



M6 + M5 ULTRA

Apple has decided that the humble desktop computer could do with a serious shot of

adrenaline. Enter M6 in the new Mac mini and M5 Ultra in the new Mac Studio, two new Apple silicon chips promising big gains in performance, graphics and, naturally, AI. One is aimed at pretty much everyone, while the other is for people whose idea of a “light workload” involves rendering a feature film before lunch.

M6 is the particularly interesting one for everyday users. Built using Apple’s first 2-nanometre process, it packs a new 12-core CPU with two super cores, four performance cores and six efficiency cores. In other words, it has the right tools for everything from browsing and office work to compiling code, editing photos and tackling increasingly ambitious AI tasks. Apple claims it delivers the world’s fastest single-threaded performance, with up to 1.2x faster multithreaded performance than M5 and up to 2.4x the performance of M1.

The graphics department gets a healthy upgrade, too. M6 has a 12-core GPU, with a Neural Accelerator built into every core. That helps push peak GPU compute for AI almost 30 per cent higher than M5, while also bringing faster rendering, higher frame rates and more convincing graphics. There’s even a 50 per cent boost to geometry rates, which should make complex visual workloads considerably less of a slog. For gamers and creative types, that extra graphical muscle should translate into smoother performance, while developers can put it to work on increasingly sophisticated local AI applications. But AI is arguably where M6 gets most

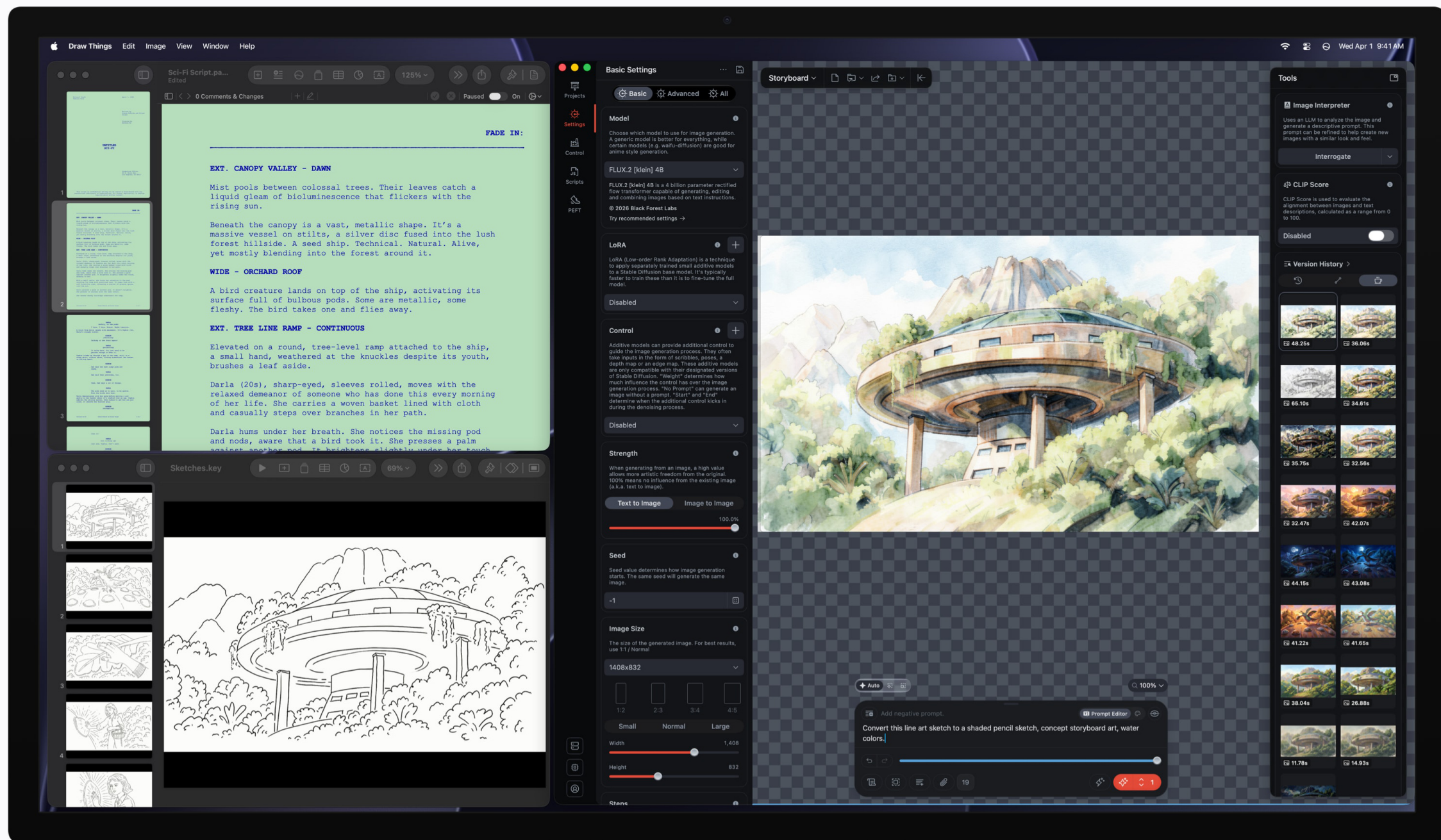
interesting. Its new Dual 16-core Neural Engine can deliver up to twice the peak compute of previous generations, while up to 32GB of unified memory and 170GB/s of memory bandwidth give it plenty of room to play with on-device AI. The appeal here is that increasingly capable AI models can run locally, keeping demanding tasks fast and data private. Apple’s system frameworks can also use both Neural Engine units at once, helping compatible applications get models running faster without requiring users to do any clever tinkering themselves.

