ATS-M), is the industry's first discrete GPU with an AV1 hardware encoder. ATS-M is a versatile GPU with leadership transcode quality and performance targeting 150 trillion operations per second (TOPS). Developers will be able to easily design for ATS-M with an open software stack through oneAPI. ATS-M will be available in two form factors and in more than 15 system designs from partners including Dell Technologies, Supermicro,, Inspur, and H3C . It will launch in 2022's third quarter.

- **New 12th Gen Intel Core HX processors for hybrid work:**The company completed the 12th Gen family with the launch of the new 12th Gen Intel Core HX processors. Created for professionals who need maximum performance and flexibility to navigate a hybrid environment, and with up to 16 cores and clock speeds up to 5 GHz, the Intel Core i9-12900HX processor is the world's best mobile workstation platform[4].

Recognizing that users also want the flexibility to tap into compute resources when and where they need them, Intel provided a first concept demonstration of its software infrastructure initiative: Project Endgame. Applications can take advantage of this software infrastructure layer that enables devices to harness computing resources from other devices within the network to provide an always-available, low latency, continual compute service. For example, a demanding GPU workload running on one device can sense and tap into additional graphics processing horsepower from a more powerful machine to enhance the user's experience. Project Endgame is in development, and Intel will begin beta testing the first milestones of the technology this year.

Today's announcements also included an early look at steps Intel is taking to enable service models across the ecosystem. The introduction of the Intel On Demand service offering helps enterprises meet the needs of evolving workloads, product sustainability and opportunities to scale systems near the data. Currently offered through select partners HPE GreenLake, Lenovo TruScale and PhoenixNAP's Bare Metal Cloud, Intel introduced a new consumption business model to enable customers to align their infrastructure with their business needs and requirements.

Working Together to Create World-Changing Technology

The power and positive impact of Intel's broad portfolio truly comes to life through examples that show not only how the hardware, software and services work together, but also the deep way that Intel collaborates with customers, partners and the ecosystem.

Highlights from today include:

- **High performance computing to solve the world's most complex challenges:** Argonne National Laboratories is on track to deliver 2 exaflops of peak performance with the Aurora supercomputer running on the Intel Xeon processor, code-named Sapphire Rapids with High Bandwidth Memory (HBM), and the Intel data center GPU, code-named Ponte Vecchio, with Intel oneAPI providing developers seamless system integration. During today's opening keynote, Rick Stevens, laboratory director for Computing, Environment and Life Science of Argonne, showed the installation of the Aurora supercomputer for the first time, discussing how it will help solve some of humankind's most complex problems, such as more accurate climate predictions and discovery of new cancer treatments, while making exascale accessible for more research and development, and innovation.

- **Confidence with confidential computing:** In an increasingly dynamic regulatory landscape, global companies must address several considerations when determining how to use regulated data to effectively train and develop neural networks. Bosch and Intel collaborated on a research effort to develop a confidential AI solution that allows Bosch to train its neural networks confidentially in the public cloud. To help achieve this at scale, Bosch Corporate Research has built a confidential AI platform powered by Intel® Software Guard Extensions available with 3rd Gen Intel® Xeon® Scalable platforms.
- **Agriculture autonomy with private wireless networks:** Intelligent edge solutions have the potential to transform food cultivation by helping farmers increase yields and operational efficiency while addressing labor shortages and human error. Data analytics also offer the opportunity to deliver insights that help farmers to increase yields and improve crop health while reducing the resources they require. Blue White Robotics developed a new type of autonomous agricultural solution that transforms a grower's existing equipment into a fleet of autonomous tractors connected to an internet-based management platform. With help from Intel and Federated Wireless, Blue White Robotics made this a scalable solution that leverages Intel® Smart Edge and Intel® Xeon® D processors, and employs the power of edge computing and shared spectrum to create a private wireless network on any farm anywhere.
- **Frictionless retail experience:** The pandemic has changed the way people want to shop, with many preferring stores with touchless or self-checkout options. Nourish + Bloom Market set out to design a frictionless shopping experience that embraced automation without replacing jobs. To accomplish this, Nourish + Bloom worked with Intel and UST, a leading transformation solutions company, to tap into the collective technical knowledge for building innovations like a next-generation self-checkout using computer vision technology and a fully autonomous store shopping experience.
- **Tech for good:** Intel works across the ecosystem to drive positive global change for future generations, such as working to further reduce its direct and indirect greenhouse gas emissions and ensuring the brightest future and next-generation skills for tomorrow's workforce through programs like Intel's AI Festival and collaboration with the Hidden Genius Project and Autodesk.

This is just the beginning of news from Intel Vision. Tune in at 9 a.m. CDT (7 a.m. PDT) Wednesday to hear more from Intel chief technology officer Greg Lavender on how Intel is helping address the growing security needs of businesses, plus even more.

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.

[1] See the Vision page at www.Intel.com/PerformanceIndex for workloads and configurations. Results may vary.

[2] For workloads and configurations visit www.Intel.com/PerformanceIndex. Click on the

Events tab and Innovation Event Claims. Results may vary.

[3] Claim estimated as of Feb. 20, 2022, based on Sapphire Rapids architecture improvements versus 3rd generation Intel Xeon Scalable at similar core counts on a test scenario using FlexRAN software. Results may vary.

[4] Based on performance estimated with measurements on 12th Gen Intel Core i9-12900HX with RTX 3080Ti against Intel Core i9-11980HK with RTX 3080, Intel Core i9-12900HK with RTX 3080Ti, AMD Ryzen 9 6900HX with RTX 3060, AMD Ryzen 9 6900HS with Radeon 6700S, Intel Core i7-12700H with RTX 3050Ti and Apple M1 Max MacBook Pro with 32 core integrated GPU. Best available compilers selected for all processors. Binaries compiled with ICC for Intel/AMD, binaries compiled with Xcode 13.1 for Apple. The metric used is the geometric mean of C/C++ integer benchmarks in SPEC*int_rate_base2017 2021.2 LLVM (1-copy) and SPEC*int_rate_base2017 2021.2 LLVM (n-copy). See www.intel.com/PerformanceIndex for additional workload and configuration details. Results may vary. Other names and brands may be claimed as the property of others.

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Danielle Coe
1-206-498-2857
intelPR@we-worldwide.com

Source: Intel Corporation