NVIDIA

DO MORE, FASTER
Train in Real-World Scenarios
With the Power of NVIDIA RTX

Screen image: Aechelon

Advance Simulation and Training with NVIDIA RTX

The constant increase in capabilities, performance, and complexities of aircraft, vehicles, and mission-critical systems places growing demands to operate and maintain complex simulation and training systems safely. Using powerful GPUs and advanced technology in these systems is crucial to supplement in-person training and significantly shorten the learning cycle.

Next-generation trainers and simulators are moving to multi-GPU solutions to maximize performance. Shifting to multi-GPU configurations provides for increased fidelity, consolidation of redundant processing and minimizes the amount of hardware required to drive large display solutions. Multi-GPU solutions help price-sensitive customers who want to optimize cost-effectiveness when evaluating total ROI over the life of the solution. In addition to a reduced total cost of ownership, some additional benefits of a multi-GPU system are a smaller hardware footprint, fewer licenses, reduced heat generation, and reduced power consumption.

More customers are implementing virtual reality (VR), augmented reality (AR), mixed reality (MR), and extended reality (XR) technologies, particularly for maintenance simulations, in training systems to enhance knowledge and skills at a reduced cost and risk. In addition, the proliferation of big data enables more effective uses of artificial intelligence (AI) to enhance learning and safety in training and ultimately improve human performance in real-world scenarios. Security concerns often require keeping computing equipment and data secure in the data center while maintaining accessibility to simulation and training applications and data. As government agencies work to support an increasingly mobile workforce, ensuring the security of sensitive data while still providing access is essential.

NVIDIA Omniverse™, a platform for scalable multi-GPU real-time, true-to-reality simulation, is opening up new potential for next-generation training and simulation solutions. Growing interest in using Omniverse to create simulated environments and deliver high-performance simulation in real time will drive the need for more powerful GPUs with large GPU memory.

NVIDIA RTX A5500 for Training and Simulation

The NVIDIA RTX™ A5500, based on the latest NVIDIA Ampere GPU architecture, provides the power, performance, memory, and features required for immersive simulation and training systems. These immersive, full-body experiences with real-time feedback offer an interactive way for responders to familiarize themselves with equipment and processes and be more confident and skilled in tools, tactics, and timing used in real-world situations. With NVIDIA virtual GPU (vGPU) software support, you can access the power of the RTX A5500 from anywhere. NVIDIA entirely builds NVIDIA RTX GPUs with long product life cycles and professional drivers that include many unique hardware and software features that can significantly simplify simulator configurations. NVIDIA RTX GPUs can offer incredible visual quality and high performance, and unlock the potential of real-time simulated environments.

NVIDIA RTX A5500 FOR SIMULATION AND TRAINING

> Enabling real-time and hyper-realistic training and simulations

KEY SOLUTION TECHNOLOGIES

> Ray tracing
> Artificial intelligence
> Multi-display
> VR
> Virtualization

KEY SOLUTION PROOF POINTS

> NVIDIA RTX A5500 provides the level of performance required for computational fluid dynamic models to be executed and visualized in real-time 3D for simulator use cases

> Help the military address critical large-scale missions from battle space training and multi-domain readiness to exploring war gaming scenarios

WHAT'S IN IT FOR ME?

> Complete hardware and software support
> Enterprise-level support at no additional cost
> Long product life cycles, multi-year deployments
> Enterprise management tools and drivers for stability and reliability

Advanced Multi-Display Technologies to Drive Immersive Simulation and Training

NVIDIA Quadro Sync II

Add-on card that enables synchronization of display outputs of up to 4 RTX A5500 GPUs per sync card and up to 32 total displays or projectors to provide multi-display solutions free of visual artifacts with no impacts on performance.

NVIDIA Mosaic

Enables applications to span up to 16 high-resolution displays as a single desktop without changes to the application software.

NVIDIA Warp and Blend

Enables the display of visually correct images on curved display surfaces without seams or bright spots.

Projector Overlap

Creates a single, unified desktop image from multiple projectors that support blending at projector overlap points for artifact-free displays.

Display Connectors

Four DisplayPort 1.4a connectors, with support for up to four 5K displays and two 8K displays. Drive 8K displays at 60Hz with a single cable using Display Stream Compression (DSC).


NVIDIA MOSAIC

PROJECTOR OVERLAP

Impressive Power and Advanced Visual Technologies to Replicate Reality on Your Desktop

	CUDA CORES 10,240 NVIDIA Ampere architecture-based CUDA® cores provide over 34 TFLOPS of single-precision floating-point (FP32) compute performance for graphics-intensive visualization workloads and GPU-accelerated compute tasks.
	RT CORES 80 second-generation RT Cores provide real-time ray tracing for compelling photo visual simulations, with the ability to run concurrent compute tasks such as ray tracing simultaneously with shading or denoising tasks.
	TENSOR CORES 8320 third-generation Tensor Cores accelerate AI compute tasks for AI-augmented applications. By leveraging AI in Tensor Cores, simulations can achieve higher frame rates and visual fidelity with DLSS technology.
	24GB OF GPU MEMORY The RTX A5500 features 24GB of GDDR6 memory with ECC (error correction code). Third generation NVIDIA® Link™ provides 48GB of combined memory with two A5500 cards, providing the memory needed for large, compelling simulation and training deployments.
	VIRTUAL REALITY With VR-enabled training and simulation scenarios, safety-critical professionals can prepare for high-risk situations safely and affordably. These immersive, full-body experiences with real-time feedback provide an interactive way for responders to familiarize themselves with equipment and processes and be more confident and skilled in tools, tactics, and timing used in real-world situations.
	VIRTUAL WORKSTATION SOFTWARE The NVIDIA RTX A5500 can be virtualized to provision powerful virtual workstations, which keeps computing resources and data secure while providing access to visual computing resources from anywhere.

Deliver Simulated Training for Real-World Situations With the NVIDIA RTX A5500

RTX A5500 is the ideal solution for custom-designed, interactive training and simulation programs. With specialized software and hardware for synchronization, scalability, real-time hyperrealism, and AR/VR, NVIDIA RTX A5500 helps deliver realistically immersive learning experiences with real-time feedback to help pilots, responders, or other safety-critical professionals prepare for real-world situations.

Use Cases

MISSION SIMULATION TRAINING	PART-TASK TRAINING	MAINTENANCE, REPAIR, OVERHAUL (MRO)	FEATURE-DENSE TERRAIN	VR/AR/MR SOLUTIONS	VIRTUALIZATION
> Advanced simulation training and visualization give military and safety-critical professionals agility in modeling and advanced synthetic training.	> Part task methods in a simulated training environment provide significant benefits in reducing overall training time on expensive training systems and enabling more effective whole task transfer performance.	> Flight simulators can help trainees develop the required critical skills to maximize MRO efficiency. In these simulators, trainees can fully experience complex processes and organizational issues.	> The creation of simulated terrain is critical for training, mission rehearsal, visualization, and terrain analysis. > Powerful graphics and rendering capabilities can help deliver complex, high-fidelity environments for simulation and training.	> VR-based training devices provide pilot trainees with more practice opportunities at a lower cost than dome-based or full-flight simulators. > The use of VR/AR/MR technologies for immersive, high-fidelity virtual simulation environments improves task performance and efficiency of training while decreasing overall training time.	> NVIDIA virtual GPU solutions can help increase security, improve mobility, and lower maintenance costs for flight simulation and training.