![Dell]

PRECISION 5820 TOWER

Big power in an innovative compact design.

POWERFUL PERFORMANCE

The Dell Precision 5820 Tower delivers high performance for your most demanding applications with the latest Intel® Xeon® and Core® X Series processors and up to 512GB of fast 2666MHz memory. In addition, every Dell Precision comes with the exclusive Dell Precision Optimizer, which automatically tunes your workstation to run some of the most popular (ISV) applications at the fastest speeds possible. DPO Premium is a new AI-based version which optimizes your workstation, based upon how you use it, providing true customization.

LATEST TECHNOLOGY

Ready for complex projects, including artificial intelligence and virtual reality workflows, with next generation Radeon™ Pro and NVIDIA Quadro® professional graphics, with support for up to 600W of graphics power. Front access FlexBays provide outstanding storage expandability, up to 60TB with SATA, SAS and PCIe M.2/U.2 NVMe solid state drives, featuring hot-swap access, so you never have to stop creating.

INNOVATIVE DESIGN

The front FlexBay design supports a range of modules from scalable storage to security options, you can build the workstation designed for your creative expertise. Secure your data with the optional Smart Card (CAC/PIV) reader, hot swap NVMe SSDs and lockable hard drive carriers. The best-in-class smart design includes integrated front and rear handles for easy deployment and moves, and an externally accessible tool-less (lockable) power supply for superior serviceability.

OUTSTANDING RELIABILITY

The revolutionary multichannel thermal design delivers advanced cooling and acoustics so you can enjoy longer productivity under heavy workloads. Precision workstations are tested and are Independent Software Vendor certified to ensure the high-performance applications you rely on every day run smoothly.

Built for business

Dell Technologies Unified Workspace

Dell Technologies Unified Workspace is the most comprehensive solution to deploy, secure, manage and support virtually all devices from the cloud. We designed this revolutionary solution with intelligence and automation providing you with visibility across the entire endpoint environment. We help you save time, improve user experience, optimize resources and strenthen security.

DEPLOY

Our modern deployment solution, ProDeploy in the Unified Workspace allows you to revolutionize the way deployment gets done. By spending just one hour for set up , IT can then hand deployment to Dell and have preconfigured systems shipped directly to the end users--wherever they are.

SECURE

Dell Endpoint Security for the Unified Workspace helps you manage growing cyber risks while embracing workforce transformation. With Dell SafeGuard and Response powered by Secureworks, you gain actionable insight to help you quickly and efficiently prevent, detect and respond to cyber-attacks - keeping your environment free from harm.
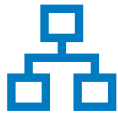
MANAGE

We integrated our hardware management solution Dell Client Command Suite with VMware Workspace ONE, allowing you to take advantage of unified endpoint management (UEM) and manage the firmware, operating system and applications for all devices from the Workspace ONE console. UEM simplifies the management of the entire environment saving IT time from having to work between separate consoles for PCs and phones.

SUPPORT

ProSupport Plus continues to be the only predictive and proactive support in the market. When compared to key competitors, ProSupport Plus with SupportAssist reduced time to resolve a failed hard drive with up to 11x faster time to resolution[*]

*Based on a Principled Technologies test report, "Spend Less Time and Effort Troubleshooting Laptop Hardware Failures" dated April 2018. Testing ommissioned by Dell, conducted in the United States. Actual results will vary. Full report: http://facts.pt/L52XKM

