



Top Flight Computers ® LLC
8565 Chapel Hill Road
Cary NC, 27513
(919)-500-5002
www.topflightpc.com

11/04/2024 -Sole Source Justification for a Custom-Built, High-Performance LiDAR Workstation for the Center for Spatial Ecology & Restoration (CSER) and Florida A&M University

Greetings,

In general, pre-built computers from most major manufacturers and other custom providers often fall short of specific computing needs, forcing users to buy computers that do not meet the exact specifications required for the job, making custom-built rigs the only viable choice for many users. At Top Flight Computers we offer custom-tailored PC solutions at competitive prices that include a personal commitment to providing the best possible service before, during, and after the sale.

We at Top Flight Computers stand out from other computer fabricators because we work exclusively with the client from the beginning to end of the transaction to provide a properly scaled computer that can handle the exact workload required by the customer. In other words, we know the hardware and workflow intimately, and we can offer a support package that best fits the needs of the user. That is the Top Flight Computers difference. Additionally, we offer an array of user options that allow us to deliver the most computing power and storage at the best possible price without sacrificing performance.

Simply put, our computers can't be purchased directly, "off-the-shelf." For years, we have produced highly capable machines for clients with advanced computing needs for all the following discipline areas including:

- Architecture, Engineering, & Construction
- Visual Effects, CPU Rendering, & GPU Rendering
- Animation & Game Development
- Broadcasting, Video Production, & Post Production
- AI Inference & Training
- Software Development & Virtual Production

Specifically, our Core Ultra 9 Laser Scanning Workstation built exclusively for LiDAR data production and management is a select Top Flight Computers offering that other computer manufacturers do not readily provide.

The recent request made to Top Flight Computers for an advanced, high-performance LiDAR processing workstation for FAMU's Center for Spatial Ecology & Restoration requires a custom-built solution that includes a processor that is both highly parallel for processing workloads and is also upgradable to even more powerful models to handle future computing needs. Specifically, if the processor limited the RAM and storage capacity notably, a different processor would need to be selected.

The Xeon W 3500 processor was chosen because it scales out to 120 overall threads, 2TB of ECC RAM, and several Gen4 NVME SSDs and works exceptionally well for LiDAR processing. This workstation request required a high amount of RAM for processing needs, with expansion to higher capacities preferred, as well as multi-day



Top Flight Computers ® LLC
Chris Touchberry

204 Hampton Lee Court Apt 1A

Cary NC 27513

Quote Date: 11/08/2024

www.topflightpc.com

Quote

TO
Paul B. Medley, RESTORE Program Specialist
USDA, Forest Service, National Forests in Florida
Co-Director, Center for Spatial Ecology & Restoration
Florida A&M University
407 Frederick S. Humphries Science Research Center
1515 S. Martin Luther King Jr. Blvd.
Tallahassee, Florida 32307
(850) 964-1737
paul.medley@famu.edu

Description	Quantity	Total (\$)
Custom Xeon Workstation	1	\$21650.00
1 Year Extended Hardware Warranty	1	\$1600.00
Packing + Shipping	1	\$150.00
	Total	\$23400.00

Please keep this invoice for your records.

Terms

Full payment of the line "Custom Xeon Workstation" for \$21650 is due upon receipt.

stability for extended processing runs. For this, we have recommended liquid cooling for the processor as it can output a significant amount of heat under full unrestricted all-core load, and thermal throttling due to inferior cooling wastes money spent on the CPU. This liquid CPU cooler also allows the CPU to run at higher frequencies than normal, where other air coolers would not have this capability.

This workstation request required a 4TB Gen4 NVME SSD for the OS and program, a 4TB Gen4 NVME SSD for main storage, a 4TB Gen4 NVME SSD for bulk storage, and a 6x4TB SSD RAID5 long-term enterprise storage array. This provides the user with very high overall storage performance, and a good degree of data integrity. Having 1 4TB drive for OS and programs gives the user plenty of room to install applications, a separate 4TB working drive allows for large projects to be pulled up on the fly, a separate 4TB backup drive of the same speed allows for quick backups, and the RAID array gives the user 20TB of secure long-term storage with single-drive fault tolerance. Using other drives would limit the user's productivity and efficiency, and not having the onboard fault-tolerant RAID array would put project files at risk of loss. While the GPU was not a primary concern, we recommended a model with 48GB of VRAM to allow for ultra-large models (e.g., deep learning models for lidar-based tree measurement) to be fully loaded into VRAM. A single GPU is also the most stable option and allows for easy upgrades in the future.

Finally, at Top Flight Computers, we offer a more consultative approach and a tailor-made solution to the request. Instead of having to work with a support department that doesn't understand what the end user is needing to solve, we know the hardware and workflow intimately and offer a support package that better fits the needs of the user. Once we assemble the solution, we stress test the entire system in a real-world environment, making sure the system does not crash in the worst possible scenario. If the system is unstable, we fix it before we ship it out. These are all the unique Top Flight Computers advantages we provide that are exclusive to our company.

Chris Touchberry
Founder & CEO
Top Flight Computers