That combination could prove particularly useful as AI becomes less of a novelty and more of an everyday computing feature. Instead of treating AI as something that lives exclusively in a browser tab or distant data centre, M6 is designed to make it part of the Mac itself. From agentic workflows and model-assisted coding to creative tools and Apple Intelligence features, the chip has the grunt to handle more of these jobs on-device. It is a sign that Apple sees local AI as an increasingly important part of what a personal computer should be capable of.

Then there’s M5 Ultra, which takes the whole concept and turns the dial up to eleven. Apple has used its UltraFusion technology to connect two dual-die M5 Max chips, creating a quad-die architecture for the first time in an Apple silicon SoC. The result is a monster with up to 36 CPU cores, an 80-core GPU and a frankly ridiculous 1.2TB/s of unified memory bandwidth.

M5 Ultra is aimed squarely at professionals working with 3D rendering, visual effects, scientific computing and enormous AI models. Its GPU can deliver up to 4.5x the peak





AI compute of M3 Ultra, while third-generation ray tracing and hardware-accelerated mesh shading promise a hefty graphics boost. There's also a 32-core Neural Engine and up to 512GB of unified memory, meaning genuinely enormous AI models can be run entirely on the Mac without constantly shuttling data off to the cloud.

That huge memory pool is particularly significant for AI developers. Large language models can be surprisingly hungry beasts, and keeping massive datasets and model parameters in local unified memory can help avoid the bottlenecks associated with constantly moving information between different components. Apple says M5 Ultra can handle models with hundreds of billions of parameters entirely on-device, which puts some seriously heavyweight AI experimentation within reach of a desktop Mac.

The chip also brings a beefier Media Engine, with dedicated hardware for H.264, HEVC and ProRes encoding and decoding, alongside hardware-accelerated AV1 decoding. For video professionals working with increasingly chunky 4K, 6K or 8K projects, that should make moving from timeline to final export considerably less painful. Add faster graphics, improved ray tracing and plenty of CPU muscle, and the Mac Studio starts to look less like a desktop computer and more like a miniature workstation that happens to sit rather neatly on a desk.

With Apple's Core ML, Metal, Core AI and Xcode frameworks designed to take advantage of all this silicon muscle, the message is pretty clear. Apple wants its latest Macs to simply get on with it. And preferably without breaking a sweat.

Apple's Mac mini has always been rather good at punching above its weight. It's a tiny little box that can quietly sit on a desk while getting on with everything from everyday computing to surprisingly serious creative work. Now Apple is giving its smallest desktop another sizeable boost, with the introduction of the new M6 and M5 Pro chips. The result is a Mac mini that remains pleasingly compact but is considerably more ambitious under the bonnet.

The M6 model is the one likely to catch the eye of everyday users, promising up to four times faster AI performance, twice the graphics and storage performance, and 40 per cent faster CPU performance than the previous generation. That should make everything from opening apps and juggling multiple windows to editing photos and running AI-powered tools feel considerably snappier. Apple is also leaning heavily into agentic AI, positioning the Mac mini as an always-on desktop that can quietly get things done in the background while you get on with your day.