Feature	Precision 5820 Tower Technical Specifications
Processor Options	Intel® Xeon® Processor W-2000 Family and Core X Series CPUs with up to 18 cores and Intel Advanced Vector Extensions, Intel Trusted Execution Technology, Intel AES New instructions, Optimized Intel Turbo Boost and optional Intel vPro™ technology (Xeon W CPUs only) (Important Note: Features and Supported Configurations will differ between 5820 Tower Workstations with Intel® Xeon® W Processors and 5820 Tower Workstations with Intel® Core™ X Processors. Please see systems on Dell.com/ Precision for specific configuration details.)
Operating System Options	Windows 10 Pro for Workstations (up to 4 Cores) Windows 10 Pro for Workstations (4 Cores Plus) Windows 10 Pro - for Core X Series CPUs Red Hat Enterprise Linux 8.0 Ubuntu Linux 18.04 Suse Linux (SLES 12 SP2) supported* NeoKylin 6.0 SP5 (China only) *
Chipset	Intel® C422 (Skylake/Cascade Lake W) ; Intel X299 (Skylake/Cascade Lake X)
Memory Options[1]	Four channel memory up to 512GB 2666MHz and up to 256GB 2933MHz DDR4 (RDIMM) ECC memory. (Up to 256GB 2666MHz DDR4 (UDIMM) Non-ECC memory) 8 DIMM slots. Note: Memory speed is dependent on specific Intel Xeon or Core X Processor installed.
Graphics Options[1]	Support for 2 PCI Express® x16 Gen 3 graphics card - up to 600W with maximum of up to 2 x 300W double width graphics cards. Not all graphics card offerings are available with Core X I9 and I7 Series CPUs

High end 3D cards:
Radeon™ Pro WX 9100
Radeon™ Pro SSG
NVIDIA Quadro GV100
NVIDIA Quadro P6000
NVIDIA Quadro P5000
Nvidia Quadro RTX 8000
Nvidia Quadro RTX 6000
Nvidia RTX 5000

Mid-range 3D cards:
Radeon™ Pro WX 7100
Radeon™ Pro WX 5100
Radeon™ Pro WX 4100
NVIDIA Quadro P4000
NVIDIA Quadro P2000
NVIDIA Quadro P2200
NVIDIA Quadro RTX 4000

Entry 3D cards:
Radeon™ Pro WX 3200
Radeon™ Pro WX 2100
NVIDIA Quadro P1000
NVIDIA Quadro P620
NVIDIA Quadro P400

Professional 2D cards:
NVIDIA NVS 310

| Storage Options[2] | Front accessible FlexBays support up to 4 x 2.5"/3.5" SATA HDD/SSDs and up to 6 x 2.5" and 5 x 3.5" drives with 5.25" bay populated. Up to 2 front accessible (hot plug) M.2/U.2 NVMe PCIe SSDs are supported in FlexBay 1 on enabled |

Feature	Precision 5820 Tower Technical Specifications
Storage Options[2]	PCIe backplane chassis with integrated Intel controller and up to 4 with MegaRAID 9460* NVMe hardware RAID controller option - see controller section Note: Precision PCIe FlexBay backplane and single M.2 Module (incl. 1 M.2 PCIe/NVMe carrier) kits are available for customers to convert standard FlexBays* to support Intel and MegaRAID NVMe controller options. (different kits) Only 1 front accessible M.2 NVMe PCIe SSD is supported, due to reduced PCIe lane support on Core X I9 and I7 Series CPUs NVMe RAID 0,1 option (Intel RSTe vROC).* Up to 4 x M.2 NVMe PCIe SSDs via 1 x Dell Ultra-Speed Drive Quad x16 card. NVMe RAID 0,1,10 option (Intel RSTe vROC).

M.2 NVMe PCIe SSDs
Up to 4 x 2TB drives on 1 Dell Precision Ultra-Speed Drive Quad x16 card.

Front FlexBay M.2/U.2 NVMe PCIe SSDs
Up to 4 x 2TB M.2 drives

Intel® Optane™905P SSDs
Up to 4 x 960GB drives

2.5" SATA SSD
Up to 6 x 1.9TB drives

2.5" SATA 7200 RPM
Up to 6 x 1TB drives

3.5" SATA 7200 RPM Hard Drives
Up to 5 x 12TB Enterprise Drives

2.5" SAS SSD
Up to 6 x 800GB drives

3.5" SAS 7200 RPM 12Gb/s
Up to 5 x 4TB

2.5" SAS 10K RPM 12Gb/s
Up to 6 x 1.8TB

2.5" SAS 15K RPM 12Gb/s
Up to 6 x 600GB

M.2 PCIe SED SSD
512GB and 1TB
Not all storage offerings (including SAS drives) are available with Core X Series CPUs

