



		LABS WINNER		
	PC Specialist Onyx 880GE	PC Specialist Onyx 994RG	Scan 3XS 3XS GWP-ME Q132R	Scan 3XS GWP-ME Q164T
	★★★★★	★★★★★	★★★★★	★★★★★
	£2,381 (£2,857)	£6,298 (£7,558)	£2,500 (£3,000)	£6,667 (£8,000)
	Free	Free	Free	Free
	pcspecialist.co.uk	pcspecialist.co.uk	scan.co.uk/3xs	scan.co.uk/3xs
	3yr RTB (1 month C&R, 1yr parts & labour, 2yr labour only)	3yr RTB (1 month C&R, 1yr parts & labour, 2yr labour only)	3yr (1yr on-site, 2yr RTB)	3yr (1yr on-site, 2yr RTB)
	3.6GHz Intel Core i9-9900K	3GHz Intel Core i9-10980XE	3.5GHz AMD Ryzen 9 3950X	3.7GHz AMD Ryzen Threadripper 3970X
	Asus WS Z390 Pro	Asus WS X299 SAGE/10G	Asus RoG Strix X570-E	Asus Rog Zenith II Extreme
	4 x RAM slots (2 free), 4 x PCIe x16 (3 free), PCIe x1 (1 free), 2 x M.2 (0 free), U.2 (1 free), 6 x SATA 600 (6 free)	8 x RAM slots (4 free), 7 x PCIe x16 (0 free), 2 x M.2 (0 free), U.2 (1 free), 8 x SATA 600 (4 free)	4 x RAM slots (2 free), 3 x PCIe x16 (2 free), 2 x PCIe x1 (3 free), 2 x M.2 (1 free), 8 x SATA 600 (6 free)	8 x RAM slots (4 free), 4 x PCIe x16 (3 free), 4 x M.2 (3 free), 8 x SATA 600 (7 free)
	32GB DDR4	64GB DDR4	64GB DDR4	128GB DDR4
	3,000MHz	3,000MHz	3,600MHz	3,600MHz
	PNY Quadro RTX 4000	PNY GeForce RTX 2080 Ti Blower x 4	PNY Quadro RTX 4000	PNY Quadro RTX 6000
	8GB GDDR6	11GB GDDR6	8GB GDDR6	24GB GDDR6
	3 x DisplayPort 1.4, USB-C VirtualLink	3 x DisplayPort 1.4, HDMI 2.0b, USB-C	3 x DisplayPort 1.4, USB-C VirtualLink	4 x DisplayPort 1.4, USB-C VirtualLink
	Samsung 970 Evo Plus	Samsung PM883	Corsair MP600	Corsair MP600
	1TB	960GB	2TB	2TB
	NVMe M.2 PCI Express	NVMe U.2 PCI Express	NVMe M.2 PCI Express 4	NVMe M.2 PCI Express 4
	Samsung 970 Evo Plus	N/A	N/A	Samsung 860 Evo
	1TB	N/A	N/A	4TB
	NVMe M.2 PCI Express	N/A	N/A	SATA
	Seagate IronWolf Pro	Seagate IronWolf Pro	N/A	N/A
	2TB x 3	4TB x 4	N/A	Toshiba N300
	7,200rpm	7,200rpm	N/A	4TB
	128MB	128MB	N/A	7,200rpm
	N/A	N/A	N/A	128MB
	N/A	N/A	N/A	N/A
	Corsair Carbide 200R (210 x 497 x 430mm)	Inwin IW-PLG Tower (200 x 590 x 430mm)	Fractal Design Define R6 USB-C (233 x 543 x 465mm)	Fractal Design Define R6 USB-C (233 x 543 x 465mm)
	Corsair RMX750 Modular 80 Plus Gold (750W)	InWin Dual-Redundant 80 Plus Gold (1,200W)	Corsair RMX650 80 Plus Gold (650W)	Corsair RMX850 80 Plus Gold (850W)
	Corsair H80i V2 Hydro Series watercooler	Noctua NH-U14S air cooler	3XS 240mm watercooler	Cooler Master MasterLiquid ML360 watercooler (360mm)
	2 x Gigabit Ethernet, 5 x 3.5mm audio jack, optical S/PDIF, 5 x USB 3.1 Gen 2 (Type-A), USB 3.1 Gen 2 (Type-C), 4 x USB 2, DisplayPort, HDMI	2 x 10 Gigabit Ethernet, 5 x 3.5mm audio jack, optical S/PDIF, 4 x USB 3.1 Gen 1, USB 3.1 Gen 2 (Type-A), USB 3.1 Gen 2 (Type-C)	2.5 Gigabit Ethernet, Gigabit Ethernet, 5 x 3.5mm audio jack, optical S/PDIF, 7 x USB 3.2 Gen 2 (Type-A), USB 3.2 Gen 2 (Type-C), DisplayPort, HDMI, Wi-Fi 6 aerial headers	10 Gigabit Ethernet, Gigabit Ethernet, 5 x 3.5mm audio jack, optical S/PDIF, 4 x USB 3.2 Gen 1, 6 x USB 3.2 Gen 2 (Type-A), 2 x USB 3.2 Gen 2 (Type-C), Wi-Fi 6 aerial header
	3.5mm audio jack, 3.5mm microphone jack, 2 x USB 3	2 x USB 3	3.5mm audio jack, 3.5mm microphone jack, 2 x USB 3, 2 x USB 2, USB 3.2 Gen 2 (Type-C)	3.5mm audio jack, 3.5mm microphone jack, 2 x USB 3, 2 x USB 2, USB 3.2 Gen 2 (Type-C)
	Windows 10 Pro 64-bit	Windows 10 Pro 64-bit	Windows 10 Pro 64-bit	Windows 10 Pro 64-bit
	Windows 10 Pro 64-bit	Windows 10 Pro 64-bit	Windows 10 Pro 64-bit	Windows 10 Pro 64-bit