Much of that extra brainpower comes from the M6's new 12-core CPU and 12-core GPU. Both gain two additional cores, while Neural Accelerators are now built into every GPU core, helping to deliver that claimed fourfold jump in AI performance. There's also a new Dual 16-core Neural Engine, which can deliver up to twice the performance of the previous generation. With 16GB of unified memory as standard and up to 32GB available, plus memory bandwidth of up to 170GB/s, the little Mac has plenty of room to multitask.

For professionals who need considerably more grunt, the M5 Pro version turns the Mac mini into something approaching a tiny workstation. It can be configured with up to an 18-core CPU, a 20-core GPU and 64GB of unified memory, with 307GB/s of memory bandwidth. That makes it better suited to demanding jobs such as video rendering, app development, scientific simulations, 3D design, visual effects and game development. Third-generation ray tracing and Neural Accelerators across the GPU should also give creative and AI workloads a healthy shove in the right direction.

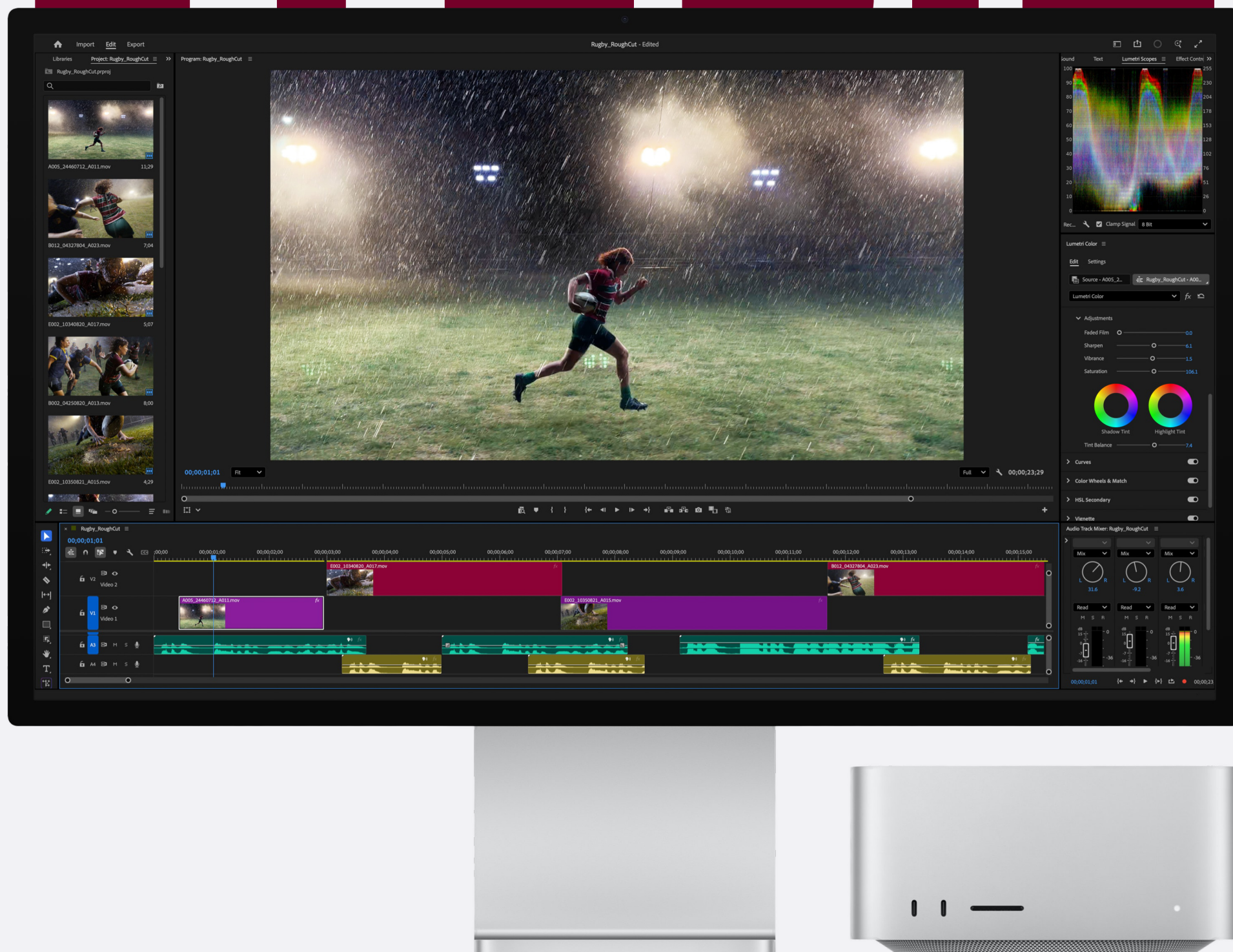
Connectivity gets a welcome refresh, too. Both models support Wi-Fi 7 and Bluetooth 6, while 2.5Gb Ethernet comes as standard, with a 10Gb option for those who like their networks seriously speedy. There are two USB-C ports up front, plus a headphone jack, while the rear houses HDMI, Ethernet and three Thunderbolt ports. M5 Pro gets Thunderbolt 5, which can even be used to cluster multiple Mac minis together for larger local AI workloads.