| Storage Controller | **Integrated:** Intel® chipset SATA controller (6Gb/s) with 6 SATA ports plus 2 dedicated ports for optical drives. Intel RSTe software RAID 0,1,5,10* Intel RSTe (vROC) software RAID 0,1,10 option (motherboard activation key) for M.2 NVMe PCIe SSDs on Dell Ultra-Speed Drive Quad card, Duo x8 card (RAID 0,1) and for 2 x front FlexBay M.2/U.2 NVMe PCIe SSDs* (RAID 0,1) or front FlexBay NVMe PCIe SSDs (RAID 0,1) Customer kit available for Intel RSTe (vROC) motherboard activation key for NVMe RAID support. **Optional:** Broadcom MegaRAID® SAS 9440-8i 12Gb/s SAS (6Gb/s SATA) PCIe controller, 8 ports, Software RAID 0,1,5,10.* MegaRAID® SAS 9460-16i 12Gb/s SAS (6Gb/s SATA) PCIe controller (4GB cache with Flash module/Super Cap backup) Hardware RAID 0,1,5,10.* MegaRAID 9460* controller NVMe option supports up to 4 front FlexBay M.2/U.2 NVMe PCIe SSDs with Hardware RAID 0,1,5,10 |

Feature	Precision 5820 Tower Technical Specifications
Communications	**Integrated:** Intel® i219 Gigabit Ethernet controllers with Intel Remote Wake UP, PXE and Jumbo frames support **Optional:** Intel® i210 10/100/1000 single port PCIe (Gen 3 x1) gigabit network card, Intel® X550-T2 10GbE dual port PCIe (Gen 3 x4) network card
Audio Controller	Integrated Realtek ALC3234 High Definition Audio Codec (2 Channel)
Speakers	Internal Speaker; Optional Dell 2.0 stereo speaker systems available and Dell sound bar for select flat-panel displays
Add-in cards	**Optional:** Dell Precision Ultra-Speed Drive Duo (HH/HL,x8) & Ultra-Speed drive Quad (FH/FL,x16) with active cooling. Support for up to 2 and 4 M.2 PCIe NVMe SSDs respectively. Optional USB 3.1 (Gen 2) 10Gb/s Type C card (2 ports) 1 DP pass-through port Optional dual & quad display Teradici PCoIP remote workstation host PCIe cards Optional Thunderbolt 3 PCIe Card (2 ports) 1 DP pass-through port Optional Serial Port PCIe Card
I/O Ports	**Front** 2 – USB 3.1 Gen 1 Type A 2 – USB 3.1 Gen 1 Type C 1 – Universal Headphone Jack **Internal** 1 – USB 2.0 Type A 1 – 2 x 5 USB 2.0 header. (requires 3rd party splitter cable to support 2 x USB 2.0 Type A ports) 6 – SATA @6Gb/s plus 2 for optical **Rear** 6 – USB 3.1 Gen 1 Type A (6th port supports Power Delivery) 1 – Serial 1 – RJ45 Network 2 – PS2 1 – Audio Line out 1 – Audio Line in/Microphone
Chassis	**HxWxD:** 16.45" (417.9 mm) | Width: 6.95" (176.5 mm) | Depth: 20.4" (518.2 mm) | Starting at weight 34lb/15.4kg **Bays:** (2) FlexBays can support up to 2x 3.25" or 2.5" drives each and (1) 5.25" HDD/SSD drives as factory option or customer kit. (1) Slimline optical bay; (1) SD slot UHS II Class 3 with read only support (SW enabled) Available PCIe backplane FlexBay chassis supporting 1 - 4 x M.2/U.2 PCIe NVMe SSDs. **Slots:** All slots PCIe Gen 3: (2) PCIe x16, (1) PCIe x16 wired as x8, (1) PCie x16 wired as x4, (1) PCIe x16 wired as x1, 1 PCI 32/33 Power Supply: 425W* or 950W (input voltage 100VAC - 240VAC) –90% efficient (80PLUS Gold Certified) Externally accessible/removable/lockable
Storage devices	Slimline Bay Options: DVD-ROM; DVD+/-RW, CAC/PIV card reader. 5.25" Bay Options: BD, DVD+/-RW; Standard: SD slot UHS II Class 3 with read only support