Scan 3XS GWP-ME Q132R

Any Ryzen 9 3950X system will give you shattering performance, but Scan wins for its attention to detail

SCORE ★★★★★

PRICE £2,500 (£3,000 inc VAT)
from scan.co.uk/3xs

Our workstation Labs are always split into two price brands, with this year's cut-off points being £3,000 and £8,000 inc VAT. Last year, workstations in the lower price band were dominated by the Intel Core i9, but it's a sign of the times that of all the machines in this class in 2020 we've only seen one Intel CPU. It's not hard to see why when you appreciate what the Scan 3XS GWP-ME Q132R can do.

Based around the top AMD Ryzen 9 3950X processor, you get 16 cores and 32 threads, which will storm through multithreaded CPU-intensive tasks. The top 4.7GHz Turbo mode will also make light work of anything single-threaded. Scan has partnered this potent processor with a generous 64GB of 3,600MHz DDR4 memory, taking advantage of the Ryzen 9's official support for 3,200MHz RAM. As this 64GB helping is supplied in the form of two 32GB modules, there's still room for upgrades if you need it.

Scan's graphics acceleration of choice is no surprise at this price, consisting of the Nvidia Quadro RTX 4000. With 2,304 CUDA cores and 8GB of GDDR6 memory providing 416GB/sec of bandwidth, the RTX 4000 is the logical sub-£1,000 GPU for professional use.

Although we traditionally expect to see a combination of fast primary boot storage and a slower but larger secondary device, Scan opted to supply just one primary SSD with the Q132R. However, it's the sizeable 2TB Corsair MP600 M.2 NVMe, which supports PCI Express 4 so can take full advantage of the AMD Ryzen 9 processor's support for this faster connection type. With a sustained sequential read rate of 4,988MB/sec and writing at 4,276MB/sec, this is a hugely fast storage device and the 2TB capacity will be enough unless you venture into capacity-hungry applications such as video editing.

If you do want to add more storage, there's an additional M.2 NVMe slot available, and the Fractal Design



Define R6 USB-C chassis provides a quartet of 3.5in bays accessible from one of the side panels. There's also a front 5.25in bay, should you need to install an optical drive or other removable storage device. We're not convinced by glass panels on workstations, but the R6 does this tastefully. This chassis also provides a USB-C port on the top. We tested this with a PCI Express 4 external storage device, and found it delivered 1,023MB/sec reading with 952MB/sec writing – much faster than an internal SATA/600 connection. The Asus RoG Strix X570-E motherboard also includes 2.5Gbit Ethernet as well as regular Gigabit, so you're well served for network connectivity.

