

NVIDIA Unveils DRIVE Thor — Centralized Car Computer Unifying Cluster, Infotainment, Automated Driving, and Parking in a Single, Cost-Saving System

Wielding 2,000 Teraflops of Performance, Platform Integrates Next-Gen GPU and Transformer Engine to Support AI Workloads for Safe and Secure Autonomous Vehicles; ZEEKR First Customer, With Initial Production Vehicles Planned for Early 2025

GTC -- NVIDIA today introduced NVIDIA DRIVE™ Thor, its next-generation centralized computer for safe and secure autonomous vehicles.

DRIVE Thor, which achieves up to 2,000 teraflops of performance, unifies intelligent functions — including automated and assisted driving, parking, driver and occupant monitoring, digital instrument cluster, in-vehicle infotainment (IVI) and rear-seat entertainment — into a single architecture for greater efficiency and lower overall system cost.

The next-generation superchip comes packed with the cutting-edge AI capabilities first introduced in the NVIDIA Hopper™ Multi-Instance GPU architecture, along with the NVIDIA Grace™ CPU and NVIDIA Ada Lovelace GPU. DRIVE Thor with MIG support for graphics and compute uniquely enables IVI and advanced driver-assistance systems to run domain isolation, which allows concurrent time-critical processes to run without interruption. Available for automakers' 2025 models, it will accelerate production roadmaps by bringing higher performance and advanced features to market in the same timeline.

"Advances in accelerated computing and AI are moving at lightspeed," said Jensen Huang, founder and CEO of NVIDIA. "DRIVE Thor is the superhero of centralized compute, with lightning-fast performance to deliver continuously upgradable, safe and secure software-defined supercomputers on wheels."

Signaling the transportation industry's support for this new supercomputing architecture, Geely-owned automaker ZEEKR announced it will integrate DRIVE Thor on its centralized vehicle computer for its next-generation intelligent electric vehicles, starting production in early 2025.

ZEEKR CEO An Conghui said: "ZEEKR users demand a luxury experience that includes the latest technology and safety features. NVIDIA DRIVE Thor will support our mission of providing cutting-edge technology that fulfills the needs of our customers and ensures ZEEKR remains at the forefront of tomorrow's innovations."

DRIVE Thor supports multi-domain computing, isolating functions for automated driving and IVI. Typically, dozens of electric control units are distributed throughout a vehicle to power individual functions. With DRIVE Thor, manufacturers can efficiently consolidate many functions on a single system-on-a-chip (SoC), which eases supply constraints and simplifies vehicle-design development, resulting in significantly lower cost, less weight and fewer cables.

DRIVE Thor is the first AV platform to incorporate an [inference transformer engine](#), a new component of the Tensor Cores within NVIDIA GPUs. With this engine, DRIVE Thor can accelerate inference performance of transformer deep neural networks by up to 9x, which is paramount for supporting the massive and complex AI workloads associated with self driving.

Another advantage of DRIVE Thor is its 8-bit floating point (FP8) capability. Typically, developers lose neural-network accuracy when moving from 32-bit FP data to 8-bit integer format. DRIVE Thor features 2,000 teraflops of FP8 precision, allowing the transition to 8-bit without sacrificing accuracy.

The new superchip also uses the latest [NVLink®-C2C](#) chip interconnect technology, while running multiple operating systems. The advantage of the NVLink-C2C is its ability to share, schedule and distribute work across the link with minimal overhead. This equips automakers with the compute headroom and flexibility to build software-defined vehicles that are continuously upgradeable through secure, over-the-air software updates.

"The shift to software-defined vehicles with centralized electronic architectures is accelerating, driving a need for more powerful and more energy-efficient compute platforms," said Sam Abuelsamid, principal research analyst at Guidehouse Insights. "The virtualization, high-speed data transfer and massive processing performance of NVIDIA DRIVE Thor can enable safer vehicles, better user experiences and potential new revenue streams."

DRIVE Thor is designed for the highest levels of functional safety. NVIDIA has invested more than 15,000 engineering years into safety across its full stack. NVIDIA is the only company with a unified safety approach across its entire system, from the data center to the fleet. Safety is incorporated into every step of the company's development process — including design, production and vehicle operation.

The DRIVE Thor SoC and AGX board are developed to comply with ISO 26262 standards. The software stack is designed for both ISO 26262 and ASPICE compliance. The Thor SoC and software are also designed and produced in alignment with ISO 21434, which provides the pathway for compliance with regulatory security such as UNECE Regulation 155.

DRIVE Thor replaces NVIDIA DRIVE Atlan™ and will be the follow-on to DRIVE Orin™, which is currently in production and delivers 254 TOPS of performance.

Broad Industry Support for DRIVE Thor

[Read more](#) (pdf) from transportation leaders who are enthusiastic about DRIVE Thor.

Existing DRIVE Orin customers can take advantage of the platform's scalable architecture to easily transition current development efforts to DRIVE Thor. Developers can reap the benefits of their software investments across multiple product generations as they design for future production roadmaps.

Watch the NVIDIA [GTC keynote address](#), in which Huang announced NVIDIA DRIVE Thor and other key automotive developments with IVI, mapping, simulation and more. [Register free](#) for GTC, which runs through Thursday, Sept. 22.

About NVIDIA

Since its founding in 1993, [NVIDIA](#) (NASDAQ: NVDA) has been a pioneer in accelerated computing. The company's invention of the GPU in 1999 sparked the growth of the PC gaming market, redefined computer graphics and ignited the era of modern AI. NVIDIA is now a full-stack computing company with data-center-scale offerings that are reshaping industry. More information at <https://nvidianews.nvidia.com/>.

Certain statements in this press release including, but not limited to, statements as to: the benefits, impact, performance, features and availability of our products and technologies, including NVIDIA DRIVE Thor; advances in accelerated computing and AI moving at lightspeed; the transportation industry's support for NVIDIA DRIVE Thor; the shift to software-defined vehicles with centralized electronic architectures accelerating; and the expectation of third-parties about the benefits, impact, performance and features of NVIDIA DRIVE Thor and to incorporate or support DRIVE Thor in their products and/or services are forward-looking statements that are subject to risks and uncertainties that could cause results to be materially different than expectations. Important factors that could cause actual results to differ materially include: global economic conditions; our reliance on third parties to manufacture, assemble, package and test our products; the impact of technological development and competition; development of new products and technologies or enhancements to our existing product and technologies; market acceptance of our products or our partners' products; design, manufacturing or software defects; changes in consumer preferences or demands; changes in industry standards and interfaces; unexpected loss of performance of our products or technologies when integrated into systems; as well as other factors detailed from time to time in the most recent reports NVIDIA files with the Securities and Exchange Commission, or SEC, including, but not limited to, its annual report on Form 10-K and quarterly reports on Form 10-Q. Copies of reports filed with the SEC are posted on the company's website and are available from NVIDIA without charge. These forward-looking statements are not guarantees of future performance and speak only as of the date hereof, and, except as required by law, NVIDIA disclaims any obligation to update these forward-looking statements to reflect future events or circumstances.

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