Feature	Precision 5820 Tower Technical Specifications
Security Options (Check regional availability)	Trusted Platform Module (TPM 2.0); Optional CAC/PIV card reader for slimline bay, chassis Intrusion switch; Setup/BIOS Password; I/O Interface Security; Kensington® lock slot, Padlock ring, lockable power supply; Optional hard drive locking sleds (key lock), Dell Data Guardian, Dell Endpoint Security Suite Enterprise, Lockable front bezel (covers FlexBays), Front FlexBay NVMe drives are removable (hot swap).
Manageability[3]	AMT or vPro with DASH support* Dell vPro Enhancements (Grasslake)* SNMT/CIM vis OMCI Dell Command Suite
Regulatory and Environmental	Energy Star® configurations available* including 80 PLUS® registered Gold power supplies; EPEAT® registered (see epeat.net for specific registration rating/status by country); China CECP; GS Mark. For a complete listing of declarations & certifications, see Dell's regulatory & compliance homepage at dell.com/regulatory_compliance
Warranty & Support Services[4]	3-Year Limited Hardware Warranty and 3-year NBD On-Site Service after Remote Diagnosis **Optional:** Dell ProSupport is designed to rapidly respond to your business's needs, help protect your investment and sensitive data, and provide enhanced proactive support services to help reduce risk and complexity within your IT environment

PRECISION 5820 TOWER

Create without limits

NVIDIA RTX A4000

SLEEK DESIGN.
POWERFUL PERFORMANCE.

Amplified Performance for Professionals

The NVIDIA RTX™ A4000 is the most powerful single-slot GPU for professionals, delivering real-time ray tracing, AI-accelerated compute, and high-performance graphics to your desktop. Built on the NVIDIA Ampere architecture, the RTX A4000 combines 48 second-generation RT Cores, 192 third-generation Tensor Cores, and 6,144 CUDA® cores with 16 GB of graphics memory with error-correction code (ECC) so you can innovate with uncompromised computing accuracy and reliability. The RTX A4000 also features a power-efficient, single-slot PCIe form factor that fits into a wide range of workstation chassis, so you can do exceptional work without limits.

NVIDIA RTX professional graphics cards are certified with a broad range of professional applications, tested by leading independent software vendors (ISVs) and workstation manufacturers, and backed by a global team of support specialists. Get the peace of mind needed to focus on what matters with the premier visual computing solution for mission-critical business.

Features

> PCI Express Gen 4

> Four DisplayPort 1.4a connectors

> AV1 decode support

> DisplayPort with audio

> 3D stereo support with stereo connector

> NVIDIA GPUDirect® for Video support

> NVIDIA Quadro® Sync II[1] compatibility

> NVIDIA RTX Experience™

> NVIDIA RTX Desktop Manager software

> NVIDIA RTX IO support

> HDCP 2.2 support

> NVIDIA Mosaic[2] technology

SPECIFICATIONS

Part Number	**VCNRTXA4000-PB**
EAN Code	**3536403383855**
GPU memory	**16 GB GDDR6**
Memory interface	**256-bit**
Memory bandwidth	**448 GB/s**
Error-correcting code (ECC)	**Yes**
NVIDIA Ampere architecture-based CUDA Cores	**6,144**
NVIDIA third-generation Tensor Cores	**192**
NVIDIA second-generation RT Cores	**48**
Single-precision performance	**19.2 TFLOPS[3]**
RT Core performance	**37.4 TFLOPS[3]**
Tensor performance	**153.4 TFLOPS[4]**
System interface	**PCI Express 4.0 x16**
Power consumption	**Total board power: 140 W**
Thermal solution	**Active**
Form factor	**4.4" H x 9.5" L, single slot**
Display connectors	**4x DisplayPort 1.4a**
Max simultaneous displays	**4x 4096 x 2160 @ 120 Hz, 4x 5120 x 2880 @ 60 Hz, 2x 7680 x 4320 @ 60 Hz**
Power connector	**1x 6-pin PCIe**
Encode/decode engines	**1x encode, 1x decode (+AV1 decode)**
VR ready	**Yes**
Graphics APIs	**DirectX 12.07[5], Shader Model 5.17[5], OpenGL 4.68[6], Vulkan 1.2[6]**