ABOVE Scan wins not just for well-balanced performance but also for features



BELOW The Fractal Design chassis is stylish without being ostentatious



The Scan's overall *PC Pro* benchmark score of 503 fell behind the InterPro and Chillblast, although its image-editing score was the best at 217. Video encoding proved a slight weakness, and it was one of the slower systems in Adobe Media Encoder 2020 CC. It again fell a fraction behind rival Ryzen 9 systems in Cinebench R20, while the Blender Gooseberry frame took 645 seconds to appear; Chillblast and InterPro were again faster here.

However, the Q132R was the fastest in most of the SPECviewperf 13 3D modelling viewsets at this price, with a particularly commendable 351 in snx-03, showing strong ability when doing engineering design with Siemens NX. Overall, this swings things back into Scan's favour. We also appreciate that most people won't want to rush to upgrade the main storage or main memory, so having 2TB of the former and 64GB of the latter provide future-proofing out of the box. Add in 2.5Gbit Ethernet and you have a system that beats the Ryzen 9 competition on features, rather than brute performance.

Although we suspect everyone reading this Labs will be lusting for a workstation based around the Threadripper 3970X, if you're on a more limited budget then the Ryzen 9 3950X offers a superb balance of performance for a much keener price. Scan's 3XS GWP-ME Q132R may not be the fastest in every area, but the well-considered specification makes it our overall Labs Winner.

VIEW FROM THE LABS

WHILE AMD IS WINNING THE CPU WAR AGAINST INTEL, IT STILL HAS MUCH TO PROVE WHEN IT COMES TO PROFESSIONAL GRAPHICS CARDS

This year's workstation Labs has been a near whitewash for AMD processors, but it's business as usual when it comes to graphics acceleration: every single system came with an Nvidia Quadro or GeForce GPU.

Where AMD's early adoption of 7nm technology and clever, efficient CPU architecture have given it an insurmountable dominance in the workstation processor market, the company has failed to make a dent in professional graphics so far. The question is: why? After all, the 7nm Radeon 5700, 5700XT and recently arrived 5500 are strong contenders for consumers.

One problem is that Nvidia's CUDA is an integral part of the workflow for many content-creation companies, and you don't get that with AMD cards. OpenCL, which AMD offers instead, is a good alternative but hasn't met with such strong adoption for GPU-accelerated rendering.

Another worry that professional content creators have is compatibility. One of the reasons Nvidia gives for the much higher prices of its professional graphics cards compared to consumer variants (with seemingly the same



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underlying GPUs) is the accredited software support. This does depend on which type of content creation you do, however. If you're performing engineering or CAD work, some of the software, particularly Siemens NX, runs like a dog on GeForce. But 3D animations applications such as 3ds Max and Maya are almost as smooth.

AMD does have some competitive potential with graphics. Its Radeon Pro W5700 is based on a professional variant of the 7nm Navi technology used in the consumer-grade Radeon 5700. It's around £50 cheaper than the Nvidia Quadro RTX 4000, and faster for many CAD and engineering applications (as well as Maya) in SPECviewperf 13, even if the Quadro has the edge in Creo and 3ds Max.

I have seen this kind of "partial" performance win from AMD professional graphics before. The Radeon Pro WX8200 was faster and offered slightly better value than

Nvidia Quadro P4000, but only a few months later the Quadro RTX 4000 arrived to swing things back in Nvidia's favour. The W5700 has arrived a little earlier in

the cycle, however; Nvidia's next Ampere architecture will land for consumers in March 2020 or later, so the professional Quadro variant may not arrive until the very end of 2020.

This gives AMD time to release higher-end professional graphics cards based on 7nm Navi. There's also a lower-cost 8GB Radeon Pro W5500, which promises competitive performance at a much lower price than what Nvidia Quados currently offer. The bad news? Nvidia's Ampere will be 7nm too, so could take the lead back rather firmly when the professional variants are introduced.

After three generations of Ryzen, AMD has a seemingly unsurmountable lead over Intel, but AMD's war against Nvidia for workstation graphics looks like a much longer conflict of attrition. On the consumer side, Nvidia has mitigated the challenge by some timely price reductions, and professionals are much more reluctant to change allegiance without clear advantages from doing so. For workstation (and server) processors those reasons are quite obviously there; for graphics acceleration, the benefits are far less conclusive. ●

"AMD has a big lead over Intel, but its war against Nvidia for workstation graphics looks like a much longer conflict of attrition"

Test results

