Ada Departmental Hybrid CPU / GPU Supercomputer

Large Memory, Many-Core CPU, GPU Computing

The Ada™ Departmental Supercomputer is designed to provide supercomputing capabilities at your office or lab. Ada is a hybrid supercomputer consisting of a large memory head node and 2 to 10 compute nodes, each with four GPUs. Each compute node is directly connected to the head node with 200 Gb/s Infiniband/Ethernet. With the maximum configuration of 10 compute nodes, Ada contains 768 AMD EPYC processor cores and 40 AMD Instinct MI210 GPUs. This delivers 7240 TFLOPS of FP16, 904 TFLOPS of FP32 and FP64, and 1812 TFLOPS of matrix FP32 and FP64 GPU floating point performance.

Ada provides a Python based distributed computing environment with a Python RPyC server on each compute node accessible from the head node. A 4TB global NVMe memory based filesystem is included. Together this enables distributed computing across all nodes. The SUSE 15 High Performance Linux is the default operating system. Ada can be configured with up to 1PB of disk array storage.

The large global NVMe filesystem and multiple GPUs can support the training of highly complex AI and machine learning models. Ada is optimized for running Pytorch and other AI and HPC applications. It can handle some of the largest engineering simulations for computational fluid dynamics, finite element analysis and coupled models. It is an excellent resource for molecular dynamics, bio-informatics and drug discovery. With Ada you can execute your most demanding computationally intensive tasks locally. Symmetric Computing's Ada delivers supercomputing performance to business, industry, academia and government with greater access and less cost.

System Specifications

Processors:	Head Node: 2 AMD EPYC 7713 processors (64 core - 2.0/3.67GHz) Compute Node: 1 AMD EPYC 7713 processor and 4 AMD Instinct MI210 GPUs
Memory:	Head Node: 2TB or 4TB 3200 MHz DDR4 Compute Node: 512GB or 1TB 3200 MHz DDR4
Storage:	On-board M.2 NVME 4TB (each node) Head Node: 12x 3.5" SATA/SAS hot-swap Compute Node: 4x 3.5" SATA/SAS hot-swap
Interconnect:	200 Gb/s Infiniband/Ethernet (Direct Connect, No switch)
I/O:	2x 1 Gb/s LAN ports, 1x management LAN port 4x USB 3.0 1x VGA console
Power:	2000W redundant PSUs (head node) 110/208 VAC, 15 AMP, 50-60Hz 1600W redundant PSUs (compute nodes) 208 VAC, 15 AMP, 50-60Hz
Dimensions:	6U-22U Standard 19 inch Rack Mountable

Features	Benefits
• Powerful Dedicated GPU and Many-Core Supercomputing	√ *Faster projects. Dedicated power when your project needs it.*
• Large Global NVMe file system	√ *Ideal for large data applications*
• Single System Interface	√ *Simple Python based distributed computing programming environment.*

Software Specifications

- Linux OS (SUSE 15)
- AMD ROCm GPU software including Pytorch
- RPYC Python distributed computing environment
- OpenMP, MPI, LLVM and GNU compilers
- Slurm Workload Manager

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