To learn more about the NVIDIA RTX A4000, visit **www.nvidia.com/rtx-a4000/**

NVIDIA® RTX™ A4000 GPU

Performance Features

NVIDIA Ampere Architecture
NVIDIA RTX A4000 is the most powerful single slot GPU solution offering high performance real-time ray tracing, AI-accelerated compute, and professional graphics rendering. Building upon the major SM enhancements from the Turing GPU, the NVIDIA Ampere architecture enhances ray tracing operations, tensor matrix operations, and concurrent executions of FP32 and INT32 operations.

CUDA Cores
The NVIDIA Ampere architecture-based CUDA cores bring up to 2.7X the single-precision floating point (FP32) throughput compared to the previous generation, providing significant performance improvements for graphics workflows such as 3D model development and compute for workloads such as desktop simulation for computer-aided engineering (CAE). The RTX A4000 enables two FP32 primary data paths, doubling the peak FP32 operations.

2nd Generation RT Cores
Incorporating 2nd generation ray tracing engines, NVIDIA Ampere architecture-based GPUs provide incredible ray traced rendering performance. A single RTX A4000 board can render complex professional models with physically accurate shadows, reflections, and refractions to empower users with instant insight. Working in concert with applications leveraging APIs such as NVIDIA OptiX, Microsoft DXR and Vulkan ray tracing, systems based on the RTX A4000 will power truly interactive design workflows to provide immediate feedback for unprecedented levels of productivity. The RTX A4000 is up to 2X faster in ray tracing compared to the previous generation. This technology also speeds up the rendering of ray-traced motion blur for faster results with greater visual accuracy.

3rd Generation Tensor Cores
Purpose-built for deep learning matrix arithmetic at the heart of neural network training and inferencing functions, the RTX A4000 includes enhanced Tensor Cores that accelerate more datatypes and includes a new Fine-Grained Structured Sparsity feature that delivers up to 2X throughput for tensor matrix operations compared to the previous generation. New Tensor Cores will accelerate two new TF32 and BFloat16 precision modes. Independent floating-point and integer data paths allow more efficient execution of workloads using a mix of computation and addressing calculations.

PCIe Gen 4
The RTX A4000 supports PCI Express Gen 4, which provides double the bandwidth of PCIe Gen 3, improving data-transfer speeds from CPU memory for data-intensive tasks like AI and data science.

Higher Speed GDDR6 Memory
Built with 16GB GDDR6 memory delivering up to 23% greater throughput for ray tracing, rendering, and AI workloads than the previous generation. The RTX A4000 provides the industry's largest graphics memory footprint to address the largest datasets and models in latency-sensitive professional applications.

Error Correcting Code (ECC) on Graphics Memory
Meet strict data integrity requirements for mission critical applications with uncompromised computing accuracy and reliability for workstations.

5th Generation NVDEC Engine[1]
NVDEC is well suited for transcoding and video playback applications for real-time decoding. The following video codecs are supported for hardware-accelerated decoding: MPEG-2, VC-1, H.264 (AVCHD), H.265 (HEVC), VP8, VP9, and AV1.

7th Generation NVENC Engine[1]
NVENC can take on the most demanding 4K or 8K video encoding tasks to free up the graphics engine and the CPU for other operations. The RTX A4000 provides better encoding quality than software-based x264 encoders.

