WPI Common Computational Resources and Infrastructure

Worcester Polytechnic Institute (WPI) provides faculty and students with state of the art computational resources, enterprise storage and high speed wired and wireless networks. The WPI parallel computing resources currently are centered around a Linux cluster for teaching and research. The cluster features 3492 CPUs, ranging from Intel E5-2695 v4 processors to Intel Scalable Gold 6248 and AMD Epyc 7543 processors, and 40.5TB of memory. The cluster has GPU-accelerated segments, with 60 GPUs, including 20x 80GB A100's and 2x H100's. The clusters are connected via 10 Gigabit links to the WPI backbone, and use 100Gigabit Ethernet internally. The cluster uses Bright Cluster Manager with Ubuntu 20.04 and the SLURM scheduler. In addition to the hardware listed above and general high performance computing software such as MPI, PETSc, Lapack, BLAS, the parallel user community has access to the porting of parallel codes to new platforms and information on current and new approaches to parallel code development. The clusters are both connected to a 560TB high performance VAST scale-out storage system, providing home directories and scratch space. VAST also provides hourly snapshots of the home directories, enabling self-service file recovery.

The research computing support team also includes a scientific software Application Scientist and a Research Data Scientist who work closely with faculty and students engaged in research.

The Research Computing group also provides access for all researchers to applications such as Matlab, Ansys, Abaqus, Fluent, Comsol, Intel Suite of Compilers, Portland Group Compilers and a host of other major applications.

Worcester Polytechnic Institute currently supports a redundant Ethernet backbone connecting the campus buildings and data Centers. The University servers housed within the IT Data Center are connected via single or 10 gigabit connections. The Isilon Research Storage arrays are connected via redundant 10Gb connections to the University backbone. All academic and residence hall buildings are connected via fiber to the University backbone via dual or quad homed load sharing redundant 10 Gb connections. WPI supports two 2Gb connections for commodity Internet. WPI also supports 20Gbit/s connection to Internet2 - the University is classified as one of two GigaPOP connectors for Massachusetts and offers Internet2 connectivity to other universities, K-12 schools, museums, and businesses in the Worcester and Boston areas.