



## POWERWULF CLUSTERS: COMPUTATIONAL FLUID DYNAMICS

Computational Fluid Dynamics (CFD) is an integral part of the engineering design and analysis process for many companies and research organizations. CFD offers the ability to accurately predict the performance of new designs or processes before they are ever manufactured or implemented. CFD applications work by dividing the region of interest into a large number of cells or control volumes. This is referred to as the "mesh" or "grid". Within each cell, the partial differential equations describing the fluid flow, known as the Navier-Stokes equations, are rewritten as algebraic equations that relate the pressure, velocity, temperature and other variables to the values in the neighboring cells. These equations are then solved numerically yielding a complete picture of the fluid flow down to the resolution of the grid. The resulting image is an accurate depiction of the fluid dynamics surrounding the grid.

PSSC PowerWulf Clusters are custom configured, turn-key solutions that are optimized for CFD applications. Our PowerWulf Clusters are used by several CFD application developers for inhouse testing and development including Metacomp Technologies and Flow Sciences. According to Sukumar Chakravarthy, Metacomp Technologies President, "PSSC keeps tabs on all changes in technology so we don't have to, including hardware, chip, interconnect and operating system developments."

### UNLIMITED LIFETIME SUPPORT

All PowerWulf Clusters include unlimited lifetime support at NO additional cost.



## POWERWULF CLUSTERS: COMPUTATIONAL FLUID DYNAMICS CONTINUED



POWERWULF CLUSTERS ARE KNOWN TO BE COMPATIBLE WITH THE FOLLOWING INDUSTRY APPLICATIONS.



All PowerWulf Clusters include PSSC Labs industry recognized CBeST cluster management toolkit. CBeST (Complete Beowulf Software Toolkit) is the premier software package preinstalled to ease all aspects of cluster administration including operation, monitoring, maintenance and upgrades. All CBeST components must undergo PSSC Labs thorough testing and approval procedures before any equipment is shipped. CBeST includes unlimited lifetime support at NO additional cost. CBeST is the Intellectual Property of PSSC Labs and is available on PSSC Labs PowerWulf Clusters. Below are the components included with CBeST.



### OPERATING SYSTEM



### MESSAGE PASSING





## POWERWULF CLUSTERS: COMPUTATIONAL FLUID DYNAMICS CONTINUED



### FORTAN & C COMPILER

---



### RECOVERY UTILITY

---



For more information please visit the [CPR Information Page](#)

### BATCH SCHEDULER

---



### HARDWARE & TEMPERATURE MONITORING UTILITY

---



### NODE IMAGING & UPDATING UTILITY

---



### POWER CYCLING SCRIPTS

---

**REMOTE POWER ON**

**REMOTE REBOOT**

**REMOTE POWER OFF**



## POWERWULF CLUSTERS: COMPUTATIONAL FLUID DYNAMICS CONTINUED



## PSSC LABS DIFFERENCE

### COMMITMENT TO YOUR SATISFACTION

PSSC Labs is an acronym that stands for Professional Service, Super Computers. Our mission is to bring a superior level of service and support to a commodity based industry. PSSC Labs offers an alternative to the traditional computer company by focusing on problem solving not just shipping low cost systems.

### EXPERIENCE

PSSC Labs proudly wears the distinction of one of the oldest companies in the high performance computing arena. With almost 20 years in business and over 600 PowerWulf Cluster delivered, PSSC Labs has the experience to quickly and efficiently solve any issues that may arise.

### EXPERTISE

PSSC Labs continues to evolve as the computing industry becomes more technically advanced and complex. PSSC Labs Cluster Technicians are constantly looking for new and innovative technologies in order to provide the best price / performance solution for each application.

### TRUELY TURN KEY SOLUTION

Our CBeST software package is a combination of open source software and custom scripts elegantly combined to offer the most complete Beowulf software toolkit available. CBeST is a testament to our level of experience in the HPC industry. For more information about CBeST, please visit our CBeST section.

### FINANCIAL SECURITY

PSSC Labs is 100% owned and operated by it's employees. Our company philosophy is to first support our clients and then worry about growth. Our current financial position can allow us to support all of our clients for up to three years even if we did not receive another order.

### FACILITY

With over 27 tons of air conditioning and seventy 20 AMP power circuits, PSSC Labs' integration facility can accommodate the largest PowerWulf clusters. This facility is extremely important because it allows PSSC Labs to conduct all hardware assembly, burn in testing and software integration in house. There is absolutely NO out sourcing of any work.

### LIFETIME SUPPORT

In order to meet our end user's ever changing needs, PSSC Labs focuses on maintaining the highest level of support. We offer unlimited phone and email support for the lifetime of all our products. There are no expensive annual contracts of any kind for PSSC Labs software support.