Graphics Preemption
Pixel-level preemption provides more granular control to better support time-sensitive tasks such as VR motion tracking.

Compute Preemption
Preemption at the instruction-level provides finer grain control over compute tasks to prevent long-running applications from either monopolizing system resources or timing out.

NVIDIA RTX IO
Accelerating GPU-based lossless decompression performance by up to 100x and 20x lower CPU utilization compared to traditional storage APIs using Microsoft's new DirectStorage for Windows API. RTX IO moves data from the storage to the GPU in a more efficient, compressed form, and improving I/O performance.

Multi-GPU Technology

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[1] This feature requires implementation by software applications, and it is not a stand-alone utility. Please contact quadrohelp@nvidia.com for details on availability.

NVIDIA® SLI® Technology

Leverage multiple GPUs to dynamically scale graphics performance, enhance image quality, expand display real estate, and assemble a fully virtualized system.

Display Features

NVIDIA® Mosaic Technology

Transparently scale the desktop and applications across up to 4 GPUs and 16 displays from a single workstation while delivering full performance and image quality.

DisplayPort 1.4a

Support up to four 5K monitors @ 60Hz, or dual 8K displays @ 60Hz per card. The RTX A4000 supports HDR color for 4K @ 60Hz for 10/12b HEVC decode and up to 4K @ 60Hz for 10b HEVC encode. Each DisplayPort connector can drive ultra-high resolutions of 4096x2160 @ 120 Hz with 30-bit color.

NVIDIA® RTX™ Desktop Manager[2]

Gain unprecedented end-user control of the desktop experience for increased productivity in single large display or multi-display environments, especially in the current age of large, widescreen displays.

NVIDIA® Quadro Sync II[3]

Synchronize the display and image output of up to 32 displays[iii] from 8 GPUs (connected through two Sync II boards) in a single system, reducing the number of machines needed to create an advanced video visualization environment.

Frame Lock Connector Latch

Each frame lock connector is designed with a self-locking retention mechanism to secure its connection with the frame lock cable to provide robust connectivity and maximum productivity.

OpenGL Quad Buffered Stereo Support

Provide a smooth and immersive 3D Stereo experience for professional applications.

Ultra-High-Resolution Desktop Support

Get more Mosaic topology choices with high resolution displays devices with a 32K Max desktop size.

Professional 3D Stereo Synchronization

Robust control of stereo effects through a dedicated connection to directly synchronize 3D stereo hardware to an NVIDIA RTX professional graphics card.

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[2] Product formerly known as NVIDIA Quadro View has undergone a brand transition.
[3] Feature supported in future driver release.

Software Support

NVIDIA® RTX™ Experience[4]

NVIDIA RTX Experience delivers a suite of productivity tools to your desktop workstation, including desktop recording in up to 8K, automatic alerts for the latest NVIDIA RTX Enterprise driver updates, and access gaming features. The application is available for download here.

Software Optimized for AI

Deep learning frameworks such as Caffe2, MXNet, CNTK, TensorFlow, and others deliver dramatically faster training times and higher multi-node training performance. GPU accelerated libraries such as cuDNN, cuBLAS, and TensorRT delivers higher performance for both deep learning inference and High-Performance Computing (HPC) applications.

NVIDIA® CUDA® Parallel Computing Platform

Natively execute standard programming languages like C/C++ and Fortran, and APIs such as OpenCL, OpenACC and Direct Compute to accelerates techniques such as ray tracing, video and image processing, and computation fluid dynamics.

Unified Memory

A single, seamless 49-bit virtual address space allows for the transparent migration of data between the full allocation of CPU and GPU memory.

NVIDIA® GPUDirect for Video

GPUDirect for Video speeds communication between the GPU and video I/O devices by avoiding unnecessary system memory copies and CPU overhead.

NVIDIA Enterprise-Management Tools

Maximize system uptime, seamlessly manage wide-scale deployments, and remotely control graphics and display settings for efficient opera ions.

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[4] Product formerly known as NVIDIA Quadro Experience, rebrand effective 4/21/2021.