



Ada-X Departmental Hybrid CPU / GPU Supercomputer

Large Memory, Many-Core CPU, GPU Computing

The Ada-X™ Departmental Supercomputer is designed to provide on-premises supercomputing capabilities. Ada-X is a hybrid supercomputer consisting of a large memory head node and 2 to 10 compute nodes with eight GPUs each. Compute nodes are directly connected to the head node with 200 Gb/s Infiniband/Ethernet. With the maximum configuration of 10 compute nodes, Ada contains 2112 AMD EPYC processor cores and 80 AMD Instinct MI300X GPUs. This delivers a combined GPU floating point performance of 6536 TFLOPS of FP64, and 13072 TFLOPS of FP32 and matrix FP64. Combined GPU AI performance is 104592 / 209184 (sparse) TFLOPS FP16 and 209192 / 412284 (sparse) TFLOPS of INT8.

Ada provides a Python based distributed computing environment with a RPyC server on each compute node accessible from the head node. A 60TB global NVMe memory based filesystem is included. Together this enables a distributed computing environment across all nodes. The SUSE 15 High Performance Linux is the default operating system. Ada can be configured with up to 1.2PB of combined flash/HDD 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 9654 processors (96 core - 2.4/3.7GHz) Compute Node: 2 AMD EPYC 9654 processors and 8 AMD Instinct MI300X GPUs
Memory:	Head Node: 3TB 4800 MHz DDR5 24 DIMM Compute Node: 768GB or 1.5TB 4800 MHz DDR5 24 DIMM
Storage:	On-board M.2 NVME 4TB (each node) Head Node: 4x 3.5" NVMe drive bays, 8x 3.5" SATA hot-swap Compute Node: 8x 2.5" NVMe drive bays, 8x SATA/SAS hot-swap drive bays
Interconnect:	200 Gb/s Infiniband/Ethernet (Direct Connect, No switch)
I/O:	2x 1 Gb/s LAN ports, 1x management LAN port 10 Gb/s Ethernet port (optional) 4x USB 3.0 1x VGA console
Power:	2000W redundant PSUs (head node) 110/208 VAC, 15 AMP, 50-60Hz 2700W redundant PSUs (compute nodes) 208 VAC, 15 AMP, 50-60Hz
Dimensions:	12U-52U 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 Image 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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