With macOS 27 and the next generation of Apple Intelligence joining the party, the new Mac mini is shaping up to be more than just a compact desktop. It's a tiny box with increasingly enormous ambitions – and it may be one of the sneakiest ways to get serious computing power onto your desk.

The new Mac Mini is available to pre-order now starting at £899.00/AU\$1449.00 and £1699.00/AU\$2,699.00 for the model with the M5 Pro. A significant price hike thanks to the memory shortage caused the scramble to build data centres.



STUDIO



Apple's Mac Studio has never been the sort of computer you'd accuse of lacking ambition, but the latest version takes things to another level. With the arrival of M5 Max and the all-new M5 Ultra, Apple's Mac Studio is being aimed squarely at professionals who want enormous amounts of computing power without sacrificing half their office to a workstation. It's still the tidy little box we know, but there's considerably more going on under the bonnet.

Apple says the new Mac Studio can deliver up to 4.3x faster AI performance, up to twice the storage performance, up to 1.8x faster graphics and up to 1.3x faster CPU performance. Those are impressive numbers on their own, but the real story is how much of that power is now being directed towards AI. The Mac Studio is increasingly being positioned as a serious on-device AI machine, rather than simply a very fast computer that happens to run AI applications.

For creative professionals, developers and anyone who regards an enormous video timeline as a perfectly normal Tuesday afternoon, the M5 Max model is already something of a powerhouse. It comes with an 18-core CPU and up to a 40-core GPU, with Neural Accelerators built into every GPU core. Apple says graphics performance is up to 50 per cent faster than the previous generation, while up to 128GB of unified memory and 614GB/s of memory bandwidth give demanding applications plenty of room to breathe.

Then comes M5 Ultra, which is where things get ridiculous. With up to 36 CPU cores, an 80-core GPU and up to 512GB of

unified memory, it is designed for workloads that make ordinary desktops struggle. Apple says its GPU can deliver up to 4.3x the peak AI compute of M3 Ultra, while graphics performance is up to 1.8x faster. The 1.2TB/s memory bandwidth also means huge AI models can be loaded and run locally, without constantly relying on the cloud. Apple has a clever trick for when one Mac Studio simply isn't enough. Thunderbolt 5 and RDMA support allow multiple Mac Studio systems to be clustered together, creating a shared memory pool. A four-machine setup can deliver up to three times the AI inference performance of a single system. It's perhaps not the sort of arrangement you'd recommend for checking email, but for AI researchers and developers it could be a very big deal.

Naturally, creative work remains central to the Mac Studio's appeal. Third-generation hardware-accelerated ray tracing, enhanced shader cores and faster graphics are designed to make 3D, VFX and game development smoother, while the upgraded Media Engine can handle up to 33 simultaneous streams of 8K ProRes 422 at 30fps. That should keep even the most demanding video editors reasonably cheerful.

Connectivity is improved too, with Thunderbolt 5 offering up to 120Gb/s of bandwidth, alongside Wi-Fi 7 and Bluetooth 6. Faster storage, support for up to eight displays and genlock over USB-C make the Mac Studio an impressively capable hub for a professional setup.

The Mac Studio is available to pre-order now starting at £2,499.00/AU\$4,299.00 or £5,499.00/AU\$9,499.00 with M5 Ultra chip.