

Executive Summary

This document compares three recently released unified memory systems capable of 128GB+ RAM: the Apple Mac Studio (M5 Max / M5 Ultra), the NVIDIA DGX Spark (GB10 Grace Blackwell), and the AMD Ryzen AI Max+395. The Mac Studio offers the highest memory capacity (up to 512GB) and bandwidth (1.2 TB/s) at a premium price. The DGX Spark provides the best value for a 128GB setup with NVIDIA CUDA support. The AMD Ryzen AI Max+395 is a Windows-friendly option with a discrete GPU but limited memory headroom. The choice depends on OS preference, model size requirements, and software ecosystem.

1. Apple Mac Studio (M5 Max / M5 Ultra)

Release & Availability

Released: August 2026

Availability: Available starting September 22, 2026 [11]

Memory: Unified memory, 128GB+, up to 512GB on M5 Ultra

Memory bandwidth: 1.2 TB/s

Pricing

Starting price: M5 Max chip from \$2,499; M5 Ultra 96GB/1TB from \$5,499 [14]

512GB configuration: \$18,299 before tax (limited at launch) [14]

Pros

Highest memory capacity (up to 512GB) with 1.2 TB/s bandwidth — ideal for large model loading on local LLM setups

Full desktop experience with macOS, Core ML, MLX, and Metal tooling

Upgradeable memory across multiple configurations

Cons

Expensive — entry point \$5,499; 512GB config reaches ~\$18,000

macOS only; no CUDA support (requires Apple frameworks)

Higher absolute pricing for 128GB+ compared to alternatives

2. NVIDIA DGX Spark (GB10 Grace Blackwell)

Release & Availability

Released: 2026 (price raised from \$3,999 to \$4,699 in February 2026) [14]

Availability: Currently available at \$4,699 [14]

Memory: 128GB LPDDR5x, fixed; expandable to 256GB with two units networked

Memory bandwidth: 273 GB/s

Pricing

Starting price: \$4,699 (only configuration available) [14]

Two-unit networked: ~\$9,398 combined for 256GB total memory [14]

Pros

Lowest starting price — best value for a 128GB unified memory system

Published AI compute figure (up to 1 PFLOP FP4, sparse theoretical)

Full CUDA ecosystem with NIM, TensorRT-LLM, and NVIDIA AI stack preinstalled

Cons

Fixed 128GB memory — no within-unit expansion

Linux-based OS, not macOS

Lower memory bandwidth (273 GB/s vs 1.2 TB/s on M5 Ultra)

240W power supply; heavier appliance

3. AMD Ryzen AI Max+395 (LPDDR5X)

Release & Availability

Released: 2025 [2][3]

Availability: Available through retailers (e.g., Best Buy) [2]

Memory: 128GB LPDDR5X-8000 unified system memory

Memory bandwidth: ~64 GB/s (LPDDR5X-8000 standard) [3]

Pricing

Estimated range: ~\$1,000–1,500 (not confirmed from sources; retailer listing referenced) [2]

Model capacity: Fine-tune ~70B LLMs (e.g., Llama 3) locally [2]

Pros

128GB LPDDR5X provides high memory bandwidth at relatively affordable price

Discrete Radeon 8060S for dedicated graphics in 8K rendering and video editing

Windows ecosystem compatibility

Comparison	Feature	Apple Mac Studio (M5 Ultra)	NVIDIA DGX Spark	AMD Ryzen AI Max+395
	Memory (128GB+)	Up to 512GB	Fixed 128GB (256GB with 2 units)	128GB LPDDR5X
	Memory bandwidth	1.2 TB/s	273 GB/s	~64 GB/s (est.)
	Starting price	\$5,499+ [14]	\$4,699 [14]	~\$1,000–1,500 (est.) [2]
	OS	macOS [11]	Linux (DGX OS) [14]	Windows
	AI compute	Up to 4.5× M3 Ultra [14]	1 PFLOP FP4 (theoretical) [14]	50 TOPS NPU [2]
	Model capacity (local)	Inference up to ~200B params [11]	Inference ~200B; FT up to 70B [14]	FT ~70B LLMs [2]
	Best for	macOS users, largest models in memory [11]	CUDA workloads, lower price [14]	Windows users, discrete GPU [2]
	Software stack	Core ML, MLX, Metal [11]	CUDA, NIM, TensorRT-LLM [14]	AMD Radeon, Windows [2]

Sources: [11] Apple Mac Studio product page & launch coverage [14] Akash Network comparison & NVIDIA DGX Spark product page [2] Best Buy product listing [3] NotebookCheck/GeekPC reviews. Pricing and availability are as of August–September 2026.